Texas Commission on Environmental Quality

Edwards Aquifer Application Cover Page

Our Review of Your Application

The Edwards Aquifer Program staff conducts an administrative and technical review of all applications. The turnaround time for administrative review can be up to 30 days as outlined in 30 TAC 213.4(e). Generally administrative completeness is determined during the intake meeting or within a few days of receipt. The turnaround time for technical review of an administratively complete Edwards Aquifer application is 90 days as outlined in 30 TAC 213.4(e). Please know that the review and approval time is directly impacted by the quality and completeness of the initial application that is received. In order to conduct a timely review, it is imperative that the information provided in an Edwards Aquifer application include final plans, be accurate, complete, and in compliance with 30 TAC 213.

Administrative Review

1. Edwards Aquifer applications must be deemed administratively complete before a technical review can begin. To be considered administratively complete, the application must contain completed forms and attachments, provide the requested information, and meet all the site plan requirements. The submitted application and plan sheets should be final plans. Please submit one full-size set of plan sheets with the original application, and half-size sets with the additional copies.

   To ensure that all applicable documents are included in the application, the program has developed tools to guide you and web pages to provide all forms, checklists, and guidance. Please visit the below website for assistance: http://www.tceq.texas.gov/field/eapp.

2. This Edwards Aquifer Application Cover Page form (certified by the applicant or agent) must be included in the application and brought to the administrative review meeting.

3. Administrative reviews are scheduled with program staff who will conduct the review. Applicants or their authorized agent should call the appropriate regional office, according to the county in which the project is located, to schedule a review. The average meeting time is one hour.

4. In the meeting, the application is examined for administrative completeness. Deficiencies will be noted by staff and emailed or faxed to the applicant and authorized agent at the end of the meeting, or shortly after. Administrative deficiencies will cause the application to be deemed incomplete and returned.

   An appointment should be made to resubmit the application. The application is re-examined to ensure all deficiencies are resolved. The application will only be deemed administratively complete when all administrative deficiencies are addressed.

5. If an application is received by mail, courier service, or otherwise submitted without a review meeting, the administrative review will be conducted within 30 days. The applicant and agent will be contacted with the results of the administrative review. If the application is found to be administratively incomplete, it can be retrieved from the regional office or returned by regular mail. If returned by mail, the regional office may require arrangements for return shipping.

6. If the geologic assessment was completed before October 1, 2004 and the site contains "possibly sensitive" features, the assessment must be updated in accordance with the *Instructions to Geologists* (TCEQ-0585 Instructions).

Technical Review

1. When an application is deemed administratively complete, the technical review period begins. The regional office will distribute copies of the application to the identified affected city, county, and groundwater conservation district whose jurisdiction includes the subject site. These entities and the public have 30 days to provide comments on the application to the regional office. All comments received are reviewed by TCEQ.

2. A site assessment is usually conducted as part of the technical review, to evaluate the geologic assessment and observe existing site conditions. The site must be accessible to our staff. The site boundaries should be

clearly marked, features identified in the geologic assessment should be flagged, roadways marked and the alignment of the Sewage Collection System and manholes should be staked at the time the application is submitted. If the site is not marked the application may be returned.

3. We evaluate the application for technical completeness and contact the applicant and agent via Notice of Deficiency (NOD) to request additional information and identify technical deficiencies. There are two deficiency response periods available to the applicant. There are 14 days to resolve deficiencies noted in the first NOD. If a second NOD is issued, there is an additional 14 days to resolve deficiencies. If the response to the second notice is not received, is incomplete or inadequate, or provides new information that is incomplete or inadequate, the application must be withdrawn or will be denied. Please note that because the technical review is underway, whether the application is withdrawn or denied **the application fee will be forfeited**.
4. The program has 90 calendar days to complete the technical review of the application. If the application is technically adequate, such that it complies with the Edwards Aquifer rules, and is protective of the Edwards Aquifer during and after construction, an approval letter will be issued. Construction or other regulated activity may not begin until an approval is issued.

Mid-Review Modifications

It is important to have final site plans prior to beginning the permitting process with TCEQ to avoid delays.

Occasionally, circumstances arise where you may have significant design and/or site plan changes after your Edwards Aquifer application has been deemed administratively complete by TCEQ. This is considered a "Mid-Review Modification". Mid-Review Modifications may require redistribution of an application that includes the proposed modifications for public comment.

If you are proposing a Mid-Review Modification, two options are available:

- If the technical review has begun your application can be denied/withdrawn, your fees will be forfeited, and the plan will have to be resubmitted.
- TCEQ can continue the technical review of the application as it was submitted, and a modification application can be submitted at a later time.

If the application is denied/withdrawn, the resubmitted application will be subject to the administrative and technical review processes and will be treated as a new application. The application will be redistributed to the affected jurisdictions.

Please contact the regional office if you have questions. If your project is located in Williamson, Travis, or Hays County, contact TCEQ's Austin Regional Office at 512-339-2929. If your project is in Comal, Bexar, Medina, Uvalde, or Kinney County, contact TCEQ's San Antonio Regional Office at 210-490-3096

Please fill out all required fields below and submit with your application.

1. Regulated Entity Name: Williamson County Central Maint Facility						**2. Regulated Entity No.: 102476660**			
3. Customer Name: Williamson County						**4. Customer No.: 600897888**			
5. Project Type: **(Please circle/check one)**	New		Modification			Extension		Exception	
6. Plan Type: **(Please circle/check one)**	WPAP	CZP	SCS	UST	AST	EXP	EXT	Technical Clarification	Optional Enhanced Measures
7. Land Use: **(Please circle/check one)**	Residential		Non-residential			**8. Site (acres):**		40.07 total	
9. Application Fee:	$6,500		**10. Permanent BMP(s):**			NA			
11. SCS (Linear Ft.):	NA		**12. AST/UST (No. Tanks):**			10			
13. County:	Williamson		**14. Watershed:**			San Gabriel			

Application Distribution

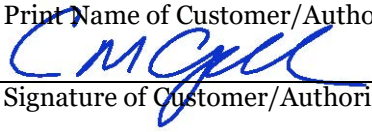
Instructions: Use the table below to determine the number of applications required. One original and one copy of the application, plus additional copies (as needed) for each affected incorporated city, county, and groundwater conservation district are required. Linear projects or large projects, which cross into multiple jurisdictions, can require additional copies. Refer to the "Texas Groundwater Conservation Districts within the EAPP Boundaries" map found at:

http://www.tceq.texas.gov/assets/public/compliance/field_ops/eapp/EAPP%20GWCD%20map.pdf

For more detailed boundaries, please contact the conservation district directly.

Austin Region			
County:	**Hays**	**Travis**	**Williamson**
Original (1 req.)	___	___	_x_
Region (1 req.)	___	___	_x_
County(ies)	___	___	_x_
Groundwater Conservation District(s)	___Edwards Aquifer Authority ___Barton Springs/ Edwards Aquifer ___Hays Trinity ___Plum Creek	___Barton Springs/ Edwards Aquifer	NA
City(ies) Jurisdiction	___Austin ___Buda ___Dripping Springs ___Kyle ___Mountain City ___San Marcos ___Wimberley ___Woodcreek	___Austin ___Bee Cave ___Pflugerville ___Rollingwood ___Round Rock ___Sunset Valley ___West Lake Hills	___Austin ___Cedar Park ___Florence _x_Georgetown ___Jerrell ___Leander ___Liberty Hill ___Pflugerville ___Round Rock

San Antonio Region					
County:	**Bexar**	**Comal**	**Kinney**	**Medina**	**Uvalde**
Original (1 req.)	___	___	___	___	___
Region (1 req.)	___	___	___	___	___
County(ies)	___	___	___	___	___
Groundwater Conservation District(s)	___ Edwards Aquifer Authority ___Trinity-Glen Rose	___Edwards Aquifer Authority	___Kinney	___EAA ___Medina	___EAA ___Uvalde
City(ies) Jurisdiction	___Castle Hills ___Fair Oaks Ranch ___Helotes ___Hill Country Village ___Hollywood Park ___San Antonio (SAWS) ___Shavano Park	___Bulverde ___Fair Oaks Ranch ___Garden Ridge ___New Braunfels ___Schertz	NA	___San Antonio ETJ (SAWS)	NA

I certify that to the best of my knowledge, that the application is complete and accurate. This application is hereby submitted to TCEQ for administrative review and technical review. Chad M. Copeland, P.G.
Print Name of Customer/Authorized Agent  08/23/2023
Signature of Customer/Authorized Agent Date

FOR TCEQ INTERNAL USE ONLY				
Date(s)Reviewed:		Date Administratively Complete:		
Received From:		Correct Number of Copies:		
Received By:		Distribution Date:		
EAPP File Number:		Complex:		
Admin. Review(s) (No.):		No. AR Rounds:		
Delinquent Fees (Y/N):		Review Time Spent:		
Lat./Long. Verified:		SOS Customer Verification:		
Agent Authorization Complete/Notarized (Y/N):		Fee Check:	Payable to TCEQ (Y/N):	
Core Data Form Complete (Y/N):			Signed (Y/N):	
Core Data Form Incomplete Nos.:			Less than 90 days old (Y/N):	

Aboveground Tank Facility Plan Application – Checklist
TCEQ-0575

Aboveground Storage Tank Facility Plan Checklist

X **Edwards Aquifer Application Cover Page (TCEQ-20705)**

X **General Information Form (TCEQ-0587)**

Attachment A - Road Map
Attachment B - USGS / Edwards Recharge Zone Map
Attachment C - Project Description

X **Geologic Assessment Form (TCEQ-0585)** Previously submitted and approved

Attachment A - Geologic Assessment Table (TCEQ-0585-Table)
Attachment B - Stratigraphic Column
Attachment C - Site Geology
Attachment D - Site Geologic Map(s)

X **Aboveground Storage Tank Facility Plan (TCEQ-0575)**

Attachment A - Alternative Methods of Secondary Containment (if proposed)
Attachment B - Scaled Drawing(s) of Containment Structure
Attachment C - Exception to the Geologic Assessment (if requested)
Attachment D - Spill and Overfill Control
Attachment E - Response Actions to Spills
Site Plan

X **Temporary Stormwater Section (TCEQ-0602)**

Attachment A - Spill Response Actions
Attachment B - Potential Sources of Contamination
Attachment C - Sequence of Major Activities
Attachment D - Temporary Best Management Practices and Measures
Attachment E - Request to Temporarily Seal a Feature (if requested)
Attachment F - Structural Practices
Attachment G - Drainage Area Map
Attachment H - Temporary Sediment Pond(s) Plans and Calculations
Attachment I - Inspection and Maintenance for BMPs
Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices

X **Agent Authorization Form (TCEQ-0599), if application submitted by agent**

X **Application Fee Form (TCEQ-0574)**

X **Check Payable to the "Texas Commission on Environmental Quality"**

X **Core Data Form (TCEQ-10400)**

General Information Form
TCEQ-0587

General Information Form

Texas Commission on Environmental Quality

For Regulated Activities on the Edwards Aquifer Recharge and Transition Zones and Relating to 30 TAC §213.4(b) & §213.5(b)(2)(A), (B) Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **General Information Form** is hereby submitted for TCEQ review. The application was prepared by:

Print Name of Customer/Agent: Chad M. Copeland, P.G., PWS

Date: 08/23/2023

Signature of Customer/Agent:

Project Information

1. Regulated Entity Name: Williamson County Cental Maint Facility
2. County: Williamson
3. Stream Basin: San Gabriel
4. Groundwater Conservation District (If applicable): NA
5. Edwards Aquifer Zone:

   ☐ Recharge Zone
   ☒ Transition Zone

6. Plan Type:

   ☐ WPAP
   ☐ SCS
   ☐ Modification
   ☒ AST
   ☐ UST
   ☐ Exception Request

7. Customer (Applicant):
   Contact Person: Kevin Teller
   Entity: Williamson County, Texas
   Mailing Address: 3151 SE Inner Loop
   City, State: Georgetown, Texas Telephone: 512-943-3368 Zip: 78626
   FAX: _____
   Email Address: kevin.teller@wilco.org

8. Agent/Representative (If any):
   Contact Person: Mr. Chad M. Copeland, P.G.
   Entity: Ranger Environmental Services, LLC
   Mailing Address: PO Box 201179
   City, State: Austin, Texas Zip: 78720
   Telephone: 512-335-1785x124 FAX: 512-335-0527
   Email Address: chad@rangerenv.com

9. Project Location:

   ☒ The project site is located inside the city limits of Georgetown, Texas.
   ☐ The project site is located outside the city limits but inside the ETJ (extra-territorial jurisdiction) of _____.
   ☐ The project site is not located within any city's limits or ETJ.

10. ☒ The location of the project site is described below. The description provides sufficient detail and clarity so that the TCEQ's Regional staff can easily locate the project and site boundaries for a field investigation.

    The site is located at 3151 SE Inner Loop, Georgetown, Texas 78726. It should be noted, this site has been merged with the 3161 SE Inner Loop, Georgetown location in to one facility.

11. ☒ **Attachment A – Road Map**. A road map showing directions to and the location of the project site is attached. The project location and site boundaries are clearly shown on the map.

12. ☒ **Attachment B - USGS / Edwards Recharge Zone Map**. A copy of the official 7 ½ minute USGS Quadrangle Map (Scale: 1" = 2000') of the Edwards Recharge Zone is attached. The map(s) clearly show:

    ☒ Project site boundaries.
    ☒ USGS Quadrangle Name(s).
    ☒ Boundaries of the Recharge Zone (and Transition Zone, if applicable).
    ☒ Drainage path from the project site to the boundary of the Recharge Zone.

13. ☒ **The TCEQ must be able to inspect the project site or the application will be returned**. Sufficient survey staking is provided on the project to allow TCEQ regional staff to locate the boundaries and alignment of the regulated activities and the geologic or manmade features noted in the Geologic Assessment.

☒ Survey staking will be completed by this date: NA

14. ☒ **Attachment C – Project Description**. Attached at the end of this form is a detailed narrative description of the proposed project. The project description is consistent throughout the application and contains, at a minimum, the following details:

    ☒ Area of the site
    ☒ Offsite areas
    ☒ Impervious cover
    ☒ Permanent BMP(s)
    ☒ Proposed site use
    ☒ Site history
    ☒ Previous development
    ☐ Area(s) to be demolished

15. Existing project site conditions are noted below:

    ☐ Existing commercial site
    ☐ Existing industrial site
    ☐ Existing residential site
    ☐ Existing paved and/or unpaved roads
    ☐ Undeveloped (Cleared)
    ☐ Undeveloped (Undisturbed/Uncleared)
    ☒ Other: Existing Maintenance Facility for Williamson County

Prohibited Activities

16. ☒ I am aware that the following activities are prohibited on the Recharge Zone and are not proposed for this project:

    (1) Waste disposal wells regulated under 30 TAC Chapter 331 of this title (relating to Underground Injection Control);

    (2) New feedlot/concentrated animal feeding operations, as defined in 30 TAC §213.3;

    (3) Land disposal of Class I wastes, as defined in 30 TAC §335.1;

    (4) The use of sewage holding tanks as parts of organized collection systems; and

    (5) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41(b), (c), and (d) of this title (relating to Types of Municipal Solid Waste Facilities).

    (6) New municipal and industrial wastewater discharges into or adjacent to water in the state that would create additional pollutant loading.

17. ☒ I am aware that the following activities are prohibited on the Transition Zone and are not proposed for this project:

    (1) Waste disposal wells regulated under 30 TAC Chapter 331 (relating to Underground Injection Control);

(2) Land disposal of Class I wastes, as defined in 30 TAC §335.1; and

(3) New municipal solid waste landfill facilities required to meet and comply with Type I standards which are defined in §330.41 (b), (c), and (d) of this title.

Administrative Information

18. The fee for the plan(s) is based on:

- ☐ For a Water Pollution Abatement Plan or Modification, the total acreage of the site where regulated activities will occur.
- ☐ For an Organized Sewage Collection System Plan or Modification, the total linear footage of all collection system lines.
- ☒ For a UST Facility Plan or Modification or an AST Facility Plan or Modification, the total number of tanks or piping systems.
- ☐ A request for an exception to any substantive portion of the regulations related to the protection of water quality.
- ☐ A request for an extension to a previously approved plan.

19. ☒ Application fees are due and payable at the time the application is filed. If the correct fee is not submitted, the TCEQ is not required to consider the application until the correct fee is submitted. Both the fee and the Edwards Aquifer Fee Form have been sent to the Commission's:

- ☒ TCEQ cashier
- ☐ Austin Regional Office (for projects in Hays, Travis, and Williamson Counties)
- ☐ San Antonio Regional Office (for projects in Bexar, Comal, Kinney, Medina, and Uvalde Counties)

20. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

21. ☒ No person shall commence any regulated activity until the Edwards Aquifer Protection Plan(s) for the activity has been filed with and approved by the Executive Director.

ATTACHMENT A

Road Map

Previously submitted and approved within the UST Application

Attachment A – Road Map

(Not to Scale)

Project Site

Directions From Halff

-Turn Left onto N Mo Pac Expy
-Merge onto TX-1 Loop N/ Mopac
-Merge onto TX-45 E toward I-35 N
-Merge onto I-35 N toward Waco
-Merge onto N Interstate 35
-Exit 259-259A toward SE Inner Loop
-Merge onto Interstate 35 Frontage Road
-Turn right onto SE Inner Loop
-2910, 3189 and 3151 SE Inner Loop on the left

HALFF®

4030 WEST BRAKER LANE, SUITE 450

AUSTIN, TEXAS 78759-5356

TEL (512) 777-4600

FAX (512) 252-8141
TBPE FIRM #312

Williamson County
North Campus Facilities
2910, 3189 and 3151 SE Inner Loop
5/4/2016

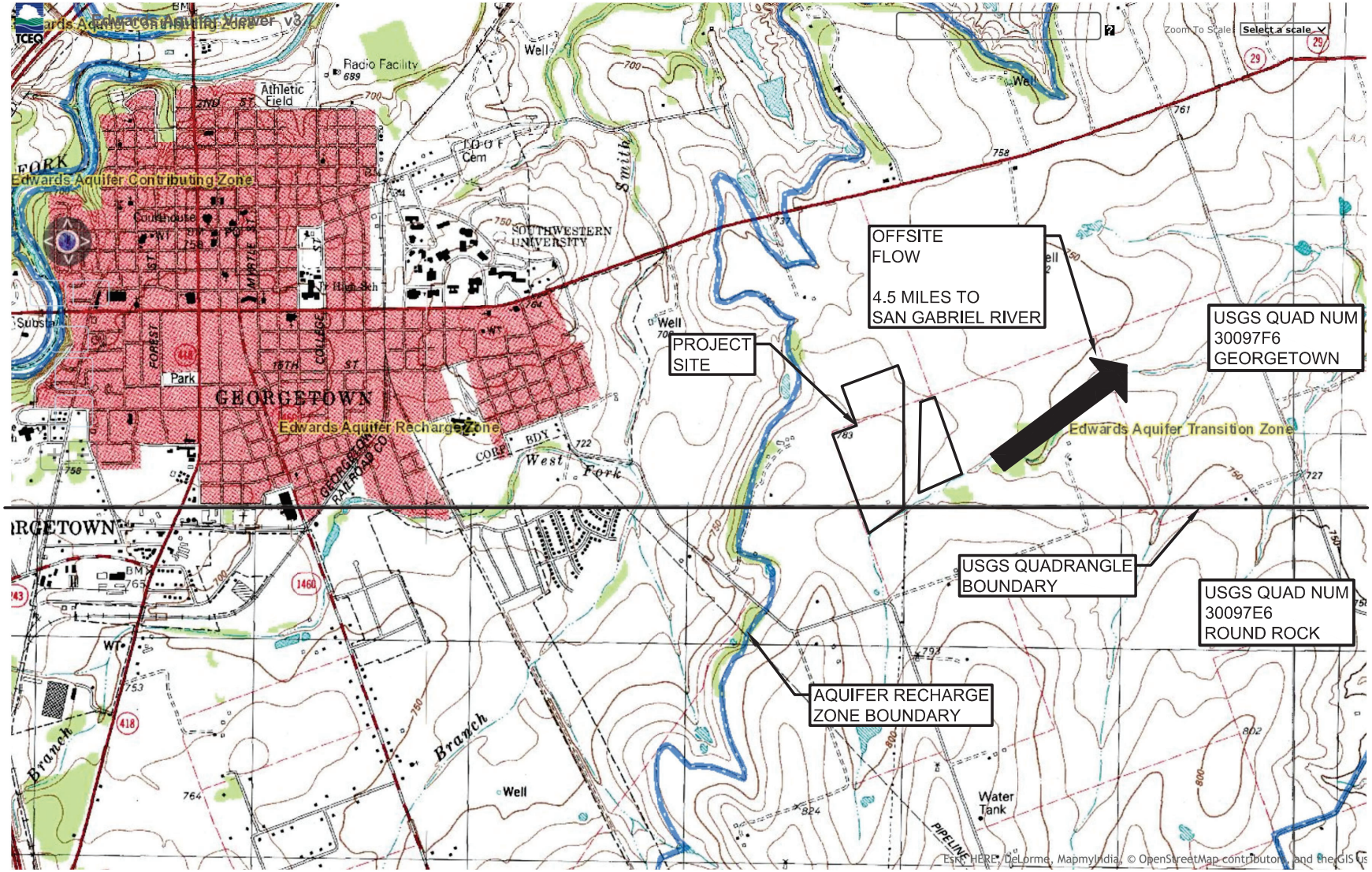
AVO #31345

ATTACHMENT B

USGS / Edwards Recharge Zone Map

ATTACHMENT B

Previously submitted and approved within the UST Application



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TEL (512) 777-4600
FAX (512) 252-8141
TBPE FIRM #F-312

AQUIFER RECHARGE ZONE MAP

WILLIAMSON COUNTY NORTH CAMPUS FACILITIES
5/19/16

AVO # 31345

ATTACHMENT C

Project Description

Williamson County Central Maintenance Facility is located 3151 SE Inner Loop, Georgetown, Williamson County, Texas. The site lies within the Edwards Aquifer Transition Zone. The facility operates as a maintenance facility for EMS and County vehicles and equipment.

This plan proposes the following aboveground storage tanks and totes:

Table 1a. Tank and Substance Storage (Inside the Maintenance Shop)

AST Number	Size (Gallons)	Substance to be Stored	Tank Material
1	130	New Motor Oil	Polyethylene
2	130	New Motor Oil	Polyethylene
3	240	New Motor Oil	Polyethylene
4	130	New Motor Oil	Polyethylene
5	130	New Motor Oil	Polyethylene
6	130	New Motor Oil	Polyethylene
7	130	New Motor Oil	Polyethylene
8	130	Hydraulic Fluid	Polyethylene
9	240	New Motor Oil	Polyethylene

Total x 1.5 = 2,085 gallons

Table 2a. Secondary Containment

Length (L) (Ft.)	Width (W) (Ft.)	Height (H) (Ft.)	LxWxH = (Ft3)	Gallons
Please see site plan				2130.5

Table 1b. Tank and Substance Storage (Outside the Maintenance Shop)

AST Number	Size (Gallons)	Substance to be Stored	Tank Material
10	2,000	Used Oil	Fireguard UL 2085 DW

Total x 1.5 = Not applicable, double wall constructed tank

Table 2b. Secondary Containment

Length (L) (Ft.)	Width (W) (Ft.)	Height (H) (Ft.)	LxWxH = (Ft3)	Gallons
The new waste oil tank is a double wall constructed tank (UL 2085).				

Table 3a. Tank and Substance Storage (Existing Concrete Secondary Containment Structure)

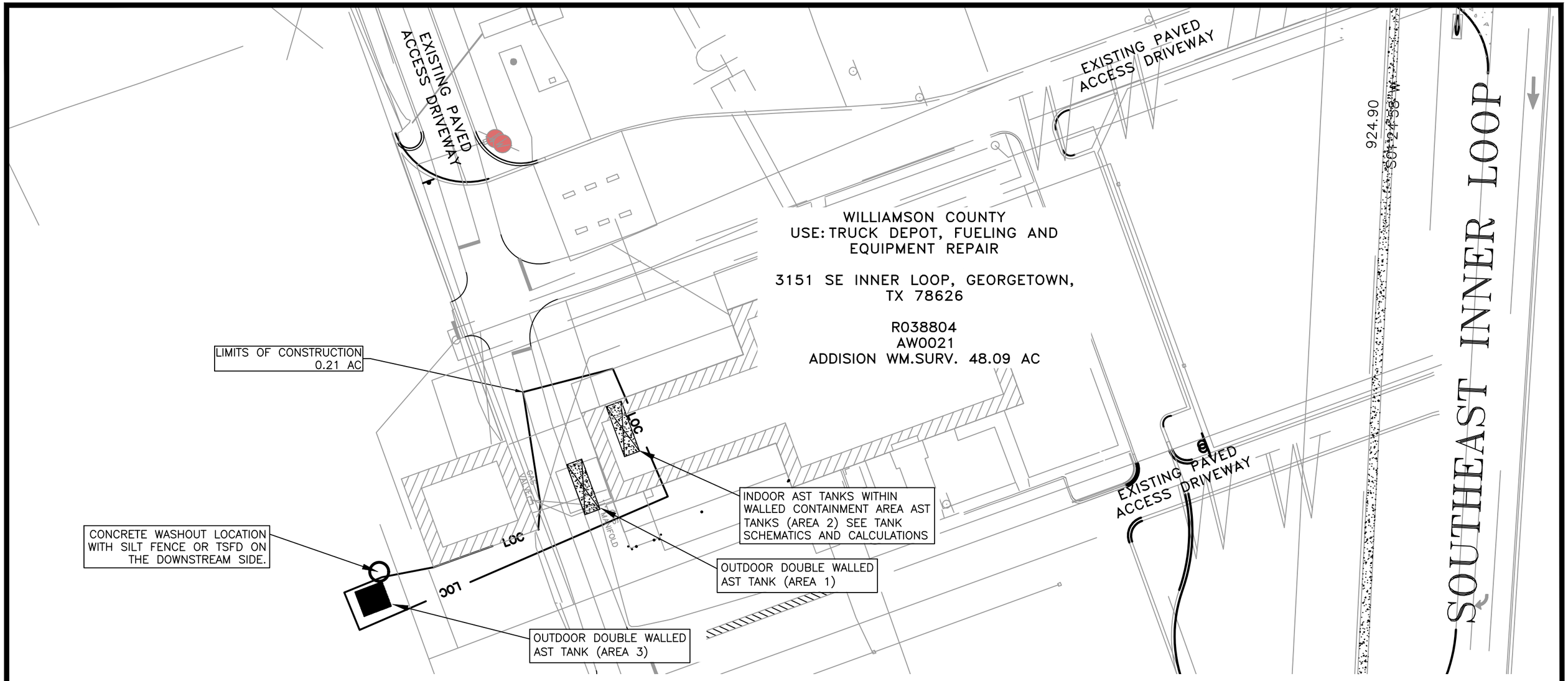
AST Number	Size (Gallons)	Substance to be Stored	Tank Material
Various temporary 55-gallon drums	Various temporary 55-gallon drums	Possibly specialized oil, brake cleaner (solvent), etc.	Single wall steel

Total x 1.5 = 825 (estimated based on 10 55-gallon drums)

Table 3b. Secondary Containment

Length (L) (Ft.)	Width (W) (Ft.)	Height (H) (Ft.)	LxWxH = (Ft3)	Gallons
15	20	2	600	4,488.31
The existing concrete containment will be utilized for temporary 55-gallon drums. It is estimated that no more than 10 55-gallon drums will be store at one time (550 gallons).				

If should be noted, no new impervious cover is proposed to be added to the site. In addition, no existing impervious cover will be disturbed. The geologic assessment of the property was conducted and approved with the recent underground storage tank (UST) plan, and is included.



1. DRAINAGE AREA TO LIMITS OF CONSTRUCTION ARE LESS THAN 0.3 AC. USE TSD PER THIS PLAN.
2. FILTER FABRIC SHOULD LAP OVER ENDS SIX (6) INCHES TO COVER DIKE TO DIKE JUNCTION EACH JUNCTION SHOULD BE SECURED BY SHOAT RINGS.
3. POSITION DIKE PARALLEL TO THE CONTOURS, WITH THE END OF EACH SECTION CLOSELY ABUTTING THE ADJACENT SECTIONS.

STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

LEGEND

PROPERTY BOUNDARY

PROPOSED ABOVE GROUND STORAGE TANKS

NOTES

1. ALL PROPERTY BOUNDARIES ARE APPROXIMATE
2. ABOVE GROUND STORAGE TANK SIZE AND SPECIFICATION TO BE PER AST APPLICATION TO LCRA
3. TANK LOCATION AND SIZE IS ESTIMATED AND WILL BE FIELD VERIFIED.

N

0 30' 60' 120'

SCALE: 1" = 60'

IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE

AST SITE LAYOUT

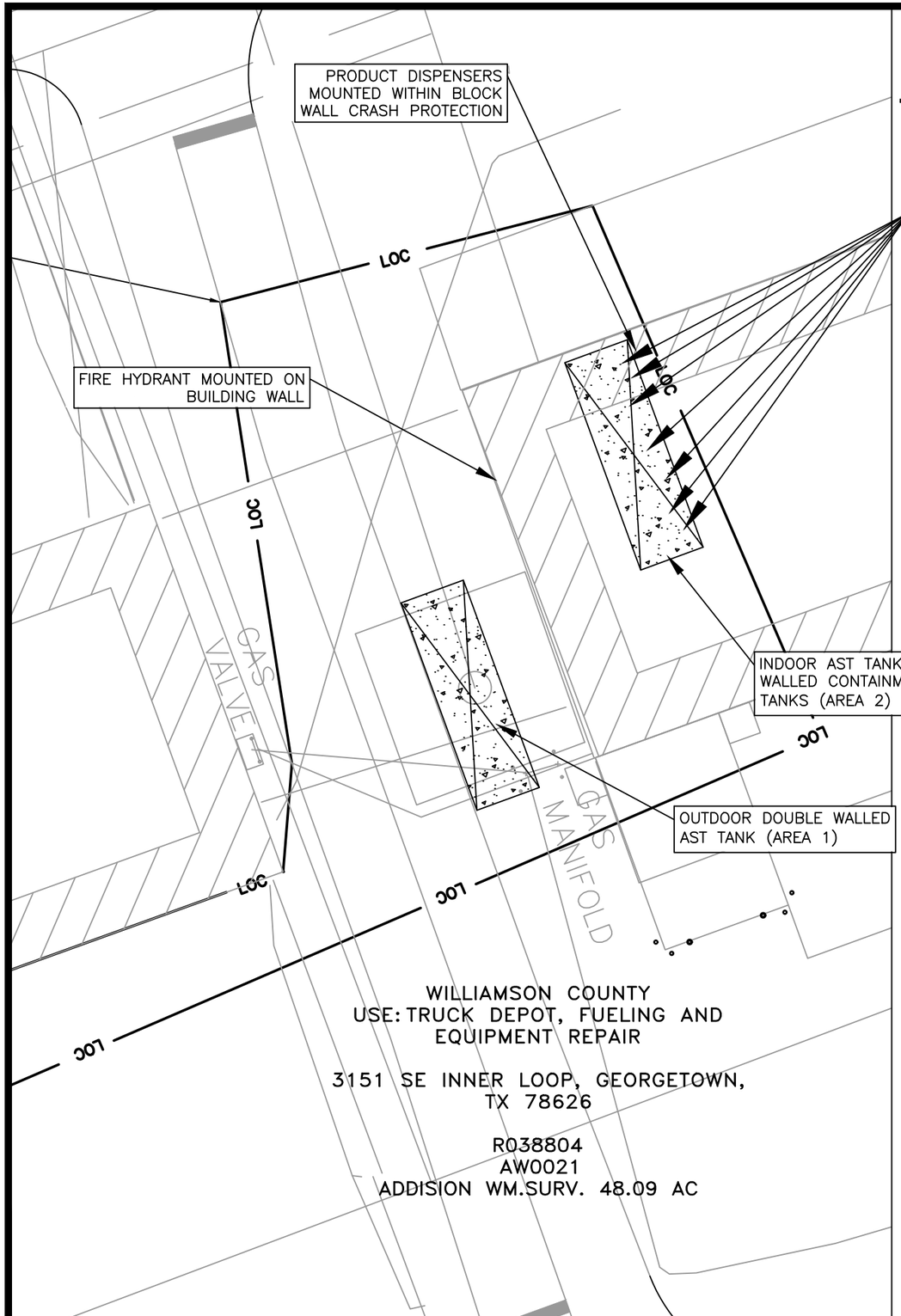
EXCELL FUELING SYSTEMS

WILCO R&B AST PLANS

SHEET 3 OF 4

SANDLIN SERVICES, LLC
ENGINEERING | CONSULTING

TBPELS FIRM #21356



WILLIAMSON COUNTY
USE: TRUCK DEPOT, FUELING AND EQUIPMENT REPAIR

3151 SE INNER LOOP, GEORGETOWN, TX 78626

R038804
AW0021
ADDISION WM.SURV. 48.09 AC

LEGEND

PROPERTY BOUNDARY

PROPOSED ABOVE GROUND STORAGE TANK

TANKS (AREA 2)
WITHIN EXISTING MASONRY CONTAINMENT

7 X 130 GAL & 2 X 240 GAL OIL/WASTE OIL TANKS WITH ENGINEERED CONTAINMENT (SEE MANUFACTURE DRAWINGS)
2085 GAL REQUIRED

N

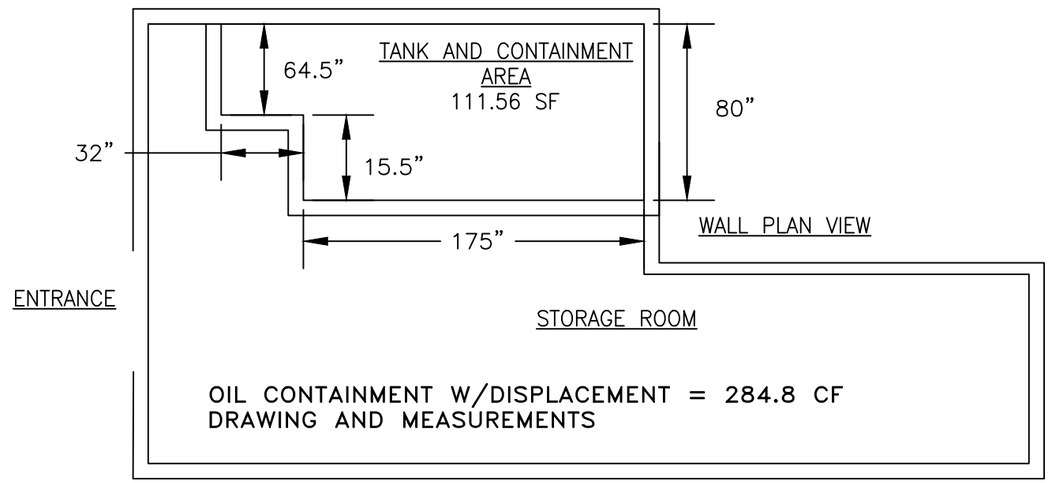
0 10' 20' 40'
SCALE: 1" = 20'

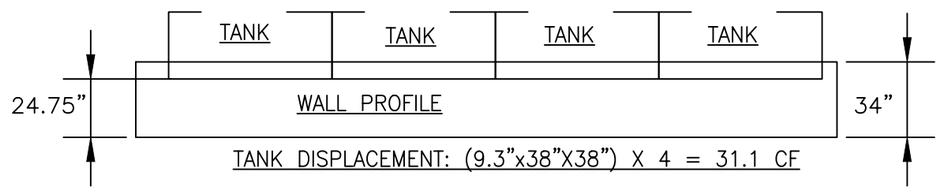
IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE

STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

DETAILED TANK SCHEMATIC
N.T.S





CONTAINMENT CALCULATIONS:
–TOTAL TANK CAP.: 1390.0 GAL
–REQUIRED CONTAINMENT: 2085.0 GAL
–PROVIDED CONTAINMENT: 2130.5 GAL

NOTES

1. ALL PROPERTY BOUNDARIES ARE APPROXIMATE
2. ABOVE GROUND STORAGE TANK SIZE AND SPECIFICATION TO BE PER AST APPLICATION TO TCEQ
3. TANK LOCATION IS ESTIMATED AND WILL BE FIELD VERIFIED.

TANK LAYOUT

EXCELL FUELING SYSTEMS

WILCO R&B AST PLANS

SHEET 4 OF 4

ENGINEERING | CONSULTING
SANDLIN
SERVICES, LLC

TBPELS FIRM #21356

Geologic Assessment
TCEQ-0585

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

December 13, 2016

The Honorable Dan A. Gattis, County Judge
Williamson County
3161 SE Inner Loop
Georgetown, Texas 78626

Re: Edwards Aquifer, Williamson County

NAME OF PROJECT: Williamson County North Campus Facility (Central Maintenance); Located 3161 SE Inner Loop, Georgetown, Texas

TYPE OF PLAN: Request for Approval of an Underground Storage Tank Facility (UST) Plan

30 Texas Administrative Code (TAC) Chapter 213 Edwards Aquifer

Edwards Aquifer Protection Program (EAPP) ID No. 11000352; Regulated Entity No. RN102476660

Dear Judge Gattis:

The Texas Commission on Environmental Quality (TCEQ) has completed its review of the UST Application for the above-referenced project submitted to the Austin Regional Office by Halff Associates, Inc. on behalf of Williamson County on August 17, 2016. Final review of the UST was completed after additional material was received on December 12, 2016. As presented to the TCEQ, the UST Facility Plan proposed in the application was prepared to be in general compliance with the requirements of 30 TAC Chapter 334, Underground Storage Tanks, and 30 TAC §213.5(d). Therefore, based on the applicant's concurrence of compliance, the planning materials for construction of the proposed project and pollution abatement measures are hereby approved subject to applicable state rules and the conditions in this approval letter. The applicant or a person affected may file with the chief clerk a motion for reconsideration of the executive director's final action on this Edwards Aquifer protection plan. A motion for reconsideration must be filed no later than 23 days after the date of this approval letter. *This approval expires two (2) years from the date of this letter unless, prior to the expiration date, more than 10 percent of the construction has commenced on the project or an extension of time has been requested.*

BACKGROUND

The proposed Williamson County North Campus Facility will be an expansion of the existing Williamson County Maintenance Facility located on the Edwards Aquifer Transition Zone. The existing facility includes multiple County buildings, County Road and Bridge Division, parking lots, roadways, material storage area, fueling facility and appurtenances.

PROJECT DESCRIPTION

The proposed UST Facility Plan will consist of two (2) new 20,000 gallon double-wall fiberglass reinforced plastic tanks to be used for the storage of gasoline and diesel fuel. Ancillary equipment will include overfill prevention, spill containment, a double-wall fiberglass reinforced plastic piping system, stainless steel flexible connectors, piping sumps, dispenser-end flexible connector isolation sleeves, four (4) observation wells, dispenser-end containment sumps, an electronic continuous leak detection system to monitor the tank and piping interstices and capable of notifying the system's owner, and all other equipment as required by 30 TAC Chapter 334.

GEOLOGY

According to the geologic assessment report included with the application, multiple borings and other manmade features were identified onsite. Additionally, Feature No. 11 was identified in the report as a sensitive, large solution cavity. On November 2, 2016, representatives of the Austin Regional Office conducted a site assessment investigation, observed Features 11 and 12 and two (2) additional features were identified in the vicinity of Feature 11. TCEQ recommended the applicant excavate Features 11, 12 and newly identified features to determine the nature and extent of the features.

The applicant excavated the features and a second site assessment was conducted on December 1, 2016. Features 11, 12 and the newly identified features were concluded to be non-karst, manmade features located in historically excavated/filled area and were therefore non-sensitive. A revised geologic assessment report was received December 12, 2016, revising Feature 11 to non-sensitive. The TCEQ concurs with the revised rating.

STANDARD CONDITIONS

1. Pursuant to Chapter 7 Subchapter C of the Texas Water Code, any violations of the requirements in 30 TAC Chapter 213 may result in administrative penalties.
2. The holder of the approved Edwards Aquifer protection plan must comply with all provisions of 30 TAC Chapter 213 and all best management practices and measures contained in the approved plan. Additional and separate approvals, permits, registrations and/or authorizations from other TCEQ Programs (i.e., Petroleum Storage Tank, Stormwater, Water Rights, UIC) can be required depending on the specifics of the plan.
3. In addition to the rules of the Commission, the applicant may also be required to comply with state and local ordinances and regulations providing for the protection of water quality.
4. Installation, testing, and operation of the tanks, piping, and all other components of the proposed storage and monitoring systems shall be in conformance with the manufacturer's specifications.
5. All installations, repairs, and removals must be conducted by a registered UST contractor who has a licensed installer or on-site supervisor at the site during all critical junctures, as required by 30 TAC Chapter 334 Subchapter I.
6. The owner of the proposed facility shall assure that the storage tank system is installed, operated, and maintained in full compliance with the applicable provisions of 30 TAC Chapter 334 which establishes the requirements for the design, installation, operation, corrosion protection, construction notification, registration, fee assessment, financial responsibility, release reporting, corrective action related to such system, and all applicable federal, state and local regulations.

Prior to Commencement of Construction:

7. Within 60 days of receiving written approval of an Edwards Aquifer Protection Plan, the applicant must submit to the Austin Regional Office, proof of recordation of notice in the county deed records, with the volume and page number(s) of the county deed records of the county in which the property is located. A description of the property boundaries shall be included in the deed recordation in the county deed records. A suggested form (Deed Recordation Affidavit, TCEQ-0625) that you may use to deed record the approved UST Facility Plan is enclosed.
8. All contractors conducting regulated activities at the referenced project location shall be provided a copy of this notice of approval. At least one complete copy of the approved UST Facility Plan and this notice of approval shall be maintained at the project location until all regulated activities are completed.
9. Prior to commencing construction, the applicant shall submit any modifications to this approved UST Facility Plan required by some other regulating authority or desired by the applicant.
10. Modification to the activities described in the referenced UST Facility Plan following the date of approval may require the submittal of an Edwards Aquifer protection plan application to modify this approval, including the payment of appropriate fees and all information necessary for its review and approval prior to initiating construction of the modifications.
11. The applicant must provide written notification of intent to commence construction, replacement, or rehabilitation of the referenced project. Notification must be submitted to the Austin Regional Office no later than 48 hours prior to commencement of the regulated activity. Written notification must include the date on which the regulated activity will commence, the name of the approved plan and program ID number for the regulated activity, and the name of the prime contractor with the name and telephone number of the contact person. The executive director will use the notification to determine if the approved plan is eligible for an extension.
12. Temporary erosion and sedimentation (E&S) controls, i.e., silt fences, rock berms, stabilized construction entrances, or other controls described in the approved UST Facility Plan, must be installed prior to construction and maintained during construction. Temporary E&S controls may be removed when vegetation is established and the construction area is stabilized. The TCEQ may monitor stormwater discharges from the site to evaluate the adequacy of temporary E&S control measures. Additional controls may be necessary if excessive solids are being discharged from the site.
13. All borings with depths greater than or equal to 20 feet must be plugged with a non-shrink grout from the bottom of the hole to within three (3) feet of the surface. The remainder of the hole must be backfilled with cuttings from the boring. All borings less than 20 feet must be backfilled with cuttings from the boring. All borings must be backfilled or plugged within four (4) days of completion of the drilling operation. Voids may be filled with gravel.

During Construction:

14. A geologist must inspect the completed tankhold for the presence of geologic features. Certification that the tankhold excavation has been inspected must be submitted to the Austin Regional Office. If a geologic feature is discovered, the applicant must propose methods to protect the feature and the Edwards Aquifer from potentially adverse impacts to water quality from the underground storage tank system. Installation activities may not

proceed until the executive director has reviewed and approved the proposed methods. The protection methods must be consistent with 30 TAC §213.5(d)(1)(B). Construction may continue without written approval from the TCEQ if the geologist certifies that no sensitive features were present.

15. During the course of regulated activities related to this project, the applicant or agent shall comply with all applicable provisions of 30 TAC Chapter 213, Edwards Aquifer. The applicant shall remain responsible for the provisions and conditions of this approval until such responsibility is legally transferred to another person or entity.
16. If any sensitive feature (caves, solution cavities, sink holes, etc.) is discovered during construction, all regulated activities near the feature must be suspended immediately. The applicant or his agent must immediately notify the Austin Regional Office of the discovery of the feature. Regulated activities near the feature may not proceed until the executive director has reviewed and approved the methods proposed to protect the feature and the aquifer from potentially adverse impacts to water quality. The plan must be sealed, signed, and dated by a Texas Licensed Professional Engineer.
17. All water wells, including injection, dewatering, and monitoring wells must be in compliance with the requirements of the Texas Department of Licensing and Regulation under Title 16 TAC Chapter 76 (relating to Water Well Drillers and Pump Installers) and all other locally applicable rules, as appropriate.
18. If sediment escapes the construction site, the sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain). Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50 percent. Litter, construction debris, and construction chemicals shall be prevented from becoming stormwater discharge pollutants.
19. The following records shall be maintained and made available to the executive director upon request: the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.
20. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, and construction activities will not resume within 21 days. When the initiation of stabilization measures by the 14th day is precluded by weather conditions, stabilization measures shall be initiated as soon as practicable.
21. Intentional discharges of sediment laden water during construction are not allowed. If dewatering of excavated areas becomes necessary, the discharge will be filtered through appropriately selected temporary best management practices. These may include vegetative filter strips, sediment traps, rock berms, silt fence rings, etc.

<u>After Completion of Construction:</u>

22. The leak detection system must provide continuous monitoring of the system and must be capable of immediately alerting the system's owner or their representative of possible leakages.

This action is taken under authority delegated by the Executive Director of the Texas Commission on Environmental Quality. If you have any questions or require additional information, please contact Mr. Zach Lanfear of the Edwards Aquifer Protection Program of the Austin Regional Office at (512) 339-2929.

Sincerely,

David Van Soest, Director
Austin Region Office
Texas Commission on Environmental Quality

DVS/zl

Enclosures: Deed Recordation Affidavit, Form TCEQ-0625

cc: Mr. Joe M. England, P.E., County Engineer, Williamson County
Mr. Ed Polasek, Transportation Services Director, Georgetown Utility Systems, City of Georgetown
Mr. John J. Teague, III, P.E., Halff Associates, Inc., 4030 W. Braker Ln., Ste. 450, Austin, TX 78759
TCEQ Central Records, Building F, MC 212

Deed Recordation Affidavit
Edwards Aquifer Protection Plan

THE STATE OF TEXAS §

County of _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____ who, being duly sworn by me, deposes and says:

(1) That my name is _____and that I own the real property described below.

(2) That said real property is subject to an EDWARDS AQUIFER PROTECTION PLAN which was required under the 30 Texas Administrative Code (TAC) Chapter 213.

(3) That the EDWARDS AQUIFER PROTECTION PLAN for said real property was approved by the Texas Commission on Environmental Quality (TCEQ) on _____.

A copy of the letter of approval from the TCEQ is attached to this affidavit as Exhibit A and is incorporated herein by reference.

(4) The said real property is located in _____ County, Texas, and the legal description of the property is as follows:

_____
LANDOWNER-AFFIANT

SWORN AND SUBSCRIBED TO before me, on this __ day of _____, ____.

_____
NOTARY PUBLIC

THE STATE OF _____ §

County of _____ §

BEFORE ME, the undersigned authority, on this day personally appeared _____ known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this __ day of _____, ____.

_____
NOTARY PUBLIC

_____
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: _____

Previously submitted and approved with the
2016 UST Facility Plan

3161 SE Inner Loop, Georgetown, TX
Edwards Aquifer Transition Zone

Geologic Assessment

Texas Commission on Environmental Quality

For Regulated Activities on The Edwards Aquifer Recharge/transition Zones and Relating to 30 TAC §213.5(b)(3), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

Print Name of Geologist: Rosemary Wyman, P.G. (TX 751)

Telephone: 512-453-3733

Fax: _____

Date: August 9, 2016

Representing: Baer Engineering and Environmental Consulting, Inc. TBPG No. 50030

(Name of Company and TBPG or TBPE registration number)

Signature of Geologist:

Rosemary Wyman

Regulated Entity Name: Williamson County North Campus Facility

Project Information

1. Date(s) Geologic Assessment was performed: July 12 and 18, 2016
2. Type of Project:
   - ☐ WPAP
   - ☐ SCS
   - ☐ AST
   - ☒ UST
3. Location of Project:
   - ☐ Recharge Zone
   - ☒ Transition Zone

☐ Contributing Zone within the Transition Zone

4. ☒ **Attachment A - Geologic Assessment Table**. Completed Geologic Assessment Table (Form TCEQ-0585-Table) is attached.

5. ☒ Soil cover on the project site is summarized in the table below and uses the SCS Hydrologic Soil Groups* (Urban Hydrology for Small Watersheds, Technical Release No. 55, Appendix A, Soil Conservation Service, 1986). If there is more than one soil type on the project site, show each soil type on the site Geologic Map or a separate soils map.

Table 1 - Soil Units, Infiltration Characteristics and Thickness

Soil Name	Group*	Thickness(feet)
Bra	D	80"
Hse	D	60"
Ksb	C	72"
Hub	D	80"

** Soil Group Definitions (Abbreviated)*

A. Soils having a high infiltration rate when thoroughly wetted.
B. Soils having a moderate infiltration rate when thoroughly wetted.
C. Soils having a slow infiltration rate when thoroughly wetted.
D. Soils having a very slow infiltration rate when thoroughly wetted.

6. ☒ **Attachment B – Stratigraphic Column**. A stratigraphic column showing formations, members, and thicknesses is attached. The outcropping unit, if present, should be at the top of the stratigraphic column. Otherwise, the uppermost unit should be at the top of the stratigraphic column.

7. ☒ **Attachment C – Site Geology**. A narrative description of the site specific geology including any features identified in the Geologic Assessment Table, a discussion of the potential for fluid movement to the Edwards Aquifer, stratigraphy, structure(s), and karst characteristics is attached.

8. ☒ **Attachment D – Site Geologic Map(s)**. The Site Geologic Map must be the same scale as the applicant's Site Plan. The minimum scale is 1": 400'

   Applicant's Site Plan Scale: 1" = _____'
   Site Geologic Map Scale: 1" = Note:' Only one geologic formation present on site.
   Site Soils Map Scale (if more than 1 soil type): 1" = 9,420 ' (Landscape at 8.5"x11")

9. Method of collecting positional data:

   ☒ Global Positioning System (GPS) technology.
   ☐ Other method(s). Please describe method of data collection: _____

10. ☒ The project site and boundaries are clearly shown and labeled on the Site Geologic Map.

11. ☒ Surface geologic units are shown and labeled on the Site Geologic Map.

12. ☒ Geologic or manmade features were discovered on the project site during the field investigation. They are shown and labeled on the Site Geologic Map and are described in the attached Geologic Assessment Table.

    ☐ Geologic or manmade features were not discovered on the project site during the field investigation.

13. [X] The Recharge Zone boundary is shown and labeled, if appropriate.

14. All known wells (test holes, water, oil, unplugged, capped and/or abandoned, etc.): If applicable, the information must agree with Item No. 20 of the WPAP Application Section.

    ☒ There are 4 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply.)

    ☐ The wells are not in use and have been properly abandoned.

    [X] The wells are not in use and will be properly abandoned.

    ☐ The wells are in use and comply with 16 TAC Chapter 76.

    Possible borings were observed on site. We are unsure as to their purpose.

    ☐ There are no wells or test holes of any kind known to exist on the project site.

Administrative Information

15. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

GEOLOGIC ASSESSMENT TABLE			PROJECT NAME: Installation of UST, Williamson County, N. Campus																	
LOCATION			FEATURE CHARACTERISTICS												EVALUATION			PHYSICAL SETTING		
1A	1B *	1C*	2A	2B	3	4			5	5A	6	7	8A	8B	9	10		11		12
FEATURE ID	LATITUDE	LONGITUDE	FEATURE TYPE	POINTS	FORMATION	DIMENSIONS (FEET)			TREND (DEGREES)	DOM	DENSITY (NO/FT)	APERTURE (FEET)	INFILL	RELATIVE INFILTRATION RATE	TOTAL	SENSITIVITY		CATCHMENT AREA (ACRES)		TOPOGRAPHY
						X	Y	Z		10						<40	>40	<1.6	>1.6	
1	30.629813	-97.647240	O	5	Kef						1	0.125	O	5	10	10		0.3		Hilltop
2	30.630245	-97.646954	CD	5	Kef	0.5	0.5	unk					O	20	25	25		0.6		Hilltop
3	30.630125	-97.646778	MB	30	Kef	0.5	0.5	7+					X	35	65		65	0.6		Hilltop
4	30.630688	-97.646303	O	5	Kef	1	2	1			10	0.5	V	5	10	10			3	Hilltop
5	30.630886	-97.646363	MB	30	Kef	1	1	7+					X	35	65		65		3.4	Hilltop
6	30.628749	-97.645549	CD	5	Kef	5	2	1	90				C	5	10	10			8.6	Drainage
7	30.630822	-97.646093	MB	30	Kef	1	1	7+					X	35	65		65		4.1	Hilltop
8	30.631095	-97.646073	CD	5	Kef	3	3	1					V	5	10	10			4.8	Hilltop
9	30.628951	-97.644923	CD	5	Kef	10	1	1	90				C	5	10	10			7.7	Drainage
10	30.631446	-97.645690	MB	30	Kef	1	1	1					C	15	45		45	1		Hilltop
11	30.631906	-97.644286	SC	20	Kef	5	3	7+	90			0.5	X	35	55		55	1		Hillside
12	30.632042	-97.644307	CD	5	Kef	1	1	3					V	19	24	24		1.3		Hillside
13	30.626491	-97.646206	MB	30	Kef	1	1	1					C	7	37	37		<0.1		Drainage
14	30.627612	-97.645830	MB	30	Kef	12	4	Unk	360		10	0.08	X	5	35	35			2.8	Hilltop
15	30.627720	-97.645460	MB	30	Kef	Unk	Unk	Unk					X	5	35	35			4.2	Hilltop
16	30.628293	-97.645669	MB	30	Kef	1	1	1					X	5	35	35			4.2	Drainage
17	30.628603	-97.645904	CD	5	Kef	30	2	1	360				C	5	10	10			2.2	Hillside
18	30.628333	-97.645478	MB	30	Kef	Unk	Unk	Unk					X	5	35	35			3.6	Hilltop
19	30.625132	-97.643856	MB	30	Kef	90	40	2	230				X	5	35	35			18	Drainage
20	30.626406	-97.643888	CD	5	Kef	1	1	2					C	10	15	15			2.3	Hilltop
21	30.62513	-97.64386	MB	30	Kef	1,135	10	3	240				X	5	35	35			15	Drainage

* DATUM WGS 1984

2A TYPE	TYPE	2B POINTS
C	Cave	30
SC	Solution cavity	20
SF	Solution-enlarged fracture(s)	20
F	Fault	20
O	Other natural bedrock features	5
MB	Manmade feature in bedrock	30
SW	Swallow hole	30
SH	Sinkhole	20
CD	Non-karst closed depression	5
Z	Zone, clustered or aligned features	30

8A INFILLING	
N	None, exposed bedrock
C	Coarse - cobbles, breakdown, sand, gravel
O	Loose or soft mud or soil, organics, leaves, sticks, dark colors
F	Fines, compacted clay-rich sediment, soil profile, gray or red colors
V	Vegetation. Give details in narrative description
FS	Flowstone, cements, cave deposits
X	Other materials

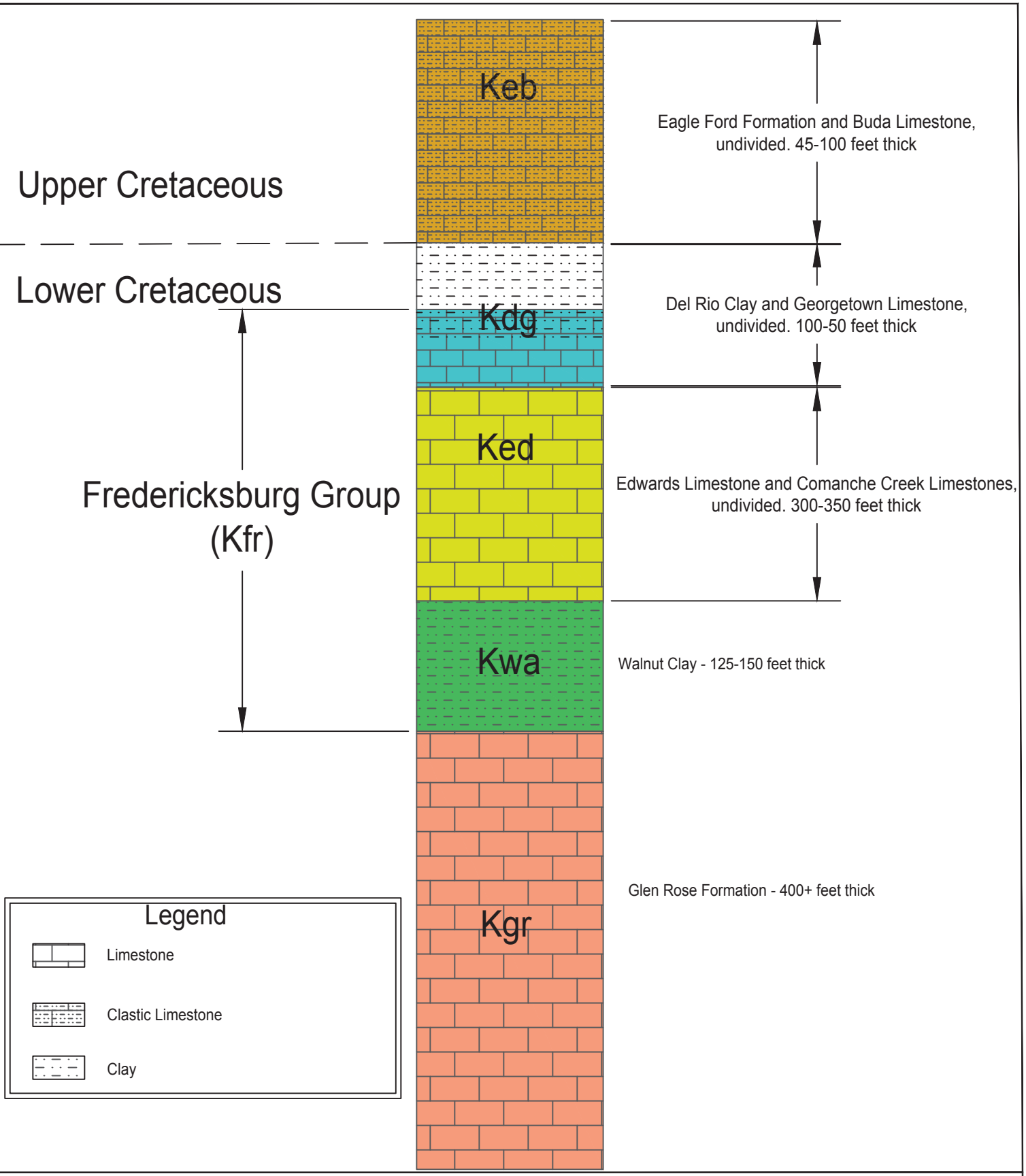
12 TOPOGRAPHY
Cliff, Hilltop, Hillside, Drainage, Floodplain, Streambed

I have read, I understood, and I have followed the Texas Commission on Environmental Quality's Instructions to Geologists. The information presented here complies with that document and is a true representation of the conditions observed in the field.
My signature certifies that I am qualified as a geologist as defined by 30 TAC Chapter 213.

_____ Date

Sheet ___1___ of __1____

Attachment B
Stratigraphic Column



Baer Engineering
and Environmental Consulting, Inc.

DRAWN BY: JCC
CHECKED BY: RW
SCALE: None

N

Stratigraphic Column
North Campus Facility

HALFF ASSOCIATES
BAER ENGINEERING PROJECT NO.: 1652037.010

SITE GEOLOGY

The project site is located at 3161 SE Inner Loop, Georgetown, TX (Site). The Site, in its entirety, is located on the undivided Eagle Ford and Buda Limestone formations (Keb) (USGS 2016). The Keb overlies the Del Rio Clay and Georgetown Limestone (undivided). The clay forms the upper confining unit of the Edwards Aquifer. This is consistent with the United States Department of Agriculture (USDA) mapped regional soils for the Site. Surface soils are clayey and dark. These soils are listed as class C and D soils. Both classes have slow infiltration rates.

The Site is located on the Edwards Aquifer Transition Zone (EATZ). This is a Texas Commission on Environmental Quality (TCEQ)-designated area, created to protect the aquifer from the effects of anthropogenic activities. The EATZ is a karst zone. The area has features connecting the ground surface directly to the aquifer. These features include caves, solution cavities, and sink holes.

The field survey identified a total of 21 features. The following are features of note. These features are discussed in greater detail on the pages that follow:

FEATURE NO.	TYPE
11	Solution Cavity
3, 4, and 6	Vertical cylindrical holes. They appear to be soil borings that were not properly abandoned.
12	Small voids near Feature 11.

FIELD OBSERVATIONS

On July 12 and July 18, 2016, Mr. Mark Sloop, G.I.T., conducted a field survey of geologic and manmade features. The Site was surveyed in transects, north to south, spaced 50 feet apart. Features observed on the Site were documented and located using GPS coordinates. The survey of the northern area of the Site was performed on July 12, 2016. The survey of the southern area of the Site was performed on July 18, 2016. The north and south areas are divided by a stormwater drainage ditch, leading to a culvert on the east perimeter of the Site running under Inner Loop Road. The Site boundary is shown in yellow on the map at right. The stormwater ditch is shown in blue.

Northern Site Area

The northern area contains several stands of trees. There are three large mounds of soil and rock on the northeastern corner. These mounds have approximately fifteen (15) feet of vertical relief. The general slope of the ground surface is minimal. Drainage appears to be to the northeast on the eastern part of this area, and to the northwest on the other part. Grasses in the area were recently cut down, prior to the field survey. This may have obscured some indications of groundwater recharge. Twelve (12) features were observed on July 12, 2016. These features have been located, using GPS coordinates. These locations can be viewed on the Site Map and on the Geologic Map.

1. **Vuggy limestone –** An exposed rock face was observed with a solution cavity, pictured at left. Evidence of vegetation debris in the hole indicates flow into the cavity. When probed, the cavity appeared to be six (6) inches deep with an (approximately) 1.5-inch aperture.

NOTE: LOCATIONS OF ALL FEATURES ARE PRESENTED ON **ATTACHMENT #1: SITE MAP**.

2. **Small depression –** The geologist observed a depression at this location (photograph at right). It was estimated to be approximately eight (8) inches in diameter and several inches deep. This feature was not probed or observed closely, because there was a swarm of bees surrounding the depression.

3. **Possible boring –** The geologist observed a six-inch diameter hole at this location. The hole was more than seven (7) feet deep. The geologist could see roots in the hole that appear to have been cut and exposed as they would be by a drilling rig. When the geologist knocked a few pebbles into the hole, he heard a splash. Either the hole contains rainwater or the boring has encountered groundwater. The area surrounding the hole is slightly mounded. It is our opinion that this is an improperly abandoned borehole. We were unable to locate a water well record associated with this location. The boring is shown in the photograph at right, with a field notebook for scale.

4. **Vuggy limestone –** The geologist observed small solution cavities (vugs) in limestone outcrops. There was debris (mostly vegetation) in the vugs. This could be indicative of water flow into the cavity, or of a windblown material accumulation. When probed, the cavities appeared to vary in aperture size and depth. A photograph is shown at right.

5. **Possible boring –** This feature is similar to Feature 3 (above). It is our opinion that this is another improperly abandoned borehole. The photograph at right shows the hole, with a walking stick and notebook for scale.

6. **Erosional scour –** A drainage ditch crosses the length of the property dividing the north and south areas. Within this ditch is a depression that is approximately one (1) foot deep, two (2) feet across, and several feet long. The walking stick is shown for scale.

7. **Possible boring –** This feature is similar to Features 3 and 5 (above). It is our opinion that this is another improperly abandoned borehole. The photograph at right shows the hole, with a notebook for scale.

8. **Depression –** The ground depression at this location is approximately one (1) foot deep and three (3) feet in diameter. There appear to be tree roots entering and terminating at the depression. It is likely that a tree was removed from this area. The photograph at right shows the feature and a walking stick for scale.

9. **Erosional scour –** This scour is located in the drainage ditch dividing the northern and southern areas of the site. The scour is approximately ten (10) inches deep, one (1) foot wide, and ten (10) feet long. The photograph at right shows a walking stick for scale.

10. Possible boring – This borehole is similar to features 3, 5, and 7. The primary difference is that this hole is approximately eight (8) inches deep. The surface expression and state of the roots are very similar to the other presumed borehole features. The photograph at right shows the feature location.

11. Large solution cavity – There is a large solution cavity located in the northeastern corner of the property. As shown in the photograph at left, a cardboard box was in the cavity when the feature was identified. The surface expression measured five (5) feet by three (3) feet. There is an opening, approximately six (6) inches wide, visible on the surface. The geologist used his walking stick to plumb the hole and found that the opening led to a lower, larger, void area. This void was wider below the opening and extended more than seven (7) feet down and to the west. When the geologist knocked a few pebbles into the cavity, he could hear splashes.

At right is another photograph of the solution cavity. Another is shown at the top of the following page. The flagged walking stick is approximately four (4) feet long.

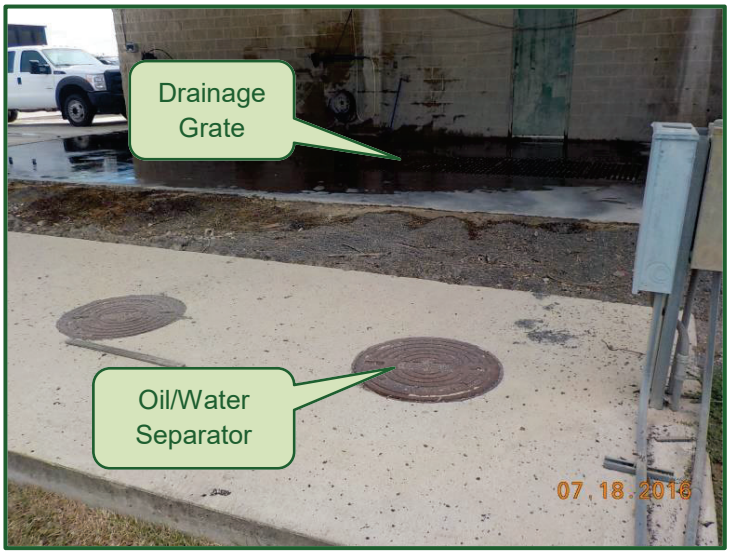
12. **Small voids –** There are two small voids, almost due north of the solution cavity described in Feature 11. These holes are approximately (6) inches in diameter and three (3) feet deep. They do not appear to be boreholes. If they are, then they are not the same vintage as the other borings identified in this report. These features appear to be naturally-occurring. They are shown in the photograph at right.

SOUTHERN SITE AREA

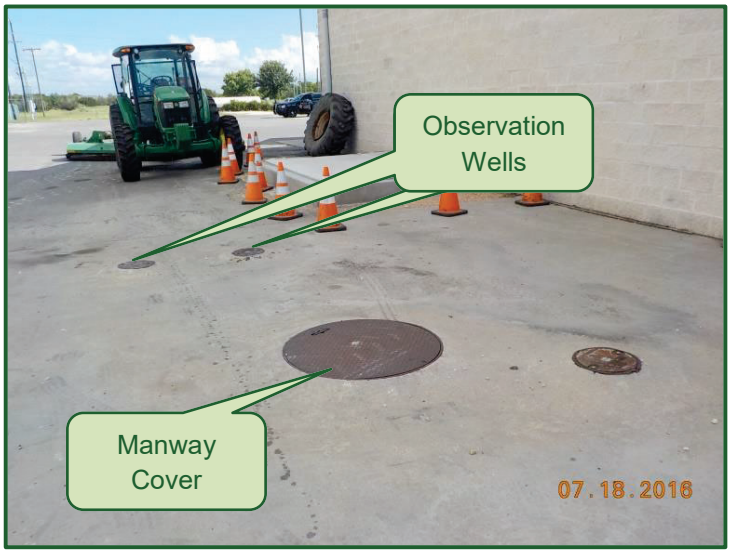
The southern area of the Site is largely developed with several structures and equipment areas. The overall topography is low relief and slopes to the south. There are several buildings in the northern portion of this area. The southern portion appears to be used as a gravel/rock materials staging area for Williamson County. The ground surface in this area comprises fill and exposed rock faces. Nine (9) features were observed on July 12, 2016; these features are discussed below. Feature numbers continue from the previous section.

13. **Corrugated pipe –** The geologist noted the top of what appeared to be a corrugated drainage pipe (the type used for culverts) at one of the entry areas to the abandoned road hazards area. The pipe was dented and appeared to be cracked. Neither end of the pipe was visible. The photograph at right shows the surface expression of the pipe and a field notebook for scale.

14. **Large drainage grate –** A large drainage grate was observed in the facility vehicle washing area. The grate measured twelve (12) feet long and four (4) feet wide. This is likely the grit-trap for the washing facility. Sudsy liquid was observed under the grate. The manhole covers in the foreground of the photograph at right are labeled "Sewer Access". This is likely the oil/water separator for the washing area.



15. **Underground storage tank (UST) with observation wells –** The photograph at right shows a UST and associated observation wells. Because of its location, close to the automotive shop, and distance from the dispensers and the other USTs, it seems likely that this is a waste oil tank. The geologist was unaccompanied on this site walk, and does not have confirmation of this assumption. The tank contents were not marked.



16. **Wastewater utilities –** An access panel and two (2) PVC pipe stub-outs are located here. The photograph at right shows these features. The photograph below shows the cap on one of the stub-outs.

17. **Erosional scour –** This erosional feature flows from south to north, into the stormwater ditch dividing the north and south areas of the property. The photograph at right was taken looking south from the ditch. The scour is approximately 1.5 feet deep at the greatest depth and 30 feet in length. A white PVC pipe crosses the feature at its deepest location. This appears to be an irrigation pipe.

18. **USTs –** Two (2) USTs and four (4) fuel dispensers are located near the main structure.

19. **Stormwater culvert –** A stormwater culvert that passes underneath Inner Loop Road discharges stormwater off of the site. This drainage feature is not heavily incised

20. **Depressions –** There are two small depressions (holes) at this location, near Inner Loop Road. These features are approximately six (6) inches in diameter and 1.5 feet deep.

21. **Stormwater drainage ditch –** This stormwater drainage ditch flows from west to east and bisects the site. This feature is approximately 1,135 feet long, ten (10) feet wide, and up to three (3) feet deep. Exposed rock faces are visible in the eastern area of the ditch. The exposed rock faces were vuggy and fractured in some areas. This photograph was taken facing east, towards Inner Loop Road.

GEOLOGIC ASSESSMENT TABLE

A geologic assessment table was prepared in accordance with TCEQ document F-0585 Instructions to Geologists for Geologic Assessments. Each feature observed and recorded in the field was evaluated to deduce a sensitivity point value and catchment area. Feature points are prescribed a base value by F-0585 and added to the geologist-interpreted infiltration rate of the feature. Interpreted infiltration rates were estimated based on evidence of flow, surface expression, and pathway to the subsurface. Catchment areas were delineated using five (5) foot contour intervals.

SITE FEATURE SUMMARY TABLE

A summary of Site features and mitigation for each sensitive feature is listed in the table below.

#	FEATURE	SENSITIVE	MITIGATION
1	Other natural bedrock features	no	
2	Non-karst closed depression	no	
3	Manmade feature in bedrock	yes	Hire a licensed water well driller to properly abandon boring.
4	Other natural bedrock features	no	
5	Manmade feature in bedrock	yes	Hire a licensed water well driller to properly abandon boring.
6	Non-karst closed depression	no	
7	Manmade feature in bedrock	yes	Hire a licensed water well driller to properly abandon boring.
8	Non-karst closed depression	no	
9	Non-karst closed depression	no	
10	Manmade feature in bedrock	yes	Hire a licensed water well driller to properly abandon boring.
11	Solution cavity	yes	This feature may require a setback or some sort of mitigation.
12	Non-karst closed depression	no	
13	Manmade feature in bedrock	no	
14	Manmade feature in bedrock	no	
15	Manmade feature in bedrock	no	
16	Manmade feature in bedrock	no	
17	Non-karst closed depression	no	
18	Manmade feature in bedrock	no	
19	Manmade feature in bedrock	no	
20	Non-karst closed depression	no	
21	Manmade feature in bedrock	no	

It should be noted, if sensitive features are encountered during construction, work in the area must cease and the TCEQ regional office must be notified, per 30 TAC 213.5(f)(2).

LIMITATIONS

Recognize that special risks occur whenever engineering or related disciplines are applied to identify subsurface conditions. Even a comprehensive sampling and testing program, implemented with the appropriate equipment and experienced personnel under the direction of a trained professional who functions in accordance with a professional standard of care may fail to detect certain conditions, because they are hidden and therefore cannot be considered in

development of a subsurface exploration program. For similar reasons, actual environmental, geologic and geotechnical conditions that the scientist properly infers to exist between sampling points may differ significantly from those that actually exist. The passage of time must also be considered. Recognize that, due to natural occurrences or direct or indirect human intervention at the site or distant from it, actual conditions discovered may quickly change. Realize that nothing can be done to eliminate these risks altogether, but certain techniques can be applied by the scientist to help reduce them to that level deemed tolerable by client. The scientist is available to explain these risks and risk reduction methods to client but, in any event, the scope of services included with this agreement is that which client agreed to or selected in light of his own risk preferences and other considerations.

REFERENCES

USDA, 2016. United States Department of Agriculture, Natural Resource Conservation Service, Web Soil Survey webpage, http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm, last accessed July 6, 2016. Last accessed July 19, 2016.

USGS, 2016. United States Geological Survey, online Texas Geology Web Map viewer. http://txpub.usgs.gov/DSS/texasgeology/ . Last accessed July 19, 2016.

ATTACHMENTS

1. Site map with feature locations.
2. Soils map and descriptions.
3. Geology map.
4. Stratigraphic column.
5. Geologic Assessment Table.

These attachment numbers were used in the original report submission to Halff Associates.
This report uses the TCEQ attachment numbers described on TCEQ Form 585.

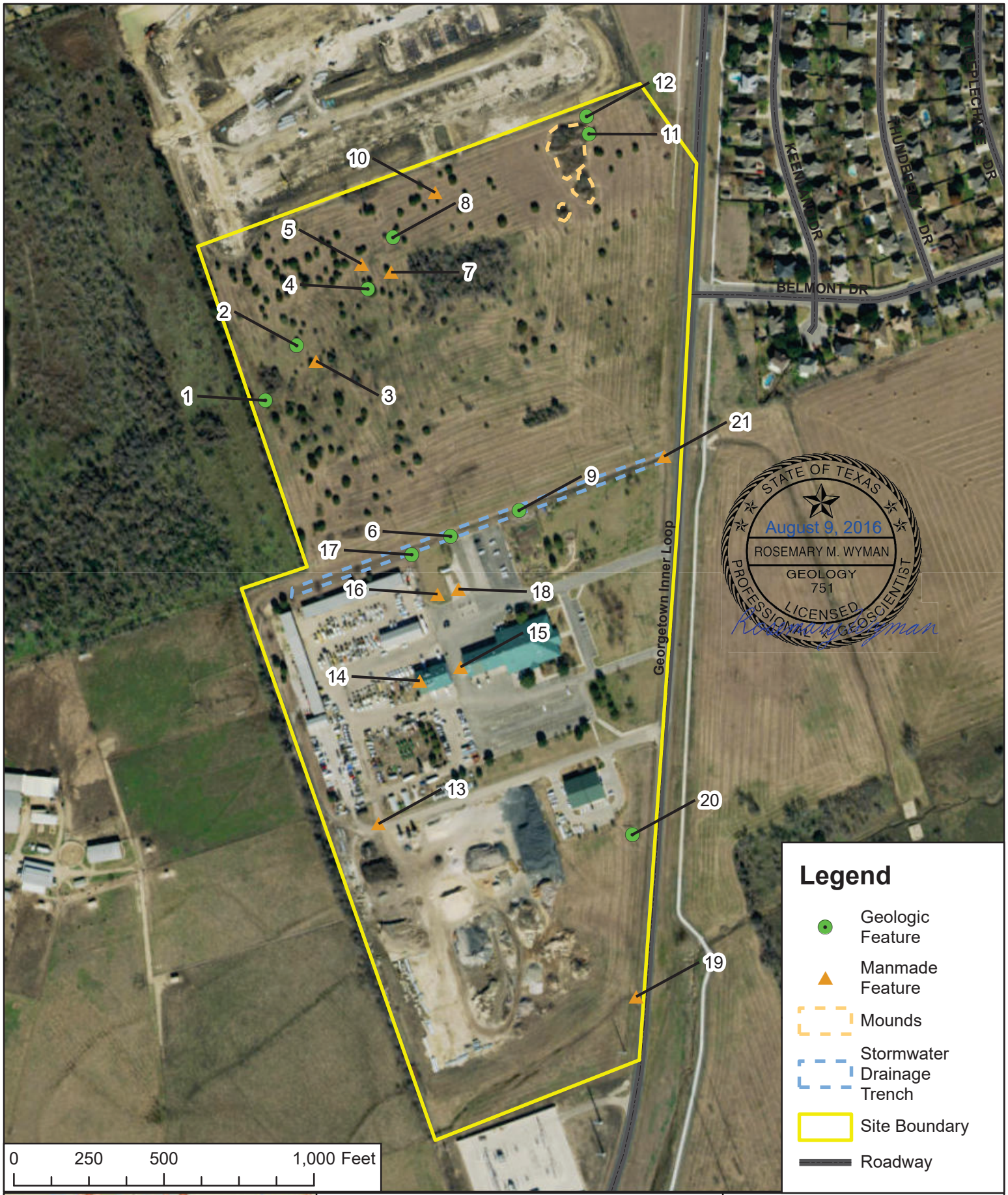
Geologic narrative is included in the body of this report.

PREPARED BY

Mark Sloop, GIT
Field Geologist

Rosemary Wyman, PG
Executive Vice President
Principal Geologist

STATE OF TEXAS
August 9, 2016
ROSEMARY M. WYMAN
GEOLOGY
751
LICENSED PROFESSIONAL GEOSCIENTIST



Site Map

Site Address: 3161 Southeast Inner Loop, Georgetown, Texas

Baer Engineering
Project No. 162037.01

Produced by: M. Sloop
Date: July 19, 2016
Checked by: R. Wyman

Baer Engineering
and Environmental Consulting, Inc.

Attachment D
Site Soils Map

Soil Map—Williamson County, Texas

Map Scale: 1:9,420 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 14N WGS84

Site Boundary

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 14, Sep 23, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 18, 2010—Feb 13, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Williamson County, Texas (TX491)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AuB	Austin silty clay, 1 to 3 percent slopes	1.6	0.4%
BrA	Branyon clay, 0 to 1 percent slopes	115.9	30.3%
BrB	Branyon clay, 1 to 3 percent slopes	22.7	5.9%
CaB	Castephen silty clay, 1 to 3 percent slopes	0.0	0.0%
DoC	Doss silty clay, moist, 1 to 5 percent slopes	5.4	1.4%
HeC2	Heiden clay, 3 to 5 percent slopes, eroded	18.9	5.0%
HeD2	Heiden clay, 5 to 8 percent slopes, eroded	40.3	10.5%
HsE	Heiden extremely stony clay, 3 to 12 percent slopes	25.9	6.8%
HuB	Houston Black clay, 1 to 3 percent slopes	74.0	19.4%
KsA	Krum silty clay, 0 to 1 percent slopes	14.4	3.8%
KsB	Krum silty clay, 1 to 3 percent slopes	53.1	13.9%
QuC	Queeny clay loam, 1 to 5 percent slopes	1.7	0.5%
SuB	Sunev silty clay loam, 1 to 3 percent slopes	8.0	2.1%
Totals for Area of Interest		**381.9**	**100.0%**

Williamson County, Texas

BrA—Branyon clay, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2shgv
Elevation: 290 to 1,050 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 65 to 70 degrees F
Frost-free period: 238 to 288 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Branyon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Branyon

Setting

Landform: Stream terraces, stream terraces
Landform position (three-dimensional): Tread
Microfeatures of landform position: Circular gilgai, circular gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Calcareous clayey alluvium derived from mudstone of pleistocene age

Typical profile

Ap - 0 to 12 inches: clay
Bkss - 12 to 72 inches: clay
BCkss - 72 to 80 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 7.0
Available water storage in profile: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: Blackland 28-40" PZ (R086AY196TX)

Minor Components

Lewisville

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: Clay Loam 28-40" PZ (R086AY199TX)

Houston black

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Microfeatures of landform position: Circular gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: Blackland 28-40" PZ (R086AY196TX)

Burleson

Percent of map unit: 5 percent
Landform: Stream terraces, stream terraces
Landform position (three-dimensional): Tread
Microfeatures of landform position: Circular gilgai, circular gilgai
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Blackland 28-40" PZ (R086AY196TX)

Data Source Information

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 14, Sep 23, 2015

Williamson County, Texas

HeD2—Heiden clay, 5 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2v1vd
Elevation: 250 to 940 feet
Mean annual precipitation: 33 to 40 inches
Mean annual air temperature: 64 to 68 degrees F
Frost-free period: 245 to 278 days
Farmland classification: Not prime farmland

Map Unit Composition

Heiden, moderately eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heiden, Moderately Eroded

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from mudstone

Typical profile

A1 - 0 to 8 inches: clay
A2 - 8 to 22 inches: clay
Bss - 22 to 44 inches: clay
CBd - 44 to 80 inches: clay

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: 40 to 65 inches to densic material
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 12.0
Available water storage in profile: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: Blackland 28-40" PZ (R086AY196TX)

Minor Components

Ferris, moderately eroded

Percent of map unit: 10 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: Eroded Blackland 28-40" PZ (R086AY201TX)

Heiden, severely eroded

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Concave
Ecological site: Blackland 28-40" PZ (R086AY196TX)

Data Source Information

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 14, Sep 23, 2015

Williamson County, Texas

HsE—Heiden extremely stony clay, 3 to 12 percent slopes

Map Unit Setting

National map unit symbol: djq8
Elevation: 400 to 1,000 feet
Mean annual precipitation: 28 to 42 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 225 to 275 days
Farmland classification: Not prime farmland

Map Unit Composition

Heiden and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heiden

Setting

Landform: Ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Clayey residuum weathered from clayey shale of eagleford shale or taylor marl

Typical profile

H1 - 0 to 8 inches: very stony clay
H2 - 8 to 60 inches: clay

Properties and qualities

Slope: 3 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 12.0
Available water storage in profile: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: D
Ecological site: Blackland 28-40" PZ (R086AY196TX)

Data Source Information

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 14, Sep 23, 2015

Williamson County, Texas

HuB—Houston Black clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2ssh0
Elevation: 270 to 1,040 feet
Mean annual precipitation: 33 to 43 inches
Mean annual air temperature: 62 to 63 degrees F
Frost-free period: 217 to 244 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Houston black and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Houston Black

Setting

Landform: Ridges
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve
Microfeatures of landform position: Linear gilgai
Down-slope shape: Convex, linear
Across-slope shape: Convex, linear
Parent material: Clayey residuum weathered from calcareous mudstone of upper cretaceous age

Typical profile

Ap - 0 to 6 inches: clay
Bkss - 6 to 70 inches: clay
BCkss - 70 to 80 inches: clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: D
Ecological site: Blackland 28-40" PZ (R086AY196TX)

Minor Components

Heiden

Percent of map unit: 15 percent
Landform: Plains
Microfeatures of landform position: Linear gilgai
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: Blackland 28-40" PZ (R086AY196TX)

Fairlie

Percent of map unit: 5 percent
Landform: Ridges
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: Blackland 28-40" PZ (R086AY196TX)

Data Source Information

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 14, Sep 23, 2015

Williamson County, Texas

KsB—Krum silty clay, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: djqf
Elevation: 600 to 1,300 feet
Mean annual precipitation: 26 to 36 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 250 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Krum and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Krum

Setting

Landform: Stream terraces, stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Clayey alluvium of pleistocene age derived from mixed sources

Typical profile

H1 - 0 to 6 inches: silty clay
H2 - 6 to 44 inches: silty clay
H3 - 44 to 72 inches: silty clay

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 50 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 3.0
Available water storage in profile: Moderate (about 8.8 inches)

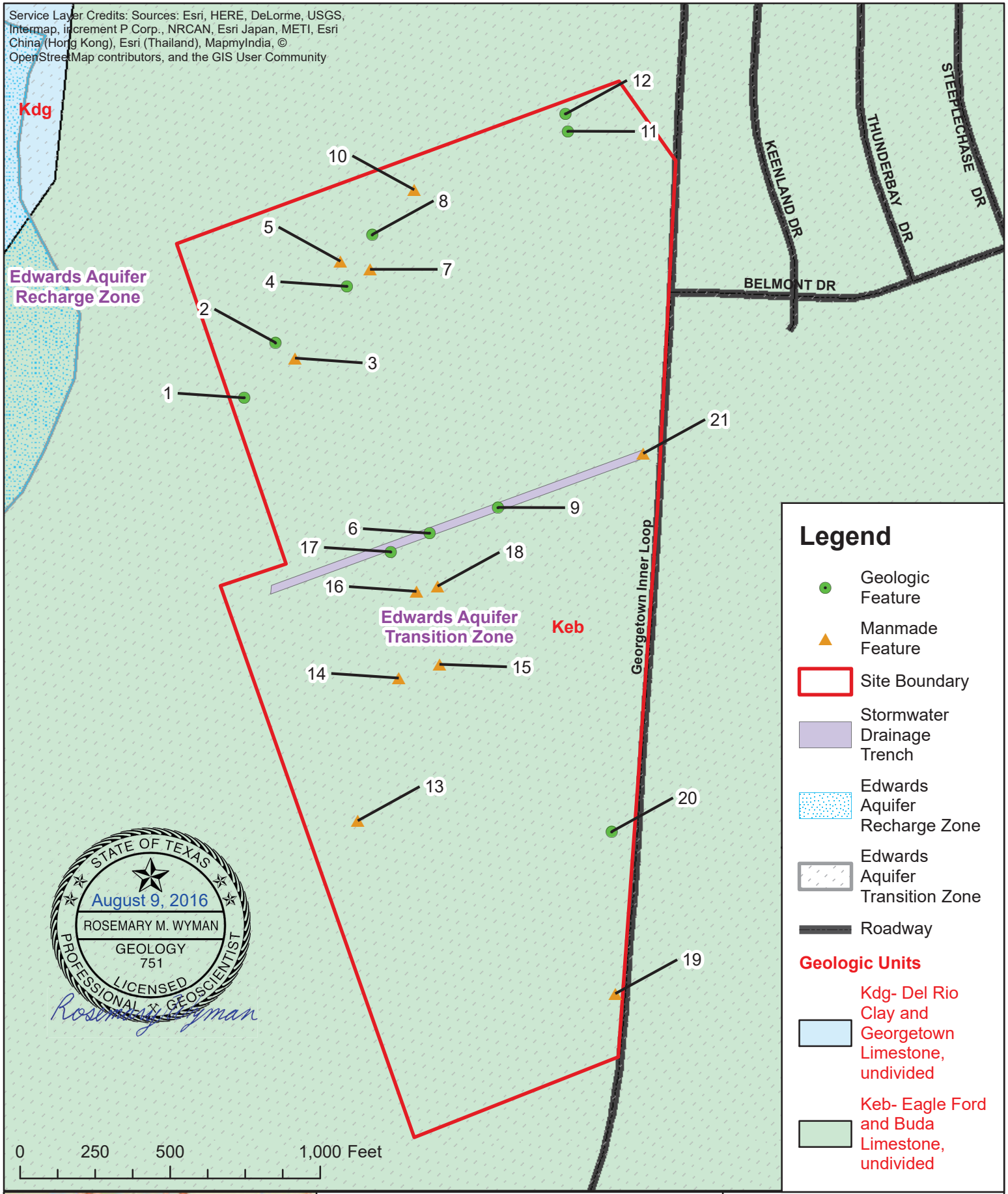
Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Ecological site: Clay Loam 28-40" PZ (R086AY199TX)

Data Source Information

Soil Survey Area: Williamson County, Texas
Survey Area Data: Version 14, Sep 23, 2015



Site Geologic Map

Site Address: 3161 Southeast Inner Loop, Georgetown Texas

Baer Engineering
Project No. 162039.01

Produced by: M. Sloop
Date: July 19, 2016
Checked by: R. Wyman

Baer Engineering
and Environmental Consulting, Inc.

Aboveground Storage Tank Facility Plan Application
TCEQ-0575

Aboveground Storage Tank Facility Plan Application

Texas Commission on Environmental Quality

For Permanent Storage on The Edwards Aquifer Recharge and Transition Zones And Relating to 30 TAC §213.5(e), Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Aboveground Storage Tank Facility Plan Application** is hereby submitted for TCEQ review and Executive Director approval. The application was prepared by:

Print Name of Customer/Agent: Mr. Chad M. Copeland, P.G., PWS

Date: 08/23/2023

Signature of Customer/Agent:

Regulated Entity Name: Williamson County Central Maint Facility

Aboveground Storage Tank (AST) Facility Information

1. Tanks and substance stored:

Table 1 - Tank and Substance Storage

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
1	Please see attached Table		
2			
3			
4			

AST Number	*Size (Gallons)*	*Substance to be Stored*	*Tank Material*
5			

Total x 1.5 = _____ Gallons

2. ☒ The AST will be placed within a containment structure that is sized to capture one and one-half (1 1/2) times the storage capacity of the system. For facilities with more than one tank system, the containment structure is sized to capture one and one-half (1 1/2) times the cumulative storage capacity of all systems.

   ☒ **Attachment A - Alternative Methods of Secondary Containment**. Alternative methods for providing secondary containment are proposed. Specifications that show equivalent protection for the Edwards Aquifer are attached.

3. Inside dimensions and capacity of containment structure(s):

Table 2 - Secondary Containment

Length (L) (Ft.)	*Width (W) (Ft.)*	*Height (H) (Ft.)*	*L x W x H = (Ft3)*	*Gallons*
Please see attached table				

Total: _____ Gallons

4. ☐ All piping, hoses, and dispensers will be located inside the containment structure.

   ☒ Some of the piping to dispensers or equipment will extend outside the containment structure.

   ☒ The piping will be aboveground
   ☐ The piping will be underground

5. ☒ The containment area must be constructed of and in a material impervious to the substance(s) being stored. The proposed containment structure will be constructed of <u>concrete</u>.

6. ☒ **Attachment B - Scaled Drawing(s) of Containment Structure**. A scaled drawing of the containment structure that shows the following is attached:

   ☒ Interior dimensions (length, width, depth and wall and floor thickness).
   ☐ Internal drainage to a point convenient for the collection of any spillage.
   ☒ Tanks clearly labeled.
   ☒ Piping clearly labeled.
   ☐ Dispenser clearly labeled.

Site Plan Requirements

Items 7 - 18 must be included on the Site Plan.

7. ☒ The Site Plan must have a minimum scale of 1" = 400'.

   Site Plan Scale: 1" = 20' & 60'.

8. 100-year floodplain boundaries:

   ☐ Some part(s) of the project site is located within the 100-year floodplain. The floodplain is shown and labeled.
   ☒ No part of the project site is located within the 100-year floodplain.

   ☒ The 100-year floodplain boundaries are based on the following specific (including date of material) sources(s): FEMA Map Number 48491C0895E; Eff. 9/26/2028.

9. ☐ The layout of the development is shown with existing and finished contours at appropriate, but not greater than ten-foot contour intervals. Show lots, recreation centers, buildings, roads, etc.

   ☒ The layout of the development is shown with existing contours. Finished topographic contours will not differ from the existing topographic configuration and are not shown.

10. All known wells (oil, water, unplugged, capped and/or abandoned, test holes, etc.):

    ☒ There are 0 (#) wells present on the project site and the locations are shown and labeled. (Check all of the following that apply):
    ☐ The wells are not in use and have been properly abandoned.
    ☐ The wells are not in use and will be properly abandoned.
    ☐ The wells are in use and comply with 16 TAC § 76.

    ☒ There are no wells or test holes of any kind known to exist on the project site.

11. Geologic or manmade features which are on the site:

    ☒ All sensitive geologic or manmade features identified in the Geologic Assessment are shown and labeled.
    ☐ No sensitive geologic or manmade features were identified in the Geologic Assessment.
    ☐ **Attachment C - Exception to the Geologic Assessment**. A request and justification for an exception to a portion of the Geologic Assessment is attached.

12. ☒ The drainage patterns and approximate slopes anticipated after major grading activities.

13. ☒ Areas of soil disturbance and areas which will not be disturbed.

14. ☒ Locations of major structural and nonstructural controls. These are the temporary and permanent best management practices.

15. ☒ Locations where soil stabilization practices are expected to occur.

16. ☐ Surface waters (including wetlands).

    ☒ N/A

17. ☐ Locations where stormwater discharges to surface water or sensitive features.

    ☒ There will be no discharges to surface water or sensitive features.

18. ☒ Legal boundaries of the site are shown.

Best Management Practices

19. ☒ Any spills must be directed to a point convenient for collection and recovery. Spills from storage tank facilities must be removed from the controlled drainage area for disposal within 24 hours of the spill.

    ☒ In the event of a spill, any spillage will be removed from the containment structure within 24 hours of the spill and disposed of properly.

    ☐ In the event of a spill, any spillage will be drained from the containment structure through a drain and valve within 24 hours of the spill and disposed of properly. The drain and valve system are shown in detail on the scaled drawing.

20. ☒ All stormwater accumulating inside the containment structure will be disposed of through an authorized waste disposal contractor.

    ☒ Containment area will be covered by a roof.

    ☒ Containment area will not be covered by a roof.

    ☐ A description of the alternate method of stormwater disposal is submitted for the executive director's review and approval and is attached.

21. ☒ **Attachment D - Spill and Overfill Control**. A site-specific description of the methods to be used at the facility for spill and overfill control is attached.

22. ☒ **Attachment E - Response Actions to Spills**. A site-specific description of the planned response actions to spills that will take place at the facility is attached.

Administrative Information

23. A Water Pollution Abatement Plan (WPAP) is required for construction of any associated commercial, industrial or residential project located on the Recharge Zone.

    ☐ The WPAP application for this project was approved by letter dated _____. A copy of the approval letter is attached at the end of this application.

    ☐ The WPAP application for this project was submitted to the TCEQ on _____, but has not been approved.

    ☐ A WPAP application is required for an associated project, but it has not been submitted.

☐ There will be no building or structure associated with this project. In the event a building or structure is needed in the future, the required WPAP will be submitted to the TCEQ.

☒ The proposed AST is located on the Transition Zone and a WPAP is not required. Information requested in 30 TAC 213.5 subsection (b) (4)(B) and (C) and (5) is provided with this application. (Forms TCEQ-0600 Permanent Stormwater Section and TCEQ-0602 Temporary Stormwater Section or Stormwater Pollution Prevention Plan/SW3P).

24. ☒ This facility is subject to the requirements for the reporting and cleanup of surface spills and overfills pursuant to 30 TAC 334 Subchapter D relating to Release Reporting and Corrective Action.

25. ☒ Submit one (1) original and one (1) copy of the application, plus additional copies as needed for each affected incorporated city, groundwater conservation district, and county in which the project will be located. The TCEQ will distribute the additional copies to these jurisdictions. The copies must be submitted to the appropriate regional office.

26. ☒ Any modification of this AST Facility Plan application will require executive director approval, prior to construction, and may require submission of a revised application, with appropriate fees.

Table 1a. Tank and Substance Storage (Inside the Maintenance Shop)

AST Number	Size (Gallons)	Substance to be Stored	Tank Material
1	130	New Motor Oil	Polyethylene
2	130	New Motor Oil	Polyethylene
3	240	New Motor Oil	Polyethylene
4	130	New Motor Oil	Polyethylene
5	130	New Motor Oil	Polyethylene
6	130	New Motor Oil	Polyethylene
7	130	New Motor Oil	Polyethylene
8	130	Hydraulic Fluid	Polyethylene
9	240	New Motor Oil	Polyethylene

Total x 1.5 = 2,085 gallons

Table 2a. Secondary Containment

Length (L) (Ft.)	Width (W) (Ft.)	Height (H) (Ft.)	LxWxH = (Ft3)	Gallons
Please see site plan				2130.5

Table 1b. Tank and Substance Storage (Outside the Maintenance Shop)

AST Number	Size (Gallons)	Substance to be Stored	Tank Material
10	2,000	Used Oil	Fireguard UL 2085 DW

Total x 1.5 = Not applicable, double wall constructed tank

Table 2b. Secondary Containment

Length (L) (Ft.)	Width (W) (Ft.)	Height (H) (Ft.)	LxWxH = (Ft3)	Gallons
The new waste oil tank is a double wall constructed tank (UL 2085).				

Table 3a. Tank and Substance Storage (Existing Concrete Secondary Containment Structure)

AST Number	Size (Gallons)	Substance to be Stored	Tank Material
Various temporary 55-gallon drums	Various temporary 55-gallon drums	Possibly specialized oil, brake cleaner (solvent), etc.	Single wall steel

Total x 1.5 = 825 (estimated based on 10 55-gallon drums)

Table 3b. Secondary Containment

Length (L) (Ft.)	Width (W) (Ft.)	Height (H) (Ft.)	LxWxH = (Ft3)	Gallons
15	20	2	600	4,488.31
The existing concrete containment will be utilized for temporary 55-gallon drums. It is estimated that no more than 10 55-gallon drums will be store at one time (550 gallons).				

Gmail

Chad Copeland <chad.copeland11@gmail.com>

Temporary 55-gallon drums

James Slone <james.slone@tceq.texas.gov> Wed, Jun 21, 2023 at 4:16 PM
To: RangerEnv-Chad <chad@rangerenv.com>

If it was Miki, she told you correctly. 55-gallon drums are not considered tanks (Totes are argued about though). So, no AST plan requirement for drums (no additional fee). I have seen quarries and manufacturing facilities just put them in the concrete containment area with adequate volume for containment. You are not charged for them, but it is best to count the volume in the containment area and discuss them in the plan.

Bo

James “Bo” Slone, P.G.

Geoscientist

Edwards Aquifer Protection Program

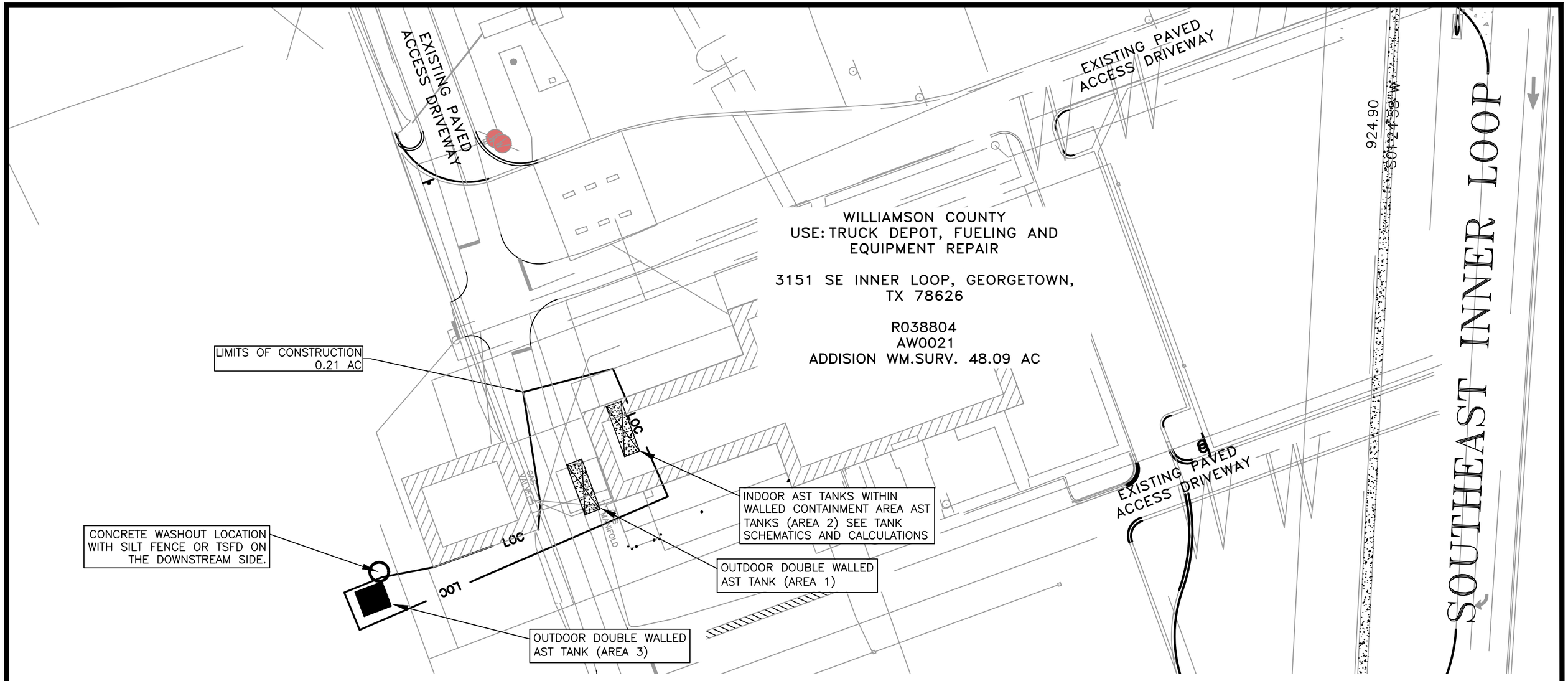
Texas Commission on Environmental Quality

(512) 239-5711

[Quoted text hidden]

ATTACHMENT A

Alternative Methods of Secondary Containment



1. DRAINAGE AREA TO LIMITS OF CONSTRUCTION ARE LESS THAN 0.3 AC. USE TSD PER THIS PLAN.
2. FILTER FABRIC SHOULD LAP OVER ENDS SIX (6) INCHES TO COVER DIKE TO DIKE JUNCTION EACH JUNCTION SHOULD BE SECURED BY SHOAT RINGS.
3. POSITION DIKE PARALLEL TO THE CONTOURS, WITH THE END OF EACH SECTION CLOSELY ABUTTING THE ADJACENT SECTIONS.

STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

LEGEND

PROPERTY BOUNDARY

PROPOSED ABOVE GROUND STORAGE TANKS

NOTES

1. ALL PROPERTY BOUNDARIES ARE APPROXIMATE
2. ABOVE GROUND STORAGE TANK SIZE AND SPECIFICATION TO BE PER AST APPLICATION TO LCRA
3. TANK LOCATION AND SIZE IS ESTIMATED AND WILL BE FIELD VERIFIED.

N

0 30' 60' 120'

SCALE: 1" = 60'

IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE

AST SITE LAYOUT

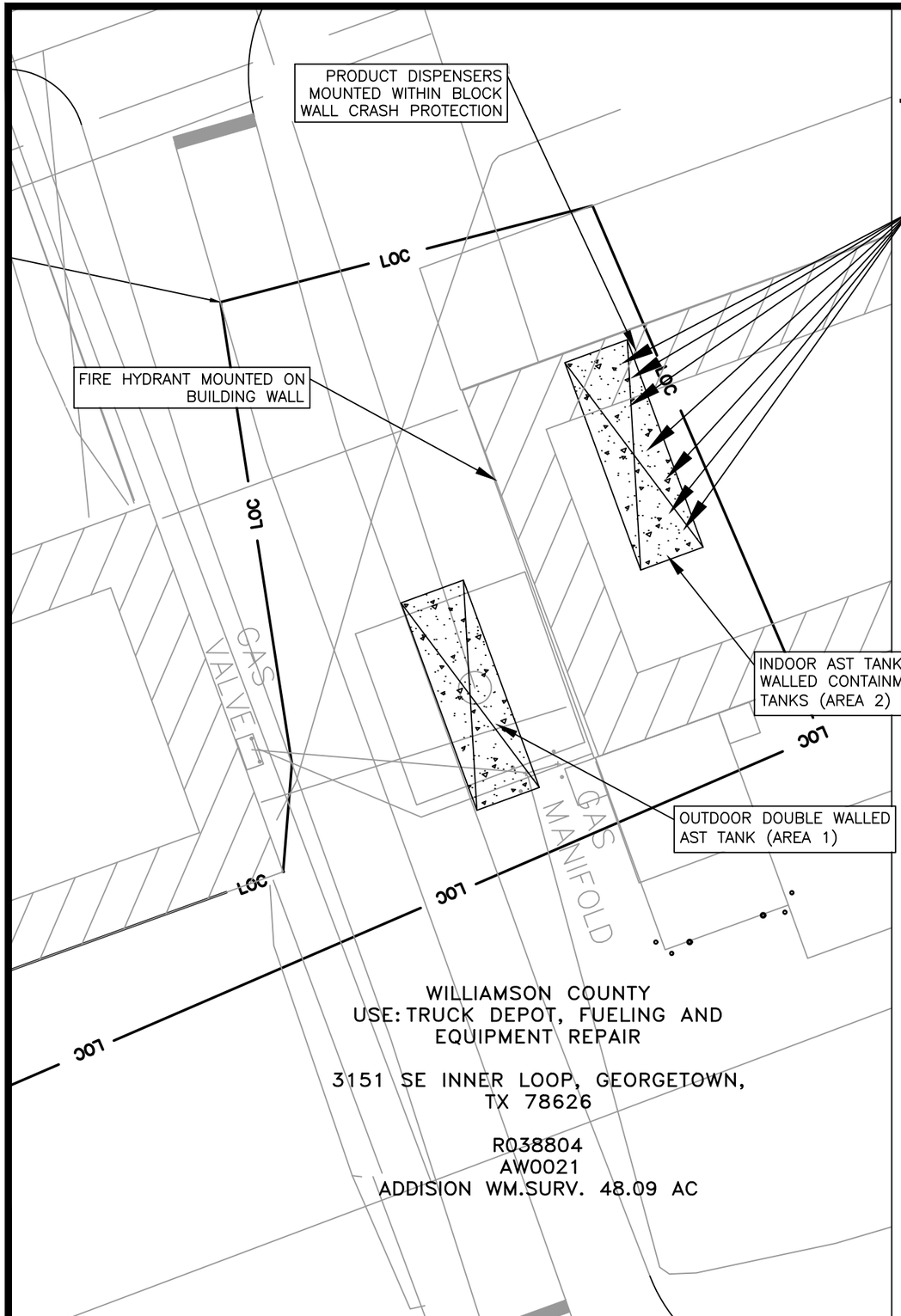
EXCELL FUELING SYSTEMS

WILCO R&B AST PLANS

SHEET 3 OF 4

SANDLIN SERVICES, LLC
ENGINEERING | CONSULTING

TBPELS FIRM #21356



WILLIAMSON COUNTY
USE: TRUCK DEPOT, FUELING AND EQUIPMENT REPAIR

3151 SE INNER LOOP, GEORGETOWN, TX 78626

R038804
AW0021
ADDISION WM.SURV. 48.09 AC

LEGEND

PROPERTY BOUNDARY

PROPOSED ABOVE GROUND STORAGE TANK

TANKS (AREA 2)
WITHIN EXISTING MASONRY CONTAINMENT

7 X 130 GAL & 2 X 240 GAL OIL/WASTE OIL TANKS WITH ENGINEERED CONTAINMENT (SEE MANUFACTURE DRAWINGS)
2085 GAL REQUIRED

N

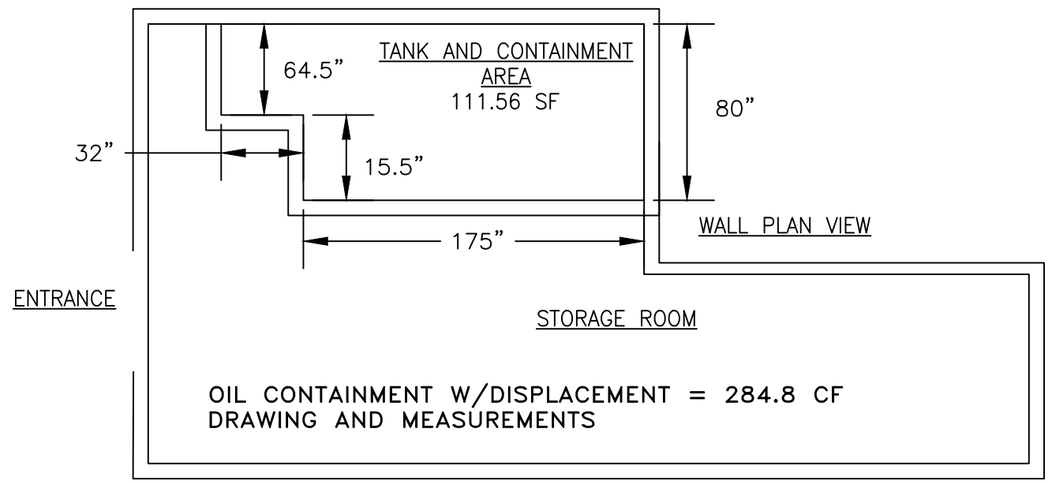
0 10' 20' 40'
SCALE: 1" = 20'

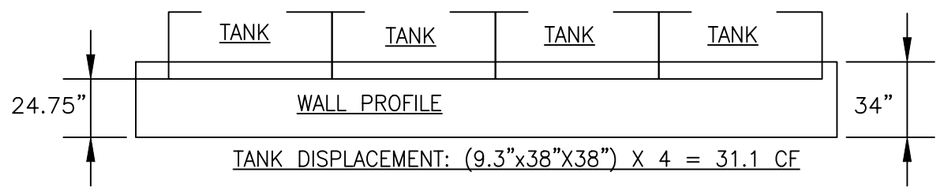
IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE

STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

DETAILED TANK SCHEMATIC
N.T.S





CONTAINMENT CALCULATIONS:
–TOTAL TANK CAP.: 1390.0 GAL
–REQUIRED CONTAINMENT: 2085.0 GAL
–PROVIDED CONTAINMENT: 2130.5 GAL

NOTES

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3. TANK LOCATION IS ESTIMATED AND WILL BE FIELD VERIFIED.

TANK LAYOUT

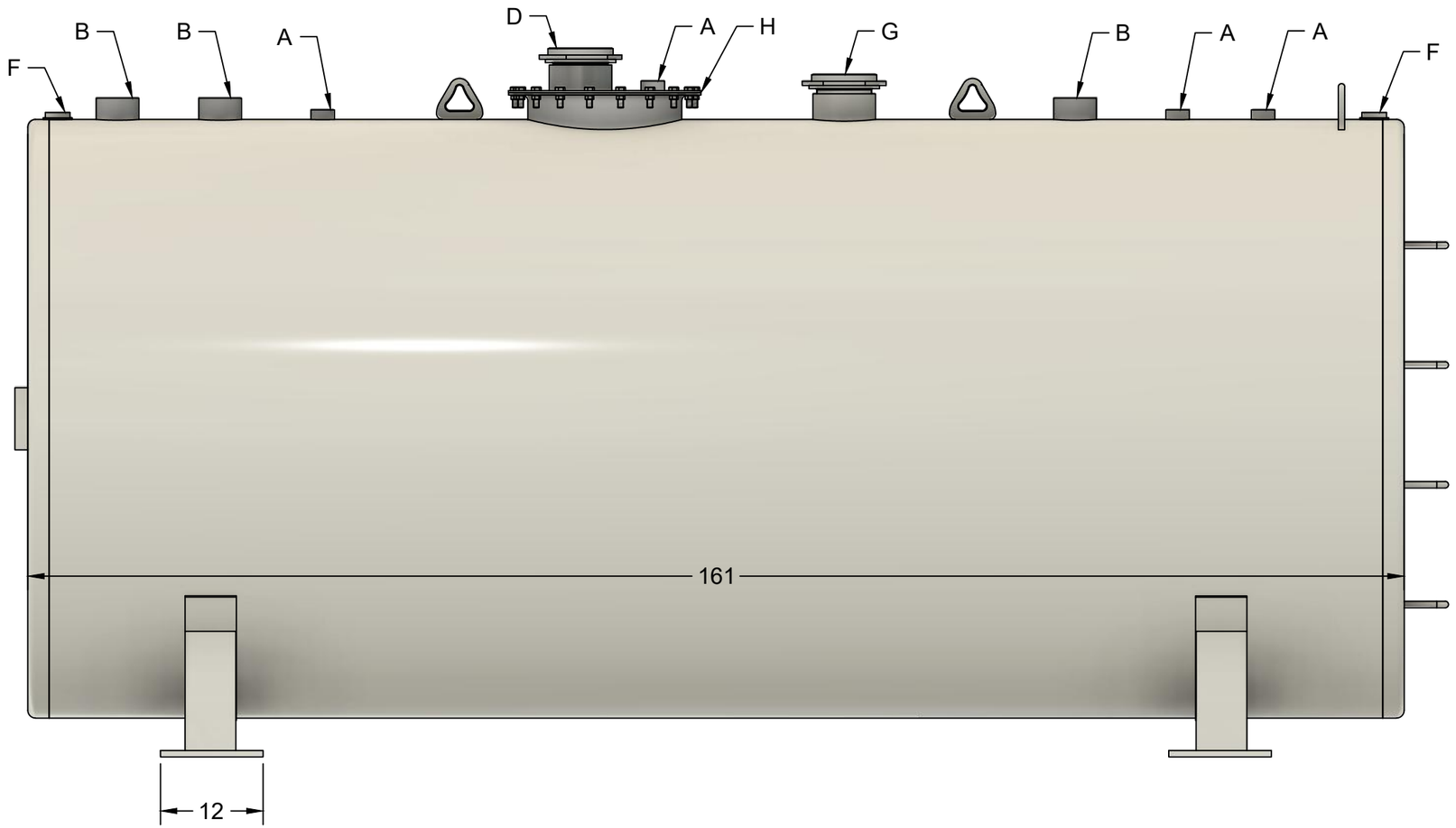
EXCELL FUELING SYSTEMS

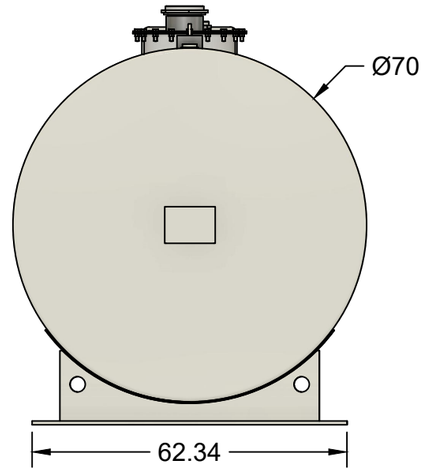
WILCO R&B AST PLANS

SHEET 4 OF 4

ENGINEERING | CONSULTING
SANDLIN
SERVICES, LLC

TBPELS FIRM #21356





- Inspection: Hughes Tank Company, Inc
- Material: A36 Mild Carbon Steel
- Internal: Surface prep - Clean of Debris
- External: Surface prep - SSPC-SP6 (commercial blast)
- External: (WHITE) Enviroastic 940 LV Polyurthane

Test:
- Inner tank: 5PSIG Hydrostatic
- Outer tank: Hydrostatic
- Pressure Test: 3-5 PSI

Lables:
- UL 2085

This drawing may contain **CONFIDENTIAL** information and is intended **ONLY** for the use of the specific individual to which it is addressed.

CUSTOMER APROVAL

SIGNATURE:

DATE: December 9, 2021

Note: At no time shall the pressure in the secondary tank exceed the pressure in the primary tank.

A	Coupling	2"	2" threaded fitting	Primary
B	Coupling	4"	4" threaded fitting	Primary
C	Coupling	6"	6" threaded fitting	Primary
D	Emergency Vent	6"	6"emergency vent	Primary
E	Lifting Lug	Med.	Medium lifting lug	Secondary
F	Interstitial	2"	2" interstitial fitting	Secondary
G	Emergency Vent	6"	6"emergency vent	Secondary
H	Manhole	18"	18" manhole	Primary

HUGHES TANK COMPANY, INC.

O: (972) - 366 - 8684
F: (972) - 366 - 3130

2900 N. FM 157
VENUS, TX 76084

P.O. BOX 570
VENUS, TX 76084

DESIGN: Fabricated per UL 2085 specifications double wall construction.

- Air test are no less than 3 PSI and no more than 5 PSI.
- Primary tank to be tested alone. Secondary tank to be pressure tested with primary tank. This shall be accomplished by bleeding air from the primary tank to the secondary tank.

CUSTOMER:
EXCELL

PROJECT:
2000G UL 2085 FIREGUARD

APPROVED Bobby Hughes

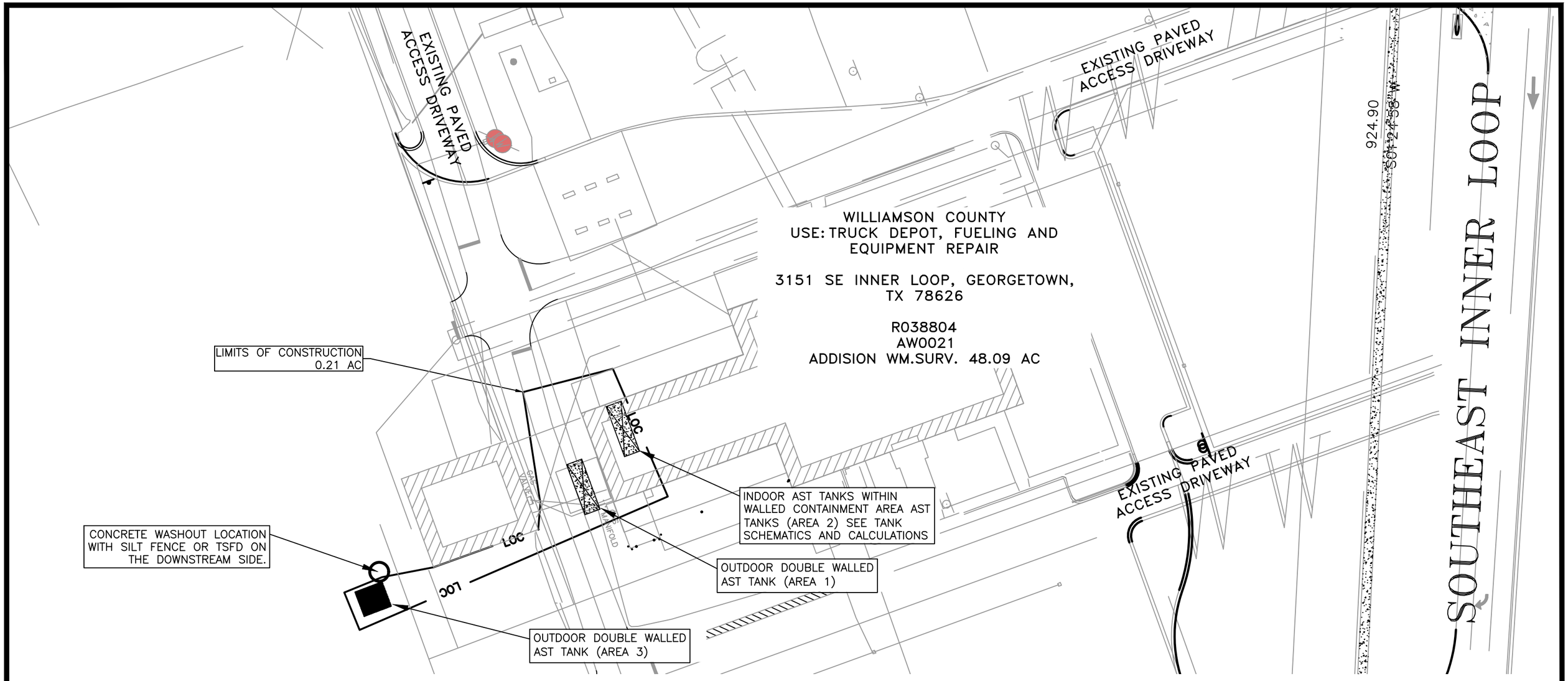
CHECKED Paige Hughes

DRAWN JD Hughes

WEIGHT | REV | SHEET 1/1

ATTACHMENT B

Scaled Drawing(s) of Containment Structure



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STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

LEGEND

PROPERTY BOUNDARY

PROPOSED ABOVE GROUND STORAGE TANKS

NOTES

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3. TANK LOCATION AND SIZE IS ESTIMATED AND WILL BE FIELD VERIFIED.

N

0 30' 60' 120'

SCALE: 1" = 60'

IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE

AST SITE LAYOUT

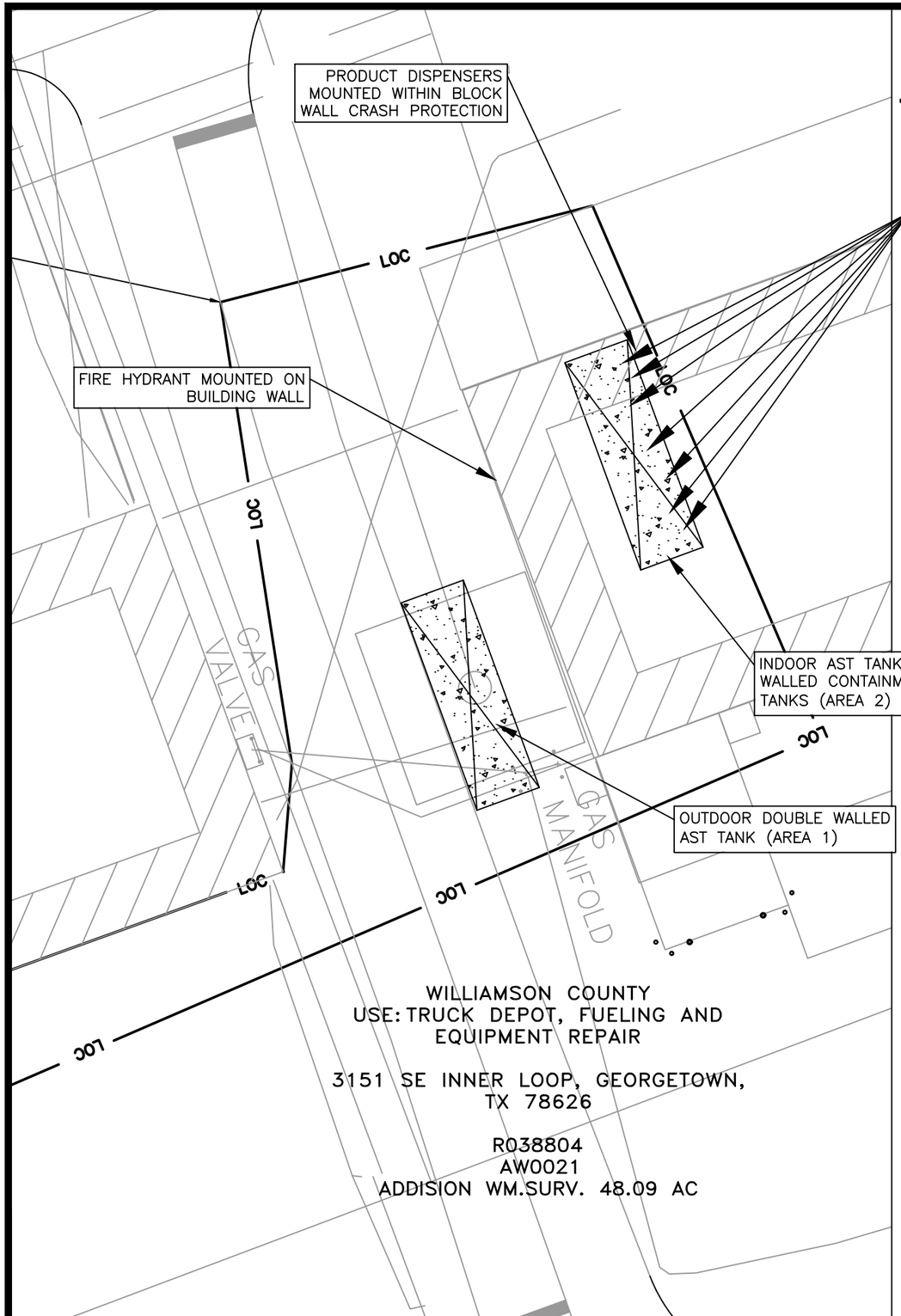
EXCELL FUELING SYSTEMS

WILCO R&B AST PLANS

SHEET 3 OF 4

SANDLIN SERVICES, LLC
ENGINEERING | CONSULTING

TBPELS FIRM #21356



WILLIAMSON COUNTY
USE: TRUCK DEPOT, FUELING AND EQUIPMENT REPAIR

3151 SE INNER LOOP, GEORGETOWN, TX 78626

R038804
AW0021
ADDISION WM.SURV. 48.09 AC

LEGEND

PROPERTY BOUNDARY

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WITHIN EXISTING MASONRY CONTAINMENT

7 X 130 GAL & 2 X 240 GAL OIL/WASTE OIL TANKS WITH ENGINEERED CONTAINMENT (SEE MANUFACTURE DRAWINGS)
2085 GAL REQUIRED

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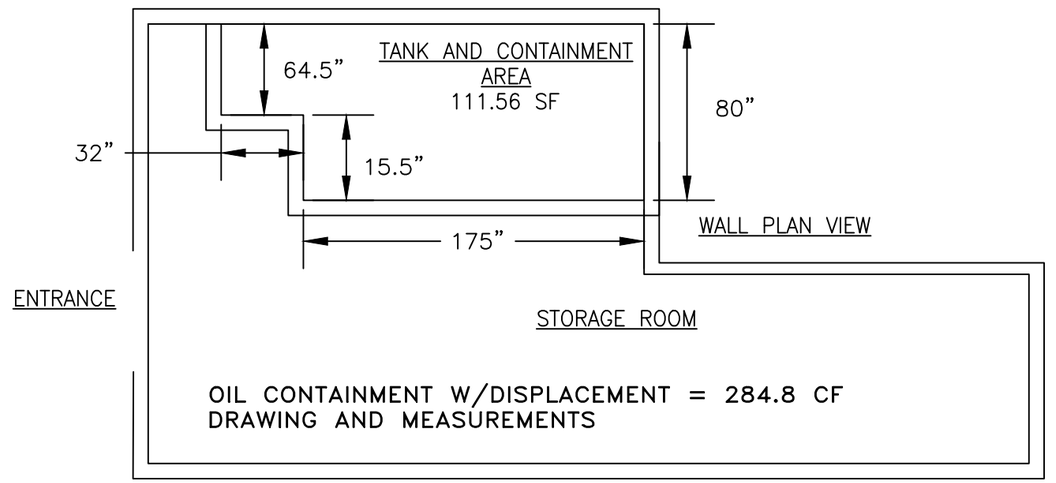
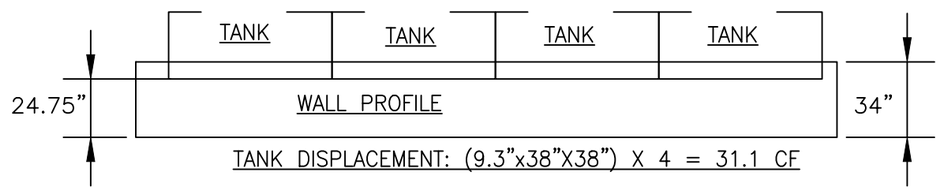
STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

DETAILED TANK SCHEMATIC
N.T.S





CONTAINMENT CALCULATIONS:
–TOTAL TANK CAP.: 1390.0 GAL
–REQUIRED CONTAINMENT: 2085.0 GAL
–PROVIDED CONTAINMENT: 2130.5 GAL

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TANK LAYOUT

EXCELL FUELING SYSTEMS

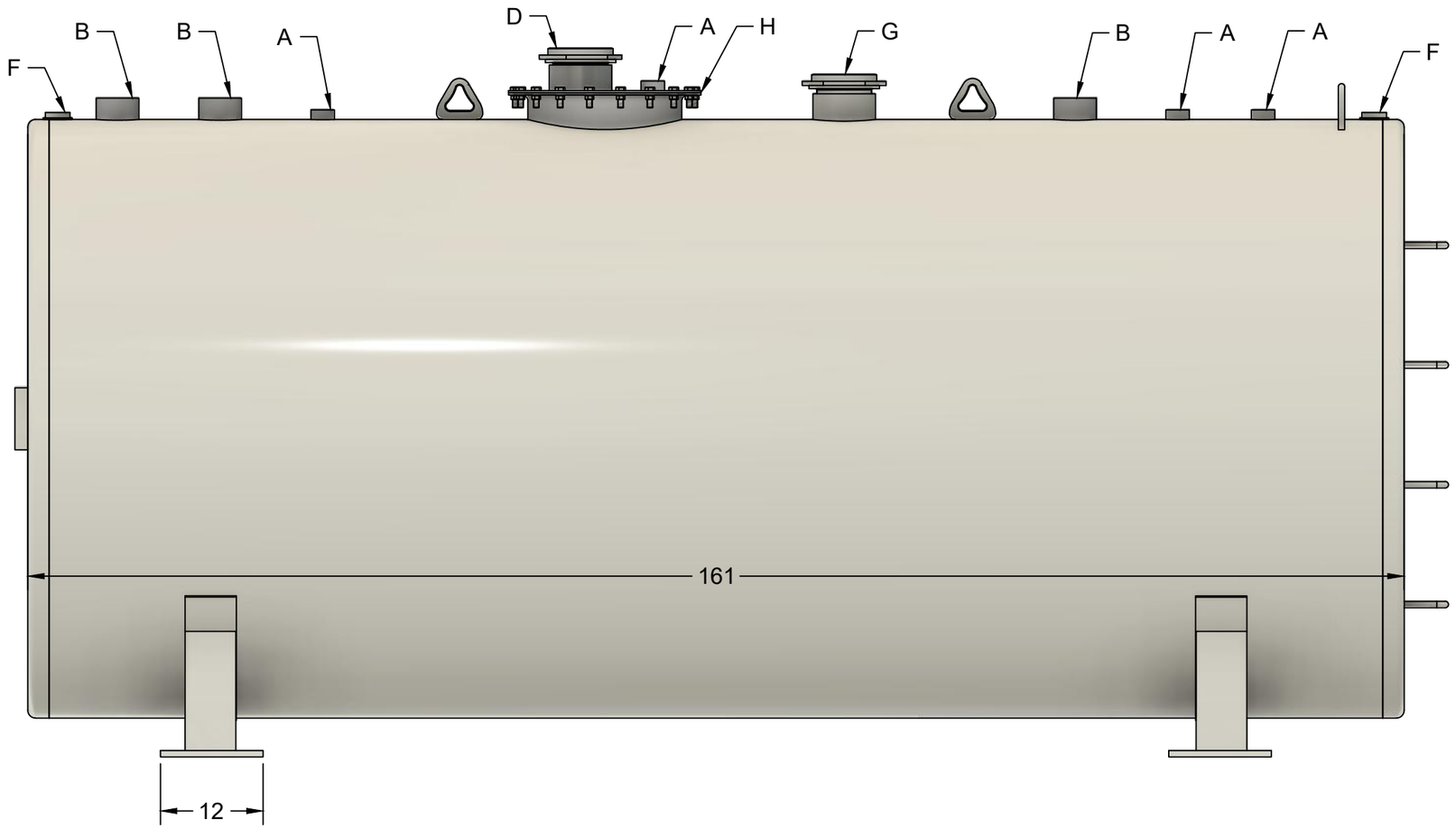
WILCO R&B AST PLANS

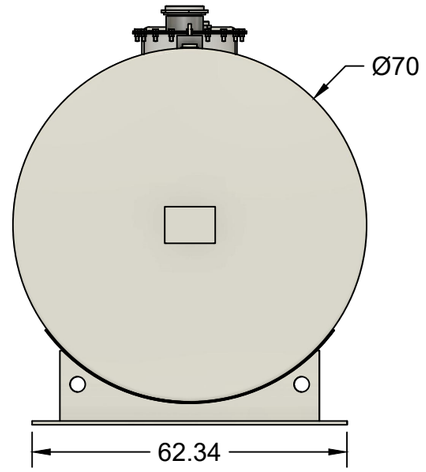
SHEET 4 OF 4

ENGINEERING | CONSULTING
SANDLIN
SERVICES, LLC

TBPELS FIRM #21356

Note: This drawing may not be reproduced in any form without the written permission of Hughes Tank Company, Inc. Customer is responsible for verifying correctness of size, location of fittings, accessories and coatings shown on this drawing. Hughes Tank Company, Inc. shall be responsible only for the items indicated in this fabrication drawing unless otherwise noted.





- Inspection: Hughes Tank Company, Inc
- Material: A36 Mild Carbon Steel
- Internal: Surface prep - Clean of Debris
- External: Surface prep - SSPC-SP6 (commercial blast)
- External: (WHITE) Enviroastic 940 LV Polyurthane

Test:
- Inner tank: 5PSIG Hydrostatic
- Outer tank: Hydrostatic
- Pressure Test: 3-5 PSI

Lables:
- UL 2085

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A	Coupling	2"	2" threaded fitting	Primary
B	Coupling	4"	4" threaded fitting	Primary
C	Coupling	6"	6" threaded fitting	Primary
D	Emergency Vent	6"	6"emergency vent	Primary
E	Lifting Lug	Med.	Medium lifting lug	Secondary
F	Interstitial	2"	2" interstitial fitting	Secondary
G	Emergency Vent	6"	6"emergency vent	Secondary
H	Manhole	18"	18" manhole	Primary

CUSTOMER APROVAL

SIGNATURE:

DATE: December 9, 2021

Note: At no time shall the pressure in the secondary tank exceed the pressure in the primary tank.

APPROVED Bobby Hughes

CHECKED Paige Hughes

DRAWN JD Hughes

CUSTOMER:

EXCELL

PROJECT:

2000G UL 2085 FIREGUARD

WEIGHT | REV | SHEET 1/1

HUGHES TANK COMPANY, INC.

O: (972) - 366 - 8684
F: (972) - 366 - 3130

2900 N. FM 157
VENUS, TX 76084

P.O. BOX 570
VENUS, TX 76084

DESIGN: Fabricated per UL 2085 specifications double wall construction.

- Air test are no less than 3 PSI and no more than 5 PSI.
- Primary tank to be tested alone. Secondary tank to be pressure tested with primary tank. This shall be accomplished by bleeding air from the primary tank to the secondary tank.

ATTACHMENT D

Spill and Overfill Control

EXCELL FUELING SYSTEMS

June 29, 2023

Ranger Environmental Services
Chad Copeland
7215 McNeil Dr.
Austin, Texas 78729

RE: Williamson County Maintenance Facility 3151 S. E. Inner Loop Georgetown, Texas.

The installation of the one AST used oil storage tanks will be equipped with the following equipment to alleviate spills and overspills. While introducing oil to the storage tank all connections will be in a fill basin capable of containing 5 gallons of product. The system is equipped with a pneumatic device that disconnects air to the diaphragm pump when the tank reaches 95%. The system will be installed in accordance to local, state and federal rules.

Respectfully,

Chris Mays
Project Manager

549 S. Loop 4
Buda, Texas 78610
Info@excellfs.com

HUB Certification #1742662468400

MEMBER PEI PETROLEUM EQUIPMENT INSTITUTE

512-280-5230
800-393-5757
Fax 512-280-3580

EXCELL FUELING SYSTEMS

June 29, 2023

Ranger Environmental Services
Chad Copeland
7215 McNeil Dr.
Austin, Texas 78729

RE: Williamson County Maintenance Facility 3151 S. E. Inner Loop Georgetown, Texas.

The site mentioned above will have new oil totes within containment to contain any spills that may occur. The size of containment will be in accordance to local, state and federal rules.

Respectfully,

Chris Mays
Project Manager

549 S. Loop 4
Buda, Texas 78610
Info@excellfs.com

HUB Certification #1742662468400

MEMBER PEI PETROLEUM EQUIPMENT INSTITUTE

512-280-5230
800-393-5757
Fax 512-280-3580

EXCELL FUELING SYSTEMS

June 29, 2023

Ranger Environmental Services
Chad Copeland
7215 McNeil Dr.
Austin, Texas 78729

RE: Williamson County Maintenance Facility 3151 S. E. Inner Loop Georgetown, Texas.

The site mentioned above will have 5-6 drums within containment to contain any spills that may occur. The size of containment will be in accordance to local, state and federal rules.

Respectfully,

Chris Mays
Project Manager

549 S. Loop 4
Buda, Texas 78610
Info@excellfs.com

HUB Certification #1742662468400

MEMBER PEI PETROLEUM EQUIPMENT INSTITUTE

512-280-5230
800-393-5757
Fax 512-280-3580

ATTACHMENT E

Response Actions to Spills

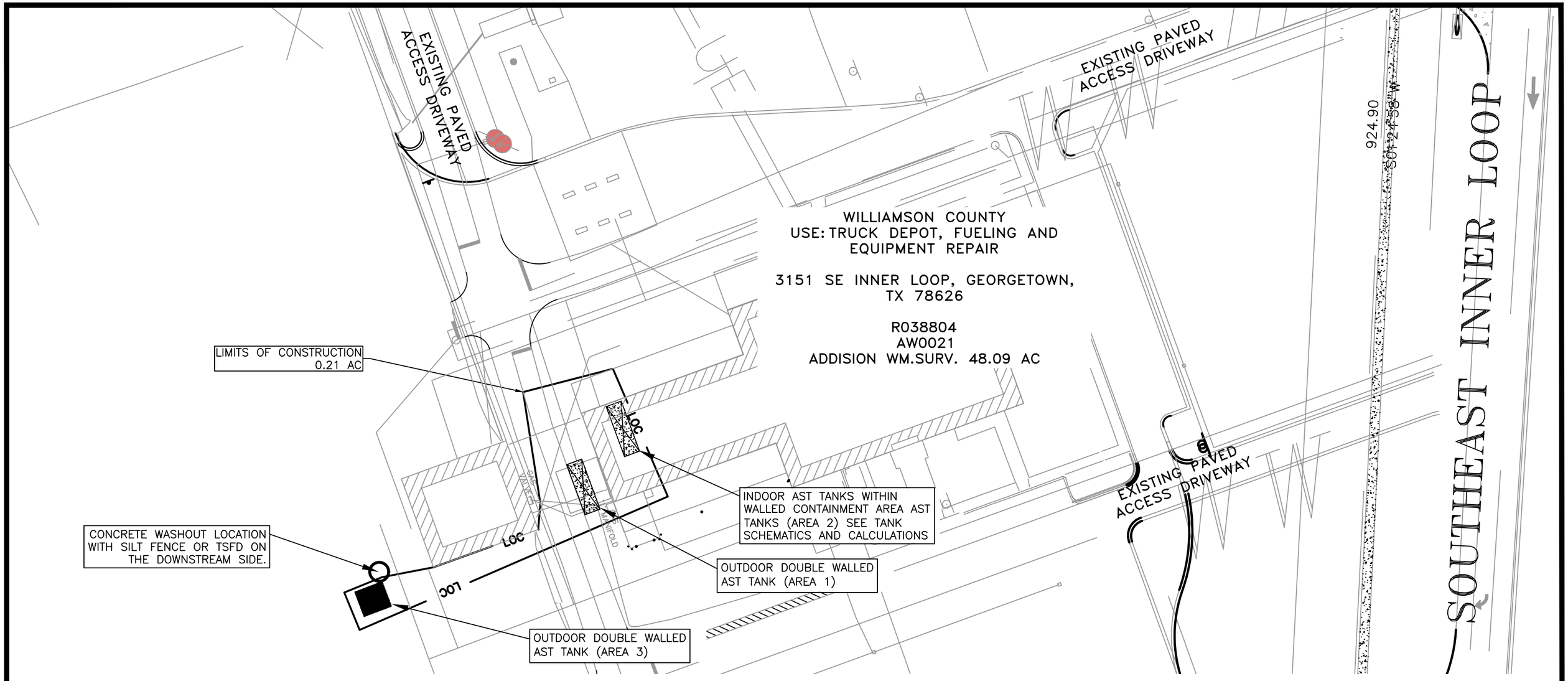
Spill Response Actions

Spill response actions will be in accordance with Texas Administrative Code (TAC) 30.327. If the amount of material spilled or discharged within any 24-hour period is equal to or greater than the reportable quantities as listed within TAC 30.327.4, the responsible person shall notify the SERC (1-800-832-8224) and/or City of Georgetown Fire Department (911) and TCEQ Austin Regional Office (512-339-2929) within 24-hours.

All spills coincide with the Spill Rule which requires the party responsible for causing a spill that by its nature and size presents the threat of contaminating groundwater or surface water to:

- Control and contain the spill (or see that this is done)
- Clean up the results of the spill (or see that this is done)
- Notify the appropriate authorities, which may range from the local fire department to TCEQ, depending on the threat posed by the spill
- Make follow-up reports to TCEQ about the continuing progress of completion of the Cleanup

During construction, the contractor will maintain a spill response kit on their vehicles consisting of sorbent material, shovels, brooms and disposable containers on site to respond to accidental spills. The contractor personnel will immediately clean up any oil, fuel or hydraulic fluid if observed being released from equipment or vehicles. Vehicles or equipment will cease operation until required repairs are made to the equipment.



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3. POSITION DIKE PARALLEL TO THE CONTOURS, WITH THE END OF EACH SECTION CLOSELY ABUTTING THE ADJACENT SECTIONS.

STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

LEGEND

PROPERTY BOUNDARY

PROPOSED ABOVE GROUND STORAGE TANKS

NOTES

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N

0 30' 60' 120'

SCALE: 1" = 60'

IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE

AST SITE LAYOUT

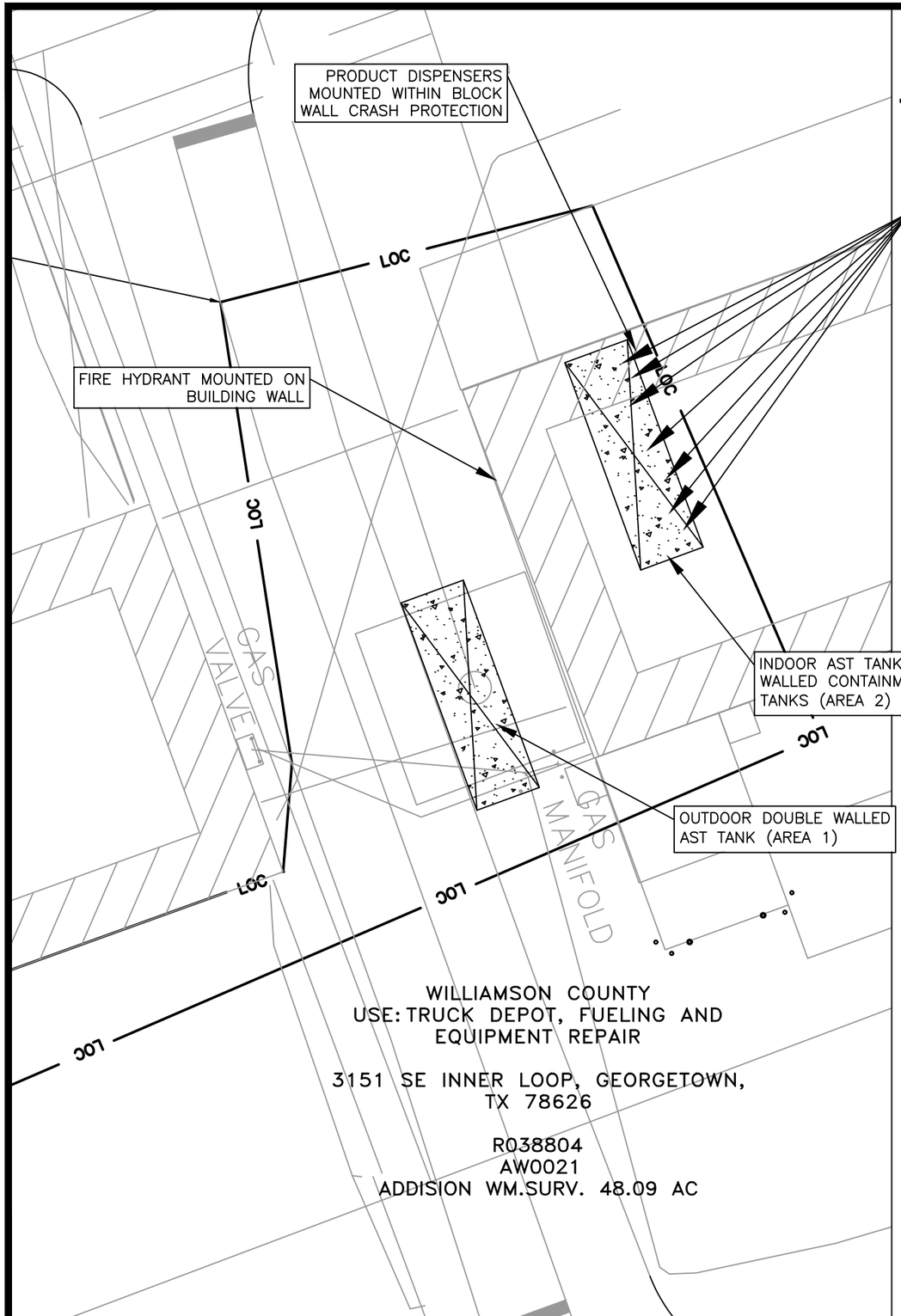
EXCELL FUELING SYSTEMS

WILCO R&B AST PLANS

SHEET 3 OF 4

SANDLIN SERVICES, LLC
ENGINEERING | CONSULTING

TBPELS FIRM #21356



WILLIAMSON COUNTY
USE: TRUCK DEPOT, FUELING AND EQUIPMENT REPAIR

3151 SE INNER LOOP, GEORGETOWN, TX 78626

R038804
AW0021
ADDISION WM.SURV. 48.09 AC

LEGEND

PROPERTY BOUNDARY

PROPOSED ABOVE GROUND STORAGE TANK

TANKS (AREA 2)
WITHIN EXISTING MASONRY CONTAINMENT

7 X 130 GAL & 2 X 240 GAL OIL/WASTE OIL TANKS WITH ENGINEERED CONTAINMENT (SEE MANUFACTURE DRAWINGS)
2085 GAL REQUIRED

N

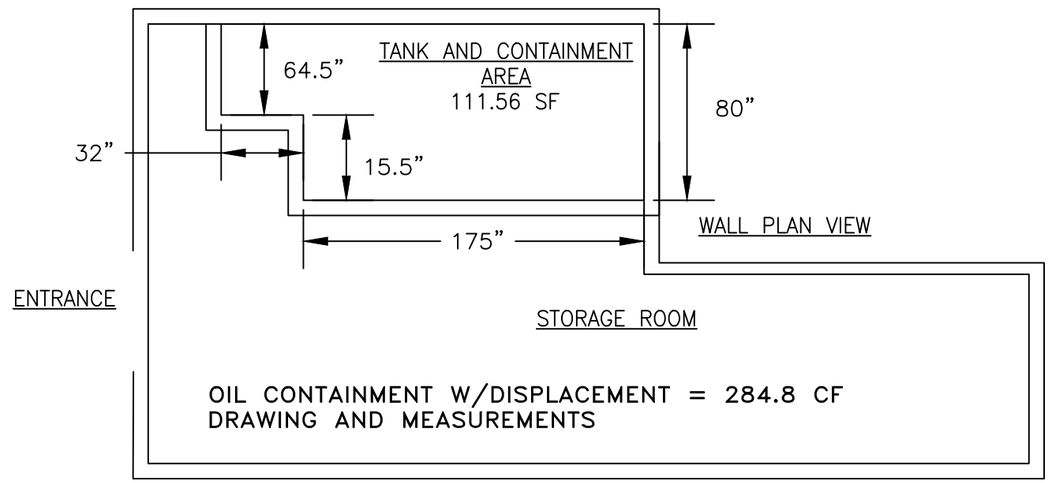
0 10' 20' 40'
SCALE: 1" = 20'

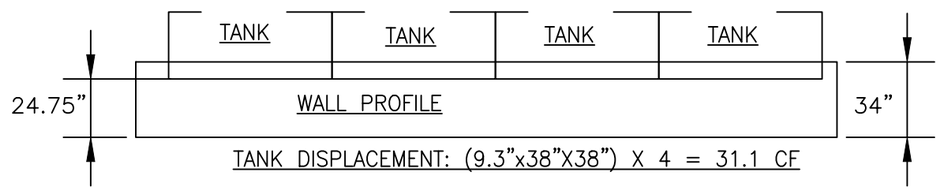
IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE

STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

DETAILED TANK SCHEMATIC
N.T.S





CONTAINMENT CALCULATIONS:
–TOTAL TANK CAP.: 1390.0 GAL
–REQUIRED CONTAINMENT: 2085.0 GAL
–PROVIDED CONTAINMENT: 2130.5 GAL

NOTES

1. ALL PROPERTY BOUNDARIES ARE APPROXIMATE
2. ABOVE GROUND STORAGE TANK SIZE AND SPECIFICATION TO BE PER AST APPLICATION TO TCEQ
3. TANK LOCATION IS ESTIMATED AND WILL BE FIELD VERIFIED.

TANK LAYOUT

EXCELL FUELING SYSTEMS

WILCO R&B AST PLANS

SHEET 4 OF 4

ENGINEERING | CONSULTING
SANDLIN
SERVICES, LLC

TBPELS FIRM #21356

EXCELL FUELING SYSTEMS

June 29, 2023

Williamson County Maintenance Facility
Oil Systems
3151 S. E Inner Loop
Georgetown, Texas

Contractor:
Excell Environmental, Inc dba Excell Fueling Systems
P.O. Box 1675
Buda, Texas

1.) 2,000gal Double wall used oil tank
2.) Various New oil tanks
3.) Used oil Brugg double wall product line
4.) Used oil diaphragm pump
5.) 3:1 new oil Fireball pump
6.) Graco lubrication reel
7.) Mechanical lubrication nozzle
8.) Used oil rolling truck drain
9.) Pneumatic over fill device

549 S. Loop 4
Buda, Texas 78610
Info@excellfs.com

MEMBER PEI PETROLEUM EQUIPMENT INSTITUTE

512-280-5230
800-393-5757
Fax 512-280-3580

EXCELL FUELING SYSTEMS

HUB Certification #1742662468400

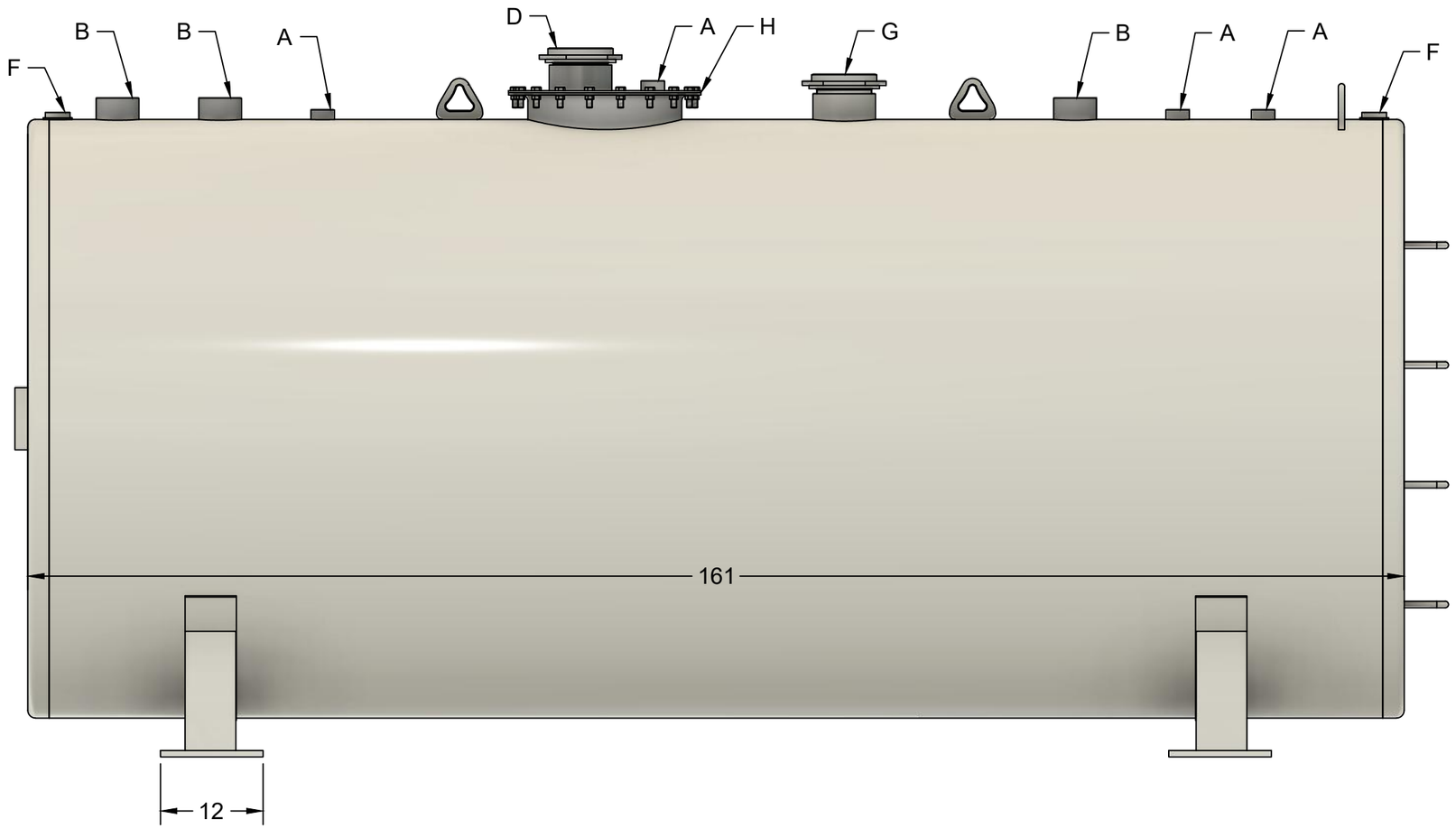
549 S. Loop 4
Buda, Texas 78610
Info@excellfs.com

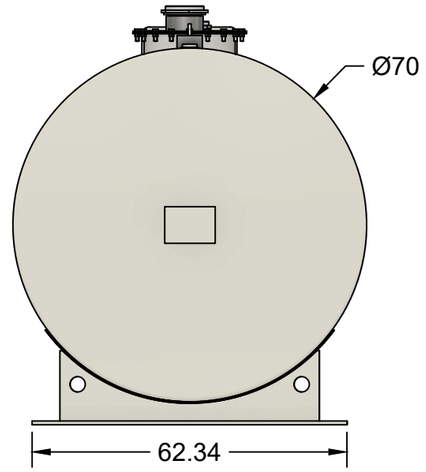
MEMBER PEI PETROLEUM EQUIPMENT INSTITUTE

512-280-5230
800-393-5757
Fax 512-280-3580

1

Note: This drawing may not be reproduced in any form without the written permission of Hughes Tank Company, Inc. Customer is responsible for verifying correctness of size, location of fittings, accessories and coatings shown on this drawing. Hughes Tank Company, Inc. shall be responsible only for the items indicated in this fabrication drawing unless otherwise noted.





- Inspection: Hughes Tank Company, Inc
- Material: A36 Mild Carbon Steel
- Internal: Surface prep - Clean of Debris
- External: Surface prep - SSPC-SP6 (commercial blast)
- External: (WHITE) Enviroastic 940 LV Polyurthane

Test:
- Inner tank: 5PSIG Hydrostatic
- Outer tank: Hydrostatic
- Pressure Test: 3-5 PSI

Lables:
- UL 2085

This drawing may contain **CONFIDENTIAL** information and is intended **ONLY** for the use of the specific individual to which it is addressed.

A	Coupling	2"	2" threaded fitting	Primary
B	Coupling	4"	4" threaded fitting	Primary
C	Coupling	6"	6" threaded fitting	Primary
D	Emergency Vent	6"	6"emergency vent	Primary
E	Lifting Lug	Med.	Medium lifting lug	Secondary
F	Interstitial	2"	2" interstitial fitting	Secondary
G	Emergency Vent	6"	6"emergency vent	Secondary
H	Manhole	18"	18" manhole	Primary

CUSTOMER APROVAL

SIGNATURE:

DATE: December 9, 2021

Note: At no time shall the pressure in the secondary tank exceed the pressure in the primary tank.

APPROVED Bobby Hughes

CHECKED Paige Hughes

DRAWN JD Hughes

CUSTOMER:

EXCELL

PROJECT:

2000G UL 2085 FIREGUARD

WEIGHT | REV | SHEET 1/1

HUGHES TANK COMPANY, INC.

O: (972) - 366 - 8684
F: (972) - 366 - 3130

2900 N. FM 157
VENUS, TX 76084

P.O. BOX 570
VENUS, TX 76084

DESIGN: Fabricated per UL 2085 specifications double wall construction.

- Air test are no less than 3 PSI and no more than 5 PSI.
- Primary tank to be tested alone. Secondary tank to be pressure tested with primary tank. This shall be accomplished by bleeding air from the primary tank to the secondary tank.

2

Tote-A-Lube Stackable Tanks

- Constructed from UL Rated Food-Grade Polyethylene Resins
- Extra Strength Corrugated Side Walls
- Patented Design for Easy Fill
- Visual Inventory of Fluid Levels
- Openings: (2) 2" Fill Ports and (1) 1" NPT Stainless Steel Dispense Fitting
- Can Be Customized with Additional Openings

Small Tote-A-Lube Tanks 35, 70 and 120 Gallons

Small Tote-A-Lube Tanks			
Part No.	**T35**	**T70**	**T120**
Tank Capacity	35 Gallons	70 Gallons	120 Gallons
Tank Dimensions	32"W x 32"D		
Tank Height	13"H	23"H	35"H
Tank Weight	23 Lbs.	32 Lbs.	50 Lbs.

T120-3 Gravity Feed System Shown with Recommended Top Tank Remote Fill Kit and Recommended Containment Vessel.

Small Tote-A-Lube Gravity Feed Systems

Includes: Tank(s), 24"H Stand, 3-Pan Drip Tray Assembly and Gravity Feed Dispense Kit. 36"W x 44"D Assembled. *Containment page 5. *Remote Fill Kit page 5.	35 Gallon				70 Gallon				120 Gallon		
											
Part No.	**T35-1**	**T35-2**	**T35-3**	**T35-4**	**T70-1**	**T70-2**	**T70-3**	**T70-4**	**T120-1**	**T120-2**	**T120-3**
No. of Stacked Tanks	1	2	3	4	1	2	3	4	1	2	3
Gallon Capacity	35	70	105	140	70	140	210	280	120	240	360
System Height	37"H	47"H	57"H	67"H	47"H	67"H	87"H	107"H	59"H	91"H	123"H
Gravity Feed Kit	GFKIT1	GFKIT2	GFKIT3	GFKIT4	GFKIT1	GFKIT2	GFKIT3	GFKIT4	GFKIT1	GFKIT2	GFKIT3

Reduce Your Total Fluid Expenses and Maximize Floor Space with a Stackable Fluid Storage and Handling System

- Purchase Fluids in Bulk; Reduce Expenses and Waste
- Eliminate the Hassles Associated with Packaged Goods and Drums
- Maximize Shop Space with Stackable Fluid Storage.
- Flexibility to Move Fluids with Portable Systems
- Configure a System with Secondary Containment Vessel

Large Tote-A-Lube Tanks 130, 180, 240 and 330 Gallons

Large Tote-A-Lube Tanks				
Part No.	**T130**	**T180**	**T240**	**T330**
Tank Capacity	130 Gallons	180 Gallons	240 Gallons	330 Gallons
Tank Dimensions	42"W x 42"D			
Tank Height	26"H	35"H	45"H	59"H
Tank Weight	58 Lbs.	76 Lbs.	135 Lbs.	165 Lbs.

T130-4 Gravity Feed System Shown with Recommended Top Tank Remote Fill Kit and Recommended Containment Vessel.

Large Tote-A-Lube Gravity Feed Systems

Includes: Tank(s), 24"H Stand, 3-Pan Drip Tray Assembly and Gravity Feed Dispense Kit. **43"W x 54"D Assembled.** ***Containment page 5.** ***Remote Fill Kit page 5.**	130 Gallon				180 Gallon		240 Gallon		330 Gallon	
										
Part No.	**T130-1**	**T130-2**	**T130-3**	**T130-4**	**T180-1**	**T180-2**	**T240-1**	**T240-2**	**T330-1**	
No. of Stacked Tanks	1	2	3	4	1	2	1	2	1	Note: System Includes Support Hoop
Gallon Capacity	130	260	390	520	180	360	240	480	330	
System Height	50"H	73"H	96"H	119"H	59"H	91"H	69"H	111"H	83"H	
Gravity Feed Kit	GFKIT1	GFKIT2	GFKIT3	GFKIT4	GFKIT1	GFKIT2	GFKIT1	GFKIT2	GFKIT1	

Wall-Stacker Stackable Tanks

Stackable Tanks with a Compact 19" x 38" Tank Footprint

Wall-Stacker Tanks 32, 71 and 115 Gallons

Tank Construction

- Constructed from UL Rated Food-Grade Polyethylene Resins
- Extra Strength Corrugated Side Walls
- Patented Design for Easy Fill
- Visual Inventory of Fluid Levels
- Openings: (2) 2" Fill Ports and (1) 1" NTP Stainless Steel Dispense Fitting

Wall-Stacker Benefits

- Purchase Fluids in Bulk; Reduce Expenses and Waste
- Eliminate the Hassles Associated with Packaged Goods.
- Maximize Shop Space with Stackable Fluid Storage.
- Flexibility to Move Fluids with Portable Systems
- Configure a System with Secondary Containment Vessel

Wall-Stacker Tanks			
Part No.	**WS32**	**WS71**	**WS115**
Tank Capacity	32 Gallons	71 Gallons	115 Gallons
Tank Dimensions	38"W x 19"D		
Tank Height	18"H	33"H	48"H
Tank Weight	33 Lbs.	47 Lbs.	61 Lbs.

Wall-Stacker Gravity Feed Systems

Includes: Tank(s), 24"H Stand, 3-Pan Drip Tray Assembly, Wall Straps and Gravity Feed Dispense Kit. 38"W x 30"D Assembled. *Containment page 5. *Remote Fill Kit page 5.	32 Gallon				71 Gallon			115 Gallon	
									
Part No.	**WS32-1**	**WS32-2**	**WS32-3**	**WS32-4**	**WS71-1**	**WS71-2**	**WS71-3**	**WS115-1**	**WS115-2**
No. of Stacked Tanks	1	2	3	4	1	2	3	1	2
Gallon Capacity	32	64	96	128	71	142	213	115	230
System Height	42"H	57"H	72"H	87"H	57"H	87"H	117"H	72"H	117"H
Wall Straps No.	VWS15	VWS30	VWS45	VWSA	VWS30	VWSA	VWSA	VWS45	VWSA
Wall Straps Height	17"H	32"H	47"H	Adjustable	32"H	Adjustable		47"H	Adjustable
Gravity Feed Kit	GFKIT1	GFKIT2	GFKIT3	GFKIT4	GFKIT1	GFKIT2	GFKIT3	GFKIT1	GFKIT2

Stackable Tank Dispense & Fill Kits

Dispense and Fill System Fluids Without the Use of a Pump

Gravity Feed Kits with Brass Valves (Sealant Included)		GFKIT1	GFKIT2	GFKIT3	GFKIT4	GFKITADD1
	Spring Release Valve	1	2	3	4	1
	1" Poly Stub Barb	-	1	2	3	1
	Elbow Mount	-	1	2	3	1
	90° Poly Elbow	-	1	2	3	1
	Poly Tubing	-	4'	9'	15'	7'
	Hose Clamps	-	2	4	6	2
Gravity Feed Kits with Stainless Steel Valves (Sealant Included)		**GFKITSS1**	**GFKITSS2**	**GFKITSS3**	**GFKITSS4**	**GFKITSSADD1**
	Spring Release Valve	1	2	3	4	1
	1" Poly Stub Barb	-	1	2	3	1
	Elbow Mount	-	1	2	3	1
	90° Poly Elbow	-	1	2	3	1
	Poly Tubing	-	4'	9'	15'	7'
	Hose Clamps	-	2	4	6	2

Remote Fill Kits

RFKIT1

Remote Fill Kit for 1 Tank
Includes 8' Hose, Tank Adapter, Ball Valve, 1.5" Cam Fitting with Cover, Hose Clamps, and Breather.

NOT INCLUDED: Tank System

Secondary Containment Vessels

An Excellent Secondary Barrier, Available in Poly, Aluminum And Steel

Part No.	CV150	CV265	CV85S	CV150S	CV275S	CV375S	CV210S	CV270S	CV370S
Use With	T120, all WS	T130, T180, T240	T70	T120	T130, T180, T240	T330	T180	T240	T330
Material / Features	Poly Vessel		Steel Vessel				Steel Vessel is Forklift Ready with 5" Legs		
Gallon Cap.	150	265	85	150	275	375	210	270	370
Width	40"W	48"W	38"W	36"W	46"W	46"W	46"W	46"W	46"W
Depth	52"D	66"D	47"D	48"D	56"D	56"D	46"D	46"D	46"D
Height	23"H	24"H	11"H	22"H	25"H	34"H	29"H	35"H	46"H
Weight (Lbs.)	40	60	107	132	174	254	150	185	231

3

SECON-X®

Flexible stainless steel pipe system
for gas stations, DEF and above ground fuel installations

Double-wall flexible pipe for automotive fuels including ethanol, biodiesel and blends, marine, jet fuels and DEF

System advantages
- flexible, double-wall
- impermeable and safe from corrosion
- fast and easy to install
- environmentally safe
- the most cost effective metallic pipe

General Description
SECON-X® is designed as an integrated primary/secondary pipe for fuel and DEF installations. Fast and easy installation without welding and minimum downtime on retrofits are only some of the major advantages of SECON-X®. SECON-X® is made in "endless" lengths, which eliminates the need for intermediate connections between beginning and end. Even distances beyond 1000 ft. can be covered with one single pipe.

Construction
SECON-X® is a flexible pipe system with a stainless steel primary pipe capable of being tested and even monitored (underground installations only) for leaks. The SECON-X® double wall pipe system consists of a helically corrugated stainless steel primary pipe and a PA/LDPE secondary containment pipe. Helical channels are formed by the geometry of the primary pipe around the circumference, aided by longitudinal channels in the secondary pipe. Both extend over the entire length of the pipe. These longitudinal channels between the primary and secondary pipe provide the necessary annular space for the safe and contained flow of leaking product along and within the integral pipe.

The SECON-X® stainless steel primary pipe is not only corrosion resistant against all currently used, and most likely future fuels, but also prevents permeation. The fact that the pipe is made from 316L stainless steel eliminates the need for any additional cathodic protection.

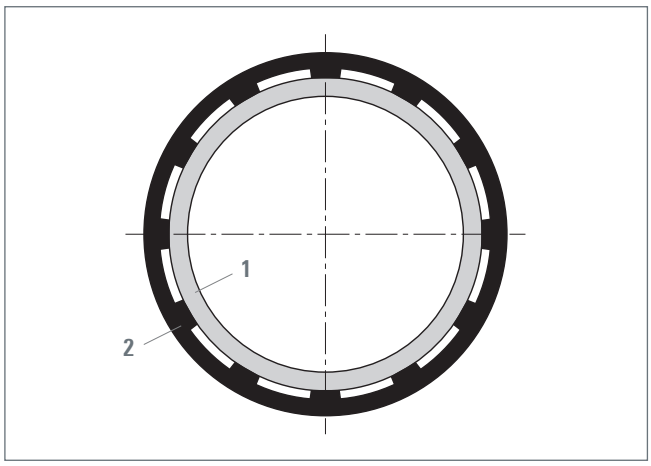
Sizes and Pressure ratings
Available sizes: 1", 1 ½", 2" and 3"
Max. operating pressure: 145 PSIG /10.0 bar (except 3") or to full vacuum. The operating temperature range is –13 °F to +122 °F.

Connection method
The SECON-X® end fitting is made of 316L stainless steel with fuel resistant elastomeric seals for both the primary and the secondary pipe. It is equipped with a test port for testing and monitoring. The end fitting is easy to assemble, requiring only common tools.
The end fitting is available with the following terminations:
- Thread (NPT, BSP)
- EZ-Fit

Installation
SECON-X® is available in coils of the required lengths. The corrugated primary pipe gives this pipe extraordinary good bendability for ease of installation. SECON-X® can easily be cut to the required lengths on site and – where necessary – bent at very tight radii. Unlike with plastic piping there is virtually no recoil once bent. A feature that makes the contractor's job a lot easier and faster, and also saves money, too.

BRUGG PIPESYSTEMS
Flexible solutions

SECON-X® end fitting
Available in NPT, BSP, EZ-Fit



SECON-X® construction
1 Corrugated stainless steel primary pipe
2 Internally fluted PA/LDPE jacket

Thecnical data of SECON-X® pipes

Item	SECON-X®	SEC 1"	SEC 1 ½"	SEC 2"	SEC 3"
Pipe size		1"	1 ½"	2"	3"
Material	• primary pipe: stainless steel 316L	•	•	•	•
	• secondary pipe: PA/LDPE	•	•	•	•
Max. operating pressure	(PSIG / bar)	145 / 10	145 / 10	145 / 10	50 / 3.5
Secondary containment pipe	• closed (PSIG / bar)	50 / 3.5	50 / 3.5		
	• open (PSIG / bar)	5 / 0.35	5 / 0.35	5 / 0.35	5 / 0.35
Nominal ID	(inch / mm)	1" / 25	1 ½" / 40	2" / 50	4" / 100
Dimensions	• internal diameter (inch / mm)	1.2 / 30	1.9 / 48	2.4 / 60	3.9 / 98
	• external diameter (inch / mm)	1.7 / 44	2.6 / 66	2.9 / 75	4.7 / 119
Volume	• volume primary pipe (gal/ft) / (l/m)	0.06 / 0.8	0.16 / 2.0	0.24 / 3.0	0.67 / 8.4
	• volume interstitial (gal/ft) / (l/m)	0.007 / 0.08	0.015 / 0.19	0.017 / 0.21	0.06 / 0.74
Min. bending radius	• with bending machine (inch / mm)	18 / 450	24 / 600	30 / 750	41 / 1050
Weight	(lb/ft) / (kg/m)	0.52 / 0.78	1.18 / 1.76	1.3 / 1.94	3.15 / 4.7
Available service (per UL)	• open	•	•	•	•
	• closed	•	•		
Leak monitoring	• vauum (PSI / bar)	–8.7 / –0.6	–8.7 / –0.6	–8.7 / –0.6	–8.7 / –0.6
	• pressure up to (PSIG / bar)	50 / 3.5	50 / 3.5	5 / 0.35	5 / 0.35

All technical data subject to change.

BRUGG Rohrsysteme GmbH
Adolf-Oesterheld-Straße 31
D-31515 Wunstorf
phone +49 (0)5031 170-0
fax +49 (0)5031 170-170
info@brugg.de
www.brugg.de

BRUGG Pipesystems, LLC
P.O. Box 1836
Rome, GA 30162-1836
phone +1 (706) 235 5606
fax +1 (706) 235 6035
pipesystems.na@brugg.com
www.pipesystems.com

A company of the BRUGG Group

BRUGG PIPESYSTEMS
Flexible solutions

4

Operation

Husky® 1050 Air-Operated Diaphragm Pump

312877Y
EN

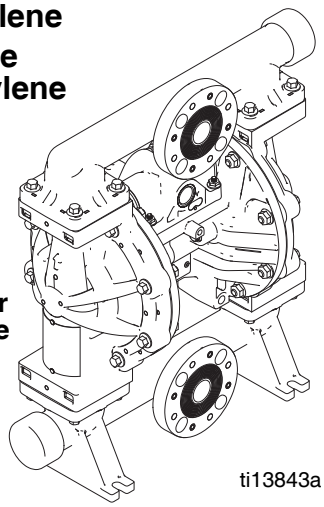
1-inch pump with modular air valve for fluid transfer applications.
For professional use only.

See page 4 for model information, including approvals.

125 psi (0.86 MPa, 8.6 bar) Maximum Fluid Working Pressure
125 psi (0.86 MPa, 8.6 bar) Maximum Air Input Pressure

Important Safety Instructions
Read all warnings and instructions in this manual.
Save these instructions.

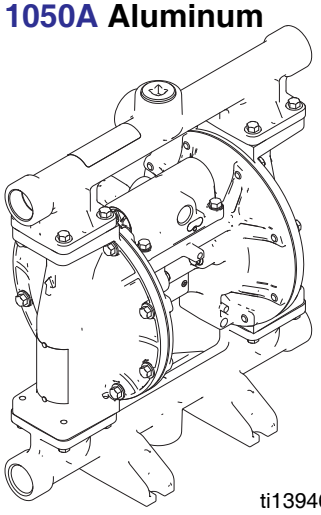
1050P Polypropylene
1050C Conductive Polypropylene
1050F PVDF



Center Flange

ti13843a

1050A Aluminum



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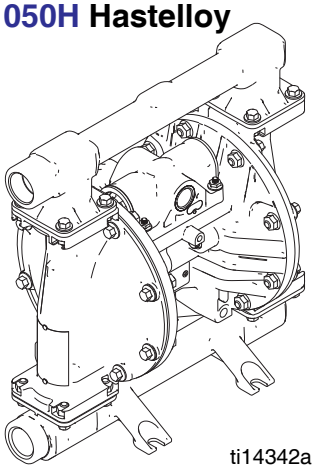
1050S Stainless Steel
1050H Hastelloy



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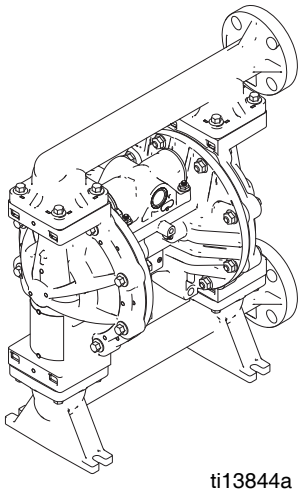

End Flange

ti13844a

CE

PROVEN QUALITY. LEADING TECHNOLOGY.

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Related Manuals

Manual	Description
313435	Husky 1050 Air-Operated Diaphragm Pump, Repair/Parts
313597	Husky 1050A UL-Listed Diaphragm Pump, Operation
313598	Husky 1050A CSA-Certified Diaphragm Pump, Operation
313840	DataTrak, Instructions/Parts
406824	Pulse Count Kits, Instructions

To Find Your Nearest Distributor

1. Visit www.graco.com.
2. Click on **Where to Buy** and use the **Distributor Locator**.

To Specify the Configuration of a New Pump

Please call your distributor.

OR

1. Use the **Online Husky Selector Tool** at wwwd.graco.com/training/husky/index.html.
2. If the link does not work, you will find the selector tool on the **Process Equipment** page at **www.graco.com.**

To Order Replacement Parts

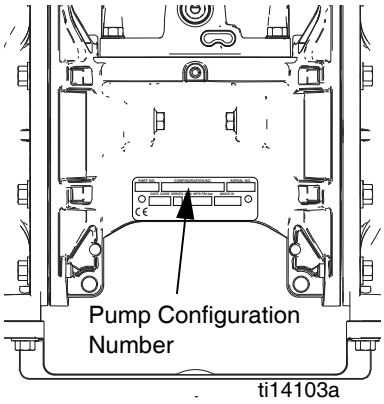
Please call your distributor.

Distributor Note

1. To find part numbers for new pumps or kits, use the **Online Husky Selector Tool.**
2. To find part numbers for replacement parts:
   a. Use the configuration number from the ID plate on the pump. If you only have the Graco 6-digit part number, use the selector tool to find the corresponding configuration number.
   b. Use the Configuration Number Matrix on the next page to understand which parts are described by each digit.
   c. **Use the Repair/Parts Manual.** Refer to the main Parts illustration and to the Parts/Kits Quick Reference. Follow the page references on these two pages for further ordering information, as needed.
3. Please call Graco Customer Service to order.

Configuration Number Matrix

Check the identification plate (ID) for the Configuration Number of your pump. Use the following matrix to define the components of your pump.



Sample Configuration Number: 1050A-PA01AA1SSBNBNPT

1050	A	P	A01A	A1	SS	BN	BN	PT
Pump Size	Wetted Section Material	Drive Identifier	Center Section and Air Valve	Fluid Covers and Manifolds	Seats	Balls	Diaphragms	Manifold O-Rings

Pump Size	Wetted Section Material		Drive Identifier	Center Section and Air Valve Material		Air Valve/Monitoring	Fluid Covers and Manifolds	
1050	A★	Aluminum	P	Aluminum	A01A	Standard	A1	Aluminum, standard ports, inch
1050	C★	Conductive Polypropylene	Pneumatic		A01B	Pulse Count✖	A2	Aluminum, standard ports, metric
					A01C	DataTrak✖	C1	Conductive polypropylene, center flange
1050	F	PVDF			A01D	Remote		
1050	H‡	Hastelloy			A01E	Optional FKM Seals	C2	Conductive polypropylene, end flange
1050	P	Polypropylene		Conductive Polypropylene	C01A	Standard	F1	PVDF, center flange
1050	S‡	Stainless Steel			C01B	Pulse Count✖	F2	PVDF, end flange
					C01C	DataTrak✖	H1	Hastelloy, standard ports, inch
					C01D	Remote	H2	Hastelloy, standard ports, metric
				Polypropylene	P01A	Standard	P1	Polypropylene, center flange
					P01B	Pulse Count✖	P2	Polypropylene, end flange
					P01C	DataTrak✖	S1	Stainless steel, standard ports, inch
					P01D	Remote		
★, ‡, or ✖: See **ATEX Certifications**, on page 5.							S2	Stainless steel, standard ports, metric
							S5-1	Stainless steel, center flange, horizontal outlet port
							S5-2	Stainless steel, center flange, vertical outlet port

Check Valve Seats		Check Valve Balls		Diaphragm		Manifold O-Rings	
AC	Acetal	AC	Acetal	BN	Buna-N	—	Models with Buna-N, FKM Fluoroelasto-mer or TPE seats do not use o-rings.
AL	Aluminum	BN	Buna-N	CO	Polychloroprene Overmolded		
BN	Buna-N	CR	Polychloroprene Standard	FK	FKM Fluoroelastomer		
FK	FKM Fluoroelastomer	CW	Polychloroprene Weighted	GE	Geolast		
GE	Geolast®	FK	FKM Fluoroelastomer	PO	PTFE/EPDM Overmolded		
PP	Polypropylene	GE	Geolast	PT	PTFE/EPDM Two-Piece		
PV	PVDF	PT	PTFE	SP	Santoprene	PT	PTFE
SP	Santoprene®	SP	Santoprene	TP	TPE		
SS	316 Stainless Steel	SS	316 Stainless Steel				
TP	TPE	TP	TPE				

ATEX Certifications

★ *All 1050A (Aluminum) and 1050C (Conductive Polypropylene) pumps are certified:*

II 2 GD
Ex h IIC 66°...135°C Gb
Ex h IIIC T135°C Db

‡ *1050S (Stainless Steel) and 1050H (Hastelloy) pumps with aluminum or conductive polypropylene centers are certified:*

II 2 GD
Ex h IIC 66°...135°C Gb
Ex h IIIC T135°C Db

✖ *DataTrak and Pulse Count are certified:*

Intertek
9902471
Class I, Div. 1, Group D T3A

2575

II 1 G
Ex ia IIA T3 Ga
ITS13ATEX27862X

ATEX T-code rating is dependent on the temperature of the fluid being pumped. Fluid temperature is limited by the materials of the pump interior wetted parts. See Technical Data for the maximum fluid operating temperature for your specific pump model.

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. When these symbols appear in the body of this manual, refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

WARNING

FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- If there is static sparking or you feel a shock, **stop operation immediately.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

Static charge may build up on plastic parts during cleaning and could discharge and ignite flammable materials and gases. To help prevent fire and explosion:

- Clean plastic parts in a well ventilated area.
- Do not clean with a dry cloth.
- Do not operate electrostatic guns in equipment work area.

WARNING

SPECIAL CONDITIONS FOR SAFE USE

Equipment must comply with the following conditions to avoid a hazardous condition which can cause fire or explosion.

- All label and marking material must be cleaned with a damp cloth (or equivalent).
- The electronic monitoring system is required to be grounded. See **Grounding** instructions.

EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure. Turn off all equipment and follow the **Pressure Relief Procedure** in this manual when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

PRESSURIZED EQUIPMENT HAZARD

Fluid from the gun/dispense valve, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.

- Follow **Pressure Relief Procedure** in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.

THERMAL EXPANSION HAZARD

Fluids subjected to heat in confined spaces, including hoses, can create a rapid rise in pressure due to the thermal expansion. Over-pressurization can result in equipment rupture and serious injury.

- Open a valve to relieve the fluid expansion during heating.
- Replace hoses proactively at regular intervals based on your operating conditions.

WARNING

PRESSURIZED ALUMINUM PARTS HAZARD

Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.

- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.

PLASTIC PARTS CLEANING SOLVENT HAZARD

Use only compatible water-based solvents to clean plastic structural or pressure-containing parts. Many solvents can degrade plastic parts and cause them to fail, which could cause serious injury or property damage. See **Technical Data** in this and all other equipment instruction manuals. Read fluid and solvent manufacturer's warnings.

TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDS's to know the specific hazards of the fluids you are using.
- Route exhaust away from work area. If diaphragm ruptures, fluid may be exhausted with air.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

BURN HAZARD

Equipment surfaces and fluid that's heated can become very hot during operation. To avoid severe burns:

- Do not touch hot fluid or equipment.

PERSONAL PROTECTIVE EQUIPMENT

You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:

- Clothing and respirator as recommended by the fluid and solvent manufacturer
- Protective eyewear, gloves, and hearing protection

Installation

The Typical Installation shown in FIG. 4 is only a guide for selecting and installing system components. Contact your Graco distributor for assistance in planning a system to suit your needs.

Tighten Fasteners Before Setup

Before using the pump for the first time, check and retorque all external fasteners. Follow **Torque Instructions**, page 18.

Tips to Reduce Cavitation

Cavitation in a diaphragm pump is the formation and collapse of bubbles in the pumped liquid. Frequent or excessive cavitation can cause serious damage, including pitting and early wear of fluid chambers, balls, and seats. It may result in reduced efficiency of the pump. Cavitation damage and reduced efficiency both result in increased operating costs.

Cavitation depends on the vapor pressure of the pumped liquid, the system suction pressure, and the velocity pressure. It can be reduced by changing any of these factors.

1. Reduce vapor pressure: Decrease the temperature of the pumped liquid.
2. Increase suction pressure:
    a. Lower the installed position of the pump relative to the liquid level in the supply.
    b. Reduce the friction length of the suction piping. Remember that fittings add friction length to the piping. Reduce the number of fittings to reduce the friction length.
    c. Increase the size of the suction piping.
    d. Increase the Net Positive Suction Head (NPSH). See .**Performance Charts**, page 23.
    NOTE: Be sure the inlet fluid pressure does not exceed 25% of the outlet working pressure.
3. Reduce liquid velocity: Slow the cyclic rate of the pump.

Pumped liquid viscosity is also very important but normally is controlled by factors that are process dependent and cannot be changed to reduce cavitation. Viscous liquids are more difficult to pump and more prone to cavitation.

Graco recommends taking all of the above factors into account in system design. To maintain pump efficiency, supply only enough power to the pump to achieve the required flow.

Graco distributors can supply site specific suggestions to improve pump performance and reduce operating costs.

Mounting

- The pump exhaust air may contain contaminants. Ventilate to a remote area. See **Air Exhaust Ventilation** on page **11.**
- Never move or lift a pump under pressure. If dropped, the fluid section may rupture. Always follow the **Pressure Relief Procedure** on page **16** before moving or lifting the pump.

1. For wall mounting, order Graco Kit 24C637.
2. Be sure the mounting surface can support the weight of the pump, hoses, and accessories, as well as the stress caused during operation.
3. For all mountings, be sure the pump is bolted directly to the mounting surface.
4. For ease of operation and service, mount the pump so air valve, air inlet, fluid inlet and fluid outlet ports are easily accessible.
5. Rubber Foot Mounting Kit 236452 is available to reduce noise and vibration during operation.
6. Prolonged exposure to UV radiation will degrade natural polypropylene components of the pumps. To prevent potential injury or equipment damage, do not expose pump or the plastic components to direct sunlight for prolonged periods.

Grounding

The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

Pump: See FIG. 1. Loosen the grounding screw (GS). Insert one end of a 12 ga. minimum ground wire (R) behind the grounding screw and tighten the screw securely. Do not exceed 15 in-lb (1.7 N•m). Connect the clamp end of the ground wire to a true earth ground. A ground wire and clamp, Part 238909, is available from Graco.

Polypropylene and PVDF: Only aluminum, conductive polypropylene, hastelloy, and stainless steel pumps have a ground screw. Standard polypropylene and PVDF pumps are **not** conductive. **Never** use a non-conductive polypropylene or PVDF pump with non-conductive flammable fluids. Follow your local fire codes. When pumping conductive flammable fluids, **always** ground the entire fluid system as described.

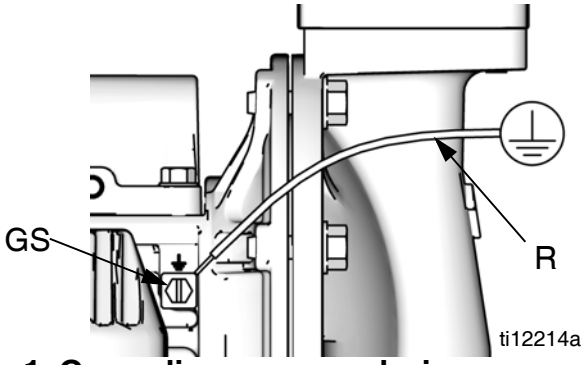


FIG. 1. Grounding screw and wire

Air and fluid hoses: Use only grounded hoses with a maximum of 500 ft (150 m) combined hose length to ensure grounding continuity.

Air compressor: Follow manufacturer's recommendations.

Fluid supply container: Follow local code.

Solvent pails used when flushing: Follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.

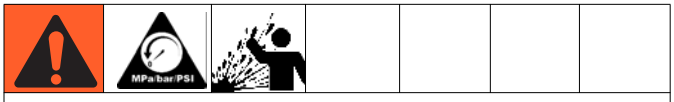
Check your system electrical continuity after the initial installation, and then set up a regular schedule for checking continuity to be sure proper grounding is maintained.

Air Line

See FIG. 4, page 13.

1. Install an air regulator (C) and gauge to control the fluid pressure. The fluid stall pressure will be the same as the setting of the air regulator.

2. Locate a bleed-type master air valve (B) close to the pump and use it to relieve trapped air. Be sure the valve is easily accessible from the pump and located downstream from the regulator.



Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing.

3. Locate another master air valve (E) upstream from all air line accessories and use it to isolate them during cleaning and repair.

4. An air line filter (F) removes harmful dirt and moisture from the compressed air supply.

5. Install a grounded, flexible air hose (A) between the accessories and the 1/2 npt(f) pump air inlet (D). Use a minimum 3/8 in. (10 mm) ID air hose.

Installation of Remote Pilot Air Lines

NOTICE

Pilot supply pressure should not exceed 25-50% of main air supply pressure. If pilot supply pressure is too high, the pump could leak air or exhaust excessive air at stall.

1. Connect an air supply line to the pump (A, FIG. 3, page 11).

2. Insert 5/32 OD tubing into the push-to-connect fitting on each pilot valve (113).

3. Connect remaining ends of tubes to external air signal, such as Graco's CycleFlo™ (PN 195264) or CycleFlo II (PN 195265) controllers.

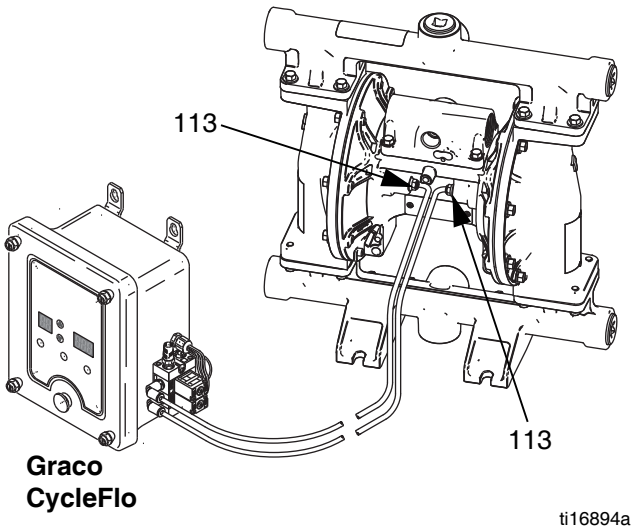
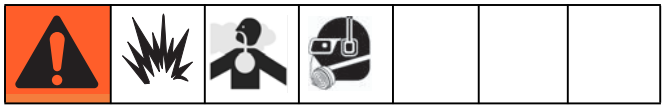


FIG. 2. Connect Remote Air Control

Reed Switch

Pulse Count models are intended for use with customer-supplied fluid management or inventory tracking systems. Attach an M12, 5-pin female cable to connect the reed switch to your data monitoring system. *See Manual 406824.*

Air Exhaust Ventilation



The air exhaust port is 3/4 npt(f). Do not restrict the air exhaust port. Excessive exhaust restriction can cause erratic pump operation.

To provide a remote exhaust:

1. Remove the muffler (T) from the pump air exhaust port.
2. Install a grounded air exhaust hose (U) and connect the muffler (T) to the other end of the hose. The minimum size for the air exhaust hose is 3/4 in. (19 mm) ID. If a hose longer than 15 ft (4.57 m) is required, use a larger diameter hose. Avoid sharp bends or kinks in the hose.
3. Place a container at the end of the air exhaust line to catch fluid in case a diaphragm ruptures. If the diaphragm ruptures, the fluid being pumped will exhaust with the air.

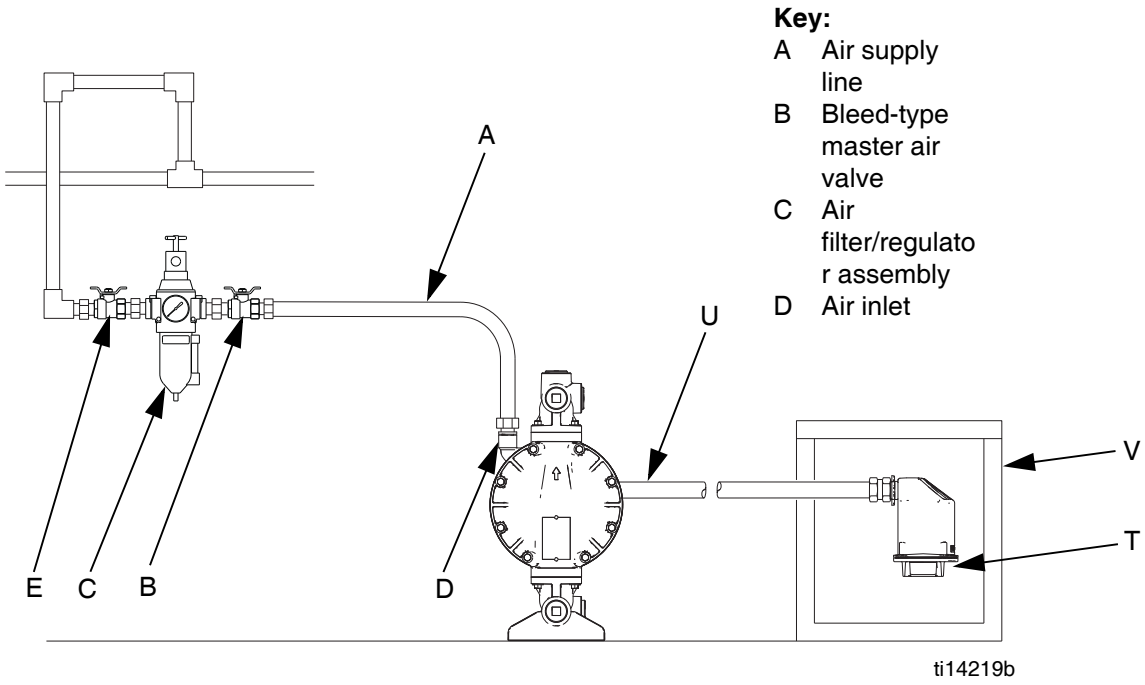


FIG. 3. Vent exhaust air

Fluid Supply Line

See FIG. 4, page 13.

1. Use grounded, flexible fluid supply lines (G). See **Grounding**, page 9.
2. If the inlet fluid pressure to the pump is more than 25% of the outlet working pressure, the ball check valves will not close fast enough, resulting in inefficient pump operation. Excessive inlet fluid pressure also will shorten diaphragm life. Approximately 3 - 5 psi (0.02- 0.03 MPa, 0.21-0.34 bar) should be adequate for most materials.
3. For maximum suction lift (wet and dry), see **Technical Data**, page 24. For best results, always install the pump as close as possible to the material source.

Fluid Outlet Line

See FIG. 4, page13.

1. Use grounded, flexible fluid hoses (L). See **Grounding**, page 9.
2. Install a fluid drain valve (J) near the fluid outlet.
3. Install a shutoff valve (K) in the fluid outlet line.

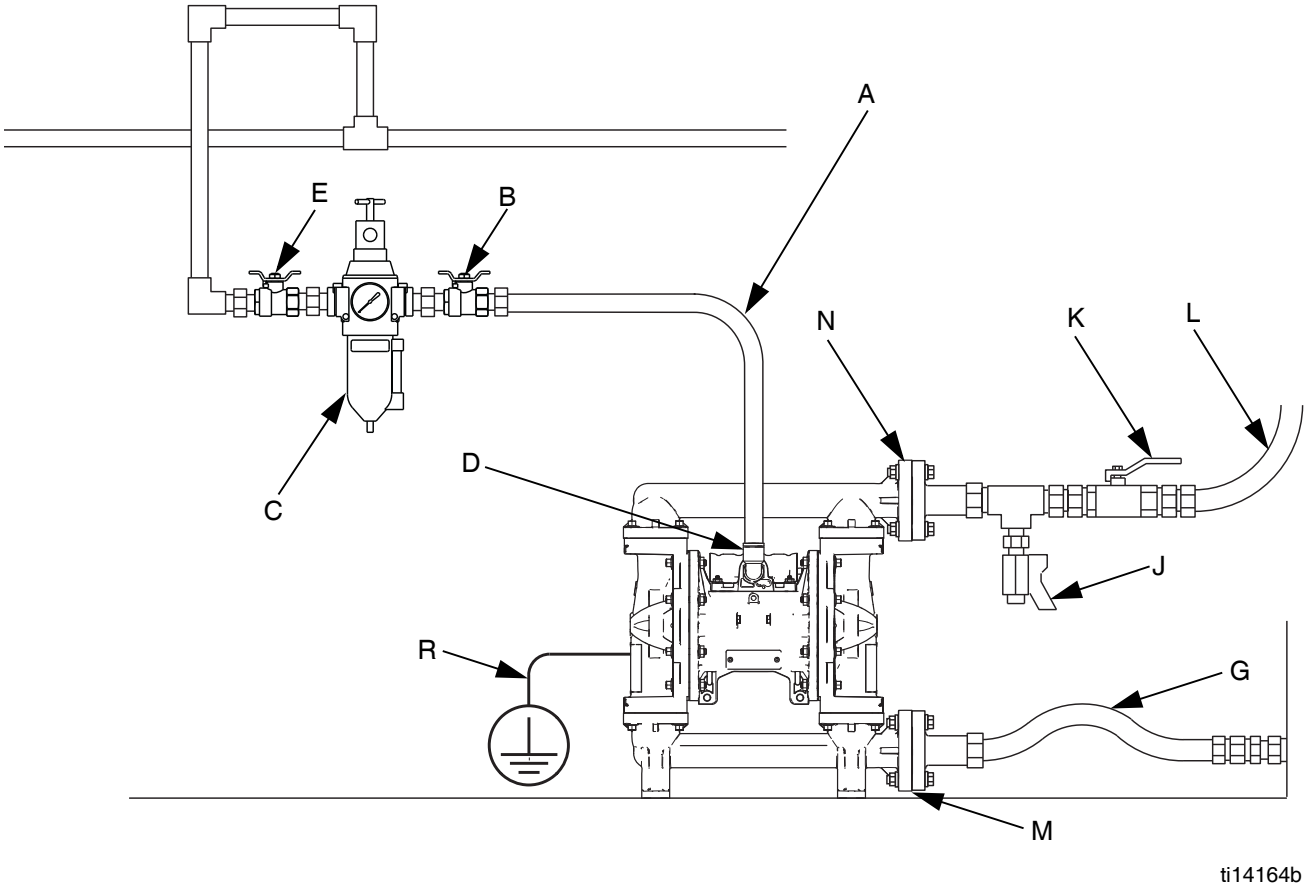


FIG. 4. Typical floor-mount installation (polypropylene, 1050P, pump shown)

Key for FIG. 4:

A Air supply line
B Bleed-type master air valve (required for pump)
C Air filter/regulator assembly
D Air inlet
E Master air valve (for accessories)
G Grounded, flexible fluid supply line
J Fluid drain valve (required)
K Fluid shutoff valve
L Grounded, flexible fluid outlet line
M Fluid inlet (Aluminum, not pictured, four ports; Plastic, FIG. 4, center or end flanges available; Hastelloy and stainless steel, not pictured, one port)
N Fluid outlet (Aluminum, not pictured, four ports; Plastic, FIG. 4, center or end flanges available; Hastelloy and stainless steel, not pictured, one port)
R Ground wire (required for aluminum, conductive polypropylene, hastelloy, and stainless steel pumps; see page 9 for installation instructions)

Fluid Inlet and Outlet Ports

NOTE: Remove and reverse the manifold(s) to change the orientation of inlet or outlet port(s). Follow **Torque Instructions** on page 18.

Aluminum (1050A)

The fluid inlet and outlet manifolds each have four 1 in. npt(f) or bspt threaded ports. Close off the unused ports, using the supplied plugs.

Plastic (1050P, 1050C, 1050F)

The fluid inlet and outlet manifolds each have a 1 in. raised face ANSI/DIN flange (FIG. 4, M, N) in either a center or end location. Connect 1 in. standard flanged plastic pipe to the pump. See FIG. 5.

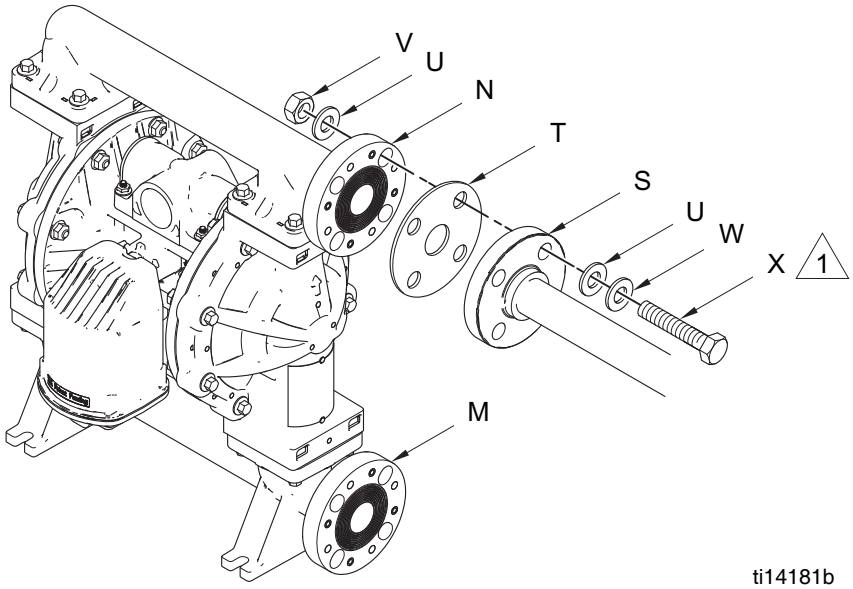
Graco standard pipe flange kits are available in polypropylene (239005), stainless steel (239008), and PVDF (239009). These kits include:

- the pipe flange
- a PTFE gasket
- four 1/2 in. bolts, spring lock washers, flat washers and nuts.

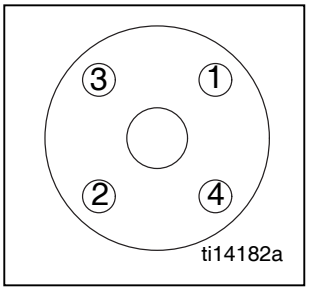
Be sure to lubricate the threads of the bolts and torque to 10-15 ft-lb (14-20 N•m). Follow the bolt tightening sequence and **do not over-torque.**

Hastelloy (1050H) or Stainless Steel (1050S)

The fluid inlet and outlet manifolds each have one 1 in. npt (f) or bspt threaded port. The models with stainless steel flanged center ports have ANSI/DIN flanges.



Bolt tightening sequence



Key:

M	1 in. fluid inlet flange
N	1 in. fluid outlet flange
S	1 in. standard pipe flange
T	PTFE gasket
U	Flat washer
V	Nut
W	Lock washer
X	Bolt

1 Torque to 10-15 ft-lb (14-20 N•m). Do not over-torque.

FIG. 5. Flange connections (plastic pumps only, 1050P, 1050C, and 1050F models)

Fluid Pressure Relief Valve

Some systems may require installation of a pressure relief valve at the pump outlet to prevent overpressurization and rupture of the pump or hose.

Thermal expansion of fluid in the outlet line can cause overpressurization. Thermal expansion can occur when using long fluid lines exposed to sunlight or ambient heat, or when pumping from a cool to a warm area (for example, from an underground tank).

Overpressurization also can occur if the Husky pump is used to feed fluid to a piston pump, and the intake valve of the piston pump does not close, causing fluid to back up in the outlet line.

FIG. 6 shows Fluid Pressure Relief Kit 238428 for aluminum pumps. Use Fluid Pressure Relief Kit 112119, not shown, for plastic pumps.

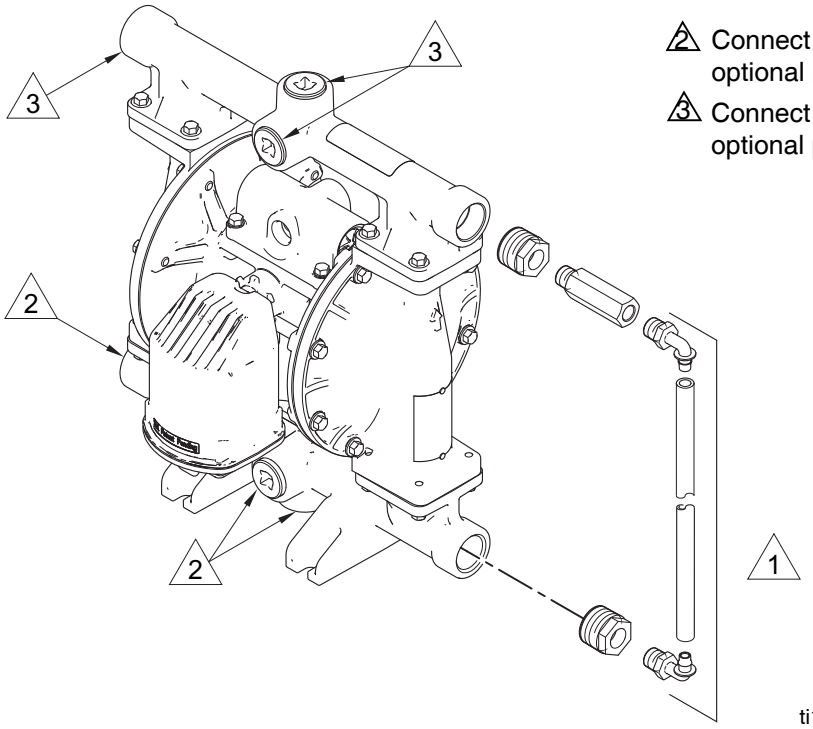
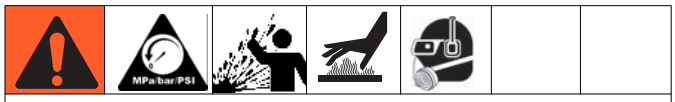


FIG. 6. Fluid pressure relief kit (Aluminum pumps only, 1050A models)

Operation

Pressure Relief Procedure



Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing.

1. Shut off the air supply to the pump.
2. Open the dispensing valve, if used.
3. Open the fluid drain valve to relieve fluid pressure. Have a container ready to catch the drainage.

Flush the Pump Before First Use

The pump was tested in water. If water could contaminate the fluid you are pumping, flush the pump thoroughly with a compatible solvent. See **Flushing and Storage**, page 17.

Tighten Fasteners Before Setup

Before using the pump for the first time, check and retorque all external fasteners. Follow **Torque Instructions**, page 18. After the first day of operation, retorque the fasteners.

Starting and Adjusting the Pump

1. Be sure the pump is properly grounded. Refer to **Grounding** on page 9.
2. Check fittings to be sure they are tight. Use a compatible liquid thread sealant on male threads. Tighten fluid inlet and outlet fittings securely.
3. Place the suction tube (if used) in fluid to be pumped.

NOTE: If fluid inlet pressure to the pump is more than 25% of outlet working pressure, the ball check valves will not close fast enough, resulting in inefficient pump operation.

4. Place the end of the fluid hose into an appropriate container.
5. Close the fluid drain valve.
6. Back out the air regulator knob, and open all bleed-type master air valves.
7. If the fluid hose has a dispensing device, hold it open.
8. *Pumps with runaway protection:* Enable the prime/flush function by pushing the prime/flush button on the DataTrak.
9. Slowly increase air pressure with the air regulator just until the pump starts to cycle. Allow the pump to cycle slowly until all air is pushed out of the lines and the pump is primed.

NOTE: Use lowest possible air pressure to prime, just enough to cycle the pump. If the pump does not prime as expected, turn air pressure **DOWN.**

NOTICE

When replacing Husky 1040s: The Husky 1050 operates more efficiently than did the 1040. **Reduce** air inlet pressure by approximately **20 percent** to maintain an equivalent fluid output.

10. If you are flushing, run the pump long enough to thoroughly clean the pump and hoses.

11. Close the dispensing valve, if used.

12. Close the bleed-type master air valve.

13. *Pumps with runaway protection:* Disable the prime/flush function by pushing the prime/flush button on the DataTrak.

DataTrak Operation

See DataTrak manual 313840 for all DataTrak information and parts, including detailed operation instructions.

Pump Shutdown

At the end of the work shift and before you check, adjust, clean or repair the system, follow **Pressure Relief Procedure**, page 16.

Maintenance

Maintenance Schedule

Establish a preventive maintenance schedule, based on the pump's service history. Scheduled maintenance is especially important to prevent spills or leakage due to diaphragm failure.

Lubrication

The pump is lubricated at the factory. It is designed to require no further lubrication for the life of the pump. There is no need to add an inline lubricator under normal operating conditions.

Tighten Threaded Connections

Before each use, check all hoses for wear or damage and replace as necessary. Check to be sure all threaded connections are tight and leak-free. Check fasteners. Tighten or retorque as necessary. Although pump use varies, a general guideline is to retorque fasteners every two months. See **Torque Instructions**, page 18.

Flushing and Storage

- Flush before fluid can dry in the equipment, at the end of the day, before storing, and before repairing equipment.
- Flush at the lowest pressure possible. Check connectors for leaks and tighten as necessary.
- Flush with a fluid that is compatible with the fluid being dispensed and the equipment wetted parts.

Flush the pump often enough to prevent the fluid you are pumping from drying or freezing in the pump and damaging it. Use a compatible solvent.

Always flush the pump and relieve the pressure before storing it for any length of time.

Torque Instructions

NOTE: Fluid cover and manifold fasteners have a thread-locking adhesive patch applied to the threads. If this patch is excessively worn, the fasteners may loosen during operation. Replace screws with new ones or apply medium-strength (blue) Loctite or equivalent to the threads.

If fluid cover or manifold fasteners have been loosened, it is important to torque them using the following procedure to improve sealing.

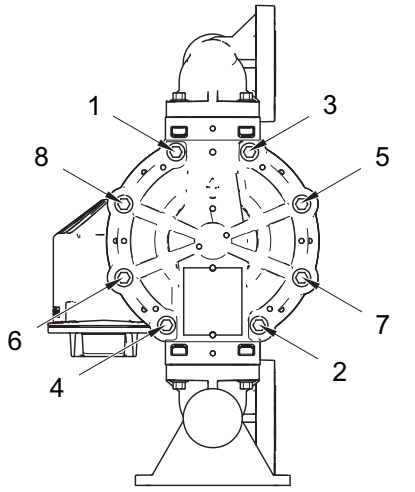
NOTE: Always completely torque fluid covers before torquing manifolds.

Start all fluid cover screws a few turns. Then turn down each screw just until head contacts cover. Then turn each screw by 1/2 turn or less working in a crisscross pattern to specified torque. Repeat for manifolds.

Fluid cover and manifold fasteners:
90 in-lb (10.2 N•m)

Retorque the air valve fasteners (V) in a crisscross pattern to specified torque.

Plastic center sections: 55 in-lb (6.2 N•m)
Metal center sections: 80 in-lb (9.0 N•m)



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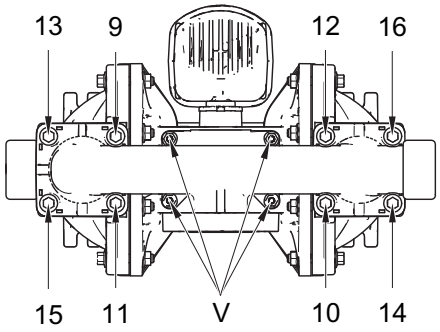

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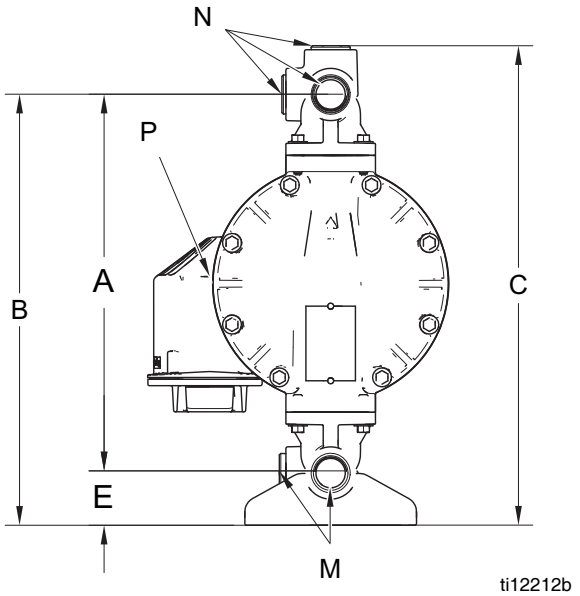
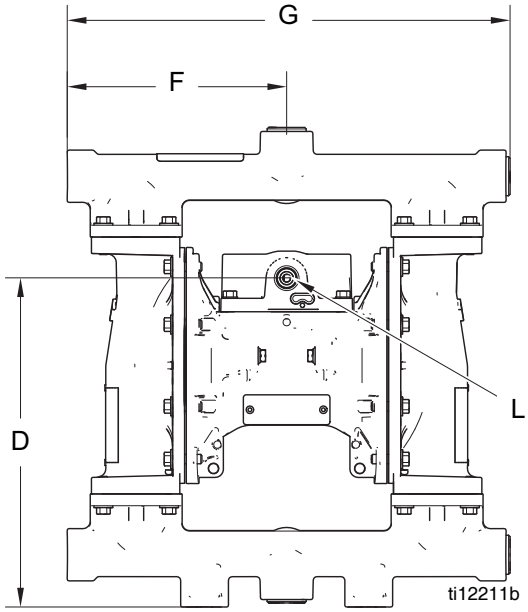
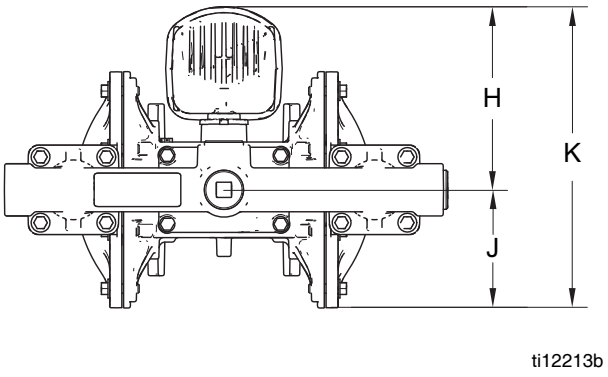
FIG. 7. Torque sequence

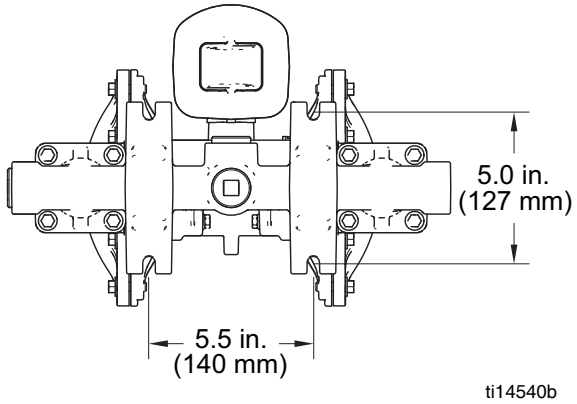
Dimensions and Mounting

Aluminum (1050A)





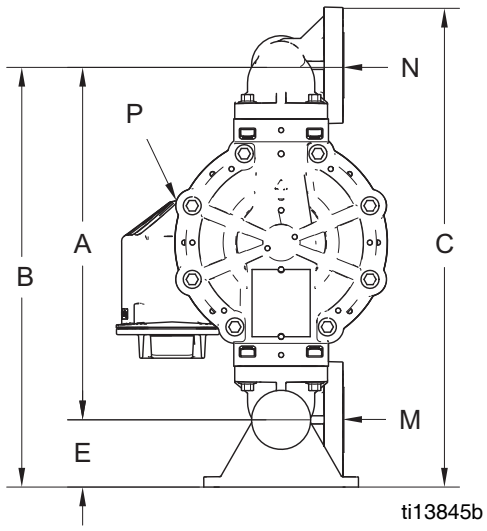


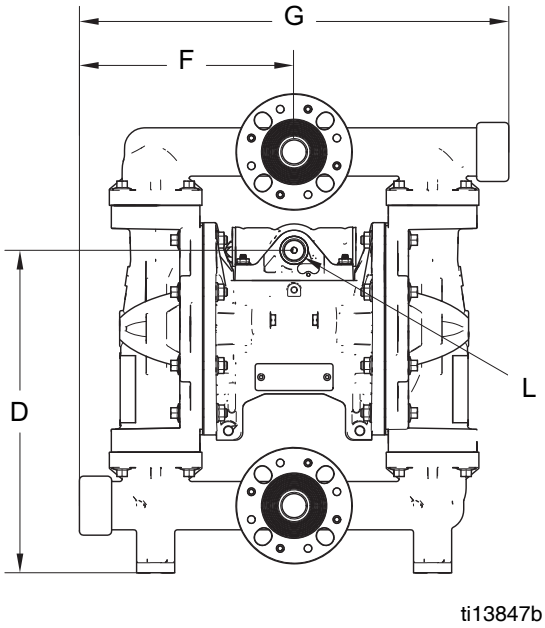


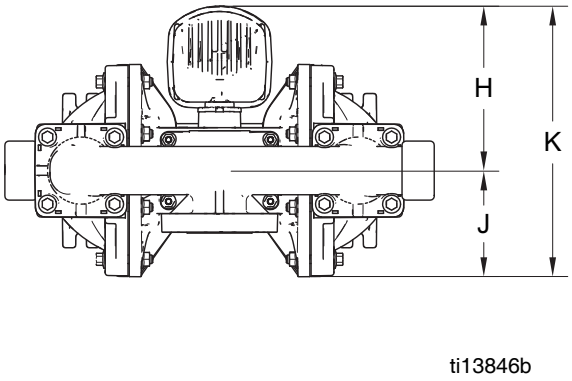
A ..... 12.7 in. (323 mm)
B ..... 14.4 in. (366 mm)
C ..... 15.9 in. (404 mm)
D ..... 10.9 in. (277 mm)
E ..... 1.8 in. (46 mm)
F..... 7.3 in. (185 mm)
G ..... 14.7 in. (373 mm)
H ..... 6.2 in. (158 mm)

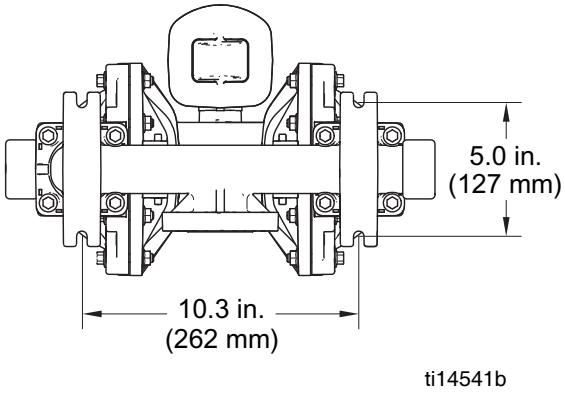
J ..... 3.9 in. (99 mm)
K..... 10.2 in. (258 mm)
L ..... 1/2 npt(f) air inlet
M .... 1 in. npt(f) or 1 in. bspt fluid inlet ports (4)
N..... 1 in. npt(f) or 1 in. bspt fluid outlet ports (4)
P ..... 3/4 npt(f) air exhaust port

Polypropylene (1050P), Conductive Polypropylene (1050C) and PVDF (1050F)









A ..... 13.2 in. (335 mm)

B ..... 15.7 in. (399 mm)

C ..... 17.8 in. (452 mm)

D ..... 12.0 in. (305 mm)

E..... 2.5 in. (63.5 mm)

F..... 8.0 in. (203 mm)

G ..... **Center Flange:** 16.0 in. (406 mm)
End Flange: 15.2 in. (386 mm)

H ..... 6.2 in. (158 mm)

J ..... 3.9 in. (99 mm)

K..... 10.2 in. (258 mm)

L ..... 1/2 npt(f) air inlet

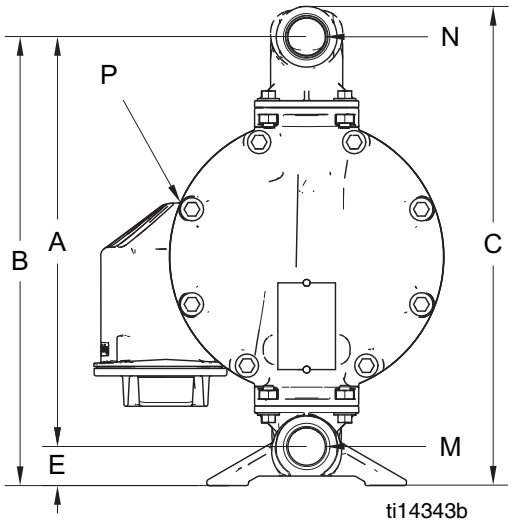
M .... 1 in. ANSI/DIN flange

N..... 1 in. ANSI/DIN flange

P ..... 3/4 npt(f) air exhaust port

NOTE: Listed dimensions are accurate for both center and end flange models, except where noted.

Hastelloy (1050H) and Stainless Steel (1050S)



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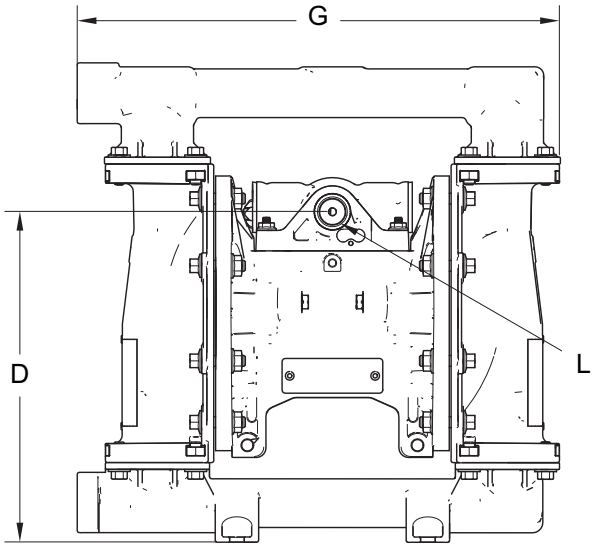

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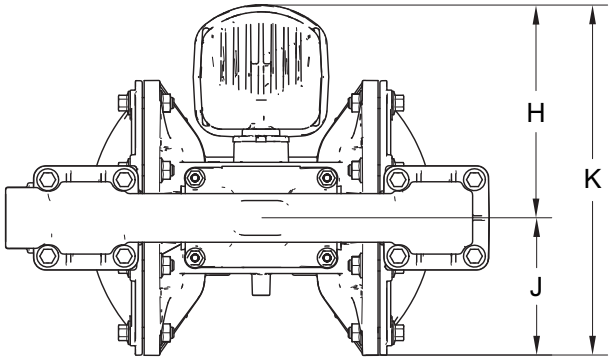

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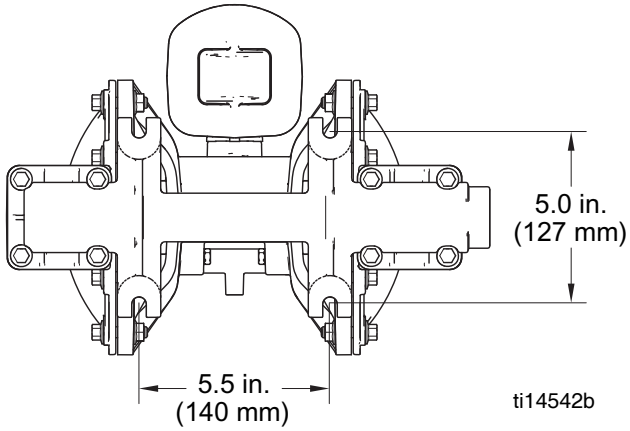

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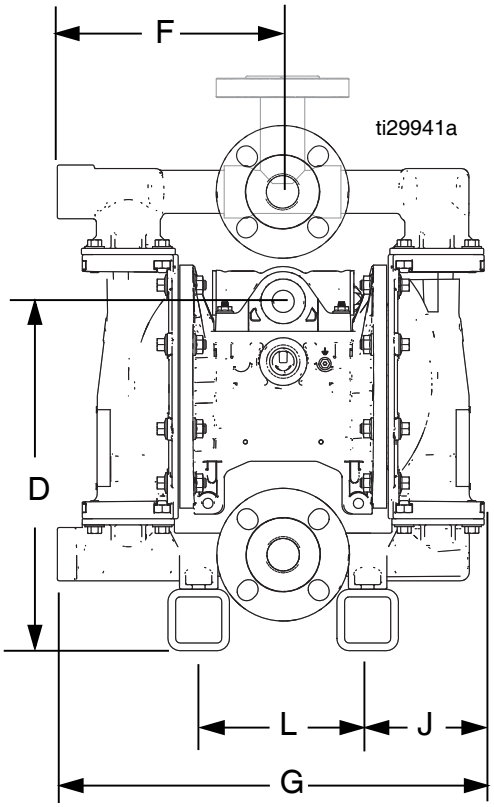
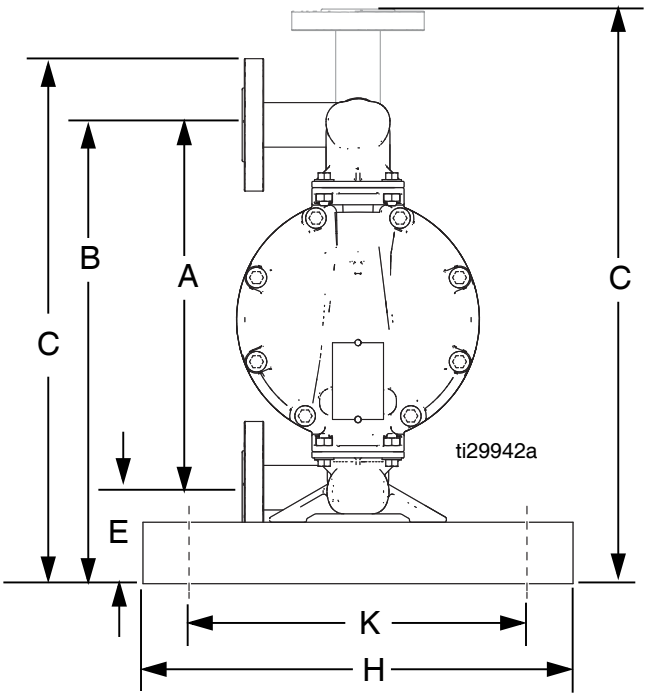
A ..... 11.8 in. (300 mm)
B ..... 12.9 in. (328 mm)
C ..... 13.7 in. (348 mm)
D ..... 9.5 in. (241 mm)
E ..... 1.1 in. (28 mm)
G ..... 13.9 in. (353 mm)
H ..... 6.2 in. (158 mm)
J ..... 4.0 in. (102 mm)
K ..... 10.2 in. (258 mm)

L ..... 1/2 npt(f) air inlet
M .... 1 in. npt(f) or 1 in. bspt fluid inlet ports (4)
N..... 1 in. npt(f) or 1 in. bspt fluid outlet ports (4)
P ..... 3/4 npt(f) air exhaust port

Stainless steel (1050S) with center flange manifold





A ..... 11.8 in. (300 mm)

B ..... 14.9 in. (378 mm)

C*.... 17.1/18.7 in. (434/475 mm)

D ..... 11.5 in. (292 mm)

E..... 3.1 in. (79 mm)

F..... 7.35 in. (187 mm)

G ..... 13.9 in. (353 mm)

H ..... 14.0 in. (356 mm)

J..... 3.8 in. (97 mm)

K ..... 11.0 in. (279 mm)

L..... 5.5 in. (140 mm)

*Dimension C lists values for outlet port in both horizontal and vertical positions.

Performance Charts

Test Conditions: Pump tested in water with inlet submerged.

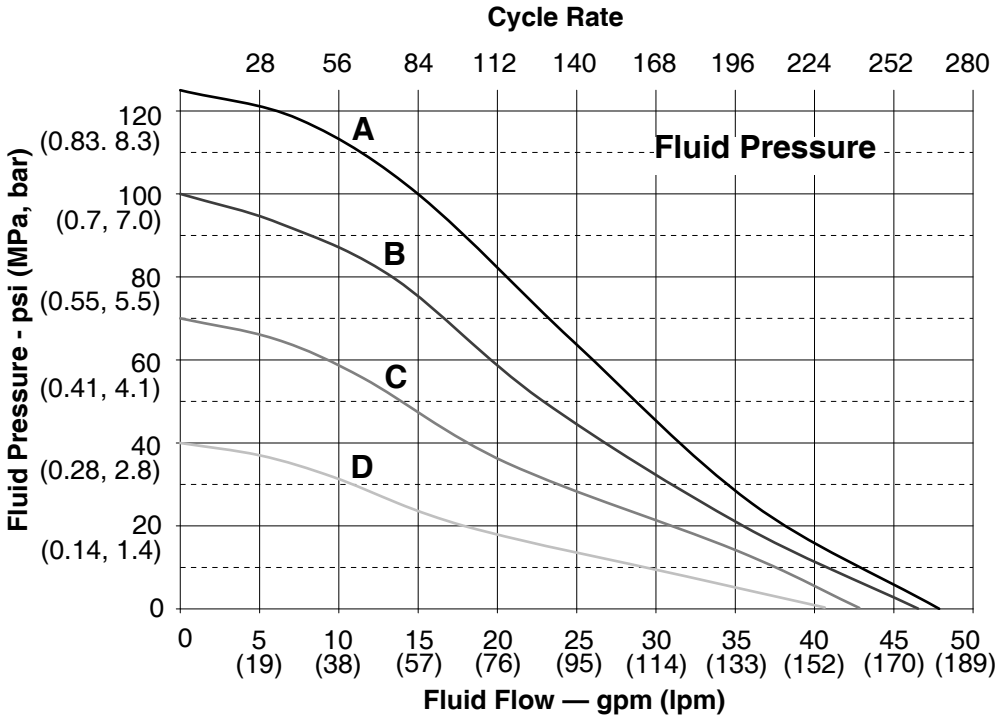
Operating Air Pressure

A
125 psi (0.83 MPa, 8.3 bar)

B
100 psi (0.7 MPa, 7.0 bar)

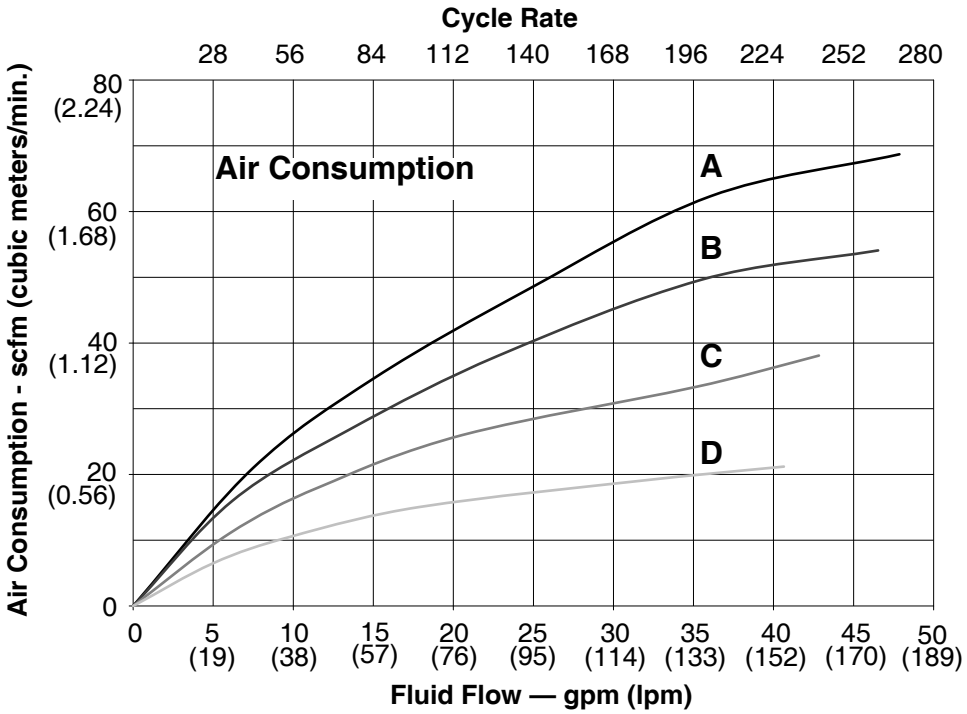
C
70 psi (0.48 MPa, 4.8 bar)

D
40 psi (0.28 MPa, 2.8 bar)



How to Read the Charts

1. Locate fluid flow rate along bottom of chart.
2. Follow vertical line up to intersection with selected operating air pressure curve.
3. Follow left to scale to read **fluid outlet pressure** (top chart) or **air consumption** (bottom chart).



Technical Data

Maximum fluid working pressure	125 psi (0.86 MPa, 8.6 bar)
Air pressure operating range	20-125 psi (0.14-0.86 MPa, 1.4-8.6 bar)
Fluid displacement per cycle	0.17 gal. (0.64 liters)
Air consumption at 70 psi (0.48 MPa, 4.8 bar), 20 gpm (76 lpm)	25 scfm
Maximum values with water as media under submerged inlet conditions at ambient temperature:	
Maximum air consumption	67 scfm
Maximum free-flow delivery	50 gpm (189 lpm)
Maximum pump speed	280 cpm
Maximum suction lift (varies widely based on ball/seat selection and wear, operating speed, material properties, and other variables)	16 ft (4.9 m) dry, 29 ft (8.8 m) wet
Maximum size pumpable solids	1/8 in. (3.2 mm)
Flooded volume	0.375 gal (1.42 liters)
Recommended cycle rate for continuous use	93 - 140 cpm
Recommended cycle rate for circulation systems	20 cpm
Sound Power*	
at 70 psi (0.48 MPa, 4.8 bar) and 50 cpm	78 dBa
at 100 psi (0.7 MPa, 7.0 bar) and full flow	90 dBa
Sound Pressure**	
at 70 psi (0.48 MPa, 4.8 bar) and 50 cpm	84 dBa
at 100 psi (0.7 MPa, 7.0 bar) and full flow	96 dBa
Fluid temperature range	see page 25
Air inlet size	1/2 npt(f)
Fluid inlet size	
Aluminum (1050A), Hastelloy (1050H) or Stainless Steel (1050S)	1 in. npt(f) or 1 in. bspt
Conductive Poly (1050C), Polypropylene (1050P), PVDF (1050F) or Stainless Steel (1050S) with flanges	1 in. raised face ANSI/DIN flange
Fluid outlet size	
Aluminum (1050A), Hastelloy (1050H) or Stainless Steel (1050S)	1 in. npt(f) or 1 in. bspt
Conductive Poly (1050C), Polypropylene (1050P), PVDF (1050F) or Stainless Steel (1050S) with flanges	1 in. raised face ANSI/DIN flange
Weight	
Aluminum (1050A)	23 lb. (10.5 kg)
Conductive Polypropylene (1050C) and Polypropylene (1050P)	18 lb. (8.2 kg)
Hastelloy	41 lb. (18.6 kg)
PVDF (1050F)	26 lb (11.8 kg)
Stainless Steel (1050S)	
with conductive polypropylene center	36.3 lb. (16.5 kg)
with polypropylene center	37.3 lb. (16.9 kg)
with aluminum center	41.4 lb. (18.8 kg)
with aluminum center and sst center flange manifolds	60.0 lb. (27.2 kg)
Wetted parts include material(s) chosen for seat, ball, and diaphragm options, **plus** the pump's material of construction	
1050A	Aluminum
1050H	Hastelloy
1050C and 1050P	Polypropylene
1050F	PVDF
1050S	Stainless Steel

Non-wetted external parts	
Aluminum (1050A)	aluminum, coated carbon steel
Hastelloy (1050H)	hastelloy, stainless steel, polypropylene or aluminum (if used in center section)
Plastic (1050P, 1050C, and 1050F)	tion)
Stainless Steel (1050S)	stainless steel, polypropylene stainless steel, polypropylene or aluminum (if used in center section)
Reference Information	
Maximum Storage Time (varies with conditions)	2 years
Maximum Lifetime (varies with operating conditions and maintenance)	10 years
Power Efficiency Factor (varies based on pump configuration, operating parameters, and material)	1.61 gal. air consumed/1 gal. fluid pumped at 70 psi (1.61 liter air consumed/1 liter fluid pumped at 4.8 bar)

** Sound power measured per ISO-9614-2.*
*** Sound pressure was tested 3.28 ft (1 m) from equipment.*

All trademarks mentioned in this manual are the property of their respective owners.

Fluid Temperature Range

NOTICE

Temperature limits are based on mechanical stress only. Certain chemicals will further limit the fluid temperature range. Stay within the temperature range of the most-restricted wetted component. Operating at a fluid temperature that is too high or too low for the components of your pump may cause equipment damage.

	Fluid Temperature Range					
	Aluminum, Hastelloy, or Stainless Steel Pumps		Polypropylene or Conductive Polypropylene Pumps		PVDF Pumps	
Diaphragm/Ball/Seat Material	Fahrenheit	Celsius	Fahrenheit	Celsius	Fahrenheit	Celsius
Acetal (AC)	10° to 180°F	-12° to 82°C	32° to 150°F	0° to 66°C	10° to 180°F	-12° to 82°C
Buna-N (BN)	10° to 180°F	-12° to 82°C	32° to 150°F	0° to 66°C	10° to 180°F	-12° to 82°C
FKM Fluoroelastomer (FK)*	-40° to 275°F	-40° to 135°C	32° to 150°F	0° to 66°C	10° to 225°F	-12° to 107°C
Geolast® (GE)	-40° to 150°F	-40° to 66°C	32° to 150°F	0° to 66°C	10° to 150°F	-12° to 66°C
Polychloroprene overmolded diaphragm (CO) or Polychloroprene check balls (CR or CW)	0° to 180°F	-18° to 82°C	32° to 150°F	0° to 66°C	10° to 180°F	-12° to 82°C
Polypropylene (PP)	32° to 150°F	0° to 66°C	32° to 150°F	0° to 66°C	32° to 150°F	0° to 66°C
PTFE overmolded diaphragm (PO)	40° to 180°F	4° to 82°C	40° to 150°F	4° to 66°C	40° to 180°F	4.0° to 82°C
PTFE check balls or two-piece PTFE/EPDM diaphragm (PT)	40° to 220°F	4° to 104°C	40° to 150°F	4° to 66°C	40° to 220°F	4° to 104°C
PVDF (PV)	10° to 225°F	-12° to 107°C	32° to 150°F	0° to 66°C	10° to 225°F	-12° to 107°C
Santoprene® (SP)	-40° to 180°F	-40° to 82°C	32° to 150°F	0° to 66°C	10° to 180°F	-12° to 82°C
TPE (TP)	-20° to 150°F	-29° to 66°C	32° to 150°F	0° to 66°C	10° to 150°F	-12° to 66°C

** The maximum temperature listed is based on the ATEX standard for T4 temperature classification. If you are operating in a non-explosive environment, FKM fluoroelastomer's maximum fluid temperature in aluminum or stainless steel pumps is 320°F (160°C).*

Graco Standard Husky Pump Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of 12 months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

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For patent information, see www.graco.com/patents.

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Phone: 612-623-6921 **or Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

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Graco reserves the right to make changes at any time without notice.

Original instructions. This manual contains English. MM 312877

Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA

www.graco.com
Revision Y, June 2019

5

Instructions-Parts

3:1 Mini Fire-Ball® 225 Oil Pump

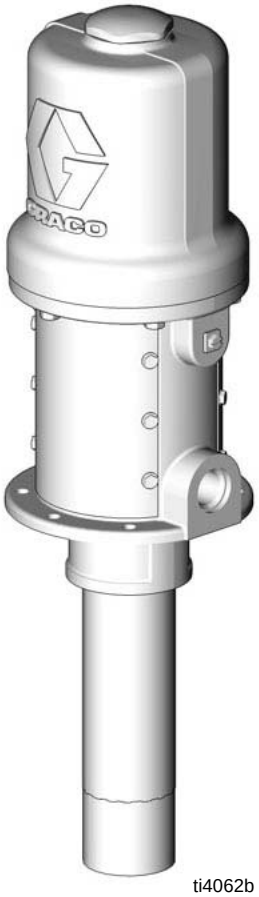
309868F

EN

For non-corrosive and non-abrasive oils and lubricants only. For professional use only.

Not for use in explosive atmospheres.

Important Safety Instructions
Read all warnings and instructions in this manual. Save these instructions.



ti4062b

Model No. 246775, Series B, Universal
Model No. 248097, Series B, Variable Length

540 psi (3.7 MPa, 37 bar) Maximum Working Pressure
180 psi (1.24 MPa, 12.4 bar) Maximum Air Input Pressure

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Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risk. Refer back to these warnings. Additional, product-specific warnings may be found throughout the body of this manual where applicable.

⚠ WARNING

Equipment Misuse Hazard

Misuse can cause death or serious injury.

- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not alter or modify equipment.
- Use equipment only for its intended purpose. Call your Graco distributor for information.
- For professional use only.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not use hoses to pull equipment.
- Comply with all applicable safety regulations.

PRESSURIZED EQUIPMENT HAZARD

Fluid from the gun/dispense valve, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.

- Follow **Pressure Relief Procedure** in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.

SKIN INJECTION HAZARD

High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not point gun at anyone or at any part of the body.
- Do not put your hand over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Do not spray without tip guard and trigger guard installed.
- Engage trigger lock when not spraying.
- Follow **Pressure Relief Procedure** in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.

⚠ WARNING

MOVING PARTS HAZARD

Moving parts can pinch or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** in this manual. Disconnect power or air supply.

TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDS's to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in work area can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords or turn lights on or off when flammable fumes are present.
- Ground equipment and conductive objects. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- If there is static sparking or you feel a shock, **stop operation immediately.** Do not use equipment until you identify and correct the problem.

Installation

The typical stationary installation shown in FIG. 1 is only a guide for selecting and installing a pump. It is not an actual system design. Contact your Graco distributor for assistance in designing a system to meet your needs.

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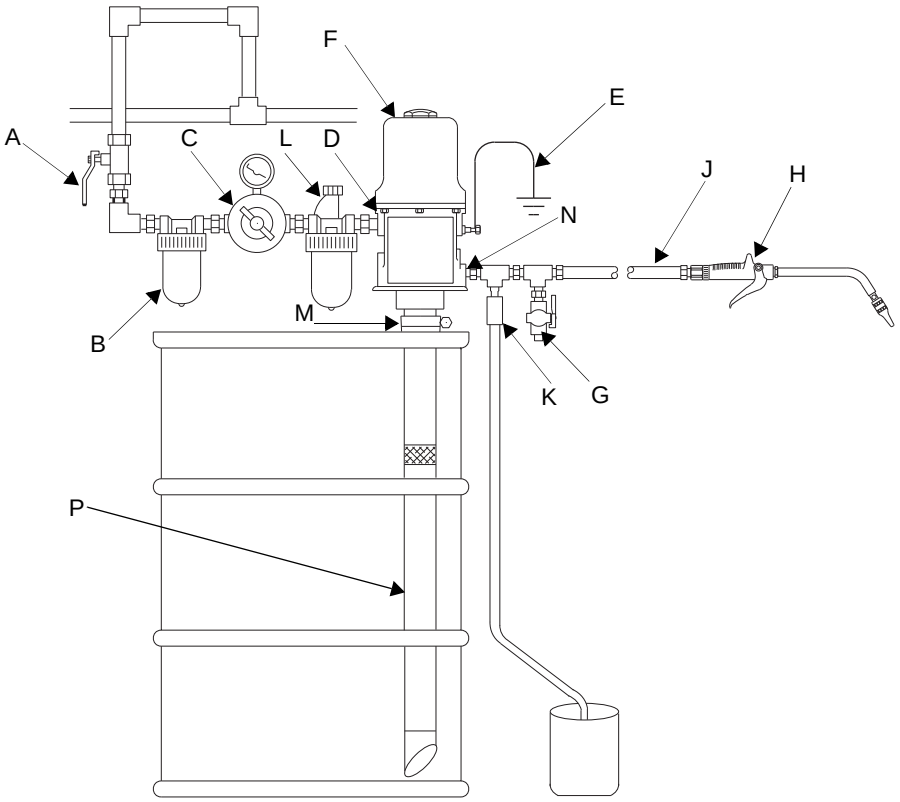


Key

- **A** Bleed-type master air valve
- **B** Air line filter
- **C** Air regulator and gauge
- **D** Air inlet
- **E** Ground wire
- **F** Pump
- **G** Drain valve
- **H** Dispensing valve
- **J** Fluid hose
- **K** Thermal relief kit (235998)
- **L** Air line lubricator
- **M** Bung adapter
- **N** Fluid outlet
- **P** Extension tube

FIG. 1

Mounting the Pump

Mount the pump securely so that it cannot move during operation. Failure to do so could result in personal injury or equipment damage.

- Select a location that allows the operator easy access to the pump and air controls, sufficient room to change supply containers, and a secure mounting platform.
- If you are mounting the pump directly on the supply container, be sure it is positioned so the pump's intake tube is no more than ***1 in. (25 mm)*** from the bottom of the container. Mount the pump to the cover or other suitable mounting device.

To prevent damage to the pump, remove sediment from the bottom of the container before installing a pump in an existing container.

Grounding

Proper grounding is essential to maintaining a safe system.

To reduce the risk of static sparking, ground the pump. Check local electrical codes for detailed grounding instructions for your area and equipment type. Be sure the following equipment is properly grounded:

- *Pump:* See FIG. 2.
- *Air and fluid hoses*: Use only electrically conductive hoses.
- *Air compressor:* Follow manufacturer's recommendations.
- *Dispensing valve:* Obtain grounding through connection to a properly grounded fluid hose and pump.
- *Fluid supply container:* Follow your local code.
- *Object being lubricated:* Follow your local code.
- *Any pails used when flushing:* Use only metal, grounded pails when flushing. Make firm metal-to-metal contact between a metal part of the dispensing valve and the pail. Use the lowest possible pressure.

To maintain grounding continuity when flushing or relieving pressure, always hold a metal part of the valve firmly to the side of a grounded metal pail, then trigger the valve.

To ground the pump, remove the ground screw (Z) and insert through the eye of the ring terminal at end of ground wire, (Y). Fasten the ground screw back onto the pump and tighten securely. Connect the other end of the ground wire to a true earth ground. See FIG. 2. To order a ground wire and clamp order Part No. 222011.

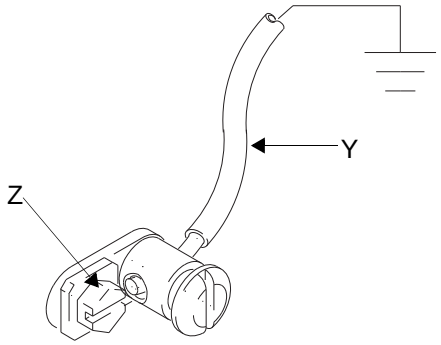
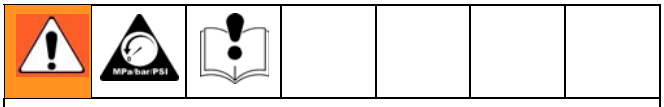


FIG. 2

Operation

See FIG. 1 to identify references shown in parentheses, i.e., (A).



This equipment stays pressurized until pressure is manually relieved. Read PRESSURIZED EQUIPMENT HAZARD warnings on page 2.

Maximum working pressure of all components in the system may not be the same. To reduce risk of overpressurizing any component, be sure you know the maximum working pressure of each component. Never exceed the maximum working pressure of the lowest rated component in the system. Overpressurizing any component can result in rupture, fire, explosion, property damage, and serious injury.

To determine the fluid output pressure using the air regulator reading, multiply the ratio of the pump by the air pressure shown on the regulator gauge. For example:

3:1 ratio x 100 psi air = 300 psi fluid output

Limit the air pressure to the pump so that no air line or fluid line component is overpressurized.

Pressure Relief Procedure

1. Close the pump air regulator (C) and the bleed-type master air valve (A), required in your system.
2. Hold a metal part of the dispensing valve (H) firmly to a grounded metal waste container, and trigger the valve to relieve fluid pressure.

Starting and Adjusting the Pump

1. With the air regulator (C) closed, open the bleed-type master air valve (A).
2. Open the dispensing valve (H) into a grounded metal waste container, making firm metal-to-metal contact between the container and valve.
3. Open the pump air regulator (C) slowly, just until the pump is running. When the pump is primed and all air has been pushed out of the lines, close the dispensing valve (H).

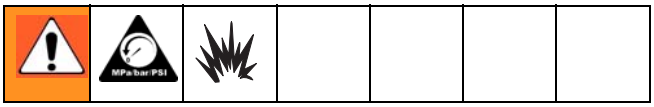
NOTE: When the pump is primed, and with sufficient air supplied, the pump starts when the dispensing valve (H) is opened, and shuts off when it is closed.

4. Adjust the air regulator (C) until you get sufficient flow from dispensing valve (H). Always run the pump at the lowest pressure necessary to get the desired results. Do not exceed the maximum working pressure of any component in the system.

CAUTION
Never allow the pump to run dry of the fluid being pumped. A dry pump will quickly accelerate to a high speed, possibly causing pump damage. It may also get very hot.

5. If your pump accelerates quickly or is running too fast, stop it immediately and check the fluid supply. If the supply container is empty and air has been pumped into the lines, prime the pump and lines with fluid, or flush it and leave it filled with a compatible solvent. Be sure to eliminate all air from the fluid lines.
6. Read and follow the instructions supplied with each component in your system.
7. If the pump will be unattended for any period of time, if there is an air supply interruption, or at the end of the work shift, shut off the system and always **relieve the pressure**.

Troubleshooting



Check all other possible problems and solutions before disassembling the pump. Before you troubleshoot problems using the table below, relieve the pressure and disconnect the pump fluid line. If the pump starts when the air is turned on again, the fluid line, dispensing valve, etc., is clogged.

Problem	Cause	Solution
Pump fails to operate	Inadequate air supply pressure or restricted air lines	Increase air supply; clear
	Closed or clogged dispensing valve	Open; clear
	Clogged fluid lines, hoses, valve, etc.	Clear
	Damaged air motor	Service air motor
	Exhausted fluid supply	Refill and reprime or flush
Continuous air exhaust	Worn or damaged air motor gasket, packing, seal, etc.	Service air motor
Erratic pump operation	Exhausted fluid supply	Refill and reprime or flush
Pump operates, but output low on down stroke	Held open or worn intake valve or piston packings	Clear; service
Pump operates, but output low on up stroke	Held open or worn piston ball or piston packings	Clear; service
Pump operates, but output low on both strokes	Inadequate air supply pressure or restricted air lines	Increase air supply; clear
	Closed or clogged valves	Open; clean
	Exhausted fluid supply	Refill and reprime or flush
	Clogged fluid lines, hoses, valves, etc.	Clear

Air Motor and Throat Service

Before You Start

- Be sure you have all necessary parts on hand. Pump Repair Kit 246918 includes repair parts for the pump and air motor. Use all the parts in the kit for the best results. Parts included in the kit are marked with one asterisk, for example (17*), in the text and drawings. See **Parts**, page 14.
- Two accessory tools should be used: **Padded Pliers, 248198,** are used to grip the trip rod without damaging its surface. **Gauge, 15E796**, is used to ensure the proper clearance between the poppets and seat of the transfer valve.

Disassembly

1. Flush the pump, and relieve the pressure.

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 6.

2. Disconnect the ground wire from the grounding screw (28a), disconnect the hoses, remove the pump from its mounting, and clamp the air motor base in a vise horizontally by closing the vice jaws on the flange.
3. Use a strap wrench on the fluid cylinder (105) to screw it out of the air motor base (28). See **Parts,** page 14.
4. Pull the displacement rod (29) down as far as it will go. See FIG. 3.
5. Using wrenches on the flats of the displacement rod (29) and on the flats of the fluid piston (107), unscrew the fluid piston from the displacement rod. Remove the ball (100) from the end of the displacement rod, and remove the packing o–ring (102*) from the fluid piston. See **Parts,** page 14.
6. Clamp the air motor upright in the vice by closing the vice jaws below the flange.
7. Unscrew the cylinder cap nut (39) from the top of the air motor cylinder (35).
8. Pull up on the cylinder cap nut (39) to expose the trip rod, grasp the trip rod with padded pliers *(Part No. 248198)*, and unscrew the cylinder cap nut from the trip rod.

CAUTION

Do not damage the plated surface of the trip rod (40). Damaging the surface of the trip rod can result in erratic air motor operation. Use the special padded pliers to grasp the rod.

9. Remove the six screws (9) holding the air motor cylinder (35) to the air motor base (28), and carefully pull the cylinder straight up off of the piston (34).

CAUTION

To avoid damaging the cylinder wall, lift the cylinder straight up off of the piston. Never tilt the cylinder while you are removing it.

10. Pull the air motor piston/displacement rod assembly (29, 34) clear of the air motor base (28) by pulling up on the air motor piston.
11. Remove the o–rings (13*, 103*) and u–cup packing (16*) from the air motor base (28). Use needle–nose pliers to remove the u–cup packing from the bottom of the air motor base.

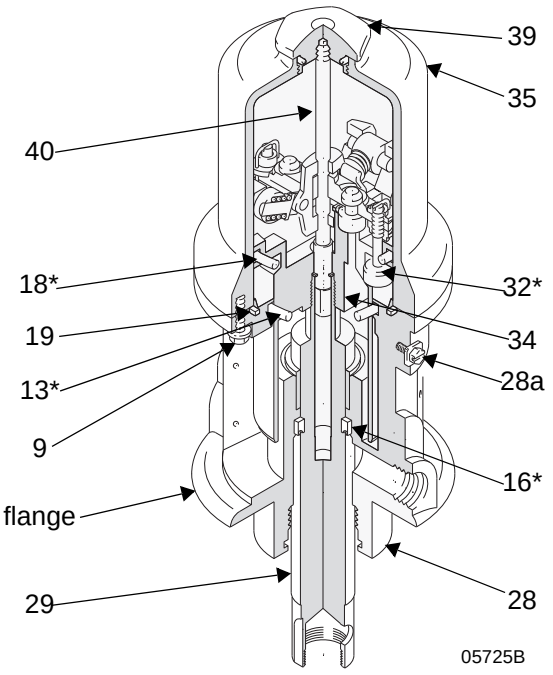


FIG. 3

12. Remove the o–ring (18*) from the air motor piston (34).

13. Clamp the displacement rod upright in the vice by closing the vice jaws on the flats of the displacement rod.

14. Use a screwdriver to push down on the trip rod yoke (23) to snap the toggle assemblies (L) down. See FIG. 4.

15. Remove the lockwires (25*) from the adjusting nuts (24*) of the transfer valves. Screw the top nuts off. Screw the valve poppet (32*) stems out of the grommets (17*) and bottom nuts (24*). Take the valve poppets off of the stems, and squeeze them firmly to check for cracks.

16. Grip the toggle arms (38) with pliers. Compress the springs (20) and swing the toggle assembly (L) up and away from the piston lugs (M), and remove the assembly. Check that the valve actuator (27) is supported by the spring clips (26), but slides easily into them. See Fig. 4.

To reduce the risk of pinching or amputating your fingers, always keep fingers clear of the toggle assemblies (L).

17. Remove the trip rod yoke (23), actuator (27), and trip rod (40). Check the exhaust valve poppets (31*) for cracks.

To remove the exhaust valve poppets (31*), stretch them out and cut the end off with a sharp knife.

Clean and Service

1. Clean all the parts carefully in a compatible solvent and inspect for wear or damage. Use all the repair kit parts during reassembly, and replace other parts as necessary.

2. Check the polished surfaces of the air motor piston (34), displacement rod (29), and cylinder wall (35) for scratches or wear. A scored rod will cause premature packing wear and leaking.

3. Lubricate all parts with a light weight, water-resistant grease.

Reassembly

1. Clamp the displacement rod (29) upright in the vice by closing the vice jaws on the flats of the displacement rod.

2. Pull the new exhaust valve poppets (31*) into the valve actuator (27), and clip off the top parts of the poppets (shown with dotted lines in the **Cutaway View** in Fig. 4).

3. Install the new grommets (17*) in the actuator (27), place the inlet valve poppets (32*) in the piston, and thread the bottom valve nuts (24*) onto the stems of the inlet valve poppets until there are a few threads left before the threads run out.

If you thread the valve nuts too far down onto the poppets, they will run off the threaded part of the poppets.

4. Grease heavily and place the trip rod (40) in the air motor piston (34), place the actuator (27) in the yoke (23), and place the well–greased actuator/yoke assembly in the piston, with the trip rod going through the center holes of the actuator and yoke and the stems of the inlet valve poppets (32*) going through the grommets (17*).

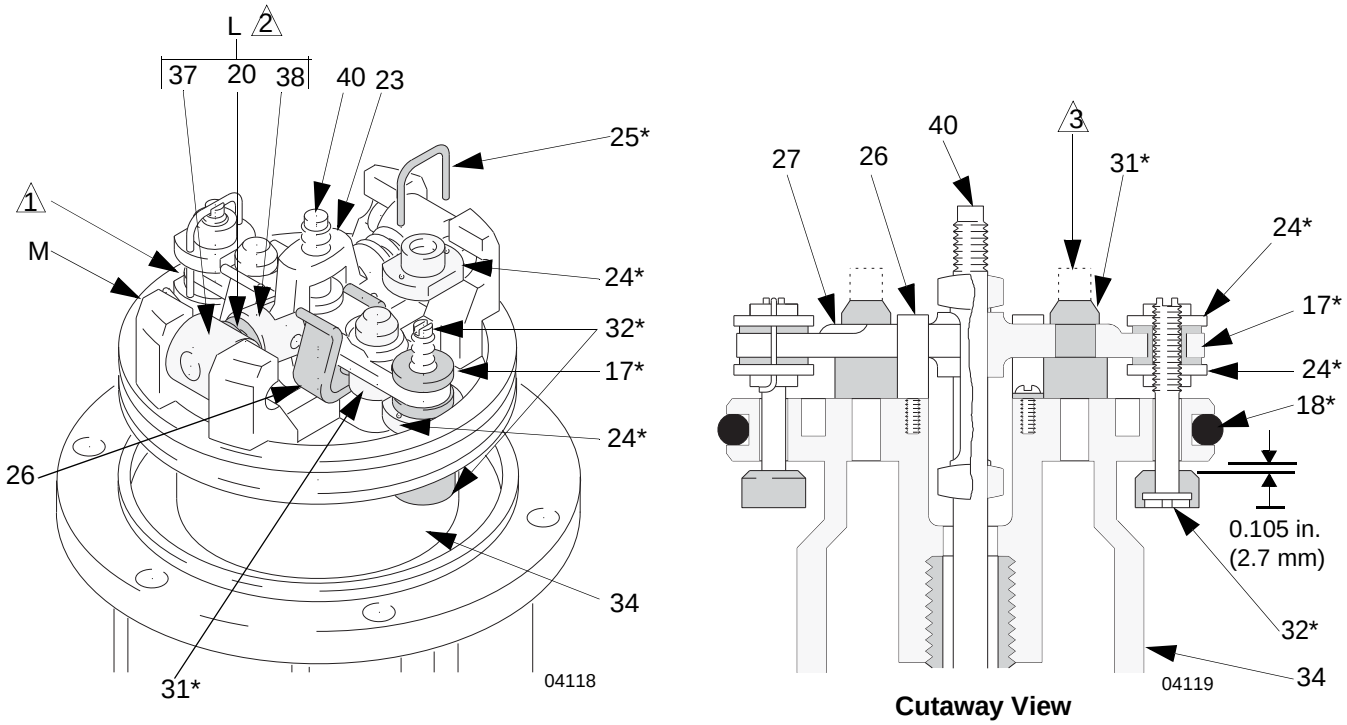
5. Thread the top valve nuts (24*) onto the stems of the inlet valve poppets (32*) until one thread of the inlet valve poppets is exposed above the valve nuts.

6. Install the toggle pins (36) in the yoke (23), place the toggle arm (38) ends of the toggle assembly (L) onto the toggle pins, and snap the pivot pin (37) ends of the toggle assembly into the piston lugs (M).

7. Measuring with the gauge *(Part No.15E796)*, create 0.105 in. (2.7 mm) of clearance between the inlet valve poppets (32*) and the piston seat when the inlet valve is open. See the **Cutaway View** in Fig. 4.

Adjust the distance between the inlet valve poppets and the piston seat by turning the top valve nuts (24*).

8. Tighten the bottom valve nuts (24*) by hand. The grommets (17*) should be slightly compressed.



Cutaway View

1 Turn wires up.

2 Push toggles (L) in and then up.

3 Cut off tops of poppets as indicated by dotted lines.

FIG. 4

CAUTION
Never re-use the old lock wires. They will get brittle and break easily from too much bending.

9. Align the holes in the valve nuts (24*) and the slots on the stems of the inlet valve poppets (32*). Drop the lock wires (25*) through the holes in the valve nuts and into the slots in the stems of the inlet valve poppets. Pull the lock wires down tightly, and bend the ends with pliers so that they cannot be pulled back out of the holes.

10. Take the assembly out of the vice so that you can move it around for steps 11 and 12.

11. Grease and install the new o–rings (13*, 18*, 103*).

12. Install the new u–cup packing (16*) through the bottom of the air motor base, with the lips facing toward the bottom of the pump.

13. Slide the displacement rod (29) down through the packings, and lower the air motor piston (34) into the air motor base (28).

14. Clamp the air motor upright in the vice by closing the vice jaws below the flange.

15. Carefully lower the air motor cylinder (35) straight down onto the piston assembly (34). Tighten the six screws (9) holding the air motor cylinder to the air motor base (28).

CAUTION
To avoid damaging the cylinder wall, lower the cylinder straight down onto the piston. Never tilt the cylinder as it is being lowered.

16. Pull the trip rod (40) so it is sticking up out of the air motor cylinder (35).

You may have to hold the unit upside down to shake the trip rod loose.

17. Grip the trip rod (40) with padded pliers, screw the cylinder cap nut (39) onto the trip rod, push the cylinder cap nut down, and screw it into the top of the cylinder.

CAUTION
Do not damage the plated surface of the trip rod (40). Damaging the surface of the trip rod can result in erratic air motor operation. Use the special padded pliers to grasp the rod.

18. Place the piston ball (100) in the displacement rod (29).

19. Clean the threads of the fluid piston (107), apply Loctite® to the threads, install the new packing o–ring (102*) on the fluid piston, and thread the fluid piston onto the displacement rod (29).

20. Clamp the flats of the fluid piston (107) in a vice, and torque the displacement rod (29) to the piston to 40 to 60 ft–lb (54 to 81 N•m).

21. Clamp the air motor base (28) in a vise horizontally by closing the vice jaws on the flange.

22. Use a strap wrench to screw the displacement pump cylinder (105) to the air motor base (28), and torque to 40 to 60 ft–lb (54 to 81 N•m).

23. Before remounting the pump, connect an air hose and run the air motor slowly, starting with just enough air pressure to make the air motor run, and make sure that it operates smoothly.

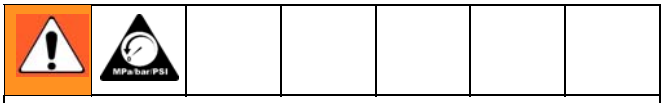
Never operate the pump with the warning plate (47) or the identification plate (46) removed. These plates protect your fingers from getting pinched or amputated by moving parts in the air motor.

24. Reconnect the ground wire before you resume regular pump operation.

Displacement Pump Service

Be sure you have all necessary parts on hand. **Pump Repair Kit 246918** includes repair parts for the pump and air motor. Use all of the parts in the kit for the best results. Parts included in the kit are marked with one asterisk, for example (13*), in the text and drawings. See **Parts,** page 14.

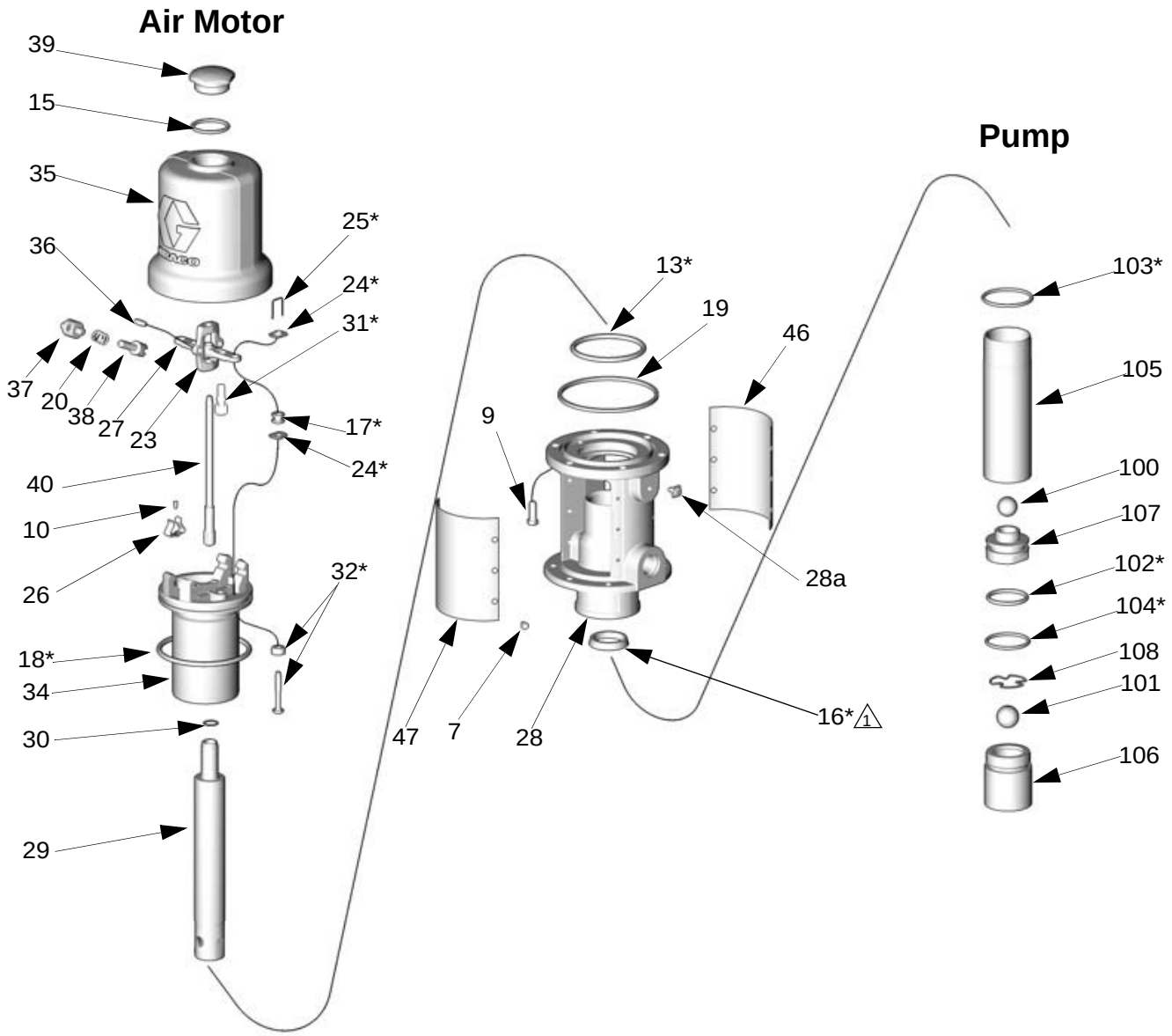
1. Flush the pump and **relieve the pressure.**



To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 6.

2. Disconnect the hoses, remove the pump from its mounting, and clamp the air motor base in a vise horizontally by closing the vice jaws on the flange.
3. Unscrew the intake valve housing (106) from the fluid cylinder (105). Disassemble the intake valve (see **Parts**, page 14). Clean and inspect the parts for wear or damage, and replace parts as needed. Be sure to check the o-ring (104*). Unless further intake valve service is needed, reassemble and reinstall, using liquid sealant on the male threads.
4. Use a strap wrench on the fluid cylinder (105) to screw it out of the air motor base (28). Carefully inspect the smooth inner surface of the cylinder for scoring or irregular surfaces. Such damage causes premature packing wear and leaking, so replace the part if it is damaged.
5. Using wrenches on the flats of the displacement rod (29) and on the flats of the fluid piston (107), unscrew the fluid piston from the displacement rod.
6. Take the piston ball (100) out of the displacement rod (29), and take the packing o-ring (102*) off of the fluid piston (107).
7. Clean and inspect the parts. Use all the repair kit parts during reassembly, and replace other parts as necessary.
8. Place the piston ball (100) in the displacement rod (29).
9. Install the new packing o-ring (102*) on the fluid piston (107).
10. Clamp the flats of the fluid piston (107) in a vice and torque the displacement rod (29) to the piston to 40 to 60 ft-lb (54 to 81 N•m).
11. Clamp the air motor base (28) in a vise horizontally by closing the vice jaws on the flange.
12. Use a strap wrench to screw the fluid cylinder (105) to the air motor base (28), and torque to 40 to 60 ft-lb (54 to 81 N•m).
13. If you disconnected the ground wire, reconnect it before you resume regular pump operation.

Parts



△1 Lips face down.

TI4016b

Model No. 246775, Series B, Universal
Model No. 248097, Series B, Variable Length

Air Motor

Ref. No.	Part No.	Description	Qty.
7	100078	SCREW, thread forming, hex head 8-32 x 3/8 in.	12
9	101578	CAPSCREW, hex head, 8-32 x 3/8 in.	6
10	118718	SCREW, machine	2
13*	113347	O-RING, buna-N	1
15	156698	O-RING, buna-N	1
16*	118106	PACKING, u-cup	1
17*	118107	GROMMET, lower valve	2
18*	118108	PACKING, o-ring	1
19	118109	PACKING, square	1
20	118111	SPRING, compression, helical	2
23	15C245	YOKE, rod, trip	1
24*	15C246	NUT, valve	4
25*	15C247	WIRE, lock	2
26	15C248	CLIP, spring	2
27	15C249	ACTUATOR, valve	1
28	253580	BASE, motor, air (includes 28a)	1
28a	116343	SCREW, grounding	1
29	15C252	ROD, displacement, mp	1
30	15C266	GASKET, copper	1
31*	15C267	POPPET, valve, exhaust	2
32*	248211	POPPET, valve, inlet**	2
34	15W205	PISTON, motor, air 2-1/4”	1
35	15C274	CYLINDER, motor, air	1
36	15C275	PIN, toggle	2
37	15C276	PIN, pivot	2
38	15C277	ARM, toggle	2
39	15C278	NUT, cap, cylinder	1
40	15C279	ROD, trip	1
46	246782	PLATE, muffler, serial number	1
47	246783	PLATE, muffler, warning	1

Pump

Ref. No.	Part No.	Description	Qty.
100	100400	BALL, piston, metallic, 3/4 in.	1
101	100279	BALL, metallic, 7/8 in.	1
102*	107227	O-RING, buna-N	1
103*	107306	O-RING, fluoroelastomer	1
104*	157195	O-RING, buna-N	1
105	15C499	CYLINDER, fluid	1
106	15C500	HOUSING, valve, intake	1
107	15C501	PISTON, fluid	1
108	15C533	RETAINER, ball	1
109	15C502	TUBE, extension, variable length, Model 248097 only, (not shown)	1
110	222308	ADAPTER, bung, Model 248097 only, (not shown)	1

*Included in Pump Repair Kit 246918.

** Use gap adjustment tool 15E796 (also included in Repair Kit 246918) to ensure correct gap setting for poppets.

Technical Data

(Data measured with 10 weight oil at 70°F (21°C)

Fluid to air ratio 3:1

Cycles/gallon (cycles/liter) 43.5 (11.4)

Fluid flow @80 cpm (gpm/lpm) 1.84 (7.0)

Pumping distance guideline..... up to 250 ft. (76.2 m)

Maximum fluid pressure ..... 540 psi (3.7 MPa, 37 bar)

Air motor effective diameter..... 2.25 in. (57.2 mm)

Air operating range ..... 40-180 psi (0.28-1.2 MPa, 2.8-12 bar)

Approx. air consumption and fluid flow @100 psi air and 80 cpm .....8.5 scfm @2.1 gpm (.241 m^3/min @7.9 lpm)

Dry suction lift (feet of water) 23

Wetted materials ..... steel, polyurethane, aluminum, buna-N, Rulon®

Air inlet port size ..... 3/8 in. npt(f)

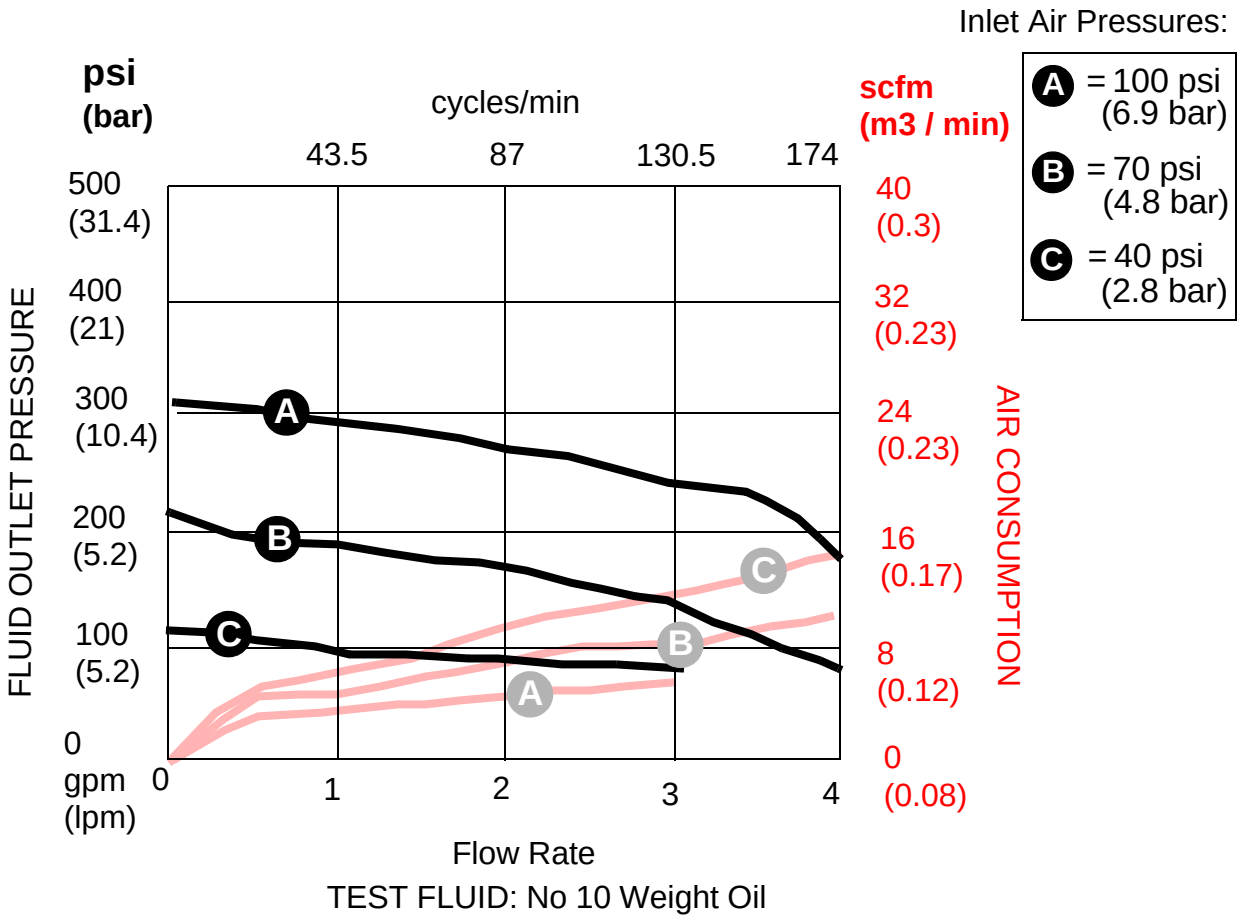
Fluid inlet port size ..... 1.5 in. npt(f)

Fluid outlet port size..... 1/2 in. npt(f)

Sound pressure (measured 1 meter from unit) .. 77.8 dB

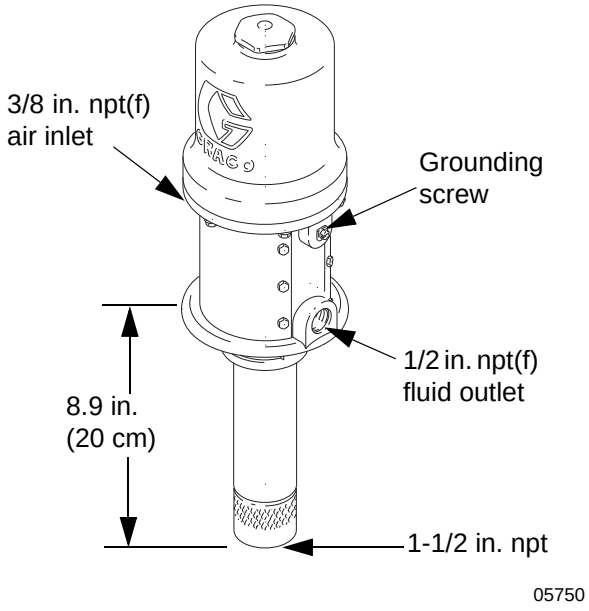
Sound pressure (ISO 9614-2)..... 85.6 dB

Performance Chart

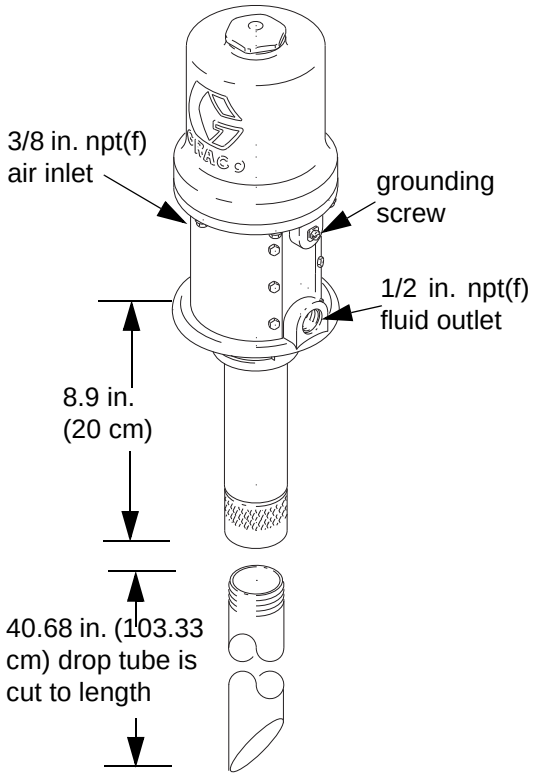


Dimensional Drawings

Model 246775
Universal
Overall Length: 18.9 in. (48 cm)

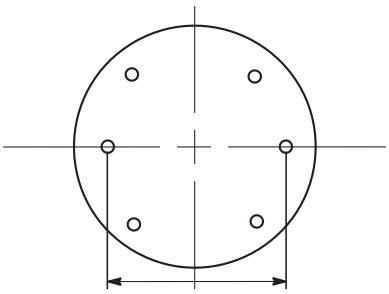


Model 248097
Variable length
Overall Length: 59.2 in. (150.4 cm)



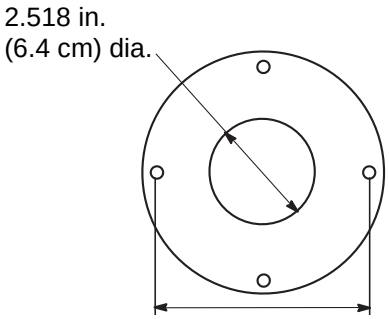
Mounting Hole Layout

Pump Base



4.250 in. (10.8 cm) bolt circle
0.281 in. (7.1 mm) diameter clearance holes

Order gasket 15R881 for sealed tank/drum mounting.



4.250 in. (10.8 cm) bolt circle
0.266 in. (6.7 mm) diameter clearance holes

Graco 7-Year Pump Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period from the date of sale as defined in the table below, repair or replace equipment covered by this warranty and determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

Graco 7-Year Pump Extended Warranty	
Components	**Warranty Period**
Structural Components	7 years
Wear Parts - including but not limited to o-rings, packings and seal	1 year

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within one (1) year past the warranty period, or two (2) years for all other parts.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

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Original instructions. This manual contains English. MM 309868
For patent information: www.graco.com/patents

Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1441

www.graco.com
Revised May 2016

6

Instructions

SDX™ and XDX™ 10/20 Series Hose Reels

3A8626D

EN

For dispensing air, water, antifreeze, windshield washer solvent, transmission fluid, oil, and grease. Not for use with gasoline or diesel fuels. For professional use only.

Not approved for use in European explosive atmosphere locations.

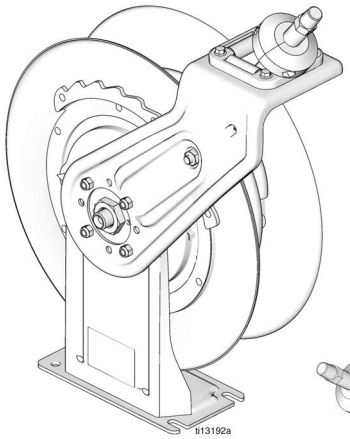
Model:

See page 3 for model information, including maximum working pressure and approvals.

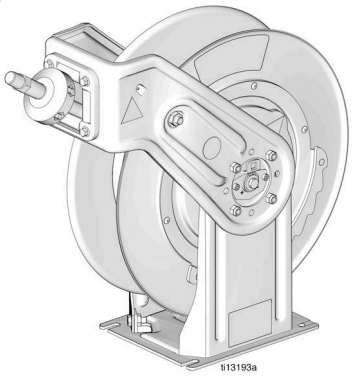
Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment. Save these instructions.

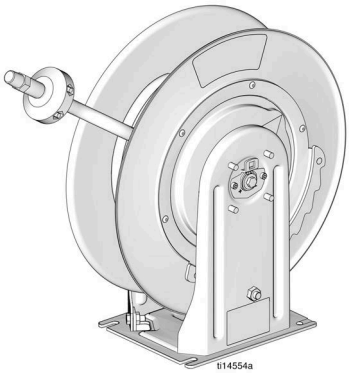
SDX Series



XDX Series



XNX Series



Related Manuals

Manual in English	Description
3A8689	Hose Reel Swivel Kit
406801	Latch Kit
313902	Hose Reel Enclosure Retrofit Kit
406741	Hose Inlet Kit
406743	Roller Guide Kits
406742	Ball Stop Kit

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Models

SDX Series

(Part List page 31)

*Each SDX Model hose reel shown in the table is available in several colors. The last character of each Model No. indicates the hose reel color. For example: A = white, B = metallic blue, C = red, D = black, F = yellow.

The SDX Series Models table uses the generic # symbol to represent the last character. For example, to order a white SDL56# model reel hose, the # symbol is replaced with “A” - SDL56A would be the complete model number used.

Model No.*	Size	Type	Maximum Working Pressure psi (MPa, bar)	Media	Connection Size		Line Size (in.)	Length (ft)
					Inlet	Outlet		
SDL2D#	10	Bare	300 (2.1, 21)	Air/Water	1/2 npsm(m)	3/8 npsm(f)	3/8	50
SDL6D#	20	Bare	300 (2.1, 21)	Air/Water	1/2 npsm(m)	1/2 npsm(f)	1/2	50
SDL23#	10	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	3/8 npt(m)	3/8	35
SDL25#	10	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	3/8 npt(m)	3/8	50
SDL56#	20	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	3/8 npt(m)	3/8	65
SDL5J#	20	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	3/8 npt(m)	3/8	65
SDL33#	10	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	1/2 npt(m)	1/2	35
SDL65#	20	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	1/2 npt(m)	1/2	50
SDL6H#	20	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	1/2 npt(m)	1/2	50
SDM3B#	10	Bare	2000 (14, 138)	Oil	1/2 npsm(m)	1/2 npsm(f)	1/2	35
SDM6D#	20	Bare	2000 (14, 138)	Oil	1/2 npsm(m)	1/2 npsm(f)	1/2	50
SDM33#	10	Hose	2000 (14, 138)	Oil	1/2 npsm(m)	1/2 npt(m)	1/2	35
SDM65#	20	Hose	2000 (14, 138)	Oil	1/2 npsm(m)	1/2 npt(m)	1/2	50
SDM6H#	20	Hose	2000 (14, 138)	Oil	1/2 npsm(m)	1/2 npt(m)	1/2	50
SDH1D#	10	Bare	5000 (35, 345)	Grease	3/8 npsm(m)	3/8 npsm(f)	1/4	50
SDH5D#	20	Bare	5000 (35, 345)	Grease	3/8 npsm(m)	3/8 npsm(f)	3/8	50
SDH15#	10	Hose	5000 (35, 345)	Grease	3/8 npsm(m)	1/4 npt(m)	1/4	50
SDH23#	10	Hose	5000 (35, 345)	Grease	3/8 npsm(m)	1/4 npt(m)	3/8	35
SDH55#	20	Hose	5000 (35, 345)	Grease	3/8 npsm(m)	1/4 npt(m)	3/8	50
SDH5H#	20	Hose	5000 (35, 345)	Grease	3/8 npsm(m)	1/4 npt(m)	3/8	50

XDX Series

(Part List page 34)

*Each XDX or XNX™ Model hose reel shown in the table is available in several colors. The last character of each Model No. indicates the hose reel color. For example: A = white, B = metallic blue, D = Black, F = yellow.

The XDX and XNX Models table uses the generic # symbol to represent the last character. For example, to order a white XDL2D# model reel hose, the # symbol is replaced with “A” - XDL2DA would be the complete model number used.

Model No.*	Size	Type	Maximum Working Pressure psi (MPa, bar)	Media	Connection Size		Line Size (in.)	Length (ft)
					Inlet	Outlet		
XDL2D#	10	Bare	300 (2.1, 21)	Air/Water	1/2 npsm(m)	3/8 npsm(f)	3/8	50
XDL6D#	20	Bare	300 (2.1, 21)	Air/Water	1/2 npsm(m)	1/2 npsm(f)	1/2	50
XDL25#	10	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	3/8 npt(m)	3/8	50
XDL33#	10	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	3/8 npt(m)	1/2	35
XDL56#	20	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	3/8 npt(m)	3/8	65
XDL65#	20	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	1/2 npt(m)	1/2	50
XDM3B#	10	Bare	2000 (14, 138)	Oil	1/2 npsm(m)	1/2 npsm(f)	1/2	35
XDM6D#	20	Bare	2000 (14, 138)	Oil	1/2 npsm(m)	1/2 npsm(f)	1/2	50
XDM33#	10	Hose	2000 (14, 138)	Oil	1/2 npsm(m)	1/2npt(m)	1/2	35
XDM65#	20	Hose	2000 (14, 138)	Oil	1/2 npsm(m)	1/2npt(m)	1/2	50
XDH15#	10	Hose	5000 (35, 345)	Grease	3/8 npsm(m)	1/4 npt(m)	1/4	50
XDH1D#	10	Bare	8000 (55, 552)	Grease	3/8 npsm(m)	3/8 npsm(f)	1/4	50
XDH5D#	20	Bare	8000 (55, 552)	Grease	3/8 npsm(m)	3/8 npsm(f)	3/8	50
XDH55#	20	Hose	5000 (35, 345)	Grease	3/8 npsm(m)	1/4 npt(m)	3/8	50
XNL56#	20	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	3/8 npt(m)	3/8	65
XNL65#	20	Hose	300 (2.1, 21)	Air/Water	1/2 npsm(m)	1/2 npt(m)	1/2	50
XNM65#	20	Hose	2000 (14, 138)	Oil	1/2 npsm(m)	1/2 npt(m)	1/2	50
XNH55#	20	Hose	5000 (35, 345)	Grease	3/8 npsm(m)	1/4 npt(m)	3/8	50

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

⚠ WARNING





SKIN INJECTION HAZARD

High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not point dispensing device at anyone or at any part of the body.
- Do not put your hand over the fluid outlet.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.


FIRE AND EXPLOSION HAZARD

When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well-ventilated area.
- Eliminate all ignition sources, such as cigarettes and portable electric lamps.
- Ground all equipment in the work area.
- Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline.
- Do not plug or unplug power cords or turn lights on or off when flammable fumes are present.
- Use only conductive hoses.
- **Stop operation immediately** if static sparking occurs or you feel a shock**.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

⚠ WARNING

EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.

PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Typical Installation

Overhead-Mounted Hose Reel

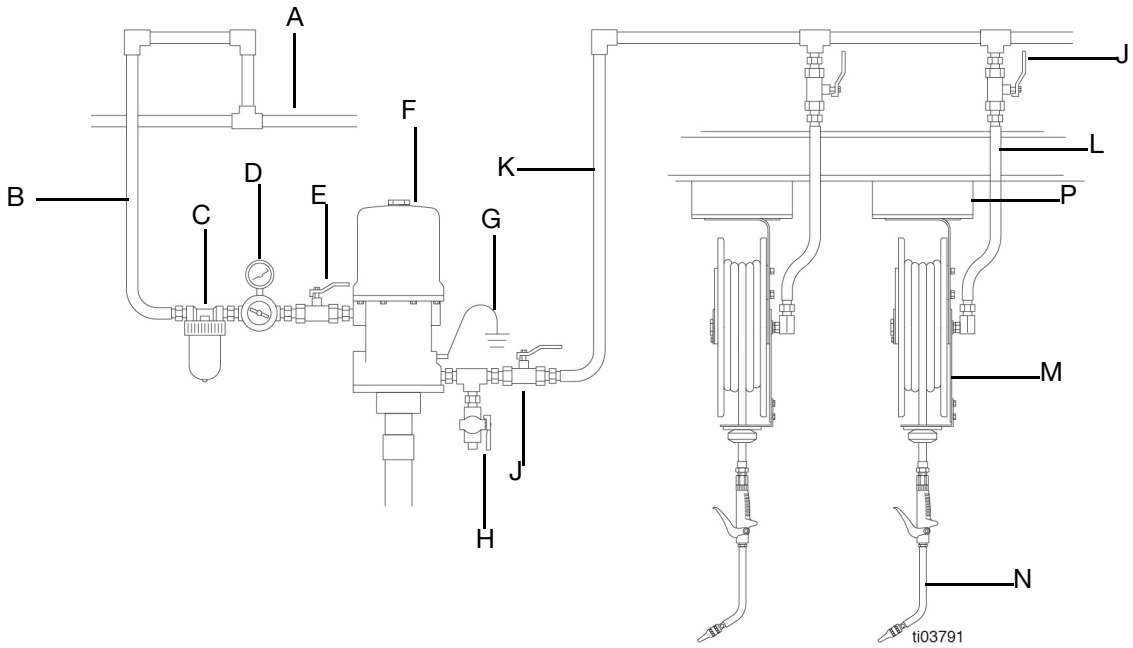
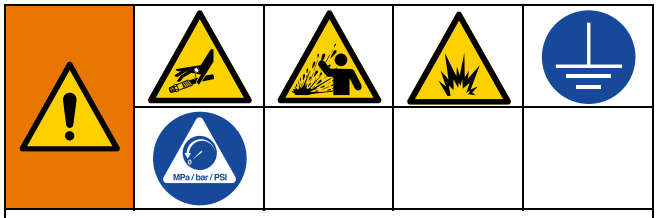


FIG. 1: Typical Installation

Key:

A Main Air Supply Line
B Pump Air Supply Line
C Air Filter
D Air Regulator
E Bleed-type Master Air Valve (required)
F Pump
G Pump Grounding Wire (required)
H Fluid Drain Valve (required)
J Fluid Shutoff Valve
K Fluid Line
L Hose Inlet Kit
M Hose Reel
N Dispense Valve
P Mounting Channel/Base

Installation



A ground wire (G), bleed-type master air valve (E), and fluid drain valve (H) are required in your system installation. These components help reduce the risk of serious injury, including fire and explosion, injection, and splashing in your eyes or on the skin.

- The ground wire must be connected to the pump grounding lug and to a true earth ground according to your local codes.
- The bleed-type master air valve relieves air trapped between this valve and the pump after the air is shut off. Trapped air can cause the pump to cycle unexpectedly. Locate the valve close to the pump.
- The fluid drain valve assists in relieving fluid pressure in the pump, hose, and dispense valve. Triggering the valve to relieve pressure may not be sufficient to relieve pressure when the Fluid Shutoff Valve (J) is closed.

The typical installation shown in FIG. 1 is only a guide for selecting and installing a hose reel system. The components shown are the minimum requirements for all systems. However, it is not an actual system design. Contact your Graco Distributor for assistance in designing a system to suit your needs.

NOTE: The air and fluid accessories required for your pump must be properly sized to the pump. Refer to your pump manual for selecting pump accessories.

Grounding

The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

Pump: follow manufacturer's recommendations.

Hose reels: connect to a true earth ground when dispensing petroleum products. This can be done by bolting the reel to a grounded structure, or by using a conductive inlet hose to connect to a grounded piping system.

Fluid hoses: use only conductive hoses when dispensing petroleum products.

Dispense valves: use thread sealant when connecting the meter to the hose. Do not use PTFE tape on the pipe joints, as it may cause loss of ground across the pipe joint.

Waste container while flushing: use a grounded metal container. Hold the hose coupling or metal part of the meter firmly to the side of the waste container while flushing.

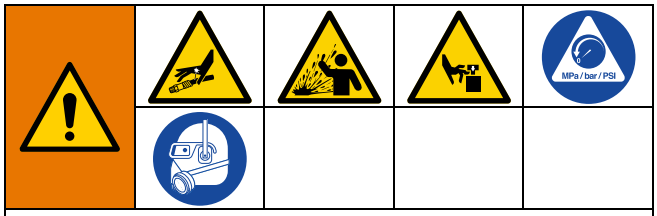
Required Components

Be sure to have the following components before beginning installation.

- Hose Inlet kits (L)
- Reel mounting bases, mounting brackets, and mounting channels (P)
- Dispense valves (N)

Pressure Relief Procedure

Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing the equipment.

1. Turn off the power supply to the pump or close the upstream ball valve.
2. Trigger the dispense valve into a waste container to relieve pressure.
3. Open any bleed-type master air valves and fluid drain valves in the system.
4. Leave the drain valve open until ready to pressurize the system.

NOTE: If you suspect that the dispense valve or extension is clogged, or that the pressure has not been fully relieved after following the above steps, very slowly loosen the coupler or hose end coupling to relieve the pressure gradually, then loosen completely. After doing this, the obstruction can be cleared.

Flush the Equipment

To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

Before installation of the dispense valve to the end of the hose, flush the line with the fluid being dispensed.

1. Place the end of the hose into a grounded metal waste container. Hold the hose firmly against the waste container throughout the flushing process (FIG. 2).

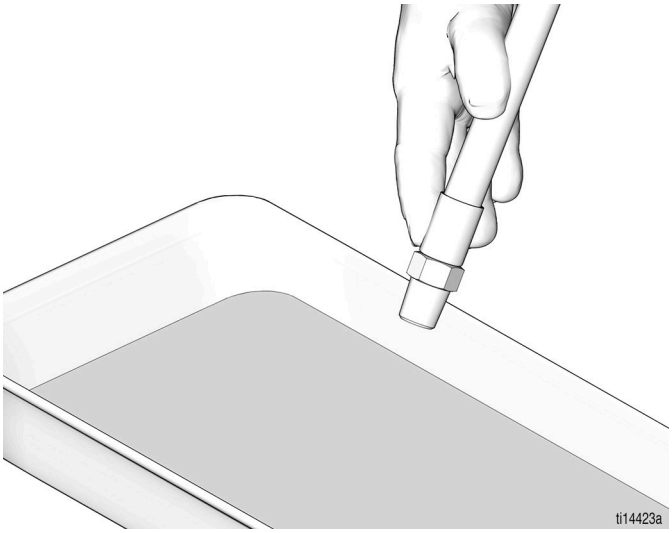


FIG. 2

2. Blow out the entire lubricant supply line with air (FIG. 3).

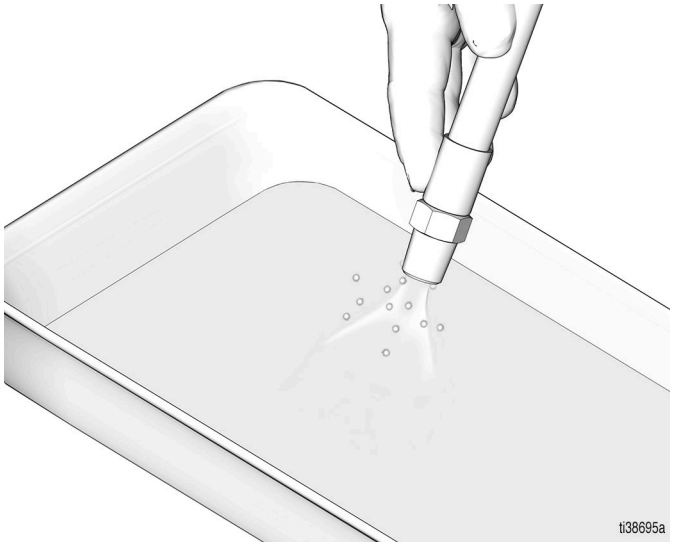


FIG. 3

3. Flush the fluid being dispensed through the equipment until the fluid runs clear (FIG. 4).

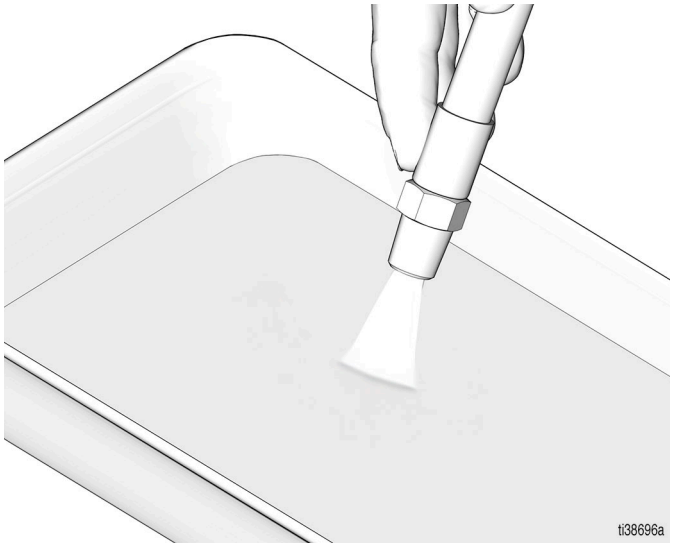


FIG. 4

Installation Mounting Options

Reel Bank Mounting Location's Selection

A Mounting Adapter Kit is available for installing an XDX Series Hose Reel in the same location that a Series 500 Hose Reel was previously installed. Graco Kit No. 24A224. See FIG. 5, and page 41.

A = Original Series 500 holes in mounting surface.

B = Holes on the bottom of the adapter bracket, pre-drilled to match the Original Series 500 hole configuration (A).

C = Holes on the top of the adapter bracket, pre-drilled to match the new XDX Series Hose Reel base.

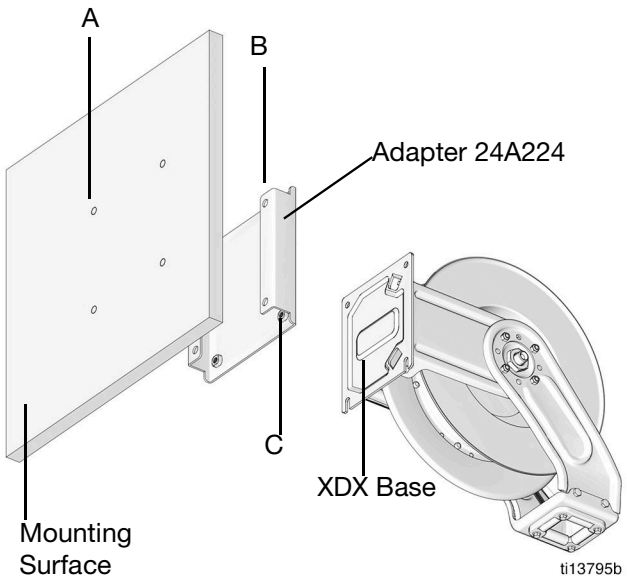


FIG. 5

All Mountings

To reduce the risk of injury, be sure that the mounting surface is strong enough to support the reels, weight of the lubricants, and the stress caused by hard pulls on the hoses. See **Technical Specifications**, page 51, for weights of the hose reel assemblies.

NOTE: Always use all four (4) large flat washers with four (4) bolts to mount the hose reel pedestal to any surface.

NOTE: The reels perform best when the arm allows the hose to pull straight off of the spool (FIG. 6).

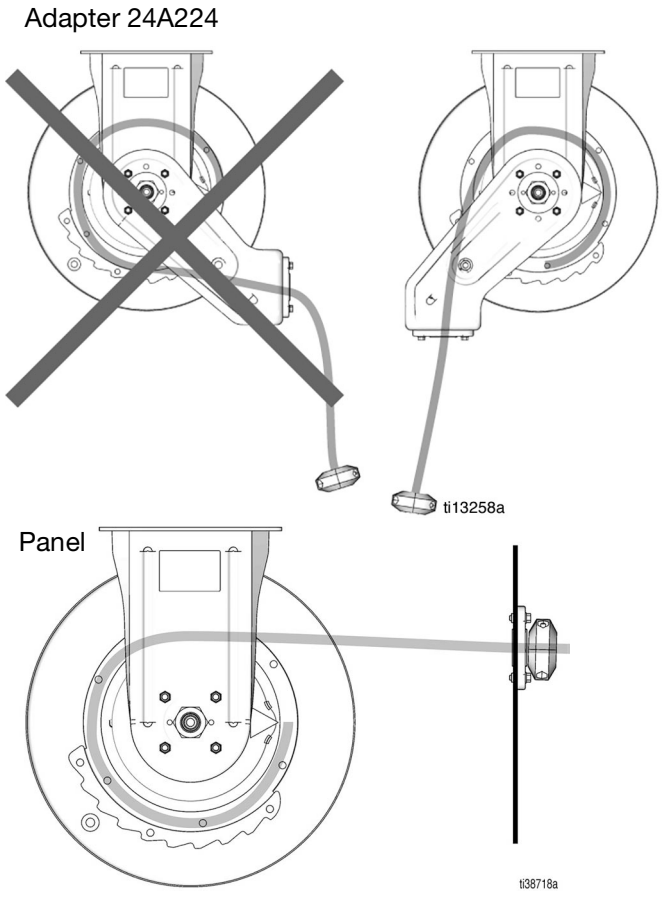


FIG. 6

All Models

Select the reel bank mounting location (FIG. 7).

- For high ceilings, suspend a suitable support structure for the reels, so the hoses will be long enough to reach the service area.
- A reel bank mounted in a one-lift service bay should be at least 6 ft (1.9 m) from the center line of the lift.
- A reel bank mounted in a two-lift service bay should be mounted an equal distance between the lifts.
- A bank of all motor oil reels should be mounted about 5 ft (1.5 m) from the center of the lift, toward the front of the lift rails.

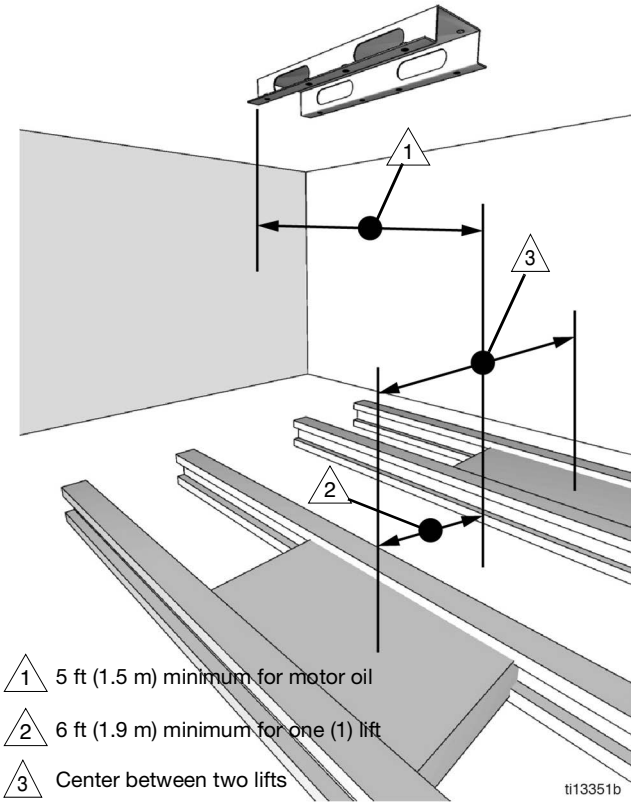


FIG. 7

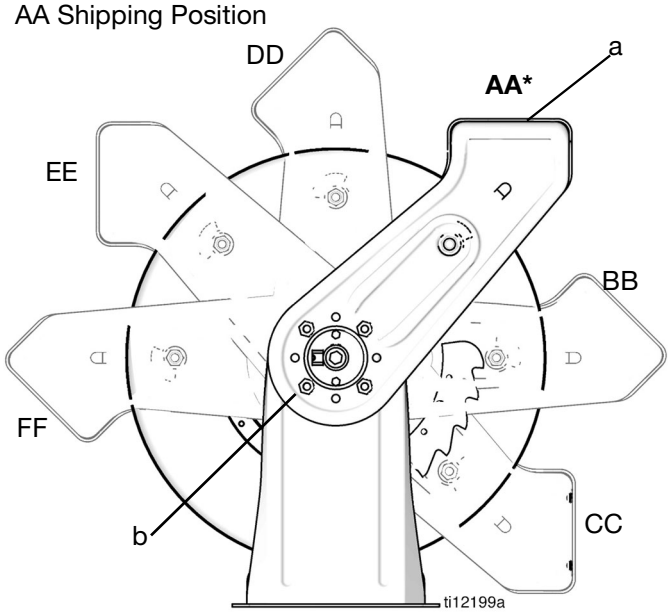
SDX or XDX Models Only

NOTE: The reference letters in the following instructions refer to FIG. 8 and FIG. 26.

1. Determine if the position of the roller guide arm (a) (FIG. 8) is in the desired installation position. If it is not in the desired installation position, skip to Step 2.

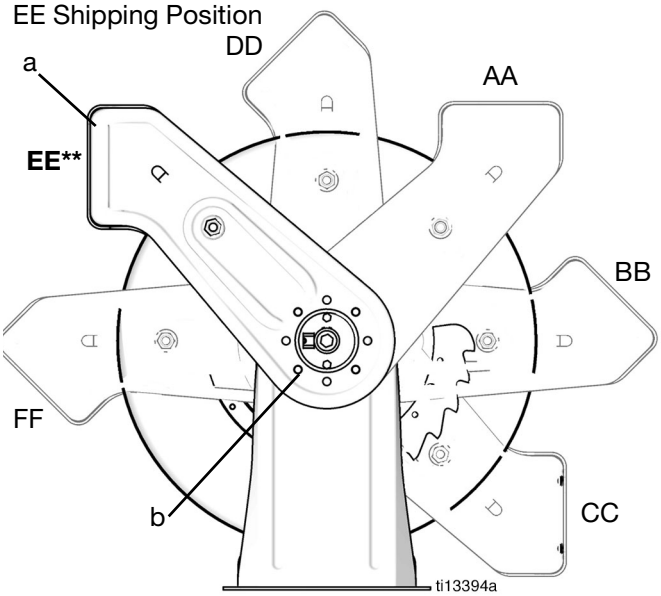
The hose reel is factory-assembled and shipped with the roller guide arm (a) in either the AA or EE position (FIG. 8).

AA Shipping Position



*SDX Models without an H or J in the fifth number position of the model number are shipped with the roller guide arm (a) in the AA position.

EE Shipping Position



**SDX Models with an H or J in the fifth number position of the model number are shipped with the roller guide arm (a) in the EE position.

**All XDX Models are shipped with the roller guide arm (a) in the EE position.

FIG. 8

2. To reposition the roller guide arm (a) to a position other than Shipping Position AA or EE:

   a. Secure the reel to a solid surface with C-clamps (C) (FIG. 9).

   b. Attach a C-clamp (D) to the reel flange to prevent the reel from unintentionally becoming unlatched and spinning freely (FIG. 9).

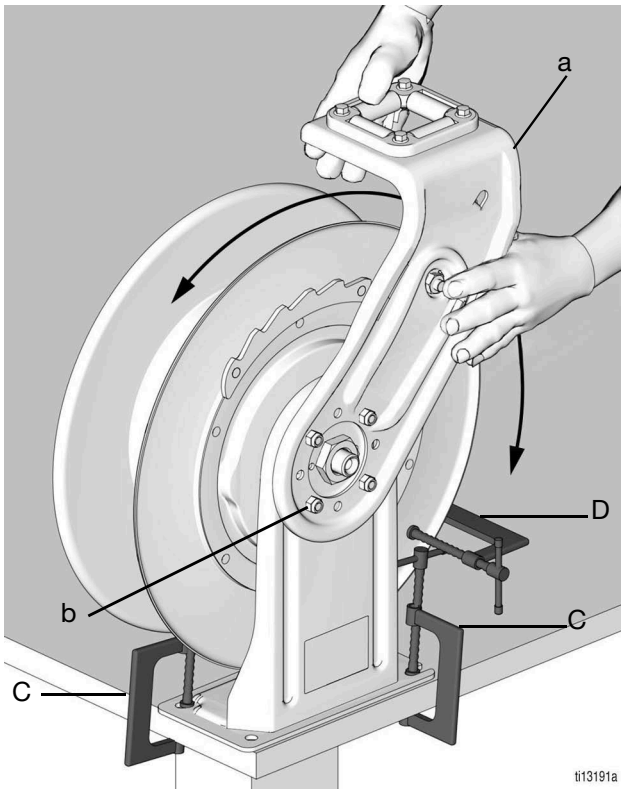


FIG. 9

   c. Remove the nuts (b) from each side and rotate arm (a) to the desired position.

   NOTE: SDX Model Reels have four (4) nuts, and XDX Model Reels have eight (8) nuts (four on each side).

   d. Check the pawl to make sure it is not wedged (FIG. 10).

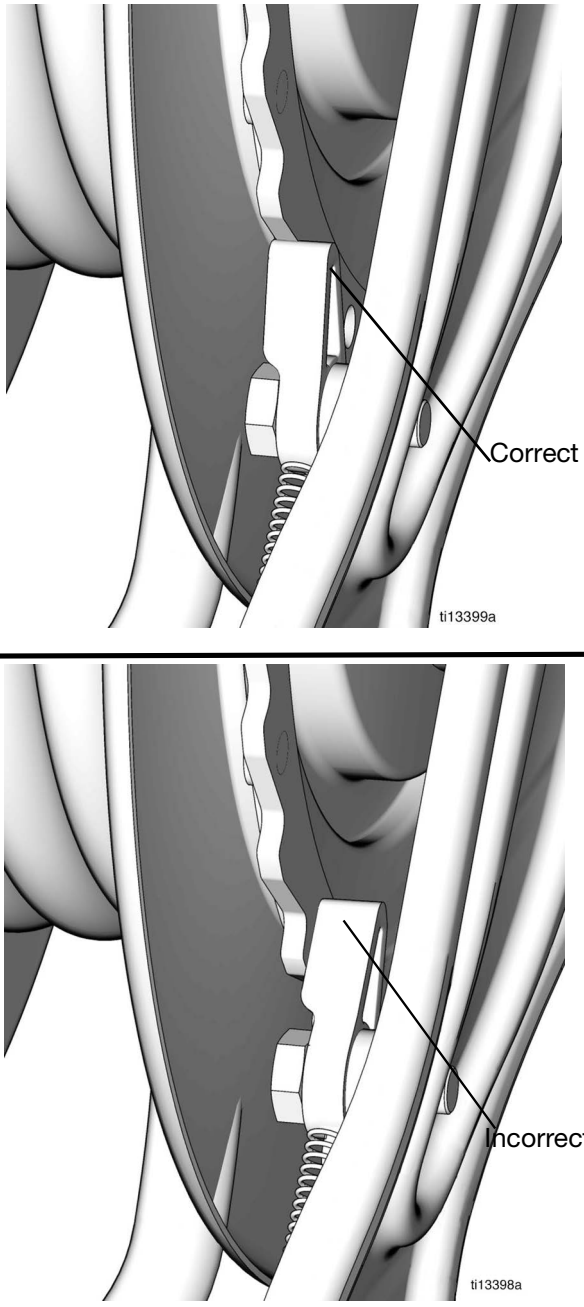


FIG. 10

   e. Replace and tighten nuts to secure the arm (torque 25 - 35 ft-lb/33.9 - 47.5 N•m).

Ceiling Installations

To reduce the risk of injury, always use a man-lift while doing a hose reel ceiling installation.

XDX Models Only

1. Reposition the guide arm to position AA. See Step 2, page 13.
2. Position the hose reel so the pedestal is facing upward.
3. Using the man-lift, raise the reel as close to the mounting location as possible.
4. Bolt the hose reel to the mounting, making sure that it is secure before lowering the man-lift.
5. Connect the inlet supply line to the inlet hose of the reel. See **Hose Installation**, page 18.

NOTE: None of the hose reels listed in this manual come with a Hose Inlet Kit.

6. Flush the hose following the instructions in **Flush the Equipment**, page 9.
7. Re-position the hose stop, if needed, so that the hose extends far enough for all operators to reach the dispense valve, then tighten the nuts to securely hold the hose stop in place.
8. Install the motor or dispense valve to the end of the hose following the instructions provided with the dispense equipment.

NOTE: if an enclosure is being installed around the hose reel, first install the dispense valve or motor to the hose end.

9. See **Adjust Spring Tension**, page 20.

Ceiling Mount Without an I-Beam - Open Channel (All Models)

- For SDX Model Reels Order Mounting Kit: 24A934, 24A935, 24A936, 24A937, 24A938, or 24A939.
- For XDX or XNX Model Reels Order Mounting Kit: 24A219, 24A220, 24A221, or 24A222.
- See Mounting Channel Dimensions, page 45.

SDX Models: Open Channel Mounting Kits								XDX Models: Mounting Kits			
FN	**Description**	**24A934 1 Reel**	**24A935 2 Reels**	**24A936 3 Reels**	**24A937 4 Reels**	**24A938 5 Reels**	**24A939 6 Reels**	**24A219 1 Reel**	**24A220 2 Reels**	**24A221 3 Reels**	**24A222 6 Reels**
101	PLATE, hold down	1	2	3	4	5	6				
102	SCREW, 3/8 in. -16 x 5/8 in.	5	10	15	20	25	30	4	8	12	24
103	WASHER, lock, 3/8 in.	5	10	15	20	25	30	4	8	12	24
104	BASE, reel	1	2	3	4	5	6				
105	BASE, reel, channel	1	1	1	1	1	1	1	1	1	1

1. Install the mounting channel (105) and base plate (104) (SDX Models), as shown in FIG. 11.

2. Slide the hose reel into the base plate (104) and install the hold down plate (101), washer (103), and the cap screw (102). Tighten the screw firmly (FIG. 11).

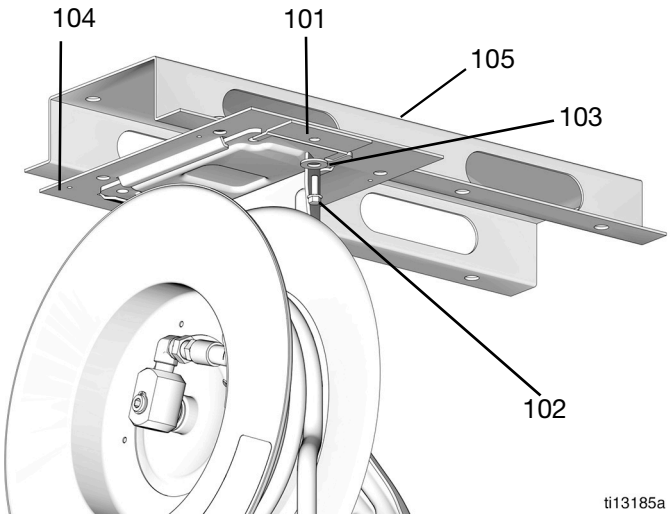


FIG. 11

3. When installing permanent supply lines above the ceiling, drill 1.5 in. (38 mm) diameter holes through the ceiling toward the inlet side of the reels.
4. Follow Steps 5 through 9, **Ceiling Installations**, page 14 to complete installation.

Ceiling Mount Directly to an I-Beam without Drilling holes - All Models

NOTE: Order Mounting Bracket Kit: 204741 for open or enclosed reels.

NOTE:

- Two kits are required when mounting one to three reels.
- Three kits are required when mounting four to six reels.

MOUNTING BRACKET KIT: 204741

FN	Description	Qty
201	WASHER, lock, 1/2 in.	4
202	SCREW, 1/2 in. - 13 x 1 in.	2
203	SCREW, 1/2 in. 13 x 3/4 in.	2
204	NUT, 1/2 in. - 13	2
205	NUT, spring clamp (not shown)	2
206	CLAMP, beam	2
207	CHANNEL, strut	1

1. Secure mounting brackets (D) to the channel. Use two mounting brackets for each one to three capacity mounting channel (105). Use three mounting brackets for each four to six capacity mounting channel (105).
2. Position the adjustable clamps (206) for the mounting brackets over the I-Beam (A), then tighten securely (FIG. 12).
3. SDX Model Reels only: See FIG. 11, page 15. Slide the hose reel onto the base plate (104) then install the hold down plate (101), washer (103), and cap screw (102). Tighten the screw firmly.
4. If installing permanent supply lines above a ceiling, drill 1.5 in. (38 mm) diameter holes through the ceiling toward the inlet side of the reels.
5. Connect the inlet supply line to the inlet hose of the reel. See **Hose Installation**, page 18.

NOTE: The hose reels listed in this manual do not come with a Hose Inlet Kit.

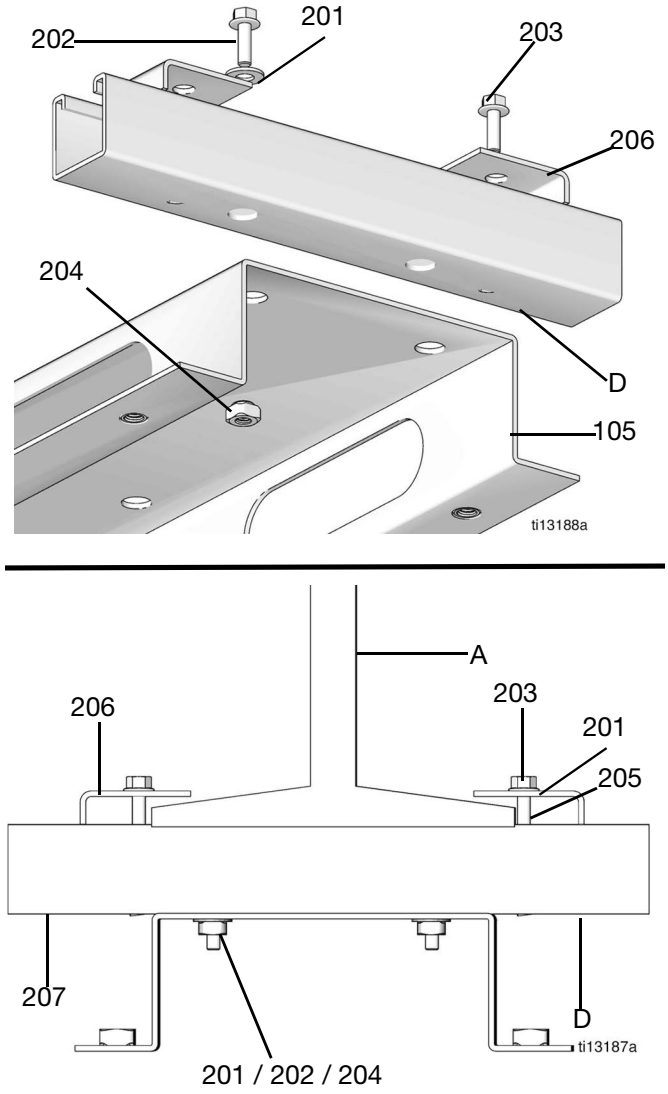


FIG. 12

6. Flush the hose following the instructions in **Flush the Equipment**, page 9.

Wall Installations

- For SDX Model Reels Wall Mounting Bracket Kit With No Channel order: 24H193.
- For SDX Model Reels Open Channeling Mounting Kit order: 24A934, 24A935, 24A936, 24A937, 24A938, or 24A939.
- For XDX or XNX Model Reels Mounting Kit order: 24A219, 24A220, 24A221, or 24A222.

SDX Models: Open Channel Mounting Kits								XDX Models: Mounting Kits			
FN	**Description**	**24A934 1 Reel**	**24A935 2 Reels**	**24A936 3 Reels**	**24A937 4 Reels**	**24A938 5 Reels**	**24A939 6 Reels**	**24A219 1 Reel**	**24A220 2 Reels**	**24A221 3 Reels**	**24A222 4 Reels**
101	PLATE, hold down	1	2	3	4	5	6				
102	SCREW, 3/8 in. -16 x 5/8 in.	5	10	15	20	25	30	4	8	12	24
103	WASHER, lock, 3/8 in.	5	10	15	20	25	30	4	8	12	24
104	BASE, reel	1	2	3	4	5	6				
105	BASE, reel, channel	1	1	1	1	1	1	1	1	1	1

1. Adjust the guide arm to the desired position, see FIG. 8, page 12.
2. Select the wall mounting location and style for the reel bank.

NOTE: The base plate (104) can be directly mounted to the wall for easier installation and removal of the hose reel for servicing (FIG. 13).

a. For mounting the reel directly to the wall, use the provided template (B) to lay out the holes for drilling (FIG. 13).

b. For mounting with kit 24H193, mount the base plate (104) to the wall, slide the hose reel onto the base plate (104), then install the hold down plate (101), the washer (103), and the cap screw (102). Tighten the screw firmly (FIG. 13).

c. For mounting with kits 24A934-24A939, mount the channel (105) to the wall, mount the base plate (104) to the channel (105), slide the hose reel onto the base plate (104), then install the hold down plate (101), the washer (103), and the cap screw (102). Tighten the screw firmly (FIG. 13).

d. For mounting with kits 24A219-24A222, mount the channel (105) to the wall, then mount the hose reel to the channel (105) (FIG. 14).

3. Slide the hose reel onto the base plate (104) then install the hold down plate (101), washer (103), and cap screw (102). Tighten the screw firmly (FIG. 13).

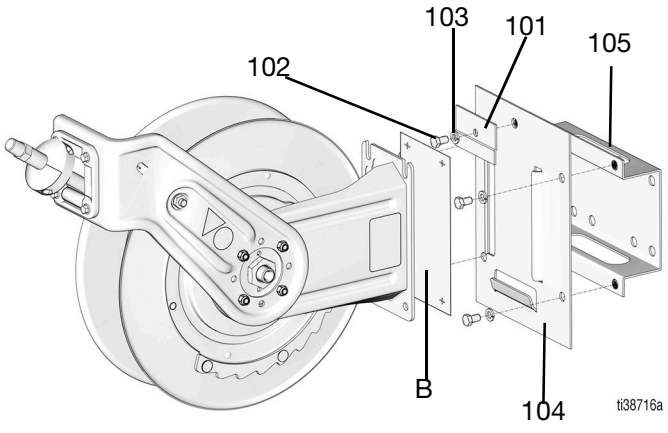


FIG. 13

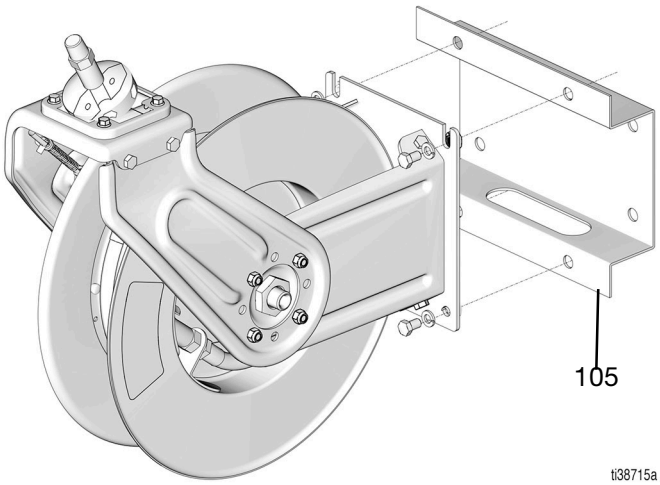


FIG. 14

4. Connect the supply line to the hose reel inlet using the hose inlet kit (see **Typical Installation**, FIG. 1, page 7).

NOTE: The hose reels listed in this manual do not come with a Hose Inlet Kit.

5. Flush the hose following the instructions in **Flush the Equipment**, page 9.

Hose Installation

Installation of Hose on a Bare Reel

1. Locate the length of the hose in the table and note the number of revolutions the spool must be turned to properly pre-set the spring tension.

Hose Length	No. of Spool Turns
35 ft (10.7 m)	17
50 ft (15.2 m)	21
65 ft (19.8 m)	23

SPRING TENSION HAZARD

The hose reel spring is always under great tension, which if released in an uncontrolled manner could cause serious injury.

- Never allow the reel to spin freely. Uncontrolled spinning could cause serious injury if hit by the hose.
- Securely fasten the reel in place while making adjustments.
- The hose reel spring is not a serviceable part. Do not attempt to replace or service the hose reel spring.
- Always wear heavy gloves while adjusting the spring tension to protect your hands from being cut on the hose reel.

2. Secure the reel to a solid surface with C-clamps (C) (FIG. 9)

3. Place a piece of tape on the side of the reel flange as a visual reference to count the number of revolutions.

4. While wearing heavy gloves, firmly grasp the outside edge of the reel flange with both hands. Wind the spool the correct number of turns (see reference table from Step 1), rotating the reel in the direction shown in FIG. 15.

- Stop only at latching locations.
- Stop the reel where there is access to the hose swivel (A) (FIG. 16), and where the reel is securely latched.

5. Before installation of the hose, attach a C-clamp (D, FIG. 15) to the reel flange to prevent the reel from unintentionally becoming unlatched and spinning freely.

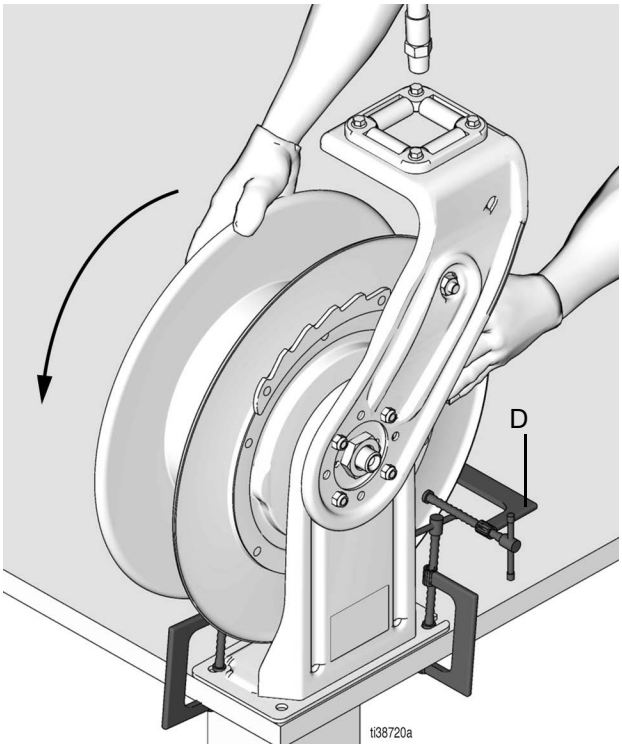


FIG. 15

6. Uncoil and extend the hose.

7. Install the hose stop (C) (FIG. 16) to the end of the hose. If the hose has a warning tag (F), the hose stop should be installed on the same end of the hose as the warning tag.

NOTE: If the hose is equipped with a spring guard, this end must be on the same end as the hose stop.

8. Run the end of the hose (B) through the hose guide (G) and then to the hole (E) in the reel (FIG. 16).

9. Attach the hose end (B) to the hose reel swivel (A).

10. Carefully remove the C-clamp (D) (FIG. 15),

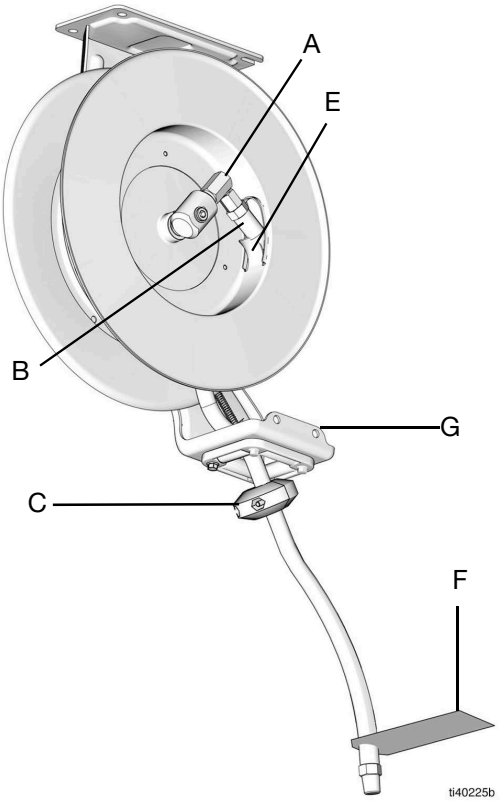


FIG. 16

11. Pull on the hose hard enough to release the latch, and slowly allow the hose to retract.

12. Re-position the hose stop so the hose extends far enough for all operators to reach the dispense valve.

13. Flush the hose following the **Flush the Equipment** instructions, page 9.

Adjust Spring Tension

SPRING TENSION HAZARD

The hose reel spring is always under great tension, which if released in an uncontrolled manner could cause serious injury.

- Never allow the reel to spin freely. Uncontrolled spinning could cause serious injury if hit by the hose.
- Always grasp the adjusting tool firmly with both hands when adjusting tension. Spring tension can cause the tool to move violently.
- Securely fasten the reel in place while making adjustments.
- The hose reel spring is not a serviceable part. Do not attempt to replace or service the hose reel spring.
- Always wear heavy gloves while adjusting the spring tension to protect your hands from being cut on the hose reel.

Single Pedestal SDX Model Hose Reels

Increase Spring Tension

1. Pull the hose out one to two turns, then engage the latch.
2. Pull the hose back through the hose guides.
3. Wrap a loop of hose onto the reel flange.
4. Check the spring tension. The hose must pull out fully and retract fully. Wrap more loops, one at a time around the reel flange, until the spring has the desired tension.

NOTE: Do not put so many loops onto the reel so that the spring winds up tightly before the hose is fully extended.

Decrease Spring Tension

To decrease the spring tension, remove loops around the reel flange until tension is at the desired level.

Dual Pedestal XDX or XNX Model Hose Reels

If the hose is not retracting sufficiently, or is wound too tight, the tension can be increased or decreased using one of the following procedures:

Increase Spring Tension (Spring is too loose, hose does not retract completely, or retraction is sluggish.)

NOTE: The reference letters in the following instructions refer to FIG. 17.

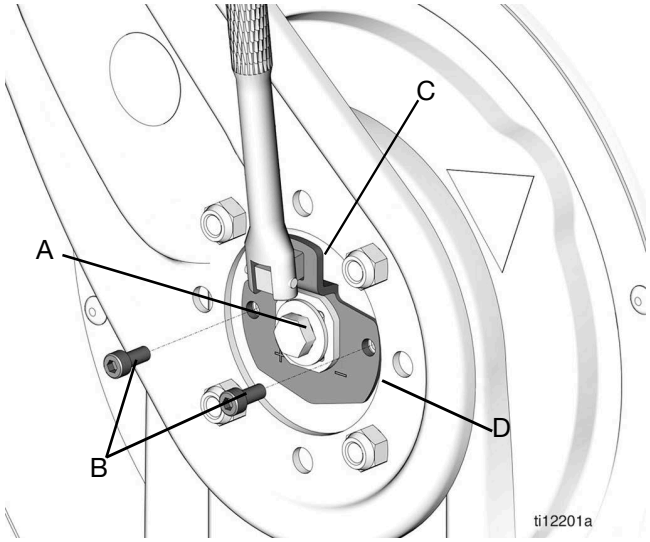


FIG. 17

1. Loosen screw (A) three to five turns. Do not completely remove the screw.
2. Use a hex wrench to loosen the two screws (B). Do not completely remove the screws.
3. Insert a 3/8 in. square drive breaker bar into opening (C) on the spring adjustment plate (D).
4. While holding the breaker bar securely, completely remove the two screws (B).
5. While firmly grasping the breaker bar with both hands, turn the spring adjustment plate clockwise one turn at a time to increase (tighten) the spring tension.
6. Replace and finger-tighten both screws (B).
7. Remove the breaker bar.

8. Pull out a section of hose and allow it to retract to test the tension adjustment.

9. If additional tension is required, repeat steps 3 through 8.

10. When then tension is at the required level, tighten screws A and B.

Decrease Spring Tension
(Spring is too tight, hose retracts too fast.)

NOTE: The reference letters in the following instructions refer to FIG. 16 and FIG. 17.

1. Loosen screw (A) three to five turns. Do not completely remove the screw.

2. Use a hex wrench to loosen the two screws (B). Do not completely remove the screws.

3. Insert a 3/8 in. square drive breaker bar into opening (C) on the spring adjustment plate (D).

4. While holding the breaker bar securely, completely remove the two screws (B).

5. While firmly grasping the breaker bar with both hands, turn the spring adjustment plate counter-clockwise one turn at a time to decrease (loosen) the spring tension.

6. Replace and finger-tighten both screws (B).

7. Remove the breaker bar.

8. Pull out a section of hose and allow it to retract to test the tension adjustment.

9. If additional tension is required, repeat steps 3 through 8.

10. When then tension is at the required level, tighten screws A and B.

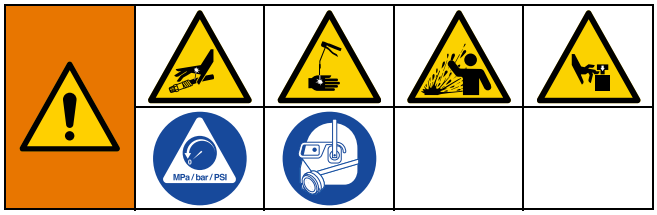
Recycling and Disposal

End of Product Life

At the end of the product's useful life, dismantle and recycle it in a responsible manner.

- Perform the **Pressure Relief Procedure,** page 9.
- Drain and dispose of fluids according to applicable regulations. Refer to the material manufacturer's Safety Data Sheet.
- Deliver remaining product to a recycling facility.

Troubleshooting



1. Follow **Pressure Relief Procedure**, page 9, before checking or repairing the equipment.
2. Check all possible problems and causes before disassembling.

Problem	Cause	Solution
The reel does not retract	Worn or broken spring	Replace spool. See pages 24 - 25.
Oil leaking from hose reel swivel	Worn or damaged swivel seals	Replace swivel. See page 38 to determine the swivel needed. See Hose Reel Swivel Kit Manual for repair information.
Fluid delivery is slow	Pressure setting is too low	Increase pressure
Hose stacks over reel spool	Retracting the hose too quickly; retracting the hose to one side of the guide, allowing the hose to stack off to one side of the spool, and eventually over the spool; allowing the spring to unwind the reel.	Retract the hose slowly, making sure it is centered so that the hose is directly below, or in line, with the hose guide.

Repair

Replace Spool - Single Pedestal SDX Models

A complete list of replacement **Kits** is available on page 38. Use all of the new parts included in the kit.

1. Follow the **Pressure Relief Procedure**, page 9.
2. Completely remove all spring tension. See **Decrease Spring Tension** information, page 20.

NOTE: The reference letters in the following instructions refer to FIG. 18 - FIG. 20.

3. Remove the cap screw (102), washer (103), and the hold-down plate (101).
4. Slide the hose reel out of the base plate (104) (FIG. 18).

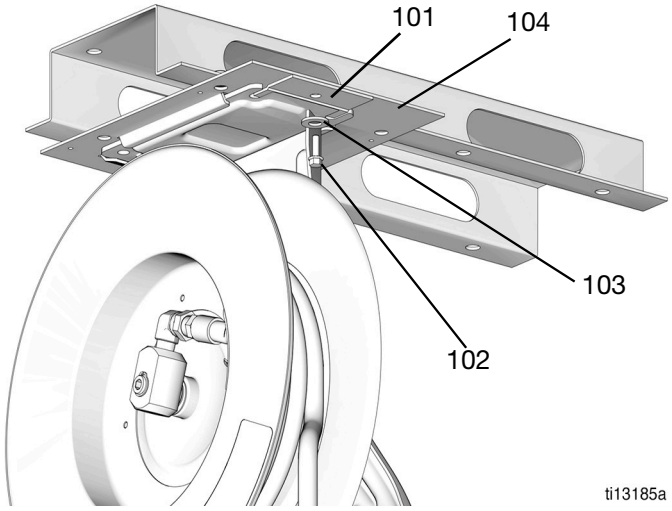


FIG. 18

5. Completely remove the hose from the swivel assembly (6 - contains 6a, 6b, and 6c) and set it aside for re-installation on the new spool (FIG. 19).
6. Loosen and unscrew the swivel shaft (6c) to remove the swivel assembly (6) from the spool (5) (FIG. 19)

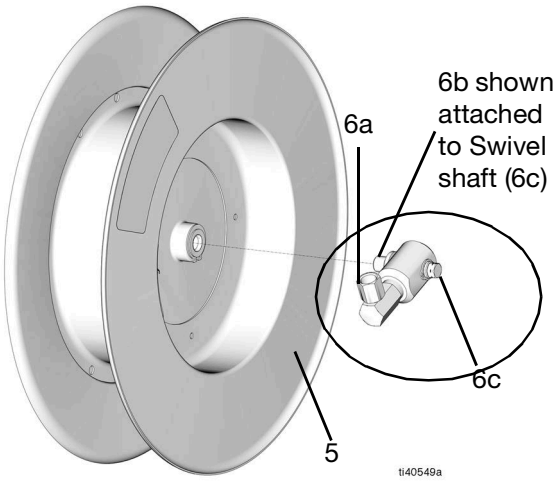


FIG. 19

7. Remove and discard the nut (5g) (FIG. 20).
8. Completely remove, as one piece, the guide arm (18) and pedestal assembly (16) and set it aside for re-installation on the new spool (FIG. 20).

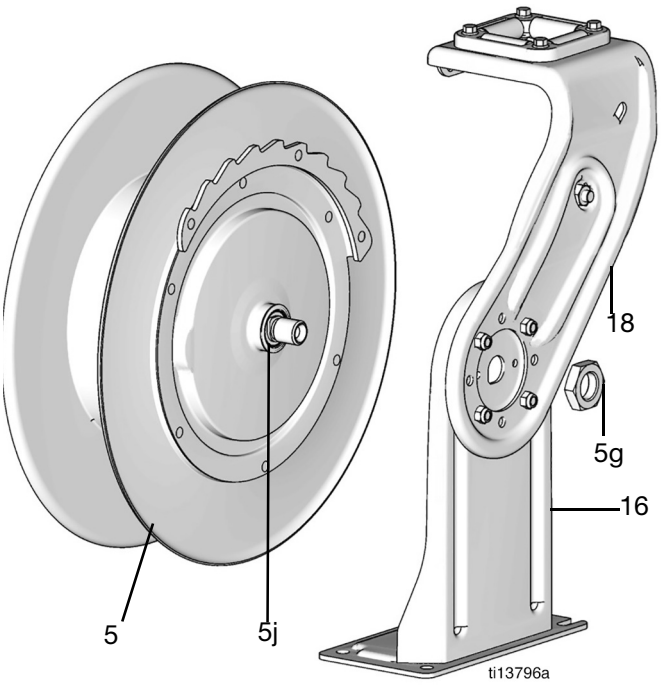


FIG. 20

9. Detach the spool assembly (5).

NOTE: Check that the washer (5j) is not adhering to the inside of the pedestal assembly (16). Discard the washer (5j) with the old spool. A new washer (5j) is installed on the new spool (5) and is part of the new spool (5) assembly.

10. Install the new spool assembly (5).

11. Reinstall the guide arm (18) and pedestal assembly (16) over the spool (5) and install the nut (5g) and tighten (torque 85 - 105 ft-lb/115.2 - 142.4 N•m).

12. Ensure that the o-ring (6b) is not damaged, then replace the swivel assembly (6) (torque 25 - 30 ft-lb/33.9 -40.7 N•m).

13. Slide the hose reel onto the base plate (104) and install the hold-down plate (101), the washer (103), and the cap screw (102). Firmly tighten the screw (102).

14. Install the hose onto the spool following the **Hose Installation** instructions, page 18.

15. Flush the hose following the **Flush the Equipment** instructions, page 9.

16. Set the spring tension following the **Adjust Spring Tension** instructions, page 20.

Replace Spool - Dual Pedestal XDX or XNX Models

A complete list of replacement **Kits** is available on page 38. Use all of the new parts included in the kit.

When replacing the spool assembly, it is recommended that a Swivel Replacement Kit be ordered. To determine the correct swivel replacement for your reel, see page 38.

1. Follow the **Pressure Relief Procedure**, page 9.

2. Completely remove all spring tension. See **Decrease Spring Tension** information, page 21.

3. Remove the reel from service.

4. Completely remove the hose from the spool and set it aside for re-installation on the new spool.

5. Remove the large nut (11) (FIG. 21).

6. Remove the two screws (27) holding the pedestal (26) to the base (24) and the two screws (27) holding the guide arm (29) to the guide arm (30) (FIG. 21).

NOTE: XNX models do not have a guide arm.

7. Completely remove, as one piece, the guide arm (29) and pedestal assembly (26) and set it aside for re-installation on the new spool (FIG. 21).

NOTE: These parts do not have to be disassembled.

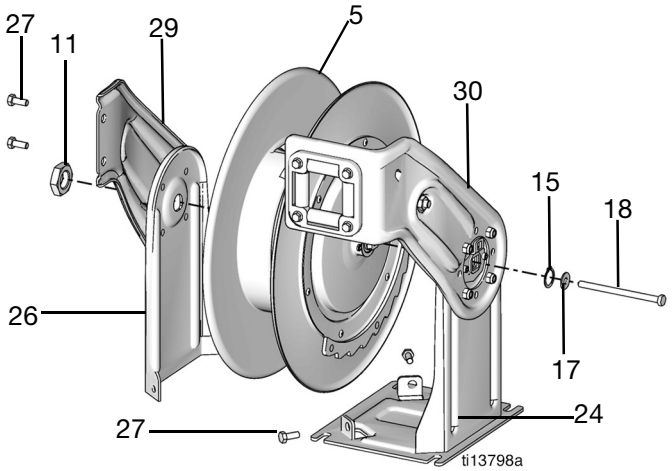


FIG. 21

8. Lay the hose reel on its side to easily access the guide arm (30) and pedestal (24).

9. Remove the long bolt (18) and washers (15 and 17) (FIG. 21).

10. Remove the snap ring (5e) (FIG. 22).

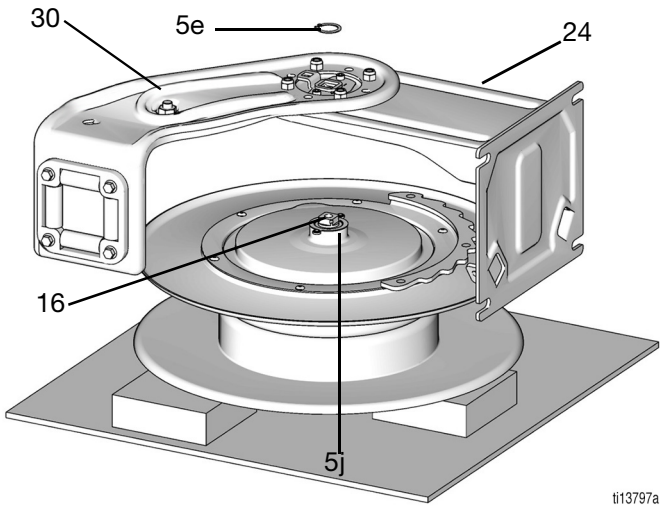


FIG. 22

11. Completely remove, as one piece, the guide arm (30) and pedestal base (24) and set it aside for re-installation on the new spool.

NOTE: These parts do not have to be disassembled.

NOTE: Check that the washer (5j) is not adhering to the inside of the pedestal base (24). Discard the washer (5j) with the old spool. A new washer (5j) is installed on the new spool (5) and is part of the new spool (5) assembly.

12. Discard the old spool.

13. Place the new spool (5) on its side on a work bench, with the flat side of the spool facing downward and the ratchet side facing upward, see FIG. 22.

14. Position the guide arm (30) and pedestal base (24) assembly over the spool. Adjust, as needed, to align the parts.

NOTE: Re-attaching the guide arm (30) and pedestal base (24) assembly is easier when the spool (5) is supported and level. Placing 1 in. (25 mm) scrap wood blocks under the spool, as shown in FIG. 22, supports it during installation of the arm.

15. Replace with a new snap ring (5e).

16. Install the new swivel assembly in the spool. See **Kits**, page 38 for determining the correct Swivel Replacement Kit.

17. Install washers (15 and 17) and the long bolt (18), but do not tighten the bolt.

18. Turn the spool over.

19. Place the guide arm (30) and pedestal assembly (29) over the swivel assembly and spool (5).

NOTE: For the hose reel to operate correctly, the alignment of the swivel to the key hole in the pedestal must be correct. See FIG. 23 (a) for the proper alignment needed.

NOTE: XNX models do not have a guide arm.

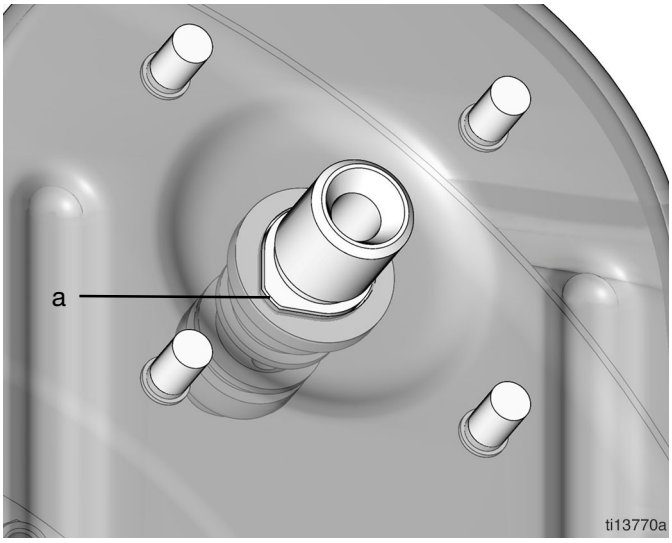


FIG. 23

20. Install large nut (11) and tighten (torque 85 - 105 ft-lb/115.2 - 142.4 N•m) (FIG. 22).

21. Tighten the bolt (18) (torque 25 - 35 ft-lb/33.9 - 47.5 N•m).

22. Align the guide arm (29) and guide arm (30), then install screws (27) and tighten (torque 20 - 30 ft-lb/27.1 - 40.7 N•m).

23. Align the pedestal assembly (26) to the base (24). Install two screws (27) and tighten (torque 20 - 30 ft-lb/27.1 - 40.7 N•m).

24. Re-install the reel to the ceiling or wall.

25. Install the hose onto the spool following the **Hose Installation** instructions, page 18.

26. Flush the hose following **Flush the Equipment**, page 9.

27. Set the spring tension following **Adjust Spring Tension**, page 20.

Replace the Hose

1. Follow the **Pressure Relief Procedure**, page 9.

2. Fully extend the hose (B) and latch the reel (FIG. 24).

3. Attach a C-clamp (A) to the reel flange to prevent the reel from unintentionally becoming unlatched and spinning freely (FIG. 24).

SPRING TENSION HAZARD

The hose reel spring is always under great tension, which if released in an uncontrolled manner could cause serious injury.

- Never allow the reel to spin freely. Uncontrolled spinning could cause serious injury if hit by the hose.
- Securely fasten the reel in place while making adjustments.
- The hose reel spring is not a serviceable part, Do not attempt to replace or service the hose reel spring.
- Always wear heavy gloves while adjusting the spring tension to protect your hands from being cut on the hose reel.

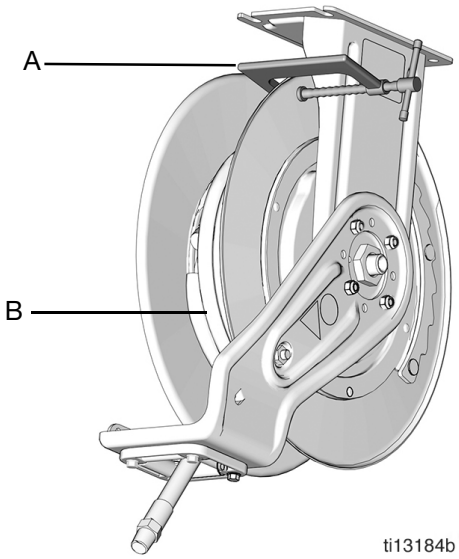


FIG. 24

4. Remove the hose stop from the hose end and put all of the parts in a secure place for re-installation on the new hose (FIG. 25).

   a. Loosen and remove screws and nuts (FIG. 25).

   b. Separate the two hose stop components to remove from the end of the hose (FIG. 25).

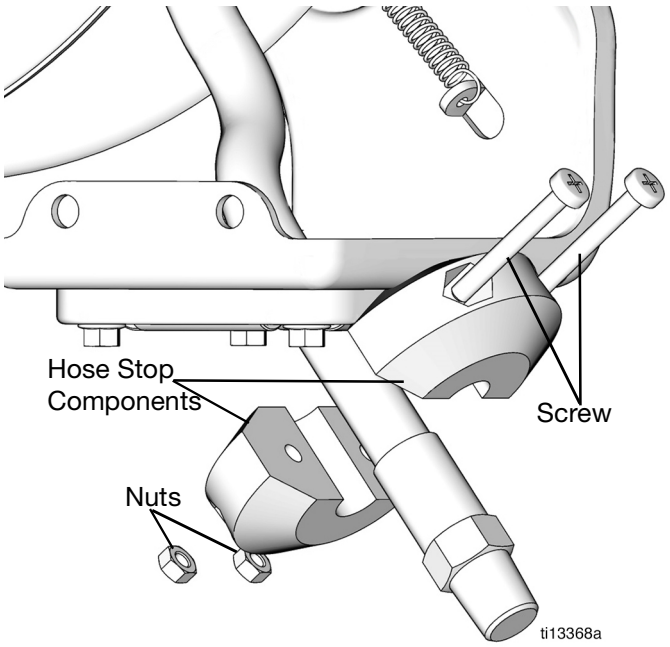


FIG. 25

5. Disconnect the hose (B) from the swivel (C) (FIG. 26).

6. Install the hose stop (D) to the end of the replacement hose. If the hose has a warning tag (F), the hose stop (D) should be installed on the same end as the warning tag (F) (FIG. 26).

NOTE: If the hose is equipped with a spring guard, this end must be on the same end as the hose stop.

7. Insert screws through the hose stop and hand tighten the nuts to hold the hose stop in place (FIG. 25).

8. Run the end of the hose (B) through the hose guide (G), and then through the hole (E) in the reel (FIG. 26).

9. Attach the hose end (B) to the hose reel swivel (C). Then carefully remove the C-clamp (D) (FIG. 24, page 27),

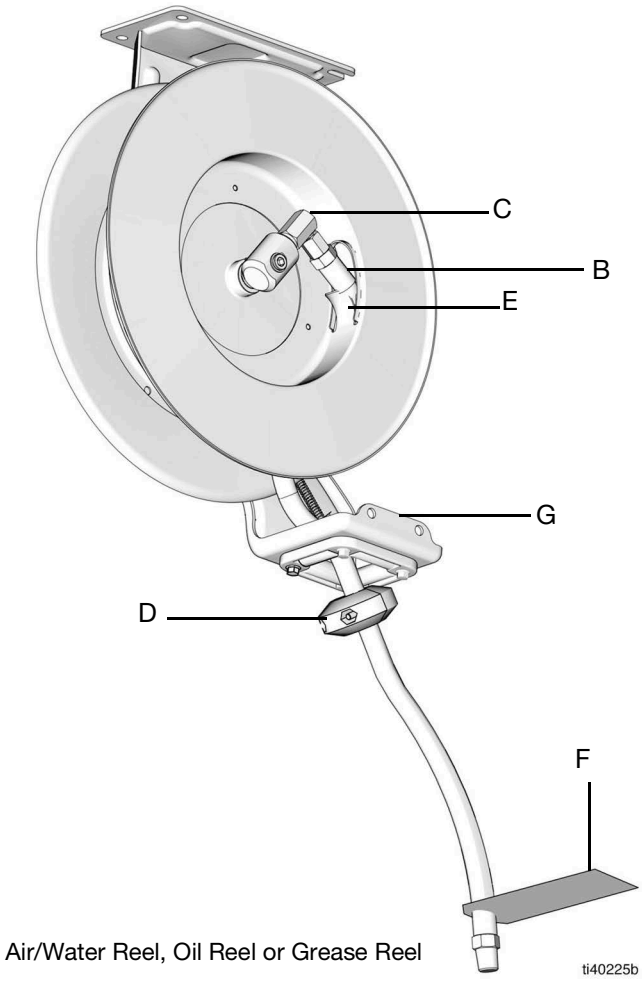


FIG. 26

10. Pull the hose (B) hard enough to release the latch and slowly allow the hose to retract.

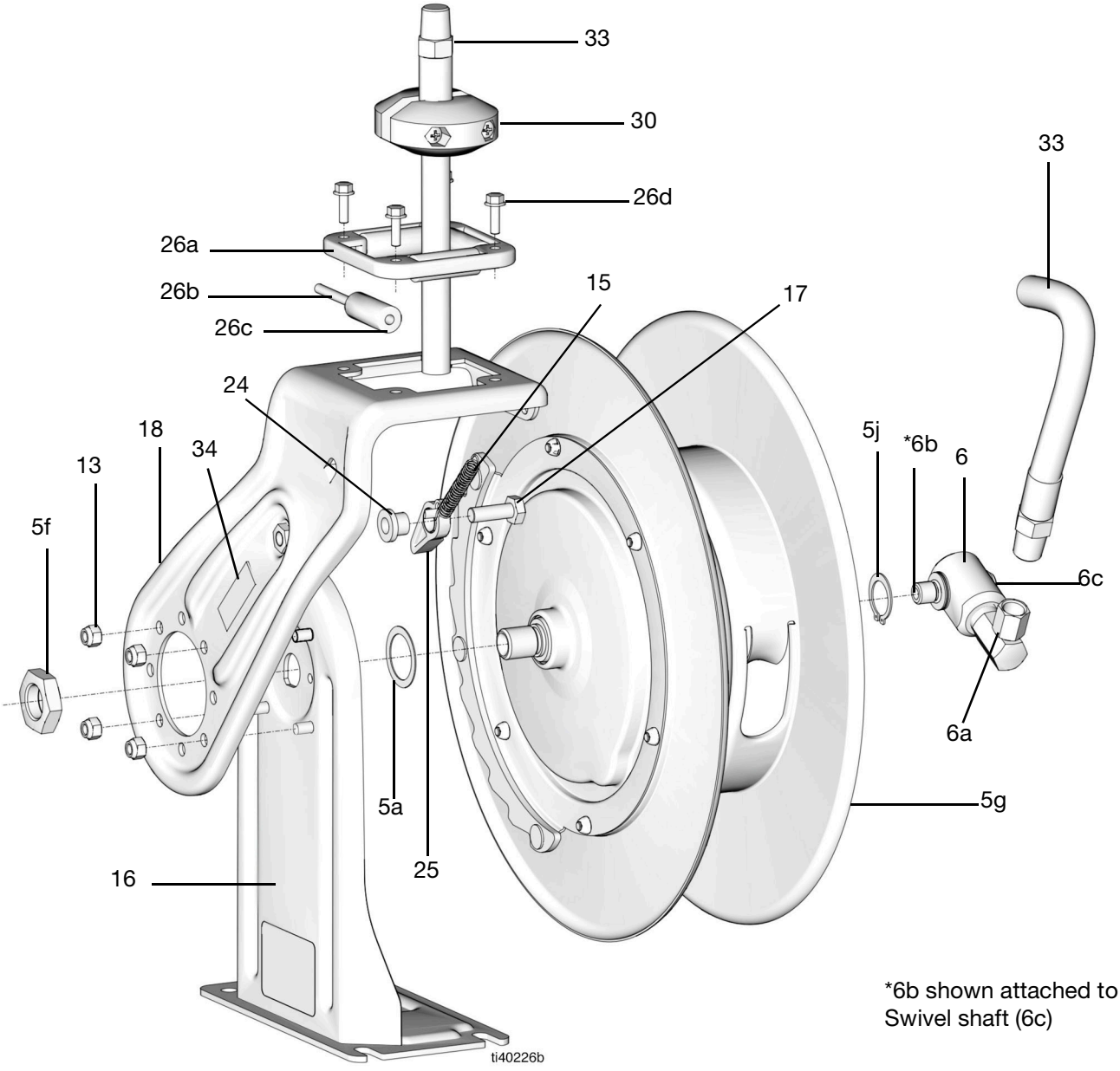
11. If used, re-assemble the hose reel enclosure.

12. Flush the hose following the **Flush the Equipment** instructions, page 9.

Notes

Parts

SDX Models



*6b shown attached to Swivel shaft (6c)

Parts SDX Series

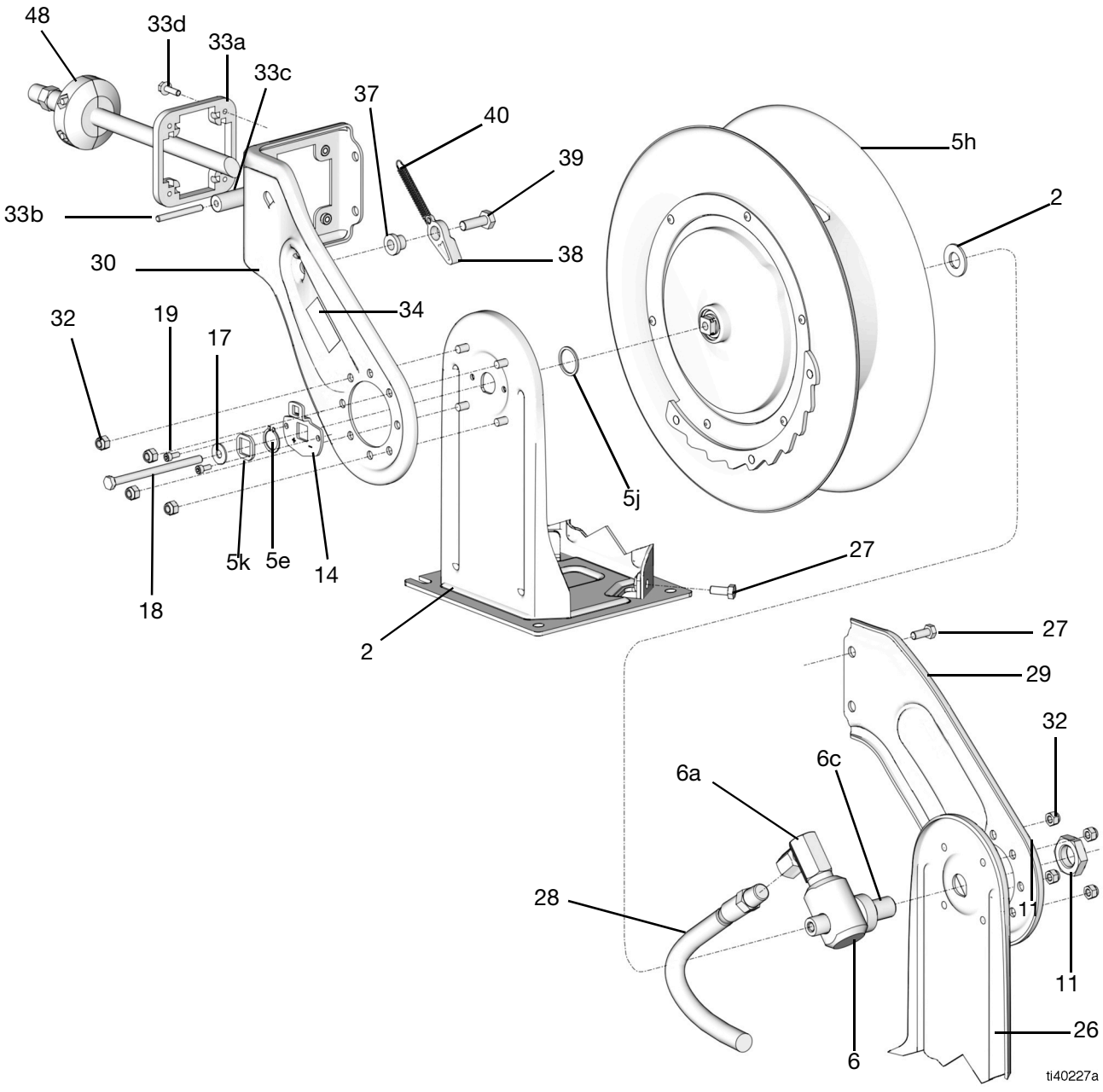
Ref	Part No.	Description	Qty
5		KIT, spool (includes 5a-5j) (see page 38)	1
5a‡		WASHER, thrust (all SDL and SDM models)	1
5a‡		WASHER, thrust (all SDH models)	1
5f‡	186579	NUT, hex, 3/8 in. x 18 npsm (SDH Models)	1
5f‡	186580	NUT, hex, 12 in. - 14 npsm (SDL and SDM Models)	1
5g‡		SPOOL	1
5j‡		RING, snap	1
6	133502	KIT, swivel, SDX A/W 3/8, Models SDL23#, SDL25#, SDL2D#, SDL56#, SDL5J	1
	133503	KIT, swivel, SDX A/W 1/2, Models SDL33#, SDL65# SDL6D#, SDL6H#	1
	133504	KIT, swivel, SDX oil 1/2, Models SDM33#, SDM3B#, SDM65#, SDM6D#, SDM6H#	1
	133505	KIT, swivel, SDX grease 3/8, Models SDH15#, SDH1D#, SDH23#, SDH55#, SDH5D#, SDH5H#	1
*6a	155470	FITTING, swivel, 90°, npsm (Models SDL3B, SDL6D, SDL33, SDL65, SDM3B, SDM6D, SDM33, SDM65)	1
*6a	161037	FITTING, swivel, 90°, npsm (Models SDL23, SDL25, SDL56)	1
*6a	15Y397	FITTING, swivel, 90°, npsm (SDH Models)	2
*6b		O-RING	1
*6c		SHAFT, swivel	1
13	104541	NUT, lock, M8 x 1.25	4
15		SPRING, ratchet, pawl	1
16		BASE	1
17		BOLT, M10 x 1.50 x 25	1
18	15V139	ARM, guide (Metallic Blue) (Models SDL23, SDL25, SDL33, SDM33, SDM3B, SDH15, SDH1D, SDH23)	
	15V141	ARM, guide (Yellow) (Models SDL23, SDL25, SDL33, SDM33, SDM3B, SDH15, SDH1D, SDH23)	
	15V142	ARM, guide (Red) (Models SDL23, SDL25, SDL33, SDM33, SDM3B, SDH15, SDH1D, SDH23)	
	15V143	ARM, guide (White) (Models SDL23, SDL25, SDL33, SDM33, SDM3B, SDH15, SDH1D, SDH23)	
	15V144	ARM, guide (Black) (Models SDL23, SDL25, SDL33, SDM33, SDM3B, SDH15, SDH1D, SDH23)	
	15V157	ARM, guide (Metallic Blue) (Models SDL56, SDL65, SDM65, SDM6D, SDH55, SDH5D)	
	15V159	ARM, guide (Yellow) (Models SDL56, SDL65, SDM65, SDM6D, SDH55, SDH5D)	
	15V160	ARM, guide (Red) (Models SDL56, SDL65, SDM65, SDM6D, SDH55, SDH5D)	
	15V161	ARM, guide (White) (Models SDL56, SDL65, SDM65, SDM6D, SDH55, SDH5D)	
	15V162	ARM, guide (Black) (Models SDL56, SDL65, SDM65, SDM6D, SDH55, SDH5D)	
24		BUSHING, pawl	1
25		PAWL, ratchet	1
26	218591	KIT, roller (includes 25a-25d) (see page 41)	1
26a		BRACKET, roller	1
26b		PIN, roller	4
26c		ROLLER, hose	4
26d		SCREW, M6 x 1.0 x 20	4
30		KIT, stop, hose (see page 41)	1
33	109158	HOSE, 50 ft., npt (Models SDH15A, SDH15B, SDH15C, SDH15D, SDH15E, SDH15F)	1
	124461	HOSE, 50 ft., npt (Models SDH55A, SDH55B, SDH55C, SDH55D, SDH55E, SDHE5F)	1
	25U035	HOSE, 35 ft., npt (Models SDL23A, SDL23B, SDL23C, SDL23D, SDL23E, SDL23F)	1
	25U036	HOSE, 50 ft., npt (Models SDL25A, SDL25B, SDL25C, SDL25D, SDL25E, SDL25F)	1
	25U037	HOSE, 65 ft., npt (Models SDL56A, SDL56B, SDL56C, SDL56D, SDL56E, SDL56F)	1
	25U038	HOSE, 35 ft., npt (Models SDL33A, SDL33B, SDL33C, SDL33D, SDL33E, SDL33F)	1

Ref	Part No.	Description	Qty
	25U039	HOSE, 50 ft., npt (Models SDL65A, SDL65B, SDL65C, SDL65D, SDL65E, SDL65F)	1
	26C121	HOSE, 35 ft., npt (Models SDM33A, SDM33B, SDM33C, SDM33D, SDM33E, SDM33F)	1
	26C122	HOSE, 50 ft., npt (Models SDM65A, SDM65B, SDM65C, SDM65D, SDM65E, SDM65F)	1
	124470	HOSE, 35 ft., npt (Models SDH23A, SDH23B, SDH23C, SDH23D, SDH23E, SDH2F)	1
34▲	15W036	LABEL, warning	1

*Included in Swivel Kit, page 38
‡Included in Spool Kit, page 38.
▲*Replacement safety labels, tags, and cards are available at no cost.*

A complete list of all available kits begins on page 38.

XDX Models



Water Reel, Oil Reel or Grease Reel

Parts XDX Series

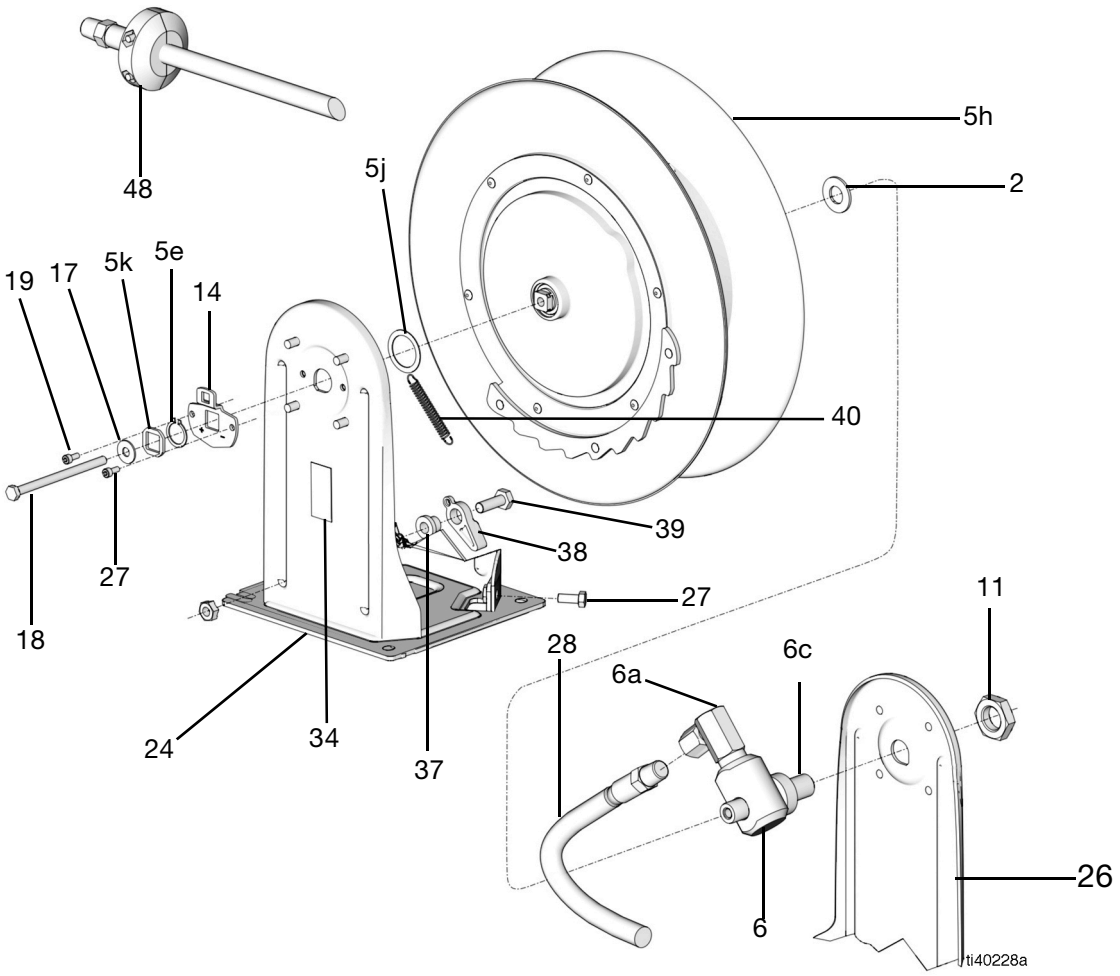
Ref	Part No.	Description	Qty
2		WASHER, flat	1
5		KIT, spool (see page 38) (includes parts 5a-5k)	1
5e‡		RING, retaining	1
5h‡		SPOOL	1
5j‡		WASHER, 30 mm	1
5k‡		WASHER, square center	1
6	133506	KIT, swivel, XDX grease 3/8	1
	133507	KIT, swivel, XDX oil 1/2	1
	133508	KIT, swivel, XDX A/W 1/2	1
	133509	KIT, swivel, XDX A/W 3/8	1
*6a	155470	FITTING, swivel, 90° npsm (Models XDL33, XDM33, XDM3B, XDL65, XDL6D, XDM65, XDM6D, XNL65, XNM65)	1
*6a	15Y397	FITTING, swivel, 90° npsm (XDH, XNH55 Models)	1
*6a	161037	FITTING, swivel, 90° npsm (Models XDL25, XDL2D, XDL56, XDL5D, XNL56)	1
*6c		SHAFT, swivel	1
11	186579	NUT, hex 3/8 in. - 18 npsm (Models XDH15, XDH1D, XDH55, XDH55B, XNH55)	1
11	186580	NUT, hex 1/2 in. - 14 npsm (Models XNL56, XNL65, XDL25, XDL33, XDL56, XDL65, XDL2D, XDL6D)	1
14		ADJUSTER, power spring	1
17	100023	WASHER, 8 mm	1
18		SCREW, M8 x 1.25 x 120	1
19		SCREW, M5 x .80 x 20	2
24		BASE, dual	1
26		PEDESTAL	1
27		SCREW, M8 x 1.25 x 20	4
28	109158	HOSE, 50 ft., npt (Models XDH15A, XDH15B)	1
	124461	HOSE, 50 ft., npt (Models XDH55A, XDH55B, XDH55F, XNH55A, XNH55B, XNH55F)	1
	25U036	HOSE, 50 ft., npt (Models XDL25A, XDL25B, XDL25F)	1
	25U037	HOSE, 65 ft., npt (Models XDL56A, XDL55B, XDL55F, XNL56A, XNL56B, XNL56F)	1
	25U039	HOSE, 50 ft., npt (Models XDL65A, XDL65B, XNL65F, XNL65A, XNL65B, XNL65F)	1
	26C121	HOSE, 35 ft., npt (Models XDM33A, XDM33B, XDM33F)	1
	26C122	HOSE, 50 ft., npt (Models XDM65A, XDM65B, XDM65F, XNM65A, XNM65B, XNM65F)	1
29	15V145	ARM, guide, dual (Metallic Blue) (Models XDL25, XDL33, XDM33, XDH15, XDH1D, XDM3B; not included on XNX models)	
	15V146	ARM, guide, dual (White) (Models XDL25, XDL33, XDM33, XDH15, XDH1D, XDM3B; not included on XNX models)	
	15X939	ARM, guide, dual (Yellow) (Models XDL25, XDL33, XDM33, XDH15, XDH1D, XDM3B; not included on XNX models)	
	18F248	ARM, guide, dual (Black) (Models XDL25, XDL33, XDM33, XDH15, XDH1D, XDM3B; not included on XNX models)	
	15V163	ARM, guide, dual (Metallic Blue) (Models XDL56, XDL65, XDM65, XDH55, XDH5D, XDM6D; not included on XNX models)	
	15V164	ARM, guide, dual (White) (Models XDL56, XDL65, XDM65, XDH55, XDH5D, XDM6D; not included on XNX models)	
	15X942	ARM, guide, dual (Yellow) (Models XDL56, XDL65, XDM65, XDH55, XDH5D, XDM6D; not included on XNX models)	
	18F249	ARM, guide, dual (Black) (Models XDL56, XDL65, XDM65, XDH55, XDH5D, XDM6D; not included on XNX models)	
30	15V143	ARM, guide (White) (Models XDL25, XDL33, XDM33, XDH15, XDH1D, XDM3B; not included on XNX models)	1
	15V139	ARM, guide (Metallic Blue) (Models XDL25, XDL33, XDM33, XDH15, XDH1D, XDM3B; not included on XNX models)	
	15V141	ARM, guide (Yellow) (Models XDL25, XDL33, XDM33, XDH15, XDH1D, XDM3B; not included on XNX models)	
	15V144	ARM, guide (Black) (Models XDL25, XDL33, XDM33, XDH15, XDH1D, XDM3B; not included on XNX models)	

Ref	Part No.	Description	Qty
	15V161	ARM, guide (White) (Models XDL56, XDL65, XDM65, XDH55, XDH5D, XDM6D; not included on XNX models)	
	15V157	ARM, guide (Metallic Blue) (Models XDL56, XDL65, XDM65, XDH55, XDH5D, XDM6D; not included on XNX models)	
	15V159	ARM, guide (Yellow) (Models XDL56, XDL65, XDM65, XDH55, XDH5D, XDM6D; not included on XNX models)	
	15V162	ARM, guide (Black) (Models XDL56, XDL65, XDM65, XDH55, XDH5D, XDM6D; not included on XNX models)	
32	104541	NUT, lock, M8 x 1.25	8
33	218591	KIT, roller (includes 33a-33d) (page 41)	
33a		BRACKET, roller	1
33b		PIN, roller	4
33c		ROLLER, hose	4
33d		SCREW, M6 x 1.0 x 20	4
34▲	15W036	LABEL, warning	1
37		BUSHING, pawl	1
38		PAWL, ratchet	1
39		BOLT, M10 x 1.5 x 25 lg	1
40		SPRING, ratchet pawl	1
48		KIT, stop, hose (page 41)	1

*Included in Swivel Kit, page 38
‡Included in Spool Kit, page 38.
▲*Replacement safety labels, tags, and cards are available at no cost.*

A complete list of all available kits begins on page 38.

XNX Models


48
5j
5h
2
19
17
5k
5e
14
40
39
38
27
27
18
24
34
37
28
6a
6c
11
26
6
ti40228a

Parts XNX Series

Ref	Part No	Description	Qty
2		WASHER, flat	1
5		KIT, spool (see page 38) (includes parts 5e-5k)	1
5e‡		RING, retaining	1
5h‡		SPOOL	1
5j‡		WASHER, 30 mm	1
5k‡		WASHER, square center	1
6	133506	KIT, swivel, XDX grease 3/8	1
	133507	KIT, swivel, XDX oil 1/2	1
	133508	KIT, swivel, XDX A/W 1/2	1
	133509	KIT, swivel, XDX A/W 3/8	1
*6a	155470	FITTING, swivel, 90° (XNL65D and XNM65D)	
*6a	15Y397	FITTING, swivel, 90° (XNH55D)	
*6a	161037	FITTING, swivel, 90° (XNL56D)	1
*6c		SHAFT, swivel	1
11	186579	NUT, hex, 3/8 in. - 18 npsm (XNH55D)	1
11	186580	NUT, hex, 1/2 in. - 14 npsm (Models XNL56D, XNL65D, AND XNM65D)	1
14		ADJUSTER, power spring	1
17	100023	WASHER, 8 mm	1
18		SCREW, M8 x 1.25 x 120	1
19		SCREW, M5 x .80 x 20	2
24		BASE, dual	1
26		PEDESTAL	1
27‡		SCREW, M8 x 1.25 x 20	2
28	124461	HOSE, 50 ft. (Model XNH55D)	1
	25U037	HOSE, 65 ft. (Model XNL56D)	1
	25U039	HOSE, 50 ft. (Model XNL65D)	1
	26C122	HOSE, coupled, 50 ft. (Model XNM65D)	1
34▲	15W036	LABEL, warning	1
37		BUSHING, pawl	1
38		PAWL, ratchet	1
39		BOLT, M10 x 1.5 x 25 lg	1
40		SPRING, ratchet pawl	1
48		KIT, stop, hose (page 41)	1

*Included in Swivel Kit, page 38.
‡Included in Spool Kit, page 38.
▲*Replacement safety labels, tags, and cards are available at no cost.*

A complete list of all available kits begins on page 38.

Kits

Reel P/N	Frame Size	Fluid	Hose Size (in./mm)	Hose Length (ft./mm)	Spool Kit	Swivel Kit
SDL2D#	SDX10	Air/Water	3/8	50	18F131	133502
SDL6D#	SDX20	Air/Water	1/2	50	18F132	133503
SDL23#	SDX10	Air/Water	3/8	35	18F133	133502
SDL25#	SDX10	Air/Water	3/8	50	18F131	133502
SDL56#	SDX20	Air/Water	3/8	65	18F134	133502
SDL5J#	SDX Truck 20	Air/Water	3/8	65	18F134	133502
SDL33#	SDX10	Air/Water	1/2	35	18F133	133503
SDL65#	SDX20	Air/Water	1/2	50	18F132	133503
SDL6H#	SDX Truck 20	Air/Water	1/2	50	18F132	133503
SDM3B#	SDX10	Oil	1/2	35	18F135	133504
SDM6D#	SDX20	Oil	1/2	50	18F141	133504
SDM33#	SDX10	Oil	1/2	35	18F135	133504
SDM65#	SDX20	Oil	1/2	50	18F141	133504
SDM6H#	SDX Truck 20	Oil	1/2	50	18F141	133504
SDH1D#	SDX10	Grease	1/4	50	18F138	133505
SDH5D#	SDX20	Grease	3/8	50	18F139	133505
SDH15#	SDX10	Grease	1/4	50	18F138	133505
SDH23#	SDX10	Grease	3/8	35	18F138	133505
SDH55#	SDX20	Grease	3/8	50	18F139	133505
SDH5H#	SDX Truck 20	Grease	3/8	50	18F139	133505
XDL2D#	XDX10	Air/Water	3/8	50	15Y496	133509
XDL6D#	XDX20	Air/Water	1/2	50	15Y497	133508
XDL25#	XDX10	Air/Water	3/8	50	15Y496	133509
XDL33#	XDX10	Air/Water	1/2	35	15Y499	133508
XDL56#	XDX20	Air/Water	3/8	65	15Y498	133509
XDL65#	XDX20	Air/Water	1/2	50	15Y497	133508
XDM3B#	XDX10	Oil	1/2	35	15Y496	133507
XDM6D#	XDX20	Oil	1/2	50	15Y502	133507
XDM33#	XDX10	Oil	1/2	35	15Y496	133507
XDM65#	XDX20	Oil	1/2	50	15Y502	133507
XDH15#	SDX10	Grease	1/4	50	15Y501	133506
XDH1D#	SDX10	Grease	1/4	50	15Y501	133506
XDH5D#	SDX20	Grease	3/8	50	15Y502	133506
XDH55#	SDX20	Grease	3/8	50	15Y502	133506
XNL56D	XDX no arm 20	Air/Water	3/8	65	15Y498	133509
XNL65D	XDX no arm 20	Air/Water	1/2	50	15Y497	133508
XNM65D	XDX no arm 20	Oil	1/2	50	15Y502	133507
XNH55D	XDX no arm 20	Grease	3/8	50	15Y502	133506

Hose Reel Label

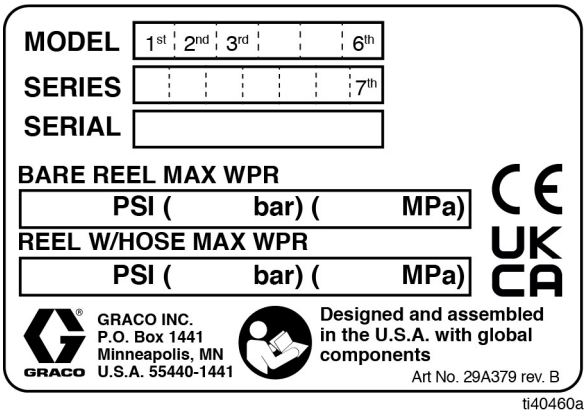


FIG. 27

NOTE:

The 1ST AND 2nd character in the model number determines the reel type category (FIG. 27).
- SD= SDX Series
- XD = XDX Series
- XN = XNX Series

The 3rd character in the model number determines the reel pressure category (FIG. 27).
- L = Low Pressure
- M = Medium Pressure
- H= High Pressure

The 6th character in the model number determines the color.
- A = white
- B = Blue
- C = Red (SDX Models only)
- D = Black
- F = Yellow

The 7th (last) character in the hose reel series is the Series Letter.

Label, Fluid Identification: 24A223

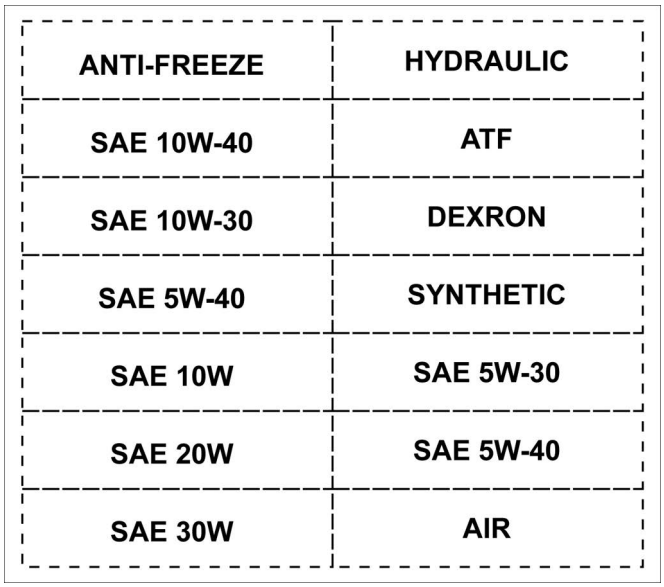


FIG. 28

Latch Kit: 15Y503

(Instruction Manual: 406801)

Description	Qty
SCREW, M8 x 1.25 X 20	2
PAWL, ratchet	1
SPRING, ratchet, pawl	1
SCREW, M10 x 1.50 x 25	1
BUSHING	1
NUT, M8 x 1.25	4
SCREW, M8 x 1.50 x 40	1
NUT, M10 x 1.50	1

Enclosure Retrofit Kit: 24C100

(Instruction Manual: 313902)

Description	Qty
ARM, hose guide	1
BASE, reel, enclosed	1
NUT, lock	4
SCREW	4
WASHER, flat	3
BOLT, M10 x 40 lg	1
NUT, hex	1
WASHER, lock, spring	1
NUT, lock	4
SCREW	4
NUT, hex	5
WASHER, lock	1
SCREW, shoulder, #10	1

Hose Inlet Kit

(Instruction Manual 406741)

Description	Qty
1/4 NPT Inlet: 224417	
HOSE, coupled, 24 in.	1
FITTING, UNION, ADAPTER, 90°	1
3/8 Inlet: 218550	
HOSE, coupled, 24 in.	1
FITTING, union, adapter, 90°	1
1/2 NPT Inlet: 218549	
HOSE, coupled, 24 in.	1
FITTING, swivel, union, 90°	1

Mounting Adapter: 22A224

(page 11)

Description	Qty
BASE, adapter	1
SCREWS, 3/8 in. - 16 x 3/4 in.	4

Hose Guide Kits

Roller Bracket Repair: 218591

(Instruction Manual: 406743)

Description	Qty
BRACKET, hose guide	1
PIN, roller	4
ROLLER, hose	4
NUT, lock, #10 - 32	4
SCREW, #10 - 32 x 3/4 in.	4
SCREW, M6 x 1.0 x 20	4

Cabinet Mounting Kit: 15Y478

Description	Qty
BRACKET, hose guide	1
PIN, roller	4
ROLLER, hose	4
PLATE, mounting	1
NUT, lock, #10 - 32	4
SCREW, #10 - 32 x 3/4 in.	4

Hose Reel Stop Kit

(Instruction Manual: 406742)

1/4 in. and 3/8 in. ID Hoses: 218340

Description	Qty
NUT, hex, jam	2
SCREW, machine, phillips	2
STOP, hose, 0.656 in. ID	2

3/8 in. and 1/2 in. ID Hoses: 218341

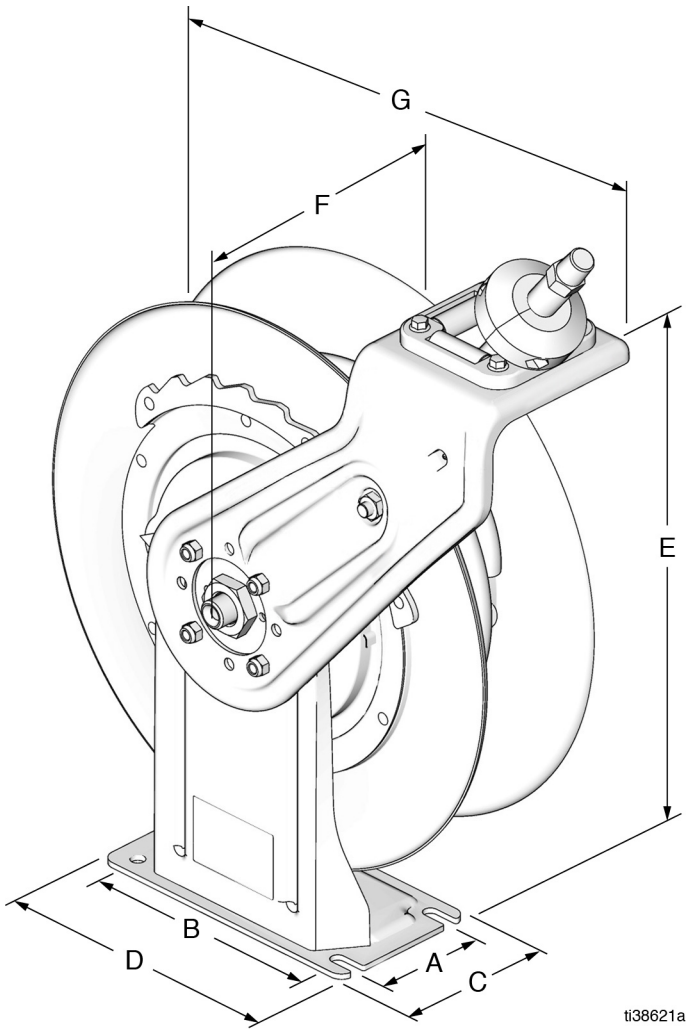
Description	Qty
NUT, hex, jam	2
SCREW, machine, phillips	2
STOP, hose, 0.782in. ID Kit	2

1/4 in. ID Hoses: 222225

Description	Qty
NUT, hex, jam	2
SCREW, machine, phillips	2
STOP, hose, 0.53 in. ID Kit	2

Dimensions

SDX Models



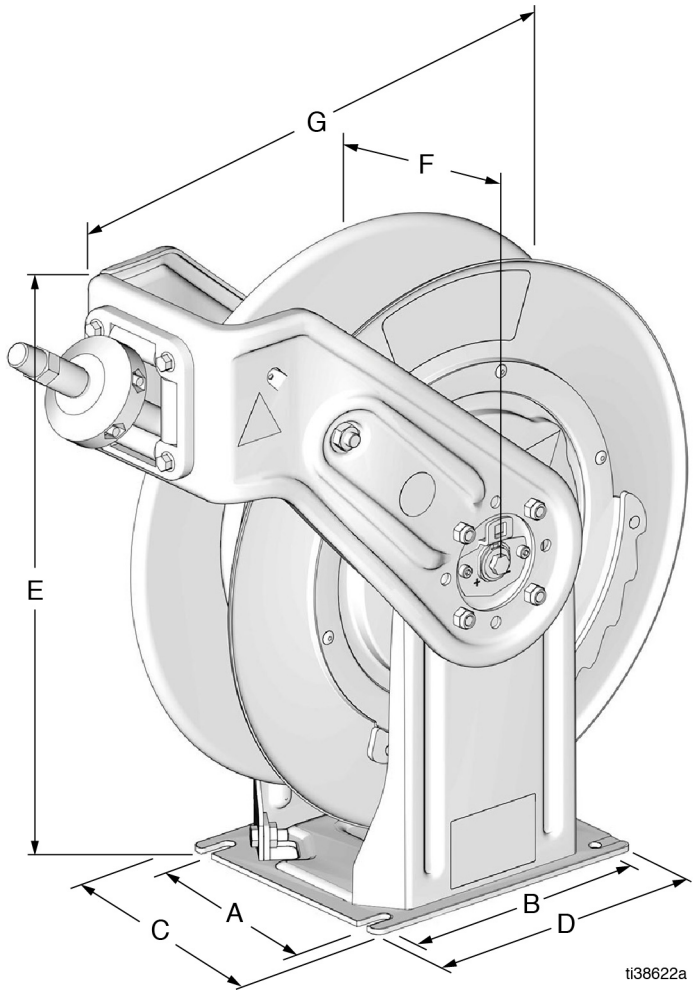
Pressure	*Size*	A	B*	C	D	E†	F	G◆
Low	10	3.5 in. (89 mm)	7.5 in. (191 mm)	4.7 in. (119 mm)	9.0 in. (229 mm)	19.5 in. (495 mm)	7.0 in. (178 mm)	17.1 in. (434 mm)
Medium	10							
High	10							
Low	20	3.5 in. (89 mm)	7.5 in. (191 mm)	4.7 in. (119 mm)	9.0 in. (229 mm)	21.8 in. (554 mm)	7.0 in. (178 mm)	19.2 in. (488 mm)
Medium	20							
High	20							

**Measurement taken from center to center of bolt slot/hole.*

†Measurement taken from base to top of bolts.

◆Measurement taken from edge of spool to front of arm.

XDX Models



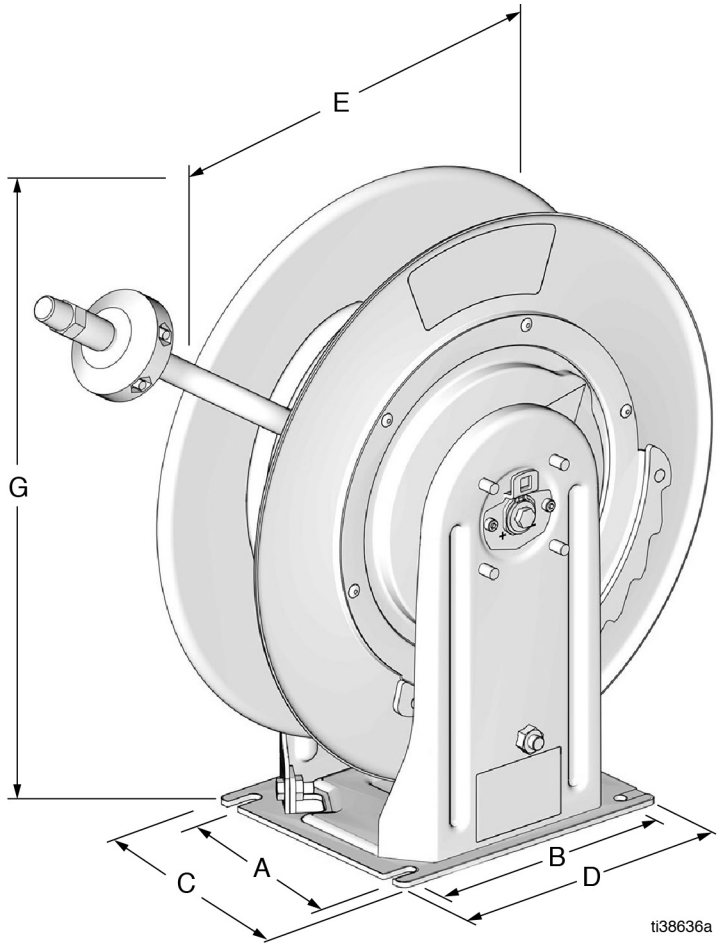
Pressure	*Size*	A	B*	C	D	E†	F	G◆
Low	10	6.5 in. (165 mm)	7.5 in. (191 mm)	7.7 in. (196 mm)	9.0 in. (229 mm)	18.5 in. (470 mm)	7.7 in. (196 mm)	18.0 in. (457 mm)
Medium	10							
High	10							
Low	20	6.5 in. (165 mm)	7.5 in. (191 mm)	7.7 in. (196 mm)	9.0 in. (229 mm)	21.0 in. (533 mm)	7.7 in. (196 mm)	20.0 in. (508 mm)
Medium	20							
High	20							

**Measurement taken from center to center of 11 mm bolt slot/hole.*

†Measurement taken from base to top of bolts.

◆Measurement taken from edge of spool to front of arm.

XNX Models



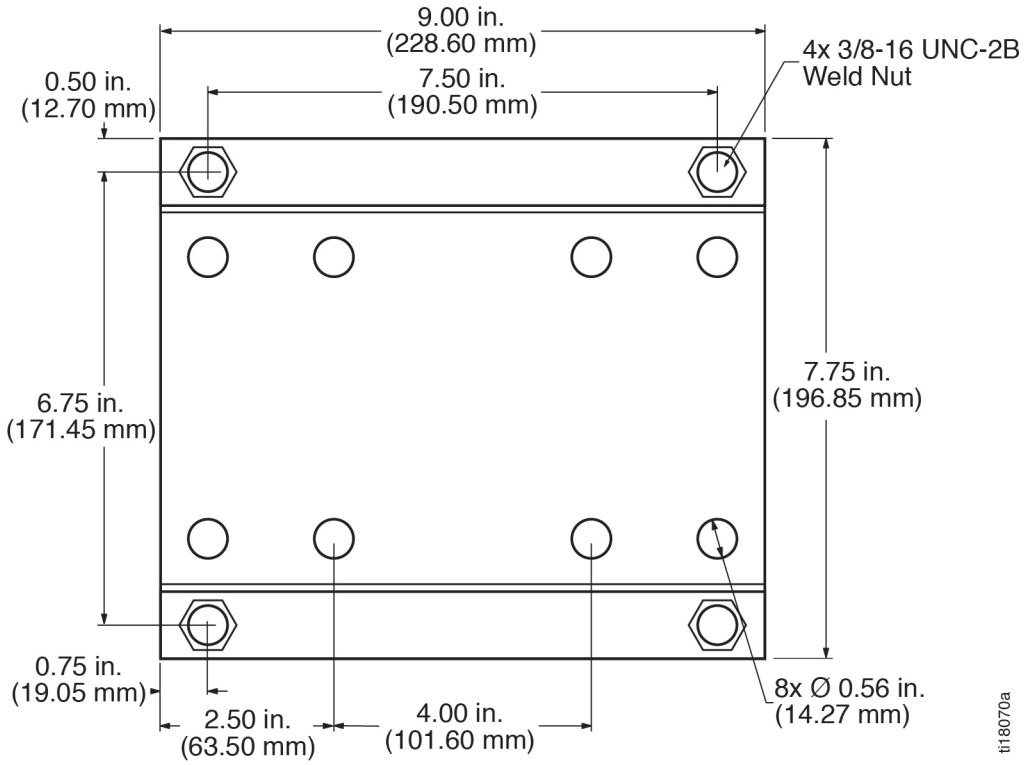
Pressure	*Size*	A	B*	C	D	E	G
Low	20	6.5 in. (165 mm)	7.5 in. (191 mm)	7.7 in. (196 mm)	9.0 in. (229 mm)	18.2 in. (462 mm)	20.0 in. (508 mm)
Medium	20						
High	20						

**Measurement taken from center to center of bolt slot/holes.*

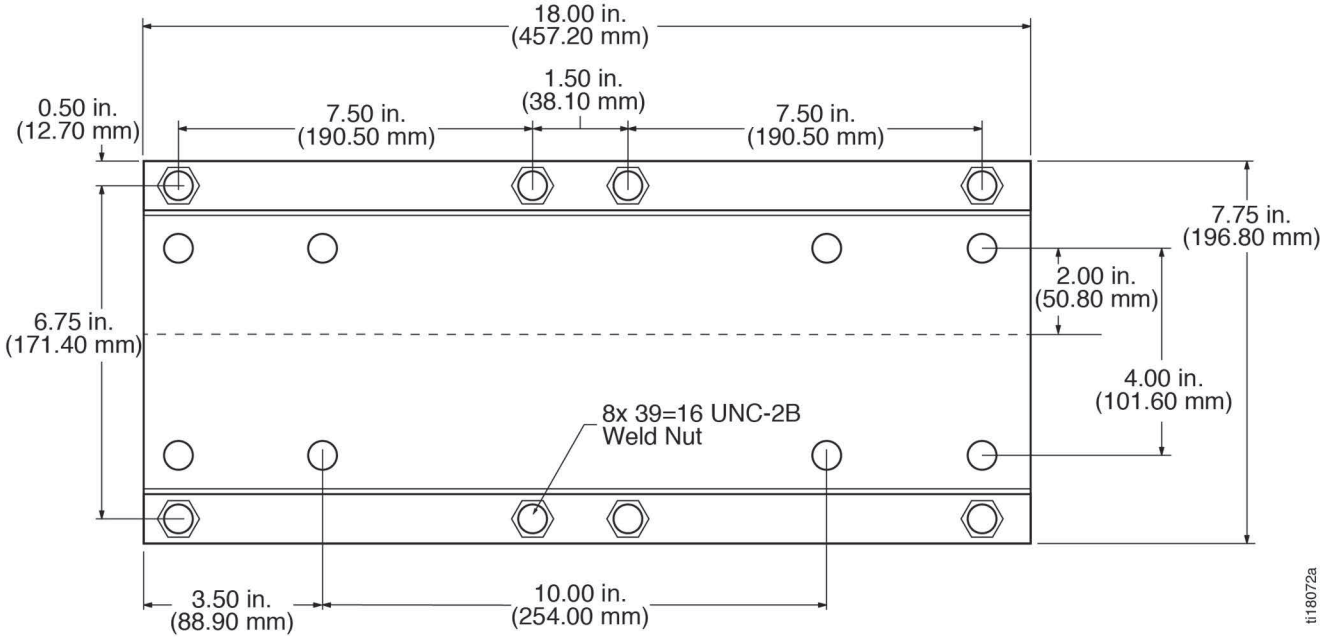
Mounting Channel Dimensions

(Side dimension for all kits, page 50)

1 Reel Base - Included in Kits 24A934/203521 - SDX Models



2 Reel Base - Included in Kits 24A935/203522 - SDX Models



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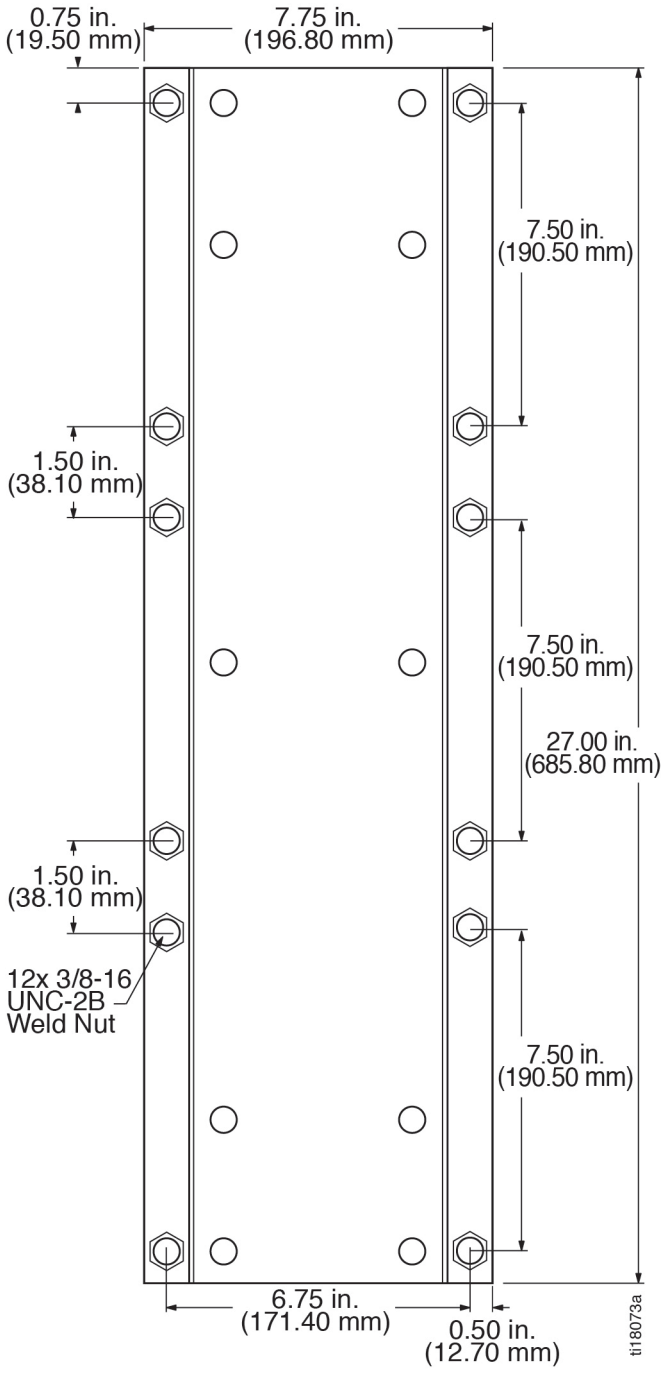
Included in Kits 24A936/203523 - SDX Models



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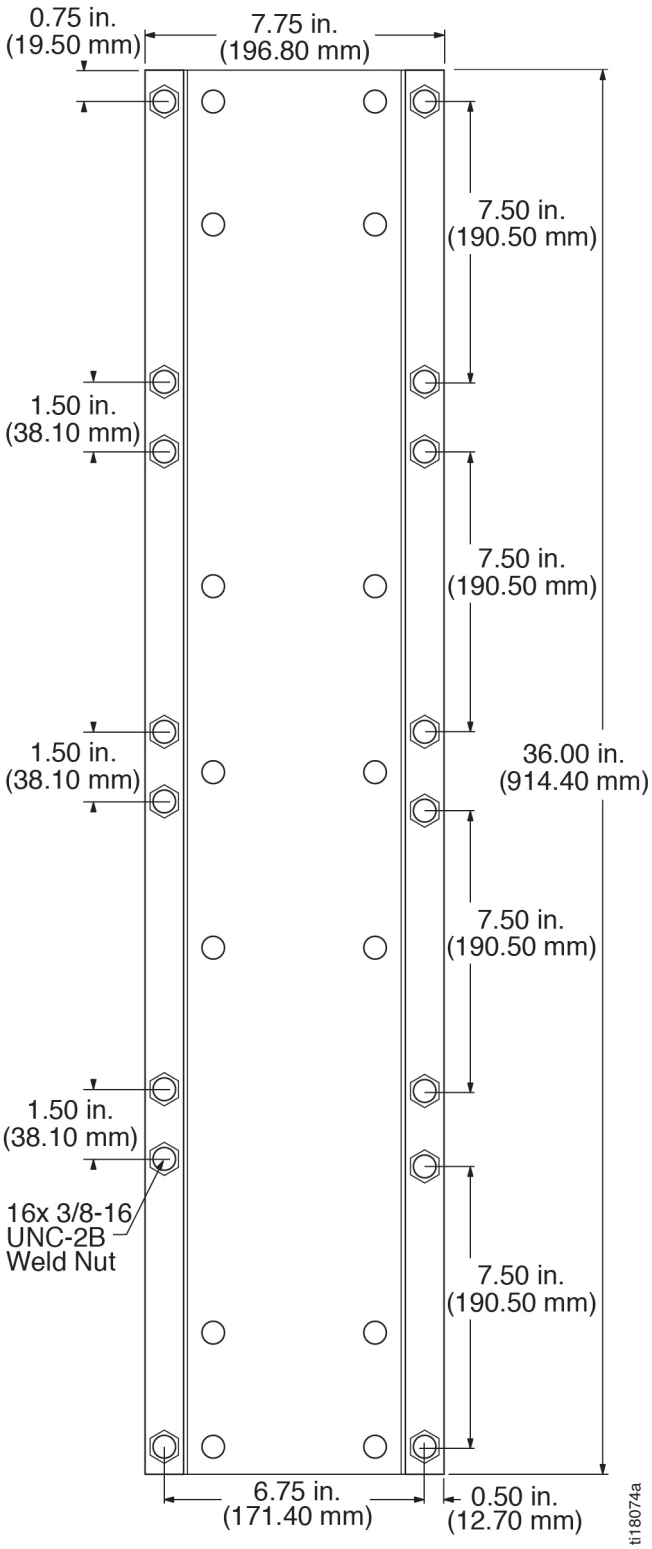
Included in Kits 24A937/203524 - SDX Models



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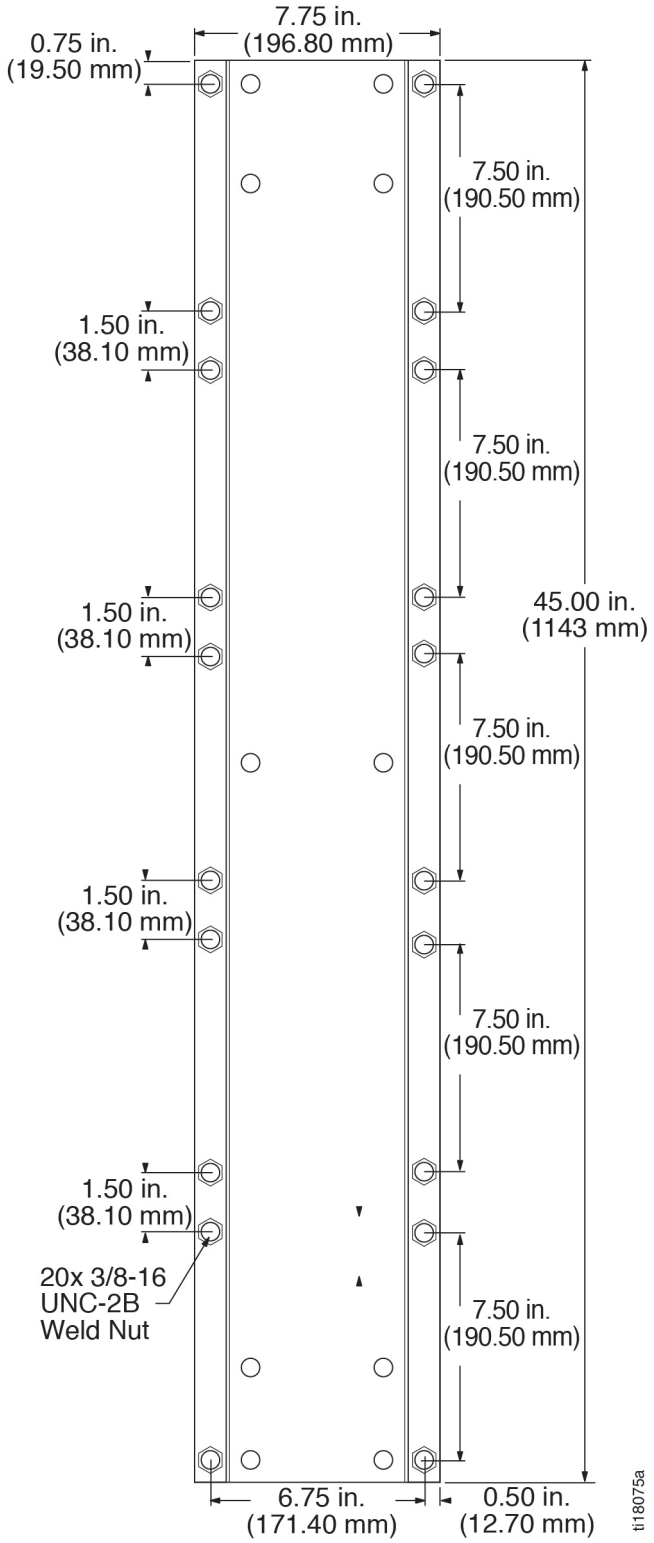
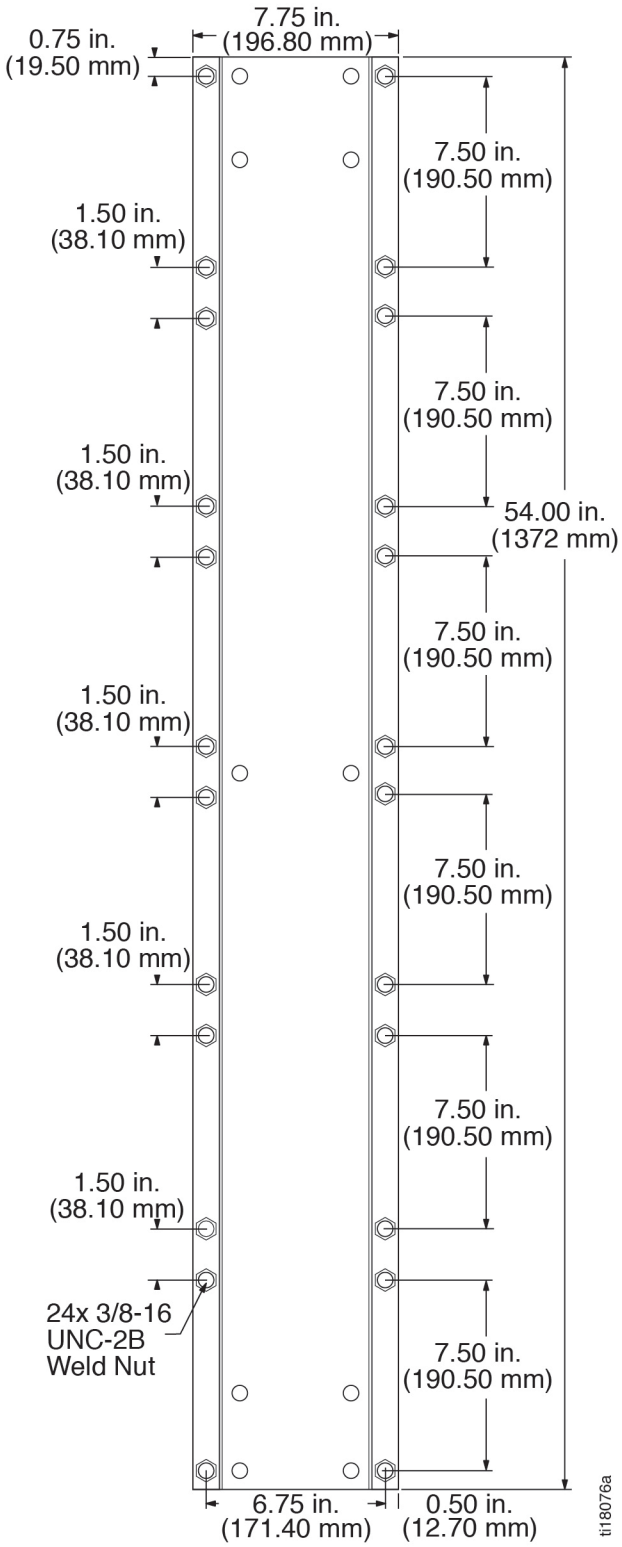
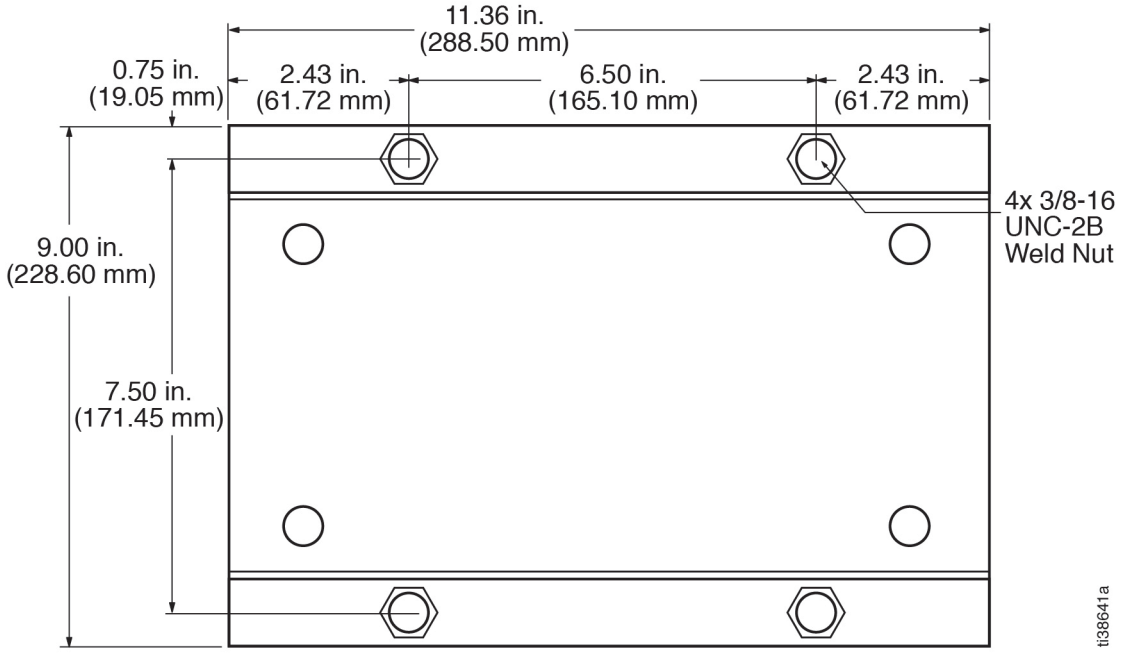


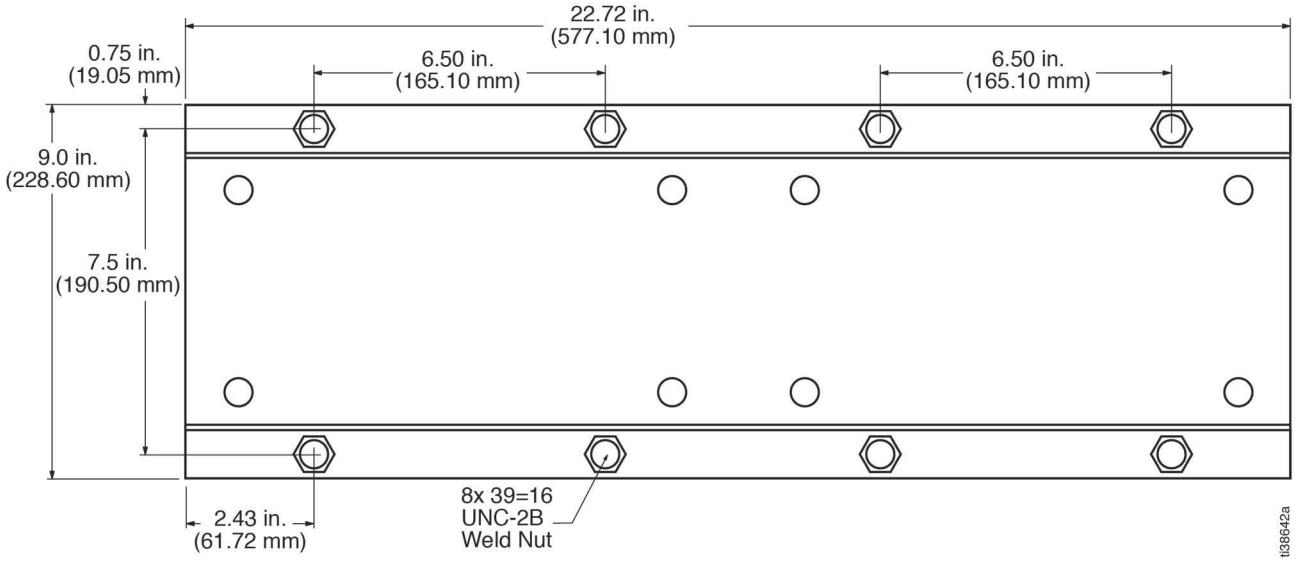
6 Reel Base -
Included in Kits 24A939/203526 - SDX Models



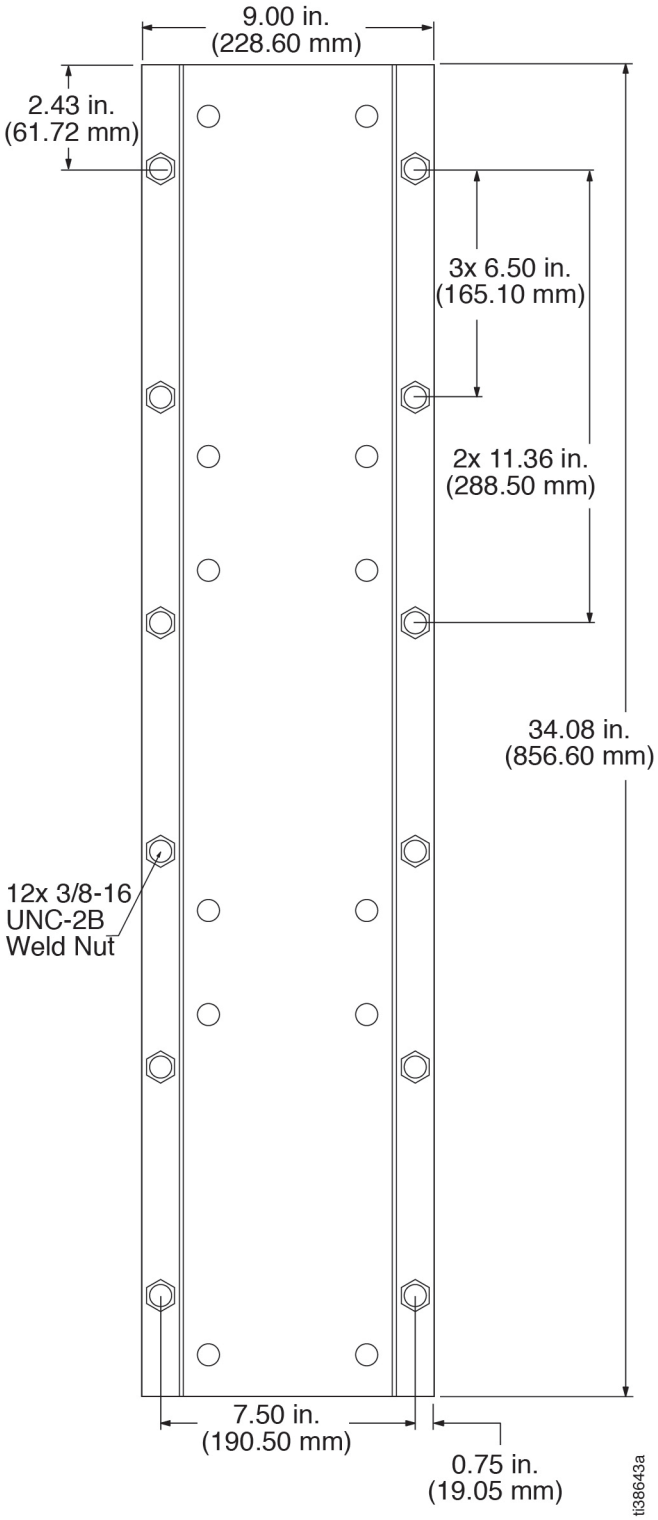
1 Reel Base - Included in Kits 24A219 - XDX Models



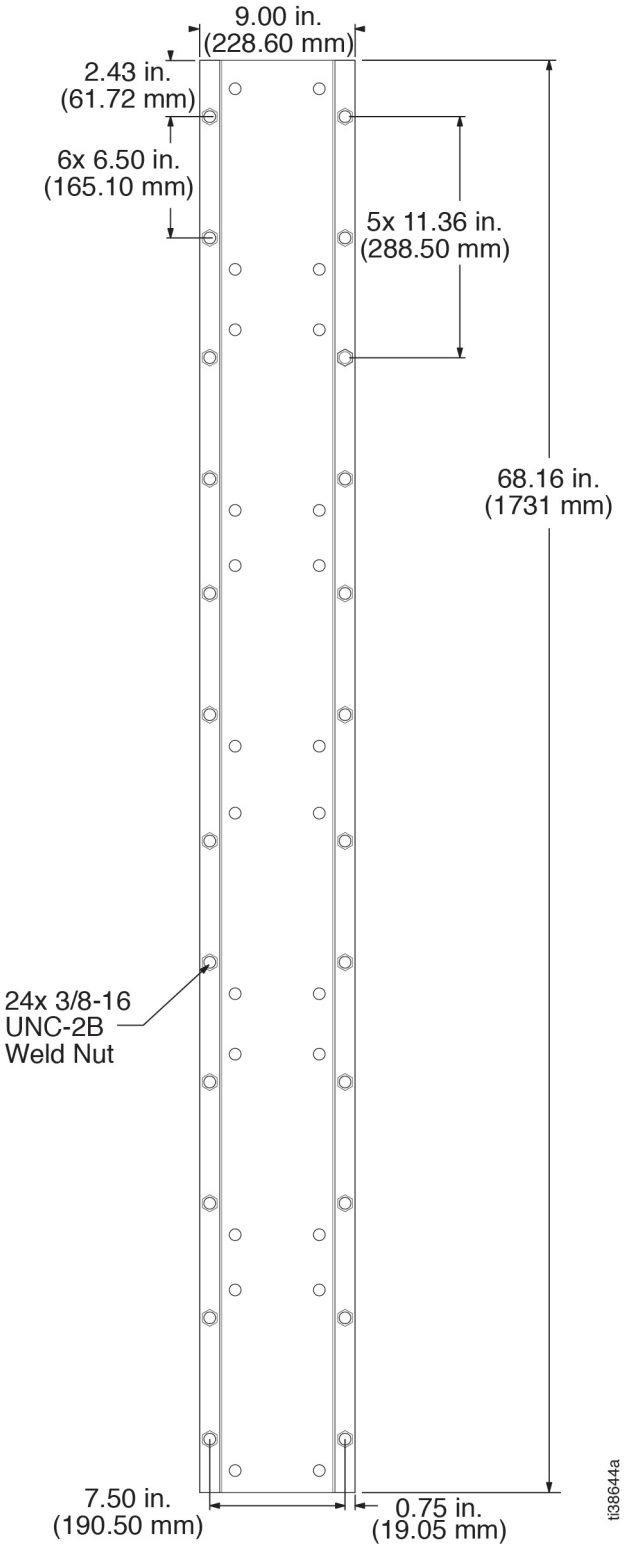
2 Reel Base - Included in Kit 24A220 - XDX Models



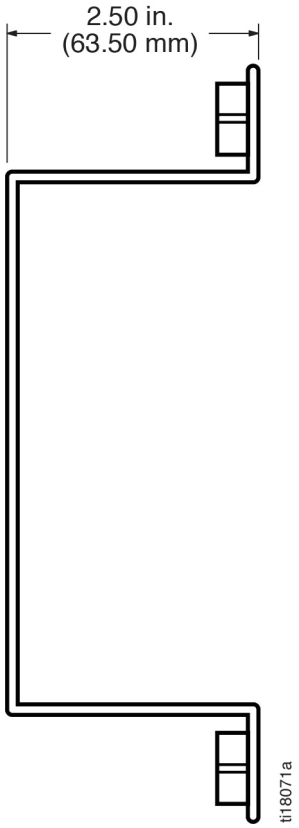
3 Reel Base -
Included in Kits 24A221 - XDX Models



6 Reel Base -
Included in Kits 24A222 - XDX Models



Side Dimension (All Models)



Technical Specifications

SDX, XDX and XNX 10/20 Series Hose Reels		
	US	**Metric**
Low Pressure Hose Reels		
Maximum fluid working pressure (Air/Water, all hose diameters)	300 psi	2.1 MPa, 21 bar
Inlet size	1/2 npsm male	
Swivel outlet size	3/8 or 1/2 npsm(f)	
Hose outlet size	3/8 or 1/2 npt(m)	
Operating temperature range	-20° – 190°F	-29° – 88°C
Wetted parts - Bare Hose Reel only	Stainless steel, anodized aluminum, Nitrile rubber	
Medium Pressure Hose Reels		
Maximum fluid working pressure (Oil)	2000 psi	14 MPa, 138 bar
Inlet size	1/2 npsm male	
Swivel outlet size	1/2 npsm (f)	
Hose outlet size	1/2 npt male	
Operating temperature range	-20° – 190°F	-29° – 88°C
Wetted parts - Bare Hose Reel only	Zinc plated steel, anodized aluminum, Nitrile rubber	
High Pressure Hose Reels		
Maximum fluid working pressure (grease, all hose diameters)	5000 psi	35 MPa, 345 bar
Inlet size	3/8 npsm male	
Swivel outlet size	3/8 npsm (f)	
Hose outlet size	1/4 npt male	
Operating temperature range	-40° – 200°F	-40° – 93°C
Wetted parts - Bare Hose Reel only	Zinc plated steel, Nitrile rubber, steel	
Dry Weight (Approximate)*		
SDX Models (for example SDH55B)	52 lbs (23.6 kg)	
XDX Models (for example XDH55B)	59 lbs (26.7 kg)	
XNX Models (for example XNL56D)	52 lbs (23.6 kg)	
Noise (dBa)		
Maximum sound pressure		
SDX Model	80 dB(A)	
XDX and XNX Model	78 dB(A)	
Maximum sound power		
SDX Model	87 dB(A)	
XDX and XNX Model	88 dB(A)	
All readings taken at assumed retraction rate, from assumed operator position. *Sound power measured per ISO-9614-2.*		
Notes		
* *Weight will vary with each swivel base and hose selection.* All trademarks or registered trademarks are the property of their respective owners.		

California Proposition 65

CALIFORNIA RESIDENTS

⚠ **WARNING:** Cancer and reproductive harm – www.P65warnings.ca.gov.

Graco 7-Year Hose Reel Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period from the date of sale as defined in the table below, repair or replace equipment covered by this warranty and determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

Graco 7-Year Hose Reel Extended Warranty	
Component	**Warranty Period**
Structural Components	7 years
Power Spring	3 years
Wear Parts - including but not limited to hose, seals, swivel seats and roller guides	1 year
Bare reels - all components	1 year

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within one (1) year past the warranty period or two (2) years for all other parts.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

For the latest information about Graco products, visit www.graco.com.
For patent information, see www.graco.com/patents.
TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.
Phone: 612-623-6928 **or Toll Free:** 1-800-533-9655, **Fax:** 612-378-3590

Original instructions. This manual contains English. MM 3A8626
Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA

www.graco.com
Revision D, May 2022

7

Instructions-Parts List

EM8, EM20 and IM20 Meters

3A5588G

EN

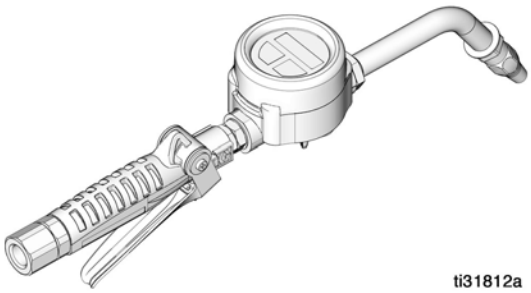
Use to dispense of petroleum based oils and anti-freeze. For professional use only.
Not approved for use in explosive atmospheres or hazardous locations.

Maximum Working Pressure: 1500 psi (10.3 MPa, 103 bar)

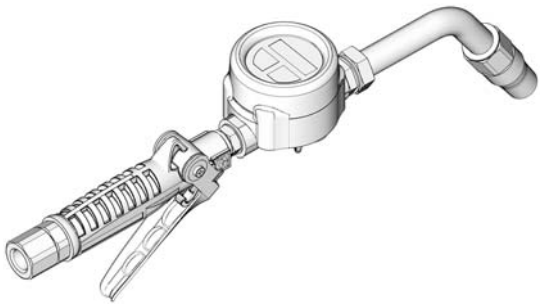
Meter measures in gallons, quarts, pints and liters. The meter is factory set to quarts.

See page 2 for model information.

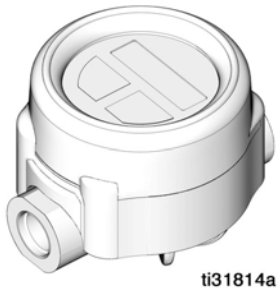
Important Safety Instructions
Read all warnings and instructions in this manual. Save these instructions.



EM8



EM20



IM20

PROVEN QUALITY. LEADING TECHNOLOGY.

Models

In-Line Meter

Model No.	Inlet	Outlet	Thread
25C841	3/4	3/4	NPT

Metered Valves with Extension and Nozzle

EM8

Model No.	Swivel	Thread	Extension
25C903	1/2	NPT	Rigid
25C904	1/2	NPT	Flex
25C905	1/2	NPT	Gear Lube
25C907	1/2	BSPP	Rigid
25C908	1/2	BSPP	Flex
25C909	1/2	BSPP	Gear Lube
25C911	1/2	BSPT	Rigid
25C912	1/2	BSPT	Flex
25C913	1/2	BSPT	Gear Lube

EM20

Model No.	Swivel	Thread	Extension
25C915	1/2	NPT	Flex
25C916	1/2	NPT	Rigid
25C918	3/4	NPT	Flex
25C919	3/4	NPT	Rigid
25C921	1/2	BSPT	Flex
25C922	1/2	BSPT	Rigid
25C924	1/2	BSPP	Flex
25C925	1/2	BSPP	Rigid
25C927	3/4	BSPT	Flex
25C928	3/4	BSPT	Rigid
25C930	3/4	BSPP	Flex
25C931	3/4	BSPP	Rigid

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

⚠WARNING





SKIN INJECTION HAZARD

High-pressure fluid from dispensing device, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Engage trigger lock when not dispensing.
- Do not point dispensing device at anyone or at any part of the body.
- Do not put your hand over the fluid outlet.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Use only extensions that are designed for use with dispensing valve.
- Do not use low-pressure flexible extension with this equipment.
- Follow the **Pressure Relief Procedure** when you stop dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.


FIRE AND EXPLOSION HAZARD

When flammable fluids are present in the work area, such as gasoline and windshield wiper fluid, be aware that flammable fumes can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well-ventilated area.
- Eliminate all ignition sources, such as cigarettes and portable electric lamps.
- Ground all equipment in the work area.
- Keep work area free of debris, including rags and spilled or open containers of solvent and gasoline.
- Do not plug or unplug power cords or turn lights on or off when flammable fumes are present.
- Use only grounded hoses.
- **Stop operation immediately** if static sparking occurs or you feel a shock**.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

⚠WARNING

EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheet (SDS) from distributor or retailer.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

CALIFORNIA PROPOSITION 65

This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.

Installation

Typical Installation: EM8 and EM20 Models

The typical installation shown in FIG. 1 is only a guide. The components shown are typical; however it is not a complete system design. Contact your Graco distributor for assistance in designing a system to suit your needs. Additionally, these dispense valves can be installed on a console.

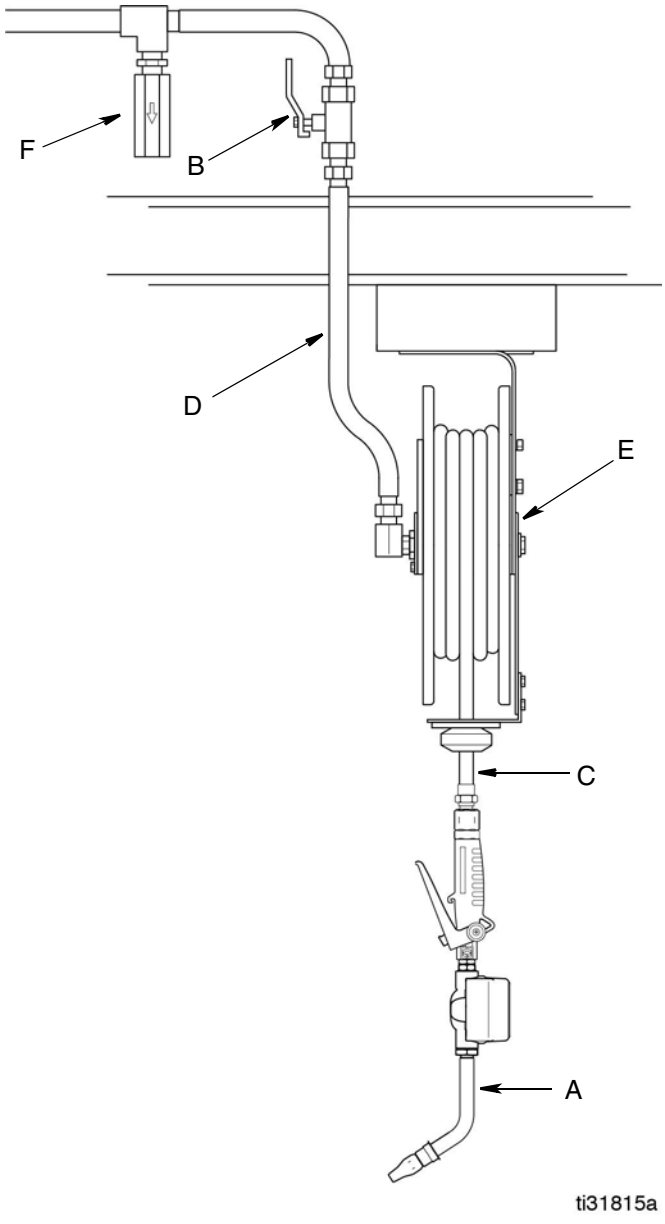


FIG. 1

KEY:

A EM8 or EM20 Metered Dispense Valve
B Fluid Shutoff Valve - Hose Reel
C Hose
D Hose Reel Fluid Inlet Hose
E Hose Reel
F Thermal Relief Kit (required). Part No. 237904. (Install downstream from pump.)

NOTICE

Flush lines before installing equipment in the system to prevent contamination which can cause equipment damage or malfunction. See Flushing Procedure, page 8.

Typical Installation: IM20

The typical installation shown in FIG. 2 is only a guide. The components shown are typical; however it is not a complete system design. Contact your Graco distributor for assistance in designing a system to suit your needs. Additionally, these dispense valves can be installed on a console.

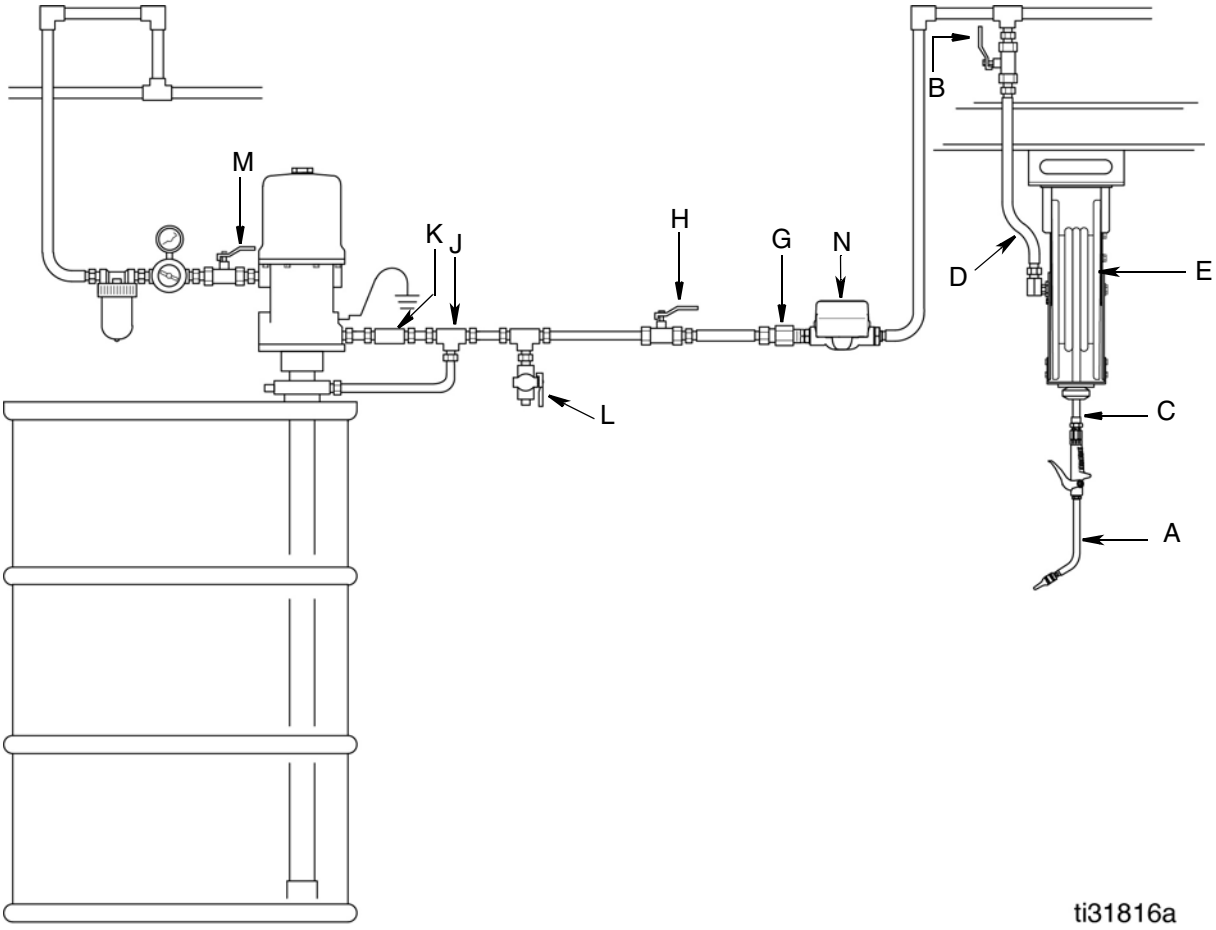


FIG. 2

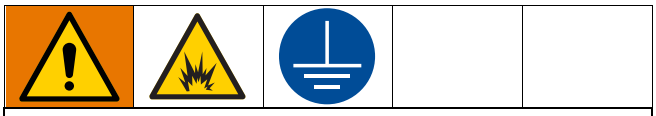
Key:

A Dispense Valve
B Fluid Shutoff Valve - Hose Reel
C Hose
D Fluid Inlet Hose
E Hose Reel
G In-line strainer
H Main Fluid Shutoff Valve
J Pressure relief Valve
K Check Valve
L Bleed-off Valve (drain valve)
M Bleed-type Master Air Valve
N IM20 Inline Meter

NOTICE

- Do not over-tighten fittings. Excessive torque will crack the casting. Only tighten fittings 2.5± 0.5 turns past finger tight. Do not exceed 80 ft.-lbs (9.04 N•m).
- Flush lines before installing equipment in the system to prevent contamination which can cause equipment damage or malfunction. See Flushing Procedure, page 8.

Grounding



The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

Pump: follow manufacturer's recommendations.

Air and fluid hoses: use only grounded hoses.

Air compressor: follow manufacturer's recommendations.

Fluid supply container: follow local code.

To maintain grounding continuity when flushing or relieving pressure: hold metal part of the dispense valve firmly to the side of a grounded metal pail, then trigger the valve.

Pressure Relief Procedure

Follow the Pressure Relief Procedure whenever you see this symbol.

This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop dispensing and before cleaning, checking, or servicing the equipment.

1. Turn off power supply to the pump.
2. Trigger the dispense valve into a grounded waste container to relieve pressure.
3. Open any bleed-type master air valves and fluid drain valves in the system.
4. Leave the drain valve open until you are ready to pressurize the system.
5. If you suspect the valve, extension or nozzle is clogged or that pressure has not been fully relieved:
   a. VERY SLOWLY loosen the fitting nut on the fluid line to relieve pressure gradually.
   b. Then loosen it completely.
   c. Clear the obstruction in the hose or tip.

The reference letters used in the instructions on this page refer to Typical Installation, FIG. 1, page 5 and FIG. 2, page 6.

Pre-Installation Procedure

1. **Relieve pressure**, page 7.
2. Close the hose reel fluid shut-off valve (B).
3. Ground the hose and reel or console. See Grounding, page 7. Do not use PTFE tape on the pipe joints; it may cause a loss of ground across the pipe joint.

Flushing

If this is a new installation or if the fluid in the lines is contaminated, flush the lines before installing the dispense valve. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment.

NOTE: The dispense valve should not be installed on the hose when flushing the equipment.

1. **Relieve pressure**, page 7.
2. Close the hose reel fluid shut-off valve (B) at each dispense position.
3. If an existing installation, remove dispense valve from hose.
4. Place the hose end into a container for waste fluid. Secure the hose in the container so it will not come out during flushing.

   NOTE: If you have multiple dispense positions, first flush the dispense position farthest from the pump, and work your way toward the pump.
5. Slowly open the hose reel fluid shut-off valve (B) at the dispense position. Flush out a sufficient amount of fluid to ensure that the entire system is clean, then close the valve.
6. Repeat step 5 at all dispense positions.

Installing Meter

To install a new meter in an *EXISTING* installation, begin instructions with Step 1 and 2.

To install a new meter in a *NEW* installation, begin instructions with Step 3.

1. **Relieve pressure**, page 7.
2. Loosen and disconnect the hose from the dispense valve you are replacing.

For Steps 3 - 8, refer to FIG. 3.

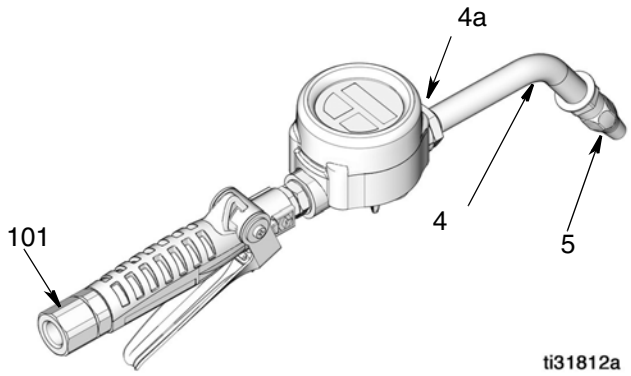


FIG. 3

3. Thread the extension, (4) into the dispense valve outlet until o-ring makes contact with the meter.
4. Position the extension for proper alignment.
5. Wrench tighten the jam nut (4a).
6. Thread the new nozzle (5) onto the extension (4), and tighten firmly.
7. Apply thread sealant to the male threads of the hose fitting. Thread the hose fitting into the swivel (101). Tighten firmly.
8. Open all dispense position shut-off valves (B). Start the pump to pressurize the system. See the Operation section, page 9 for operation instructions.
9. To ensure dispensing accuracy, purge all air from the fluid lines and dispense valves before you use them.

Operation

To Activate the Digital Display

Press the **RESET** key to clear the meter before starting a new dispense cycle. This is the best way to activate the meter, because it also clears the quantity of the last dispense cycle.

The digital display can also be activated by pressing the **TOTAL** key or by running fluid through the meter. (FIG. 4)

FIG. 4

NOTE: The digital display on the meter goes blank after approximately one minute of non-use.

Function of TOTAL

To see the accumulated total of fluid dispensed through the meter, press the **TOTAL** key. The meter can accumulate a running total of up to 19,999 units dispensed before returning to zero. (FIG. 5)

FIG. 5: Example of accumulated total

Function of RESET

Press the **RESET** key to clear the quantity of the last dispense cycle and return the digital display to all zeros. (FIG. 4).

Setup Mode

1. Press the **TOTAL** and **RESET** buttons (FIG. 7) together.
   - All segments of the digital display illuminate for approximately 6 seconds.
   - The software revision displays for approximately 2 seconds.
   - The meter goes blank and the volume unit blinks.

     The meter is now in Setup Mode.
2. Release the **TOTAL** and **RESET** buttons.

Volume Unit

1. The factory default unit of measure is Quarts (QTS).

   Repeatedly press the **TOTAL** button (FIG. 4) to change the displayed unit of measure. FIG. 6 shows examples of each UOM screen.

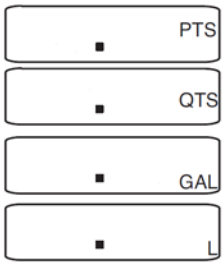


FIG. 6: Example of Units of Measure (UOM)

2. When the desired UOM is displayed, press the **RESET** button (FIG. 4) to save the selection.

3. CAL appears on the display as shown in FIG. 7. CAL indicates the meter is ready for Calibration Mode.

FIG. 7

4. To save the current Calibration factor, press **RESET** and the unit will save and exit setup.

Meter Recalibration

To recalibrate the meter:

1. Dispense 1 Quart (or 1 Liter) of fluid into a clean, calibrated container.
2. When the volume of fluid in the calibrated container reaches 1 Quart (or 1 Liter), stop the dispense.

   NOTE: During the dispense the numbers on the display and the UOM flash on the screen.

3. Press and hold the **TOTAL** button until 1.00 QTS (or 1.00 L) displays steady on the screen. FIG. 8 shows the meter displaying 1.00 QTS has been dispensed.

FIG. 8

4. If you are satisfied with the dispense, press the **RESET** button to save the new calibration factor and exit the Setup Mode.
5. If the dispense was not accurate and needs to be performed again, repeat Step 1 - Step 4.

NOTE:

- To interrupt or restart the calibration dispense at any time during the dispense, push the **TOTAL** button. This will reset the display back to 00.00 to start over.
- If **RESET** is pressed before the calibration factor is calculated, the meter will disregard the new calibration information and exit the Setup Mode.

Restoring the Default Calibration Factor

From the CAL screen:

1. Start a dispense to register a count.
2. Quickly press and release the **TOTAL** button to reset the calibration dispense to 00.00.

   NOTE: The UOM; either QTS or L, will flash on the display.

3. Press and hold **TOTAL** until 1.00 displays on the screen and the UOM stops flashing.
4. Press the **RESET** button to save the default calibration factor and exit the Setup Mode.

FIG. 9

To Verify the Accuracy

1. Use a clean, calibrated container.

   NOTE: If using a single container, be sure to clean it after each dispense.

2. Set pump air pressure at the lowest possible setting for dispensing fluid.

3. Place the tip of the nozzle at the bottom of the calibrated container.

   NOTE: If the tip of the dispense valve does not reach the bottom of the calibrated container, use a length of plastic tubing over the tip of the nozzle to ensure liquid enters the container from the bottom.

4. Trigger the dispense valve slowly. Dispense fluid until the calibrated container is full.

5. Allow product to sit for 20 minutes, then compare the actual, physical measurement in the calibrated container to the measurement displayed on the meter.

NOTE: The procedure above will determine if the meter is accurately dispensing the product and minimize testing errors. Some variance may occur depending on the viscosity of the fluid. If this procedure determines that the meter is not accurate recalibrate the meter using the procedure outlined in the Meter Recalibration instructions, page 10.

For Maximum Dispensing Accuracy

(gallon/quart/pint dispenses only)

Set the meter to dispense in pints or quarts when dispensing 1 gallon or less.

*Always press the **RESET** on the key pad to clear the meter before a new dispense cycle.*

Dispensing Instructions

To reduce the risk of serious bodily injury, including fluid injection, **never** exceed the maximum working pressure of the valve you are using or the lowest rated component in your system.

1. Open dispense nozzle and point it into the fill port or a container.

2. Fully depress the trigger lock button and squeeze the trigger toward the valve body (FIG. 10).

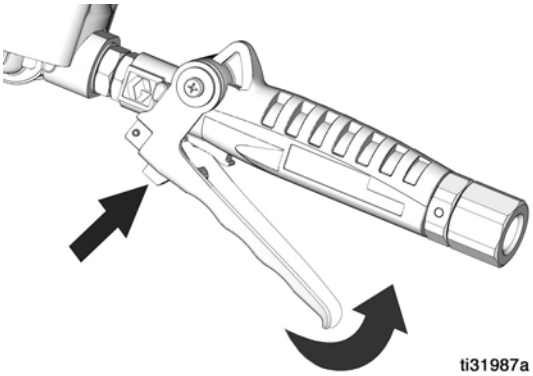


FIG. 10

3. To lock the valve open, depress the trigger lock button while continuing to squeeze the trigger to the valve body.

   Slowly release trigger while, at the same time, depressing the trigger lock button.

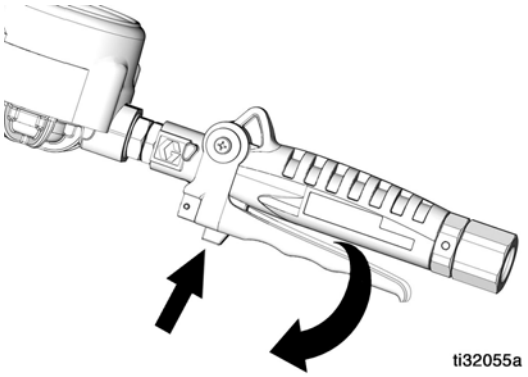


FIG. 11

4. To release the trigger lock, pull the trigger toward the valve body to release the trigger lock.

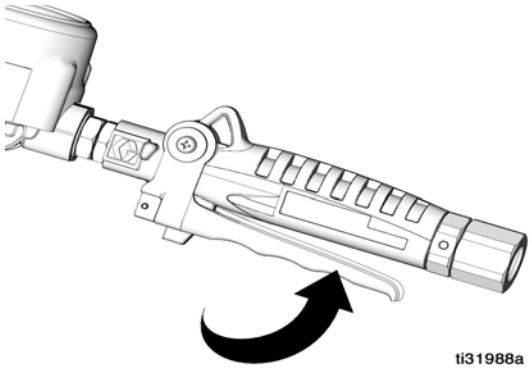


FIG. 12

5. Release the trigger to stop dispensing.

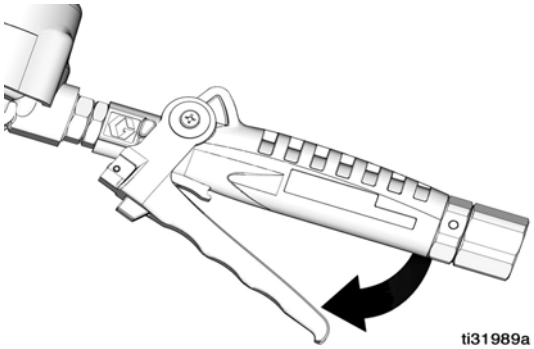


FIG. 13

Battery Installation

1. **Relieve pressure,** page 7.
2. Remove impact guard (14) (FIG. 14).
3. Remove the 4 screws (13) from the meter (3) housing, and remove the electronics bezel (3a) (FIG. 14).
4. Remove battery retainer (3b) (FIG. 14).

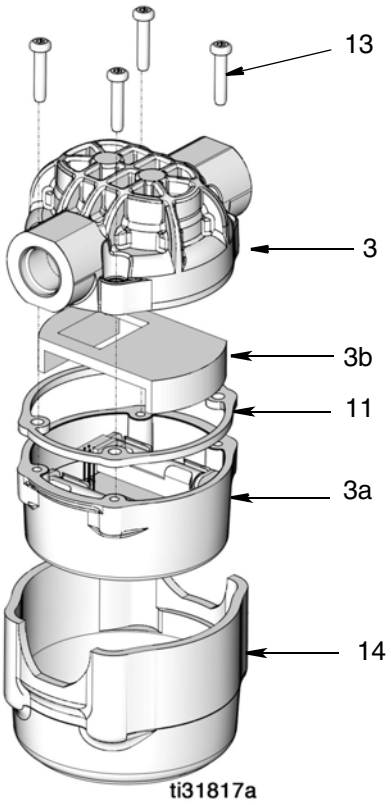


FIG. 14

5. Pull up battery retention ribbon located under batteries to unseat batteries as shown in FIG. 15. Dis-

pose of the batteries according to local regulations for battery disposal.

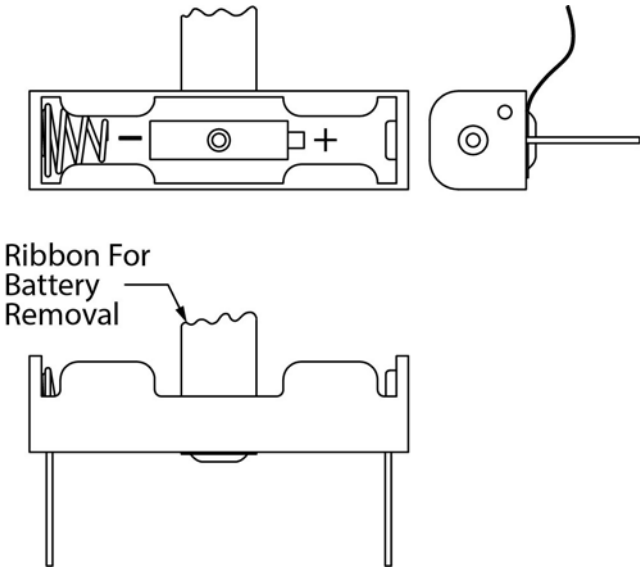


FIG. 15

6. Insert the new battery as noted on the battery holder. Press down firmly on the battery. See FIG. 15 to identify the negative and positive sides of the battery.

   NOTE: Be sure battery retention ribbon is in place beneath battery to assist with future battery removal.

7. Reinstall battery retainer (3b) (FIG. 14).

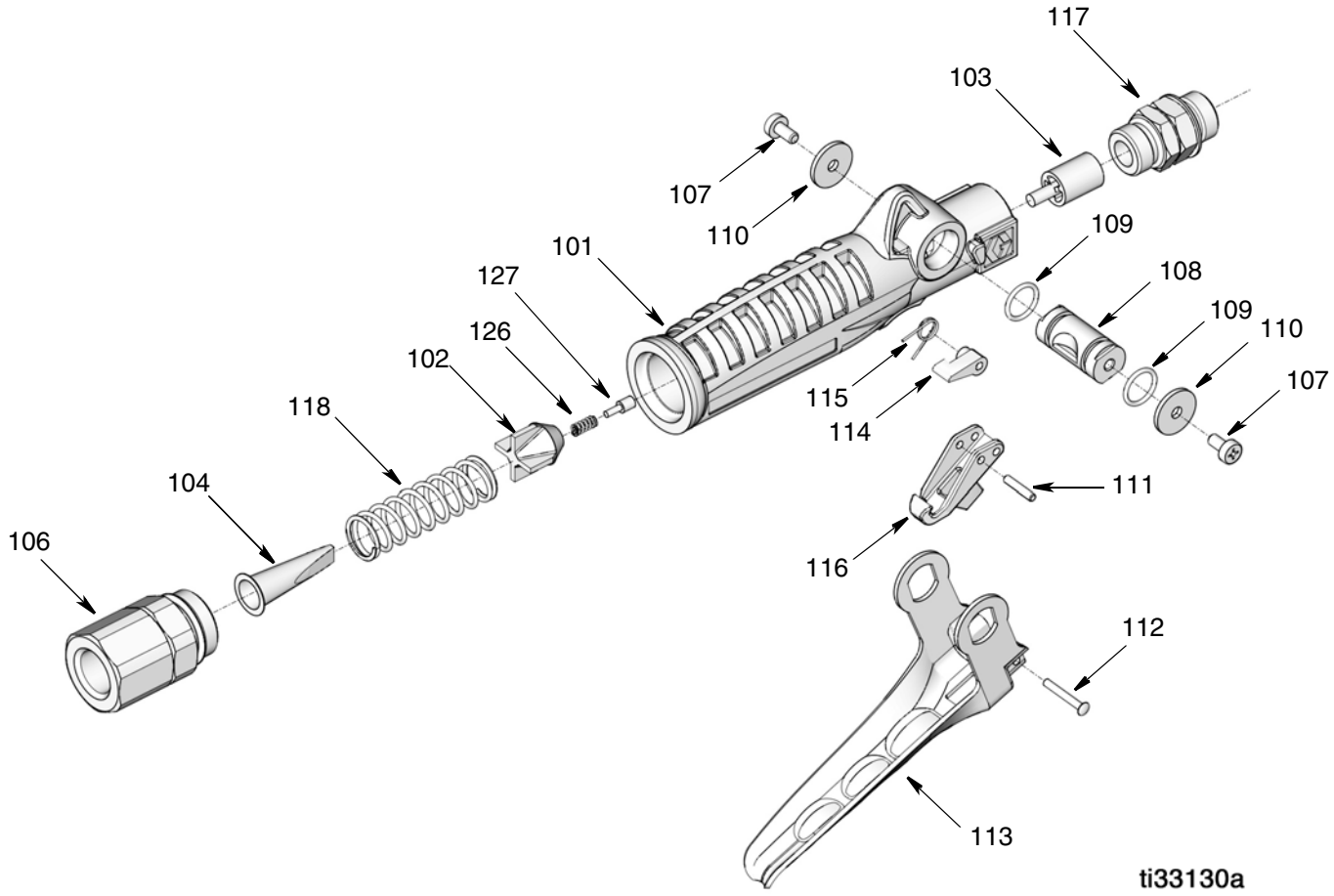
8. (Reinstall the bezel seal (11) over the lip on the top of the metering unit (3). Place electronics bezel (3a) onto bezel seal (11) (FIG. 14).

9. Reinstall screws (13) (FIG. 14). Tighten the screws in a diagonal pattern to 15-25 in-lbs (1.7-2.8 N-m).

10. Reinstall the impact guard (14) (FIG. 14).

Parts

Valve (Ref 1, page 16)



Valve (Ref 1, page 16)

Ref	Part No.	Description	Qty
101		HANDLE, valve, standard duty, models 25D433-25D435	1
		HANDLE, valve, medium flow, models 25D436 to 25D441	1
102★	15U704	SEAT, valve	1
103‡	130196	ROD, push, valve	1
104★	15M308	STRAINER, wire mesh	1
106	238399	SWIVEL, straight, NPT, model 25D433	1
	24H382	SWIVEL, straight, BSPP, model 25D434	1
	24H383	SWIVEL, straight, BSPT, model 25D435	1
	247344	SWIVEL, straight, 1/2” NPT, model 25D436	
	247345	SWIVEL, straight, 3/4", NPT, model 25D437	1
	24H097	SWIVEL, straight, 1/2-14 BSPT, model 25D438	1
	24H098	SWIVEL, straight, 1/2-14 BSPP, model 24D439	1
	24H099	SWIVEL, straight, 3/4-14 BSPT, model 24D440	1
	24H100	SWIVEL, straight, 3/4-14, BSPP, model 24D441	1
107‡	110637	SCREW, mach, panhead	2
108‡	191315	CAM	1
109‡	113574	SEAL, o-ring	2
110‡	191552	WASHER, flat	2
111❄		PIN, dowel	1
112❄		LATCH, pin	1
113❄		TRIGGER	1
114❄		LATCH, arm	1
115❄		SPRING, latch	1
116❄		LATCH, lever	1
117	130168	FITTING, 3/4” ORB x 3/4” ORB, models 25D433-24D435	1
	130169	FITTING, 7/8” ORB x 7/8” ORB, models 25D436-24D441	1
118	113493	SPRING, compression	1
126★	15U701	SPRING, secondary	1
127★	15U700	PLUNGER, trigger lift	1

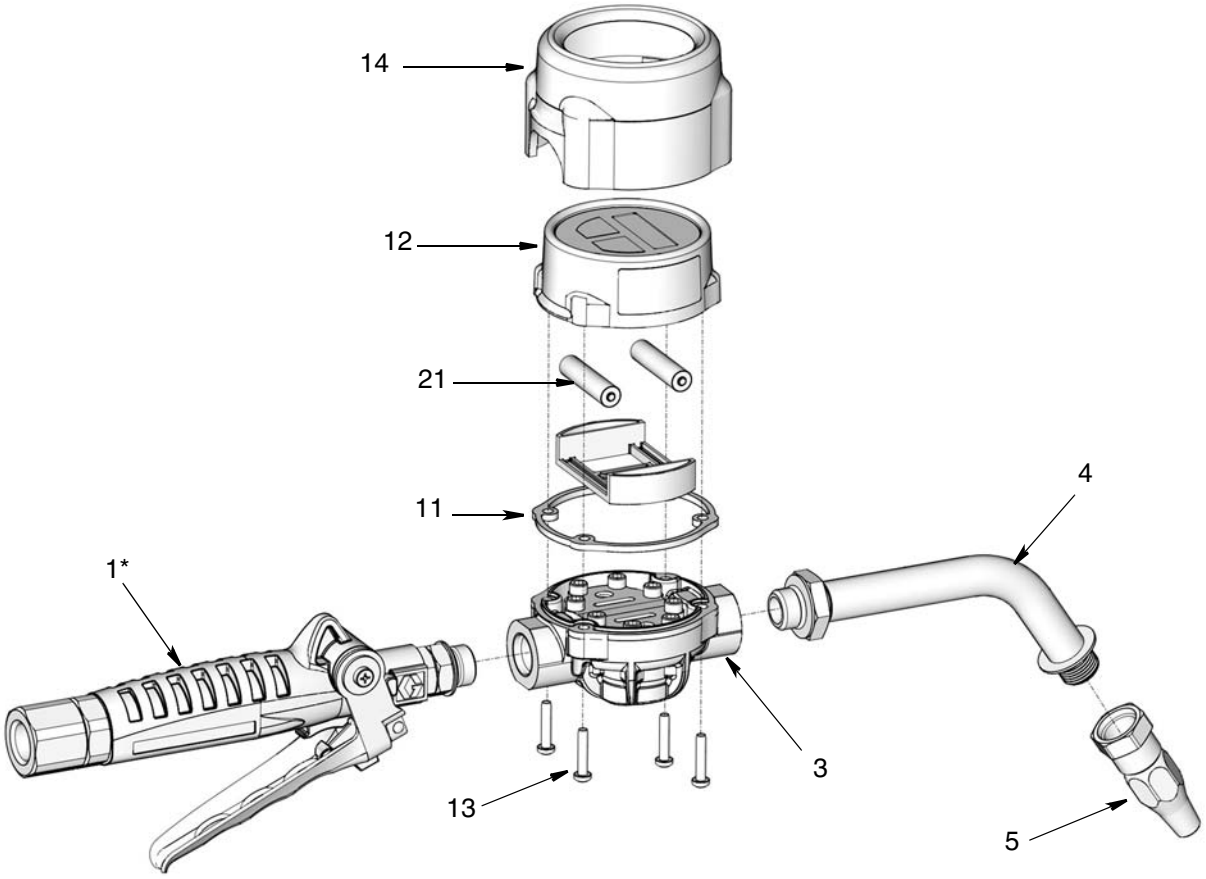
❄ Parts included in Trigger Kit 25D937. Parts come pre-assembled.

★ Parts included in Valve Kit 25D935.

‡ Parts included in Cam Repair Kit 25E145.

Parts

EM8, EM20 and IM20 Meters



* See Valve Parts, page 14

Parts

In-Line Meter, IM20

Ref	Part No.	Description	Qty
3		HOUSING, meter	1
11◆★	129949	SEAL, bezel	1
12★		CONTROL, electronic, English	1
13◆★	131172	SCREW, torx pan hd	4
14	129876	GUARD, impact	1
21◆★		BATTERIES, AAA	2

EM8 Meter

Ref	Part No.	Description	Qty
1*	25D433	VALVE, EM8,1/2 NPT x 3/4 ORB, models 25C903, 25C904, 25C905	1
	25D434	VALVE, EM8, 1/2 BSPP x 3/4 ORB, models 25C907, 25C908, 25C909	1
	25D435	VALVE, EM8, 1/2 BSPT x 3/4 ORB, models 25C911, 25C912, 25C913	1
3		HOUSING, meter	1
4	255194	EXTENSION, nozzle, models 25C903, 25C907, 25C911	1
	16Y863	HOSE, coupled, 3/8 inch ID, 2000 psi (137.9 bar, 13.79 MPa) models 25C904, 25C908, 25C912	1
	255854†	KIT, nozzle, rigid, models 25C905, 25C909, 25C913	1
5	17T207	NOZZLE, manual, models 25C903, 25C904, 25C907, 25C908, 25C911, 25C912	1
11◆★	129949	SEAL, bezel	1
12★		CONTROL, electronic, English	1
13◆★	131172	SCREW, torx pan hd	4
14★	129876	GUARD, impact	1
21◆		BATTERIES, AAA	2

EM20 Meter

Ref	Part No.	Description	Qty
1*	25D436	VALVE, EM20, 1/2 NPT x 7/8 ORB, models 25C915, 25C916	1
	25D437	VALVE, EM20, 3/4 NPT x 7/8 ORB, models 25C918. 25C919	1
	25D438	VALVE, EM20, 1/2 BSPT x 7/8 ORB, models 25C921, 25C922	1
	25D939	VALVE, EM20, 1/2 BSPP x 7/8 ORB, models 25C924, 25C925	1
	25D440	VALVE, EM20, 3/4 BSPT x 7/8 ORB, models 25C927, 25C928	1
	25D441	VALVE, EM20, 3/4 BSPP x 7/8 ORB, models 25C930, 25C931	
3		HOUSING, meter	1
4	255859❖	KIT, nozzle, flex, models 25C915, 25C918, 25C921, 25C924, 25C927, 25C930	1
	255921‡	KIT, nozzle, rigid, models 25C916, 25C919, 25C922, 25C925, 25C928, 25C931	1
11◆★	129949	SEAL, bezel	1
12★		CONTROL, electronic, English	1
13◆★	131172	SCREW, torx pan hd	4
14	129876	GUARD, impact	1
21◆★		BATTERIES, AAA	2

* See Valve Parts, page 14

❖ Kit includes Coupled 1 Foot Hose and Heavy Duty Nozzle

† Kit includes: Gear Lube Extension, Nozzle and 3/4 x 1/2 Adapter O-Ring

‡ Kit includes Rigid Nozzle Extension and a Heavy Duty Nozzle

◆ Parts included in Battery Kit 25D936.

★ Parts included in Electronic Kit 25D934.

Troubleshooting

Relieve pressure before you check or repair the dispensing valve. Be sure all other valves, controls and the pump are operating properly.

Problem	Cause	Solution
Display does not activate or is showing unintelligent characters	Electronic control is malfunctioning	Replace electronic control. Order EM8/20 Electronics Kit 25D934. Kit includes electronic control, seal and mounting screws.
	Batteries in electronic control are depleted	Replace battery. Order EM8/20 Battery Repair Kit 25D936. Kit includes seal, batteries and retainer.
Display segments do not illuminate	Loose board mounting screws cause electronic control to malfunction	Tighten the three board mounting screws on the inside of the electronic control. If this does not correct the problem, replace the electronic control. Order Electronics Kit 25D934.
Slow or no fluid flow	Strainer (4) is clogged.	Clean or replace strainer (4).
	Pump pressure is low.	Increase pump pressure.
	Shut off valve is not fully open.	Fully open shut off valve.
	Foreign material is jammed in the meter element.	Contact your local Graco distributor for repair or replacement.
Fluid leaks from swivel (101)	Swivel (101) is loose.	Torque the swivel (101) to 15 to 20 ft-lbs (20 to 27 N•m). If the problem remains, contact your Graco distributor for repair or replacement.
	Damaged or worn o-ring(s) (109)	Replace the o-rings (109) and torque the swivel (101) to 15-20 ft-lbs (20 to 27 N•m). If the problem remains, contact your Graco distributor for repair or replacement.
Fluid flow does not stop when valve is closed	Worn valve seat (102)	Replace valve seat (102). Order EM8/20 Valve Kit 25D935.
Fluid leaks from trigger barrel seals -	Damaged or worn o-ring(s) (109)	Replace cam assembly. Order Em8/20 Cam Repair Kit 25E145.
Trigger lock on/off feature does not work	Damaged trigger components	Replace trigger assembly. Order EM8/20 Trigger Kit 25D937.

Technical Specifications

EM8, EM20, IM20 Meters		
	US	**Metric**
Recommended maximum flow rate (under normal operating conditions)		
EM8 Metered Dispense Valve	8 gpm	30.3 lpm
EM20 Metered Dispense Valves	20 gpm	75.7 lpm
IM20 Inline Meter	20 gpm	75.7 lpm
Minimum flow rate (under normal operating conditions)		
EM8 Metered Dispense Valve	0.25 gpm	0.95 lpm
EM20 Metered Dispense Valves	0.25 gpm	0.95 lpm
IM20 Inline Meter	0.25 gpm	0.95 lpm
Meter Pressure Loss: Tested in 10W oil at 70°F (21°C). Flow rate varies with fluid pressure, temperature, viscosity, inlet fitting size and nozzle type.		
EM8 Metered Dispense Valve	30 psi at 6 gpm	2.07 bar at 22.7 lpm
EM20 Metered Dispense Valve	85 psi at 12 gpm	5.86 bar at 45.4 lpm
IM20 Inline Meter	35 psi at 12 gpm	2.41 bar at 45.4 lpm
Maximum operating pressure		
All models	1500 psi	10 MPa, 102 bar
Weight		
EM8 Dispense Valve	3 lb.	1.36 kg
EM20 Dispense Valves	3 lb. 1 oz.	1.39 kg
IM20 Inline Meter	1 lb. 4 oz.	0.57 kg
Temperature		
Operating Temperature Range	- 22°F to 180°F	-30°C to 82°C
Storage Temperature Range	- 40°F to 185°F	-40°C to 85°C
Ingress Protection		
All Models	IP69K as per DIN 40050-9	
Inlet Sizes		
EM8 Metered Dispense Valve	1/2 in. NPT	1/2 in. BSPP 1/2 in. BSPT
EM20 Metered Dispense Valves	1/2 in. NPT 3/4 in. NPT	1/2 in. BSPP 3/4 in. BSPP 1/2 in. BSPT 3/4i n. BSPT
IM20 Inline Valves	3/4 in. NPT	
Outlet Sizes		
EM8 Metered Dispense Valve	3/4 in. ORB	
EM20 Metered Dispense Valves	7/8 in. ORB	
IM20 Inline Meter	3/4 in. NPT	
Battery		
All models	2 AAA	
Materials of Construction		
Wetted materials	aluminum, stainless steel, carbon steel, acetal, nitrile rubber, Geolast™	

Graco 5-Year Meter and Valve Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended or limited warranty published by Graco, Graco will, for a period from the date of sale as defined in the table shown below, repair or replace equipment covered by this warranty and determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

Component	Warranty Period
Structural Components	5 years
Electronics (where applicable)	3 years
Wear Parts - including, but not limited to, o-rings, seals, valves, and trigger lock	1 year

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within eight (8) years of the date of sale, or two (2) years for all other parts.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

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Graco Information

For the latest information about Graco products, visit www.graco.com.

For patent information, see www.graco.com/patents.

TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.
Phone: 612-623-6928 or Toll Free: 1-800-533-9655, Fax: 612-378-3590

All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.

Original instructions. This manual contains English. MM 3A5588
Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA

www.graco.com
November 2018

8

Instructions - Parts List

Important Safety Instructions
Read all warnings and instructions in this manual. Save these instructions.

309194E

26-Gallon (98-Liter)

Rolling Truck Drain

Model 244055, Series A

Table of Contents

Warnings 2
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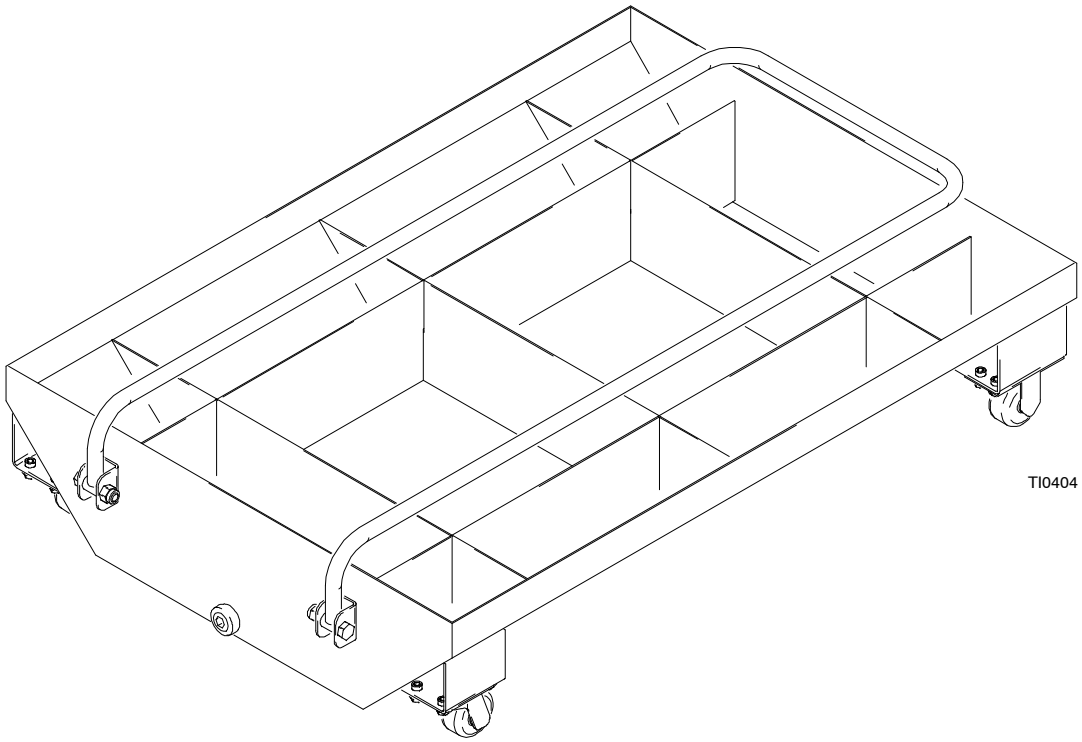


GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1441

Graco Inc. is registered to I.S. EN ISO 9001

Symbols

Warning Symbol

⚠ WARNING

This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

Caution Symbol

⚠ CAUTION

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

⚠ WARNING

EQUIPMENT MISUSE HAZARD

Equipment misuse can cause the equipment to malfunction and result in serious injury.

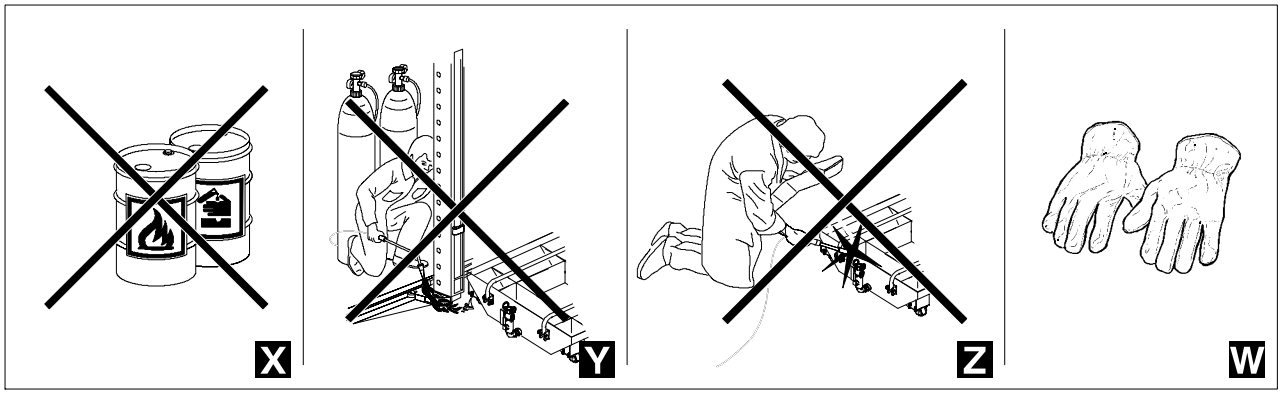
- This equipment is for professional use only.
- Read all instruction manuals before you operate this equipment.
- Use the equipment only for its intended purpose. If you are not sure, contact your Graco distributor.
- Do not alter or modify this equipment.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- This equipment is intended for collection of motor oil, transmission fluid, antifreeze and gear oils only. Any other use or collection of any other fluids could result in damage to the equipment or serious bodily injury.
- Always wear protective eyewear, gloves, clothing, and respirator as recommended by the fluid and solvent manufacturer.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.
- Dispose of waste fluids according to all local, state, and national guidelines.
- Do not lift this product without mechanical assistance.
- Do not lift the unit to drain fluids without mechanical assistance.

FIRE AND EXPLOSION HAZARD

This equipment is not intended for use with flammable liquids. Poor ventilation, open flames, or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.

- If you are using this unit with an evacuation system, make sure the pumping system is installed and grounded according to the manufacturer's recommendation.
- Drain only the following liquids into the rolling truck drain: motor oil, transmission fluid, antifreeze and gear oils.
- Provide fresh air ventilation to avoid the buildup of flammable fumes.
- Extinguish all open flames in the work area.
- Do not smoke in the work area.

⚠ WARNING



X – Do not drain caustic or flammable products.
Y – Do not expose the tank to any source of heat.
Z – Do not do any welding on the tank.
W – While draining high temperature oils, keep hands, face, and other body areas protected.

Assembly and Operation

⚠ WARNING

Never remove the grate or insert a finger into the drain port when vacuum evacuation of the contents is being performed.

⚠ CAUTION

The rolling truck drain is intended for use only on flat surfaces. Slopped surfaces can cause the rolling truck drain to move out of position.

ASSEMBLY

The rolling truck drain comes completely assembled with the exception of the four roller casters.

⚠ WARNING

Do not lift this product without mechanical assistance.

Attaching the swivel and fixed casters

1. To attach the two swivel and two fixed casters to the truck drain, extend the handle out, and position the drain so the bottom faces up.
2. Match the bolt patterns of the two fixed casters (ref. no. 9, parts list) to the rear of the drain (away from handle) and attach using four bolts per caster, (ref. no. 13, parts list).
3. Match the bolt patterns of the two swivel casters (ref. no. 8, parts list) to the front of the drain (towards the handle) and attach using four bolts per caster, (ref. no. 13, parts list).
4. Return the truck drain to the upright position.

OPERATION

⚠ WARNING

Always position the handle of the rolling truck drain out of traffic areas around the vehicle being serviced. Failure to do so can create a tripping hazard.

Draining fluids into the unit

The rolling truck drain can be drained by gravity or by using the optional evacuation kit (ref. part no. 240832, Parts List) that can be ordered from your Graco Distributor.

If using the optional evacuation kit remove the 3/4 in. coupler, camlock female from the evacuation kit and attach it to an evacuation pump.

1. Make sure the removable grate is in place. This allows the user to drain filters and prevents the loss of drain plugs and tools in the tank.
2. Position the rolling truck drain under the vehicle where the oil will be drained. For ease in positioning the unit during use, it is best to guide the unit by the front handle, because the pivoting casters are on the front. **Once in place always position the handle of the rolling truck drain out of traffic areas around the vehicle being serviced. Failure to do so can create a tripping hazard.**

Emptying fluids from the unit

⚠ CAUTION

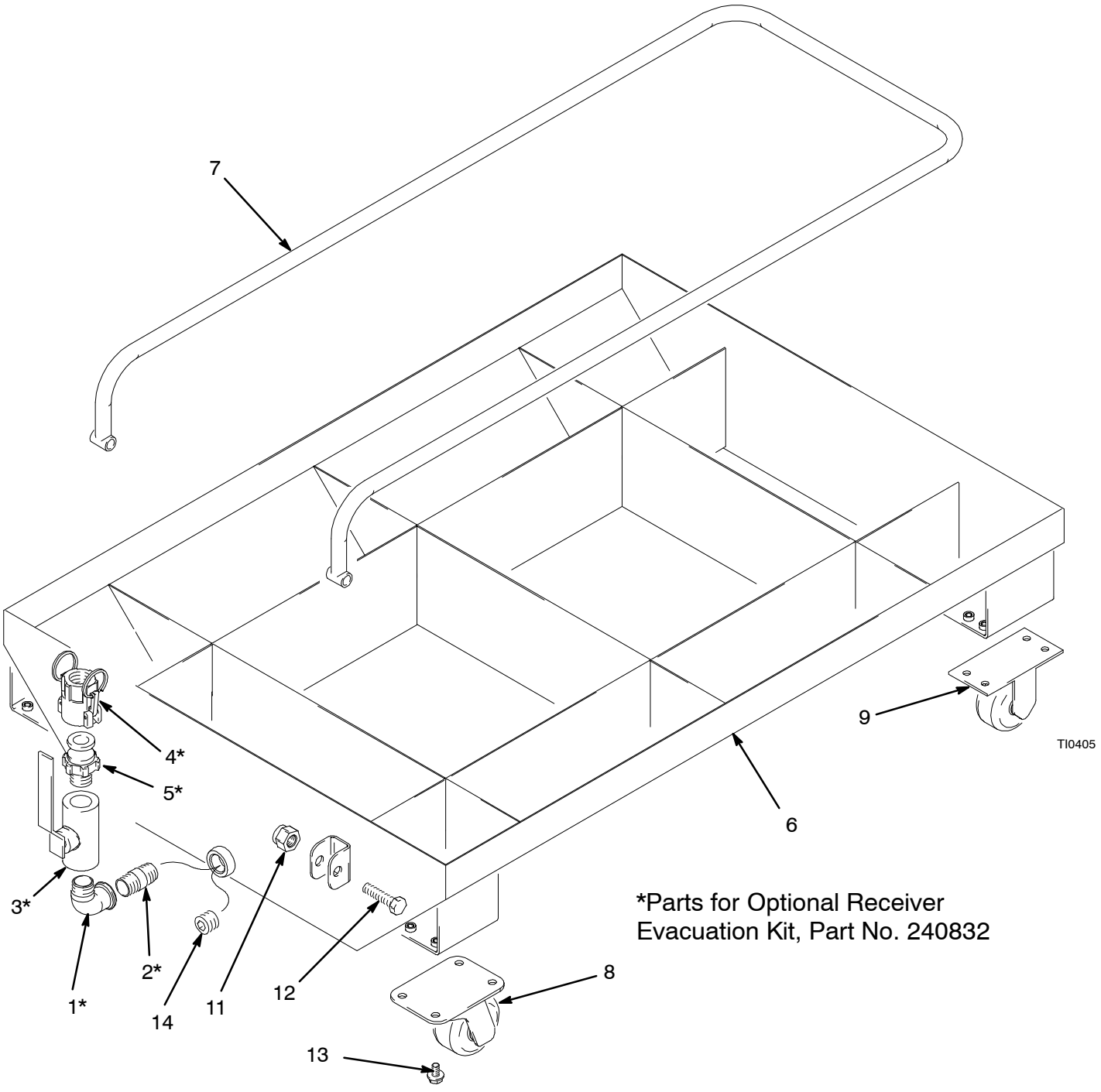
The rolling truck drain is designed to hold up to 26 gallons of used oil before draining the system. The level of oil should never exceed the height of the grate. Always ensure that enough volume is available in the container before draining additional oil into it. It is recommended that fluids be drained at frequent intervals to lower the risk of spilling and emissions of waste materials and gases from the fluids.

1. Using the handle, position the rolling truck drain at the location where the oil will be drained or evacuated into an approved waste container.
   - If using gravity to drain, remove the drain plug (ref 14, parts list) on the unit and allow the fluid to drain into the waste container.
   - If using the optional evacuation kit, couple the hose from the shop evacuation pump to the rolling truck drain evacuation coupler, open the ball valve, and start the evacuation pump.
2. After fluids have been drained from the unit's tank replace the drain plug, or close the ball valve and disconnect the evacuation pump hose.

Note: Always dispose of waste oil and other fluids in accordance with Federal, State, and Local guidelines.

Notes

Parts List and Drawing



*Parts for Optional Receiver Evacuation Kit, Part No. 240832

Parts List

Rolling Truck Drain, Model 244055, Series A

Ref. No.	Part No.	Description	Qty.
6	244055	TANK	1
7	244056	HANDLE	1
8	116187	CASTER, swivel, polyurethane	2
9	116186	CASTER, fixed, polyurethane	2
10	116189	GRATE, removable (not shown)	1
11	101580	NUT, lock 1/2"–13	2
12	100096	SCREW, Cap, Hex, HD 1/2" x 2"–13	2
13	111801	SCREW, Cap. Hex, HD 5/16" x 1/2"–18	16
14	113657	PLUG, pipe; 3/4 in.	1

Optional Receiver Evacuation Kit, Part No. 240832

Ref. No.	Part No.	Description	Qty.
	240832	KIT, installation, receiver evacuation includes items 1 thru 5	1
1*	100549	•ELBOW, street, 3/4 in.	1
2*	100627	•NIPPLE, 3/4 in. x 2 in. long	1
3*	109077	•VALVE, ball, 3/4 in.	1
4*	113907	•CAMLOCK, female, 3/4 in.	1
5*	113902	•CAMLOCK, male, 3/4 in.	1

Technical Data

Length	42 in. (106.7 cm)
Width	30 in. (76.2 cm)
Height with handle in storage position	11 in. (27.9 cm)
Height of tank	9 in. (22.9 cm)
Dry weight	85 lbs (38.25 kg)
Fluid capacity to top of grate	26 gal. (98.4 ltr)
Ground clearance minimum	3/4 in. (1.9 cm)

Graco Standard Warranty

Graco warrants all equipment manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

Graco makes no warranty, and disclaims all implied warranties of merchantability and fitness for a particular purpose in connection with accessories, equipment, materials or components sold but not manufactured by Graco. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés à la suite de ou en rapport, directement ou indirectement, avec les procedures concernées.

Graco Phone Number

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you:
1-800-533-9655 Toll Free

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This manual contains English. MM 309194

Graco Headquarters: Minneapolis
International Offices: Belgium, China, Japan, Korea

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440-1441
www.graco.com

6/2000, Revised July 2018

9

	116229	Oil Tank Monitor. Shuts off air to the pump when tank is full.

Temporary Stormwater Section
TCEQ-0602

Temporary Stormwater Section

Texas Commission on Environmental Quality

for Regulated Activities on the Edwards Aquifer Recharge Zone and Relating to 30 TAC §213.5(b)(4)(A), (B), (D)(I) and (G); Effective June 1, 1999

To ensure that the application is administratively complete, confirm that all fields in the form are complete, verify that all requested information is provided, consistently reference the same site and contact person in all forms in the application, and ensure forms are signed by the appropriate party.

Note: Including all the information requested in the form and attachments contributes to more streamlined technical reviews.

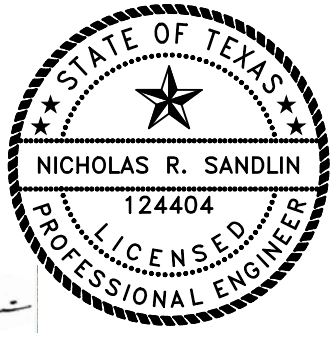
Signature

To the best of my knowledge, the responses to this form accurately reflect all information requested concerning the proposed regulated activities and methods to protect the Edwards Aquifer. This **Temporary Stormwater Section** is hereby submitted for TCEQ review and executive director approval. The application was prepared by:

Print Name of Customer/Agent: NICK SANDLIN, P.E. (SANDLIN SERVICES, LLC)

Date: 8/22/2023

Signature of Customer/Agent:



Regulated Entity Name: WILLIAMSON COUNTY NORTH CAMPUS FACILITIES

8/22/2023

Project Information

Potential Sources of Contamination

Examples: Fuel storage and use, chemical storage and use, use of asphaltic products, construction vehicles tracking onto public roads, and existing solid waste.

1. Fuels for construction equipment and hazardous substances which will be used during construction:

   ☐ The following fuels and/or hazardous substances will be stored on the site: _____

   These fuels and/or hazardous substances will be stored in:

   ☐ Aboveground storage tanks with a cumulative storage capacity of less than 250 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity between 250 gallons and 499 gallons will be stored on the site for less than one (1) year.

☐ Aboveground storage tanks with a cumulative storage capacity of 500 gallons or more will be stored on the site. An Aboveground Storage Tank Facility Plan application must be submitted to the appropriate regional office of the TCEQ prior to moving the tanks onto the project.

☒ Fuels and hazardous substances will not be stored on the site.

2. ☒ **Attachment A - Spill Response Actions**. A site specific description of the measures to be taken to contain any spill of hydrocarbons or hazardous substances is attached.

3. ☐ Temporary aboveground storage tank systems of 250 gallons or more cumulative storage capacity must be located a minimum horizontal distance of 150 feet from any domestic, industrial, irrigation, or public water supply well, or other sensitive feature.

4. ☒ **Attachment B - Potential Sources of Contamination**. A description of any activities or processes which may be a potential source of contamination affecting surface water quality is attached.

Sequence of Construction

5. ☒ **Attachment C - Sequence of Major Activities**. A description of the sequence of major activities which will disturb soils for major portions of the site (grubbing, excavation, grading, utilities, and infrastructure installation) is attached.

☒ For each activity described, an estimate (in acres) of the total area of the site to be disturbed by each activity is given.

☐ For each activity described, include a description of appropriate temporary control measures and the general timing (or sequence) during the construction process that the measures will be implemented.

6. ☒ Name the receiving water(s) at or near the site which will be disturbed or which will receive discharges from disturbed areas of the project: SAN GABRIEL RIVER

Temporary Best Management Practices (TBMPs)

Erosion control examples: tree protection, interceptor swales, level spreaders, outlet stabilization, blankets or matting, mulch, and sod. Sediment control examples: stabilized construction exit, silt fence, filter dikes, rock berms, buffer strips, sediment traps, and sediment basins. Please refer to the Technical Guidance Manual for guidelines and specifications. All structural BMPs must be shown on the site plan.

7. ☒ **Attachment D – Temporary Best Management Practices and Measures**. TBMPs and measures will prevent pollution of surface water, groundwater, and stormwater. The construction-phase BMPs for erosion and sediment controls have been designed to retain sediment on site to the extent practicable. The following information is attached:

☒ A description of how BMPs and measures will prevent pollution of surface water, groundwater or stormwater that originates upgradient from the site and flows across the site.

☒ A description of how BMPs and measures will prevent pollution of surface water or groundwater that originates on-site or flows off site, including pollution caused by contaminated stormwater runoff from the site.

☒ A description of how BMPs and measures will prevent pollutants from entering surface streams, sensitive features, or the aquifer.

☒ A description of how, to the maximum extent practicable, BMPs and measures will maintain flow to naturally-occurring sensitive features identified in either the geologic assessment, TCEQ inspections, or during excavation, blasting, or construction.

8. ☒ The temporary sealing of a naturally-occurring sensitive feature which accepts recharge to the Edwards Aquifer as a temporary pollution abatement measure during active construction should be avoided.

☐ **Attachment E - Request to Temporarily Seal a Feature**. A request to temporarily seal a feature is attached. The request includes justification as to why no reasonable and practicable alternative exists for each feature.

☒ There will be no temporary sealing of naturally-occurring sensitive features on the site.

9. ☒ **Attachment F - Structural Practices**. A description of the structural practices that will be used to divert flows away from exposed soils, to store flows, or to otherwise limit runoff discharge of pollutants from exposed areas of the site is attached. Placement of structural practices in floodplains has been avoided.

10. ☒ **Attachment G - Drainage Area Map**. A drainage area map supporting the following requirements is attached:

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin will be provided.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a smaller sediment basin and/or sediment trap(s) will be used.

☐ For areas that will have more than 10 acres within a common drainage area disturbed at one time, a sediment basin or other equivalent controls are not attainable, but other TBMPs and measures will be used in combination to protect down slope and side slope boundaries of the construction area.

☐ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. A smaller sediment basin and/or sediment trap(s) will be used in combination with other erosion and sediment controls within each disturbed drainage area.

☒ There are no areas greater than 10 acres within a common drainage area that will be disturbed at one time. Erosion and sediment controls other than sediment basins or sediment traps within each disturbed drainage area will be used.

11. ☐ **Attachment H - Temporary Sediment Pond(s) Plans and Calculations**. Temporary sediment pond or basin construction plans and design calculations for a proposed temporary BMP or measure have been prepared by or under the direct supervision of a Texas Licensed Professional Engineer. All construction plans and design information must be signed, sealed, and dated by the Texas Licensed Professional Engineer. Construction plans for the proposed temporary BMPs and measures are attached.

☒ N/A

12. ☒ **Attachment I - Inspection and Maintenance for BMPs.** A plan for the inspection of each temporary BMP(s) and measure(s) and for their timely maintenance, repairs, and, if necessary, retrofit is attached. A description of the documentation procedures, recordkeeping practices, and inspection frequency are included in the plan and are specific to the site and/or BMP.

13. ☒ All control measures must be properly selected, installed, and maintained in accordance with the manufacturer's specifications and good engineering practices. If periodic inspections by the applicant or the executive director, or other information indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations.

14. ☒ If sediment escapes the construction site, off-site accumulations of sediment must be removed at a frequency sufficient to minimize offsite impacts to water quality (e.g., fugitive sediment in street being washed into surface streams or sensitive features by the next rain).

15. ☐ Sediment must be removed from sediment traps or sedimentation ponds not later than when design capacity has been reduced by 50%. A permanent stake will be provided that can indicate when the sediment occupies 50% of the basin volume.

16. ☒ Litter, construction debris, and construction chemicals exposed to stormwater shall be prevented from becoming a pollutant source for stormwater discharges (e.g., screening outfalls, picked up daily).

Soil Stabilization Practices

Examples: establishment of temporary vegetation, establishment of permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, or preservation of mature vegetation.

17. ☒ **Attachment J - Schedule of Interim and Permanent Soil Stabilization Practices**. A schedule of the interim and permanent soil stabilization practices for the site is attached.

18. ☒ Records must be kept at the site of the dates when major grading activities occur, the dates when construction activities temporarily or permanently cease on a portion of the site, and the dates when stabilization measures are initiated.

19. ☒ Stabilization practices must be initiated as soon as practicable where construction activities have temporarily or permanently ceased.

Administrative Information

20. ☒ All structural controls will be inspected and maintained according to the submitted and approved operation and maintenance plan for the project.

21. ☒ If any geologic or manmade features, such as caves, faults, sinkholes, etc., are discovered, all regulated activities near the feature will be immediately suspended. The appropriate TCEQ Regional Office shall be immediately notified. Regulated activities must cease and not continue until the TCEQ has reviewed and approved the methods proposed to protect the aquifer from any adverse impacts.

22. ☒ Silt fences, diversion berms, and other temporary erosion and sediment controls will be constructed and maintained as appropriate to prevent pollutants from entering sensitive features discovered during construction.

WATER POLLUTION ABATEMENT PLAN AND ABOVEGROUND STORAGE TANK PLAN MODIFICATION APPLICATION

FOR

WILLIAMSON COUNTY NORTH CAMPUS FACILITY

Address
3151 SE INNER LOOP
GEORGETOWN, TX 78626

Prepared By:

Sandlin Services, LLC
TBPELS Firm # 21356
P: (806) 679-7303

August 22, 2022

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Temporary Stormwater Section (TCEQ-0602)

Attachment A: Spill Response Actions

Spill Response Actions

In the event of an accidental spill, immediate action shall be undertaken by the General Contractor to contain and remove the spilled material. All hazardous materials, including contaminated soil and liquid concrete waste (if applicable), shall be disposed of by the Contractor in the manner specified by Federal, State and Local regulations and by the manufacturer of such products. As soon as possible, the spill shall be reported to the appropriate agencies. As required under the provisions of the Clean Water Act, any spill or discharge entering waters of the United States shall be properly reported. The General Contractor shall prepare a written record of any spill and associated clean-up activities of petroleum products or hazardous materials greater than 1 gallon or reportable quantities, whichever is less. The General Contractor shall provide notice to the Owner immediately upon identification of a reportable spill.

All spills of petroleum products or hazardous materials in excess of Reportable Quantities as defined by EPA or the State or Local agency regulations, shall be immediately reported within 24 hours to the EPA National Response Center (1-800-424-8802), TCEQ (1-800-832-8224), and local Fire Department (911).

The reportable quantity for hazardous materials can be found in 40 CFR 302:

Reportable Quantities		
Material	**Media Released to**	**Reportable Quantities**
Engine Oil, Fuel, Hydraulic & Brake Fluid	Land	25 gallons
Engine Oil, Fuel, Hydraulic & Brake Fluid	Water	Visible sheen
Antifreeze	Land	100 lbs (13 gal.)
Battery Acid	Land, Water	100 lbs
Refrigerant	Air	1 lb
Gasoline	Air, Land, Water	100 lbs
Engine Degreasers	Air, Land, Water	100 lbs

In order to minimize the potential for a spill of petroleum product or hazardous materials to come in contact with stormwater, the following steps shall be implemented.

a) Good housekeeping of all non-hazardous and hazardous materials shall be followed onsite. Only amounts required to do the job shall be kept onsite. Materials shall be kept in the original containers with the manufacturer's label, and substances shall not be mixed unless recommended by the

manufacturer. Materials should be used for their intended purpose and used up before disposing of the container. Daily inspections shall ensure a neat, orderly, and safe working environment.

b) All materials with hazardous properties (such as pesticides, petroleum products, fertilizers, detergents, construction chemicals, acids paints, paint solvents, additives for soil stabilization, concrete curing compounds and additives, etc.) shall be stored in a secure location, under cover and in appropriate, tightly sealed containers when not in use.

c) The minimum practical quantity of all such materials shall be kept on the job site and scheduled for delivery as close to time of use as practical. Post Material Safety Data Sheets (MSDS), as well as proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.

d) A spill control and containment kit (containing for example: absorbent material such as kitty litter or sawdust, acid neutralizing agent, brooms, dust pans, mops, rags, gloves, goggles, plastic, and metal trash containers, etc.) shall be provided on the construction site and construction employees shall be trained in when and how to use spill containment materials.

e) The contractor personnel will immediately clean up any oil, fuel or hydraulic fluid if observed being released from equipment or vehicles. Vehicles or equipment will cease operation until required repairs are made to the equipment.

f) All of the product in a container shall be used before the container is disposed of. All such containers shall be triple rinsed with water prior to disposal. The rinse water used in these containers shall be disposed of in a manner in compliance with State and Federal regulations and shall not be allowed to mix with stormwater discharges.

g) All products shall be stored in and used from the original container with the original product label.

h) All products shall be used in strict compliance with instructions on the product label.

i) The disposal of the excess or used products shall be in strict compliance with instructions on the products label.

SPILL REPORT FORM

Notes to General Contractor:

- Control and contain the spill.
- Contact the appropriate regulatory agencies if the spill exceeds the applicable reportable quantity.
- Clean up the spill and dispose of waste according to federal, state and local regulations.
- Complete the Spill Report Form in full for each spill that exceeds the applicable reportable quantity and submit to the Owner.
- Call the Owner.
- Resolve as appropriate and as required by regulatory authorities.

SPILL REPORT FORM

DATE:
PROJECT:
PROJECT ADDRESS:

Spill Reported By: _____

Date / Time of Spill: _____

Describe spill location and events leading to spill: _____

_____

Material Spilled: _____

Source of Spill: _____

Amount Spilled: _____

Amount Spilled to Waterway (Name Waterway): _____

Containment or Clean up Action: _____

_____

Approximate depth (yards) of soil excavation: _____

List injuries or Personal Contamination: _____

Action to be taken to prevent future spills:
_____

Agencies notified of spill:
_____

_____

_____ _____
Contractor Signature and Printed Name **Date**

AFTER NOTIFYING GOVERNING AUTHORITIES, IMMEDIATELY COMPLETE THIS FORM AND CONTACT THE OWNER IF THE SPILL EXCEEDS THE REPORTABLE QUANTITY FOR THE GOVERNING AGENCY

Temporary Stormwater Section
(TCEQ-0602)

Attachment B:
Potential Sources of Contamination

Potential Sources of Contamination and Preventive Measures:

Potential Source: Concrete and concrete products used on-site during construction.
Preventive Measures: Concrete washout structure will be used if necessary.

Potential Source: Oil, grease, fuel, and hydraulic fluid contamination from construction equipment and vehicle dripping.
Preventative Measures: Vehicle maintenance will be performed at a local maintenance shop.

Potential Source: Miscellaneous trash and litter from construction workers and material wrappings.
Preventative Measures: Trash containers will be placed throughout the site to encourage proper disposal of trash.

Potential Source: Silt leaving the site.
Preventative Measures: Contractor will install all temporary best management practices prior to start of construction including the stabilized construction entrance to prevent tracking onto adjoining streets.

Potential Source: Construction debris
Preventative Measures: Construction debris will be monitored daily by contractor. Debris will be collected weekly and placed in disposal bins. Situations requiring immediate attention will be addressed on a case-by-case basis.

Potential Source: Soil and mud from construction vehicle tires as they leave the site.
Preventative Measures: a stabilized construction exit shall be utilized as vehicles leave the site. And soil, mud, etc. carried from the project onto public roads shall be cleaned up within 24 hours.

Potential Source: Sediment from soil, sand, gravel, and excavated materials stockpiled on site.
Preventative Measures: Silt fence shall be installed on the down gradient side of the stockpiled materials. Reinforced rock berms shall be installed at all downstream discharge locations.

Potential Source: Portable toilet spill
Preventative Measures: Toilets on the site will be emptied on a regular basis by the contracted toilet company.

Temporary Stormwater Section (TCEQ-0602)

Attachment C: Sequence of Major Activities

The installation of erosion and sedimentation controls shall occur prior to any excavation of materials or major disturbances on the site. The sequence of major construction activities will be as follows. Approximate acreage (AC) expected to be disturbed is listed in parentheses next to each activity.

Intended Schedule or Sequence of Major Activities:

1. Submit written notice of construction to TCEQ regional office at least 48 hours prior to the start of any regulated activities. (See Permanent Stormwater Section – Attachment F)

2. A pre-construction conference prior to commencement of construction. All contractors conducting regulated activities associated with this project must be provided with complete copies of the approved Water Pollution Abatement Plan (WPAP) and the TCEQ letter indicating the specific conditions of its approval. During these regulated activities, the contractors are required to keep on-site copies of the approved plan and approval letter.

3. Contractors must follow requirements as outlined in TCEQ General Construction Notes for the Water Pollution Abatement Plan (WPAP). WPAP Construction Notes are included on the Construction Plan sheets (See Permanent Stormwater Section – Attachment F).

4. Prior to beginning any construction activity, all temporary erosion and sedimentation BMPs and control measures must be properly installed and maintained in accordance with the approved plans and manufacturers specifications. Recommended erosion controls include mulch logs and filter dike (0.05 Acres).

5. Evaluate temporary erosion control installation. If inspections indicate a control has been used inappropriately, or incorrectly, the applicant must replace or modify the control for site situations. These controls must remain in place until the disturbed areas have been permanently stabilized.

6. Review construction schedule and the Water Pollution Abatement Plan (WPAP) requirements.
7. Install secondary containment for the AST and associated infrastructure (0.01 Acres).
8. Revegetate all disturbed areas according to plan, as needed.
9. Site cleanup and removal of temporary erosion/sedimentation BMP controls. (0.05 Acres)

Maximum total construction time is not expected to exceed 3 months.

Temporary Stormwater Section (TCEQ-0602)

Attachment D: Temporary Best Management Practices and Measures

1. There are approximately 0.0 AC of storm water that originate up gradient from the site and flow across the site through an onsite BMP. No upstream stormwater exists.

2. Temporary BMPs will be installed prior to soil disturbing construction activity. Examples of structural controls include silt fences, earth dikes, drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, storm drain inlet protection, rock outlet protection, and temporary or permanent sediment basins. Stabilization practices to keep disturbed soil in place include temporary vegetation, permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, and preservation of mature vegetation. For this project, mulch logs or filter dike is recommended. Silt fencing will be placed along the down-gradient sides of the property and limits of construction to prevent silt from escaping the construction area during construction.

3. A gravel construction entrance exists on site to reduce vehicle "tracking" onto adjoining streets. A concrete washout pit may be used to collect all excess concrete during construction, if needed.

4. Temporary BMPs for this project will protect surface water or groundwater from turbid water, phosphorus, sediment, oil and other contaminants, which may mobilize in stormwater flows by slowing the flow of runoff to allow sediment and suspended solids to settle out of the runoff.

5. Practices may also be implemented on site for interim and permanent stabilization. Stabilization practices may include but are not limited to establishment of temporary vegetation; establishment of permanent vegetation; mulching; geotextiles; sod stabilization; vegetative buffer strips; protection of existing trees and vegetation; and other similar measures.

6. There are no sensitive features or surface streams within the boundaries of the project that would require temporary BMPs. The temporary onsite BMPs will be used to treat stormwater runoff before it leaves the project and prevent pollutants from entering surface streams or any sensitive features down gradient of the site.

Temporary Stormwater Section
(TCEQ-0602)

Attachment E:
Request to Temporarily Seal a Feature
(NOT APPLICABLE)

Temporary Stormwater Section (TCEQ-0602)

Attachment F: Structural Practices

When needed, structural BMPs are used to limit runoff discharge of pollutants from exposed areas of the site. BMPs are installed prior to soil disturbing construction activity. Silt fencing will be placed along the down-gradient sides of the property to prevent silt from escaping the construction area. A temporary construction entrance will be placed at the site entry/exit point to reduce tracking onto adjoining streets. A construction staging area will be used onsite to perform all vehicle maintenance and for equipment and material storage. A concrete truck washout pit will be placed on site to provide containment and easier cleanup of waste from concrete operations. To limit runoff discharge of pollutants from exposed areas of the site during construction, mulch logs or filter dikes are recommended. The location of all structural temporary BMPs is shown within the Site Plans.

Description of Temporary BMPs

Construction Entrance/Exit:
The purpose of a gravel construction entrance is to provide a stable entrance/exit condition from the construction site and keep mud and sediment off public roads. A stabilized construction entrance is a stabilized pad of crushed stone located at any point traffic will be entering or leaving the construction site from a public right-of-way. This practice should be used at all point of construction ingress and egress. Excessive amounts of mud can also present a safety hazard to roadway users. To minimize the amount of sediment loss to nearby roads, access to the construction site should be limited to as few points as possible and vegetation around the perimeter should be protected where access is not necessary. A rock stabilized construction entrance exists and will be used at all designated access points.

Silt Fence:
The purpose of a silt fence is to intercept and detain water-borne sediment from unprotected areas of a limited extent. Silt fence is used during the period of construction near the perimeter of a disturbed area to intercept sediment while allowing water to percolate through. This fence should remain in place until the disturbed area is permanently stabilized. Silt fence should not be used where there is a concentration of water in a channel or drainage way. If concentrated flow occurs after installation, corrective action must be taken such as placing a rock berm in the areas of concentrated flow.

Silt fencing within the site may be temporarily moved during the day to allow construction activity provided it is replaced and properly anchored to the ground at the end of the day. Silt fences on the perimeter of the site or around drainage ways should not be moved at any time.

Triangular Sediment Filter Dikes

Triangular sediment filter dikes (18"x18"x18" filter material with 6" square folded wire mesh frame) will be installed downgradient of the AST construction area with filter cloth placed over any existing stormwater collection drains. The dike and filter cloth will be held in place with cloth sandbags. The facility existing topography will not change.

Check Dams

Check dams are small barriers consisting of straw bales, mulch logs, rock or earth berms placed across a drainage swale or ditch. They reduce the velocity of small, concentrated flows, providing a limited barrier for sediment and help disperse concentrated flows, reducing potential erosion.

Concrete Washout Area (if applicable)

The purpose of concrete washout areas is to prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employees and subcontractors.

The following steps will help reduce stormwater pollution from concrete wastes:

- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Avoid mixing excess amounts of fresh concrete.
- Perform washout of concrete trucks in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- For onsite washout:
- Locate washout area at least 50 feet from sensitive features, storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
- Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly.

Temporary Stormwater Section
(TCEQ-0602)

Attachment G:
Drainage Area Map
(NOT APPLICABLE)

Temporary Stormwater Section
(TCEQ-0602)

Attachment H:
Temporary Sediment Pond(s) Plans and Calculations
(NOT APPLICABLE)

Temporary Stormwater Section (TCEQ-0602)

Attachment I: Inspection and Maintenance for BMPs

Inspection and Maintenance Guidelines for Construction BMPs

Personnel Responsible for Inspections

The agent that performs the inspections should be knowledgeable of this general permit, familiar with the construction site, and knowledgeable of the SWPPP for the site. Documentation of the inspector's qualifications is to be included in the attached Inspector Qualifications Log.

Inspection Schedule

The primary operator is required to choose one of the two inspections listed below.

☐ **Option 1:** Once every seven calendar days. If this alternative schedule is developed, then the inspection must occur regardless of whether or not there has been a rainfall event since the previous inspection.

☐ **Option 2:** Once every 14 calendar days and within 24 hours of the end of a storm event of two inches or greater.

The inspections may occur on either schedule provided that documentation reflects the current schedule and that any changes to the schedule are conducted in accordance with the following provisions: the schedule may be changed a maximum of one time each month, the schedule change must be implemented at the beginning of a calendar month, and the reason for the schedule change must be documented (e.g., end of "dry" season and beginning of "wet" season).

If option 2 is the chosen frequency of inspections a rain gauge must be properly maintained on site or the storm event information from a weather station that is representative of the site location. For any day of rainfall during normal business hours that measures 0.25 inches or greater, proper documentation of the total rainfall measured for that day must be recorded.

Personnel provided by the permittee must inspect:

- disturbed areas of the construction site that have not been finally stabilized,
- areas used for storage of materials that are exposed to precipitation,
- structural controls (for evidence of, or the potential for, pollutants entering the drainage system),
- sediment and erosion control measures identified in the SWP3 (to ensure they are operating correctly), and
- locations where vehicles enter or exit the site (for evidence of off-site sediment tracking).

Reductions in Inspection Frequency

Where sites have been finally or temporarily stabilized or where runoff is unlikely due to winter conditions (e.g., site is covered with snow, ice, or frozen ground exists), inspections must be conducted at least once every month. In arid, semi-arid, or drought-stricken areas, inspections must be conducted at least once every month and within 24 hours after the end of a storm event of 0.5 inches or greater. A record of the total rainfall measured, as well as the approximate beginning and ending dates of winter or drought conditions resulting in monthly frequency of inspections in the attached Rain Gauge Log.

In the event of flooding or other uncontrollable situations which prohibit access to the inspection sites, inspections must be conducted as soon as access is practicable.

Inspection Report Forms

Use the Inspection Report Forms given as a checklist to ensure that all required areas of the construction site are addressed. There is space to document the inspector's name as well as when the inspections regularly take place. The tables will document that the required area was inspected. (If there were any areas of concern, briefly describe them in this space with a more detailed description in the narrative section. Use the last table to document any discharges found during the inspections).

Describe how effective the installed BMPs are performing. Describe any BMP failures that were noted during the investigation and describe any maintenance required due to the failure. If new BMPs are needed as the construction site changes, the inspector can use the space at the bottom of the section to list BMPs to be implemented before the next inspection.

Describe the inspector's qualifications, how the inspection was conducted, and describe any areas of non-compliance in detail. If an inspection report does not identify any incidents of non- compliance, then it must contain a certifying signature stating that the facility or site is in compliance. The report must be signed by a person and in a manner required by 30 TAC 305.128. There is space at the end of the form to allow for this certifying signature.

Whenever an inspection shows that BMP modifications are needed to better control pollutants in runoff, the changes must be completed within seven calendar days following the inspection. If existing BMPs are modified or if additional BMPs are needed, you must describe your implementation schedule, and wherever possible, make the required BMP changes before the next storm event.

The Inspection Report Form functions as the required report and must be signed in accordance with TCEQ rules at 30 TAC 305.128.

Corrective Action

Personnel Responsible for Corrective Actions

Both Primary and Secondary Operators are responsible for maintaining all necessary Corrective Actions. If an individual is specifically identified as the responsible party for modifying the contact information for that individual should be documented in the attached Inspector Qualifications Log.

Corrective Action Forms

The Temporary BMPs must be modified based on the results of inspections, as necessary, to better control pollutants in runoff. Revisions must be completed within seven (7) calendar days following the inspection. If existing BMPs are modified or if additional BMPs are necessary, an implementation schedule must be described in the attached forms and wherever possible those changes implemented before the next storm event. If implementation before the next anticipated storm event is impracticable, these changes must be implemented as soon as practicable. Actions taken as a result of inspections must be properly documented by completing the corrective action forms given.

Inspector Qualifications Log*

Inspector Name: ____
Qualifications (Check as appropriate and provide description):
☐ Training Course ____
☐ Supervised Experience ____
☐ Other ____
Inspector Name: ____
Qualifications (Check as appropriate and provide description):
☐ Training Course ____
☐ Supervised Experience ____
☐ Other ____

Inspector Name: ____
Qualifications (Check as appropriate and provide description):
☐ Training Course ____
☐ Supervised Experience ____
☐ Other ____

Inspector Name: ____
Qualifications (Check as appropriate and provide description):
☐ Training Course ____
☐ Supervised Experience ____
☐ Other ____

Inspector Name: ____
Qualifications (Check as appropriate and provide description):
☐ Training Course ____
☐ Supervised Experience ____
☐ Other ____

Inspector Name: ____
Qualifications (Check as appropriate and provide description):
☐ Training Course ____
☐ Supervised Experience ____
☐ Other ____

*The agent that performs the inspections should be knowledgeable of this general permit, familiar with the construction site, and knowledgeable of the SWPPP for the site. The contractor is to provide an inspector with a CPESC, CESSWI, or CISEC certification.

Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Construction Activity Sequence Log*

Name of Operator	Projected Dates Month/Year	Activity Disturbing Soil clearing, excavation, etc.	Location on-site where activity will be conducted	Acreage being disturbed

*Construction activity sequences for linear projects may be conducted on a rolling basis. As a result, construction activities may be at different stages at different locations in the project area. The Contractor is required to complete and update the schedule and adjust as necessary.

Stormwater Control Installation and Removal Log

Stormwater Control	Location On-Site	Installation Date	Removal Date

Stabilization Activities Log*

Date Activity Initiated	Description of Activity	Description of Stabilization Measure and Location	Date Activity Ceased (Indicate Temporary or Permanent)	Date When Stabilization Measures Initiated

*****Stabilization and erosion control practices may include, but are not limited to, establishing temporary or permanent vegetation, mulching, geotextiles, sod stabilization, vegetative buffer strips, and protecting existing trees and vegetation. List practices used where they are located, when they will be implemented, and whether they are temporary (interim) or permanent.

Inspection Frequency Log

Date	Frequency

Rain Gauge Log

Date	Location of Rain Gauge	Gauge Reading

General Information

Name of Project		**Tracking Number**		**Inspection Date**	
Inspector Name, Title & Contact Information					
Present Phase of Construction					
Inspection Location (if multiple inspections are required, specify location where this inspection is being conducted)					

Inspection Frequency

Standard Frequency: ☐ Weekly ☐Every 14 days and within 24 hours of a 0.25" rain

Increased Frequency: ☐ Every 7 days and within 24 hours of a 0.25" rain

Reduced Frequency:

☐ Once per month (for stabilized areas)

☐ Once per month and within 24 hours of a 0.25" rain (for arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought)

☐ Once per month (for frozen conditions where earth-disturbing activities are being conducted)

Was this inspection triggered by a 0.25" storm event? ☐ Yes ☐ No

If yes, how did you determine whether a 0.25" storm event has occurred?

☐ Rain gauge on site ☐Weather station representative of site. Specify weather station source.

Total rainfall amount that triggered the inspection (in inches):

Unsafe Conditions for Inspection

Did you determine that any portion of your site was unsafe for inspection? ☐ Yes ☐No

If "yes," complete the following:

- Describe the conditions that prevented you from conducting the inspection in this location:

- Location(s) where conditions were found:

Condition and Effectiveness of Erosion and Sediment (E&S) Controls				
Type / Location of E&S Control	**Repairs or Other Maintenance Needed?**	**Corrective Action Required?**	**Date on Which Maintenance of Corrective Action First Identified?**	**Notes**
1.	☐ Yes ☐ No	☐ Yes ☐ No		
2.	☐ Yes ☐ No	☐ Yes ☐ No		
3.	☐ Yes ☐ No	☐ Yes ☐ No		
4.	☐ Yes ☐ No	☐ Yes ☐ No		
5.	☐ Yes ☐ No	☐ Yes ☐ No		
6.	☐ Yes ☐ No	☐ Yes ☐ No		
7.	☐ Yes ☐ No	☐ Yes ☐ No		
8.	☐ Yes ☐ No	☐ Yes ☐ No		
9.	☐ Yes ☐ No	☐ Yes ☐ No		

Condition and Effectiveness of Pollution Prevention (P_2) Practices				
Type / Location of P_2 Practices	**Repairs or Other Maintenance Needed?**	**Corrective Action Required?**	**Identification Date**	**Notes**
1.	☐ Yes ☐ No	☐ Yes ☐ No		
2.	☐ Yes ☐ No	☐ Yes ☐ No		
3.	☐ Yes ☐ No	☐ Yes ☐ No		
4.	☐ Yes ☐ No	☐ Yes ☐ No		
5.	☐ Yes ☐ No	☐ Yes ☐ No		
6.	☐ Yes ☐ No	☐ Yes ☐ No		
7.	☐ Yes ☐ No	☐ Yes ☐ No		
8.	☐ Yes ☐ No	☐ Yes ☐ No		
9.	☐ Yes ☐ No	☐ Yes ☐ No		

Stabilization of Exposed Soil

Stabilization Area	Stabilization Method	Have you Initiated Stabilization?	Notes
1.		☐ YES ☐ NO If yes, provide date:	
2.		☐ YES ☐ NO If yes, provide date:	
3.		☐ YES ☐ NO If yes, provide date:	
4.		☐ YES ☐ NO If yes, provide date:	

Description of Discharges

Was a stormwater discharge or other discharge occurring from any part of your site at the time of the inspection? ☐ YES ☐ NO
If "YES," provide the following information for each point of discharge:

Discharge Locations	Observations
1.	Describe the discharge: At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and / or sediment accumulation that can be attributed to your discharge? ☐ YES. ☐ NO If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:
2.	Describe the discharge: At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and / or sediment accumulation that can be attributed to your discharge? ☐ YES. ☐ NO If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:
3.	Describe the discharge: At points of discharge and the channels and banks of surface waters in the immediate vicinity, are there any visible signs of erosion and / or sediment accumulation that can be attributed to your discharge? ☐ YES. ☐ NO If yes, describe what you see, specify the location(s) where these conditions were found, and indicate whether modification, maintenance, or corrective action is needed to resolve the issue:

Contractor or Subcontractor Certification and Signature

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information, submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am, aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: _____ Date**:**

Printed Name and Affiliation:

Certification and Signature by Permittee

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information, submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am, aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or
"Duly Authorized Representative": _____ **Date:**

Printed Name and Affiliation:

Section A – Initial Report **(Complete this section within 24 hours of discovering the condition that triggered corrective action.)**		
Name of Project:	Tracking Number:	Today's Date
Date Problem First Discovered:	Time Problem First Discovered:	
Name of Individual Completing this Form:	Contact Information:	

What site conditions triggered the requirement to conduct corrective action:

☐ A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or Part 3

☐ The stormwater controls that have been installed and maintained are not effective enough for the discharge to meet applicable water quality standards

☐ A prohibited discharge has occurred or is occurring

Provide a description of the problem:

Deadline for completing corrective action (Enter date that is either: (1) no more than 7 calendar days after the date you discovered the problem, or (2) if it is infeasible to complete work within the first 7 days, enter the date that is as soon as practicable following the 7th day):

If your estimated date of completion falls after the 7-day deadline, explain (1) why you believe it is infeasible to complete work within 7 days, and (2) why the date you have established for making the new or modified stormwater control operational is the soonest practicable timeframe:

Section B – Corrective Action Progress

(Complete this section no later than 7 calendar days after discovering the condition that triggered corrective action.)

Section B.1 – Why the Problem Occurred

Cause(s) of Problem (Add an additional sheet if necessary)	How This Was Determined and the Date You Determined the Cause
1.	1.
2.	2.

Section B.2 – Stormwater Control Modifications to be Implemented to Correct the Problem

List of Stormwater control Modification(s) Needed to Correct Problem (Add an additional sheet if necessary)	Completion Date	SWPPP Update Necessary?	Notes
1.		☐ Yes ☐ No Date:	
2.		☐ Yes ☐ No Date:	

Section A – Initial Report **(Complete this section within 24 hours of discovering the condition that triggered corrective action.)**		
Name of Project:	Tracking Number:	Today's Date
Date Problem First Discovered:	Time Problem First Discovered:	
Name of Individual Completing this Form:	Contact Information:	

What site conditions triggered the requirement to conduct corrective action:

☐ A required stormwater control was never installed, was installed incorrectly, or not in accordance with the requirements in Part 2 and/or Part 3

☐ The stormwater controls that have been installed and maintained are not effective enough for the discharge to meet applicable water quality standards

☐ A prohibited discharge has occurred or is occurring

Provide a description of the problem:

Deadline for completing corrective action (Enter date that is either: (1) no more than 7 calendar days after the date you discovered the problem, or (2) if it is infeasible to complete work within the first 7 days, enter the date that is as soon as practicable following the 7th day):

If your estimated date of completion falls after the 7-day deadline, explain (1) why you believe it is infeasible to complete work within 7 days, and (2) why the date you have established for making the new or modified stormwater control operational is the soonest practicable timeframe:

Section B – Corrective Action Progress

(Complete this section no later than 7 calendar days after discovering the condition that triggered corrective action.)

Section B.1 – Why the Problem Occurred

Cause(s) of Problem (Add an additional sheet if necessary)	How This Was Determined and the Date You Determined the Cause
1.	1.
2.	2.

Section B.2 – Stormwater Control Modifications to be Implemented to Correct the Problem

List of Stormwater control Modification(s) Needed to Correct Problem (Add an additional sheet if necessary)	Completion Date	SWPPP Update Necessary?	Notes
1.		☐ Yes ☐ No Date:	
2.		☐ Yes ☐ No Date:	

Contractor or Subcontractor Certification and Signature

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information, submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am, aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Contractor or Subcontractor: _____ **Date:**

Printed Name and Affiliation:

Certification and Signature by Permittee

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information, submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am, aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Signature of Permittee or
"Duly Authorized Representative": _____ **Date:**

Printed Name and Affiliation:

Temporary Stormwater Section
TCEQ-0602)

Attachment J:
Schedule of Interim and Permanent
Soil Stabilization Practices

Interim Vegetative Stabilization

Interim soil stabilization will not be required.

Permanent Vegetative Stabilization

Construction practices shall disturb the minimal amount of existing ground cover as required for land clearing, grading, and construction activity for the shortest amount of time possible to minimize the potential of erosion and sedimentation from the site. Existing vegetation shall be maintained and left in place until it is necessary to disturb for construction activity. For this project, the following stabilization practices will be implemented:

1. Hydraulic Mulch and Seeding: Disturbed areas subject to erosion shall be stabilized with hydraulic mulch and/or seeded and watered to provide interim stabilization.

2. Sodding and Wood Mulch: As per the project landscaping plan, sodding and wood mulch will be applied to landscaped areas to provide permanent stabilization prior to project completion.

Records of the following shall be maintained:

1. The dates when major grading activities occur,

2. The dates when construction activities temporarily or permanently cease on a portion of the site, and

3. The dates when stabilization measures are initiated.

Stabilization measures must be initiated as soon as practical in portions of the site where construction activities have temporarily or permanently ceased, and except as provided in the following, must be initiated no more than fourteen (14) days after the construction activity in that portion of the site has temporarily or permanently ceased:

Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practical.

Where construction activity on a portion of the site is temporarily ceased and earth disturbing activities will be resumed within twenty-one (21) days, temporary stabilization measures do not have to be initiated on that portion of the site.

In arid areas (areas with an average rainfall of 0-10 inches), semiarid areas (areas with an average annual rainfall of 10 to 20 inches), and areas experiencing droughts where the initiation of stabilization measures by the 14th day after construction activity has temporarily or permanently ceased is precluded by seasonably arid conditions, stabilization measures must be initiated as soon as practical.

CONTRACTOR NOTES:

BY THE ACT OF SUBMITTING A BID FOR THIS PROPOSED CONTRACT, THE BIDDER WARRANTS THAT THE BIDDER, AND ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS HE INTENDS TO USE, HAVE CAREFULLY AND THOROUGHLY REVIEWED THE DRAWINGS, SPECIFICATIONS AND ALL OTHER CONTRACT DOCUMENTS AND HAVE FOUND THEM COMPLETE AND FREE FROM ANY AMBIGUITIES AND SUFFICIENT FOR THE PURPOSE INTENDED. THE BIDDER FURTHER WARRANTS THAT TO THE BEST OF HIS OR HIS SUBCONTRACTORS' AND MATERIAL SUPPLIERS' KNOWLEDGE, ALL MATERIALS AND PRODUCTS SPECIFIED OR INDICATED HEREIN ARE ACCEPTABLE FOR ALL APPLICABLE CODES AND AUTHORITIES.

THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THESE PLANS HAS BEEN BASED UPON RECORD INFORMATION ONLY AND MAY NOT MATCH LOCATIONS AND/OR DEPTHS AS CONSTRUCTED. THE CONTRACTOR SHALL CONTACT THE AUSTIN AREA "ONE CALL" SYSTEM 1-800-245-4545, OR THE OWNER OF EACH INDIVIDUAL UTILITY, FOR ASSISTANCE IN DETERMINING EXISTING UTILITY LOCATIONS AND DEPTHS PRIOR TO BEGINNING ANY CONSTRUCTION. CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL UTILITY CROSSINGS PRIOR TO BEGINNING ANY CONSTRUCTION.

ENVIRONMENTAL INSPECTION HAS THE AUTHORITY TO MODIFY/CHANGE EROSION AND SEDIMENTATION CONTROLS TO KEEP THE PROJECT IN COMPLIANCE, AS PER SECTION 25-8-183 OF THE LAND DEVELOPMENT CODE.

NOTES:

1. THIS SITE LIES OVER THE EDWARDS AQUIFER TRANSISTION ZONE.
2. RELEASE OF THIS APPLICATION DOES NOT CONSTITUTE A VERIFICATION OF ALL DATA, INFORMATION, AND CALCULATIONS SUPPLIED BY THE APPLICANT. THE ENGINEER OF RECORD IS SOLELY RESPONSIBLE FOR THE COMPLETENESS, ACCURACY, AND ADEQUACY OF HIS/HER SUBMITTAL, WHETHER OR NOT THE APPLICATION IS REVIEWED FOR CODE COMPLIANCE BY CITY ENGINEERS.
3. ACCORDING TO THE NATIONAL FLOOD INSURANCE RATE MAP COMMUNITY PANEL NO 48491C0294F, DATED 12/20/2019, THIS TRACT LIES WITHIN UNSHADED ZONE X, AREAS DETERMINED TO BE OUTSIDE OF THE 500 YEAR FLOODPLAIN.
4. THE CONTRACTOR OR SURVEYOR WILL OBTAIN A DIGITAL COPY OF THE CAD FILES THAT REPRESENT THESE IMPROVEMENTS; SANDLIN SERVICES, LLC AND IT'S ASSOCIATES TAKE NO RESPONSIBILITY FOR THE LOCATION OF THESE IMPROVEMENTS IN ANY COORDINATE SYSTEM. DIGITAL FILES USED TO PRODUCE THESE PLANS WERE PARTIALLY CREATED BY PARTIES OTHER THAN SANDLIN SERVICES, LLC AND ARE NOT INTENDED FOR USE IN CONSTRUCTION STAKING. VERTICAL AND HORIZONTAL DATA SHALL BE INDEPENDENTLY VERIFIED BY CONTRACTOR'S R.P.L.S.
5. SANDLIN SERVICES, LLC HAS ENDEAVORED TO DESIGN THESE PLANS COMPLIANT WITH ADA/TDLR AND OTHER ACCESSIBILITY REQUIREMENTS. HOWEVER, THE CONTRACTOR SHALL NOT BE RELIEVED OF ANY RESPONSIBILITY FOR CONSTRUCTING THESE IMPROVEMENTS COMPLIANT WITH ALL APPLICABLE ACCESSIBILITY STANDARDS. IF THE CONTRACTOR NOTICES ANY DISCREPANCIES BETWEEN THESE PLANS AND ACCESSIBILITY LAWS/RULES, HE IS TO STOP WORK IN THE AREA OF CONFLICT AND NOTIFY THE ENGINEER IMMEDIATELY FOR A RESOLUTION AND/OR REVISION TO THESE PLANS. SANDLIN SERVICES, LLC SHALL NOT BE HELD RESPONSIBLE FOR CONSTRUCTING THIS SITE COMPLIANT WITH ACCESSIBILITY LAWS/RULES REGARDLESS OF WHAT IS SHOWN IN THESE PLANS.

WILLIAMSON COUNTY ROAD & BRIDGE ABOVE GROUND STORAGE TANK PLANS

ADDRESS: 3815 HUNTER RD, SAN MARCOS, TX 78666

STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

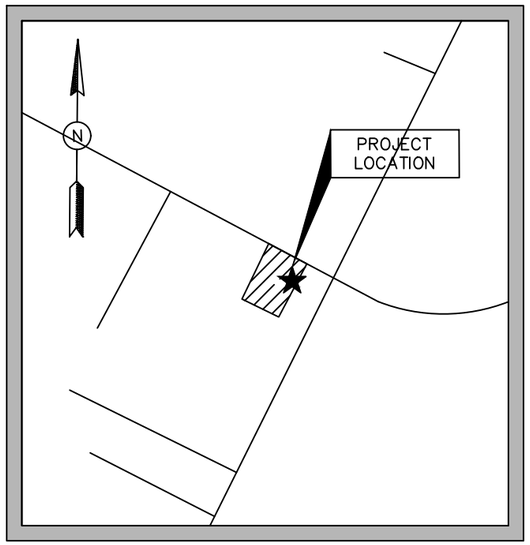
CONTACTS

OWNER: WILLIAMSON COUNTY ROAD AND BRIDGE

ENGINEER:
SANDLIN SERVICES, LLC
4501 WHISPERING VALLEY DR. UNIT#27
AUSTIN, TEXAS 78727
(806)679-7303
CONTACT: NICHOLAS SANDLIN, P.E.

CONTRACTOR:
EXCELL FUELING SYSTEMS, INC.

GEOLOGIST:
RANGER ENVIRONMENTAL, INC.



PROJECT LOCATION MAP
N.T.S.

SHEET INDEX

NUMBER	TITLE
1	COVER PAGE
2	EROSION CONTROL DETAILS
3	AST PLAN
4	TANK LAYOUT

ENGINEERING | CONSULTING
SANDLIN
SERVICES, LLC

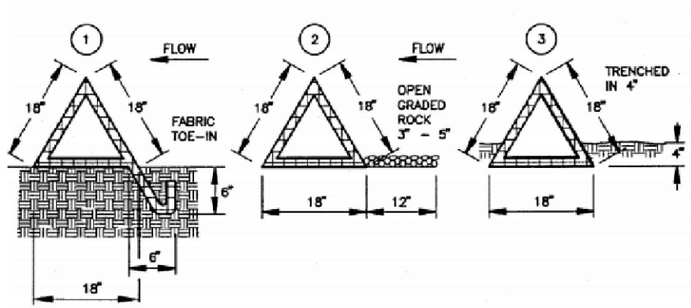
DATE OF SUBMITTAL: 8/22/2023

WATERSHED: SAN GABRIEL

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY REGION 11

COVER PAGE
EXCELL FUELING SYSTEMS
WILCO R&B AST PLANS
SHEET 1 OF 4

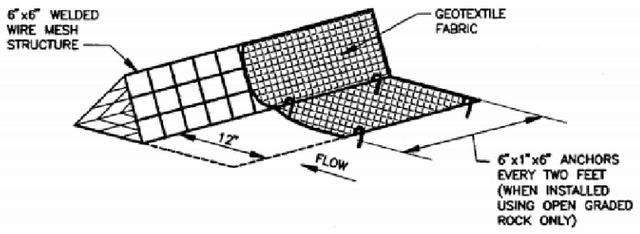
ENGINEERING | CONSULTING
SANDLIN
SERVICES, LLC
TBPELS FIRM #21356



CROSS SECTION OF INSTALLATION OPTIONS

N.T.S.

1. TOE-IN 6" MIN
2. WEIGHTED W/ 3" - 5" OPEN GRADED ROCK
3. TRENCHED IN 4"



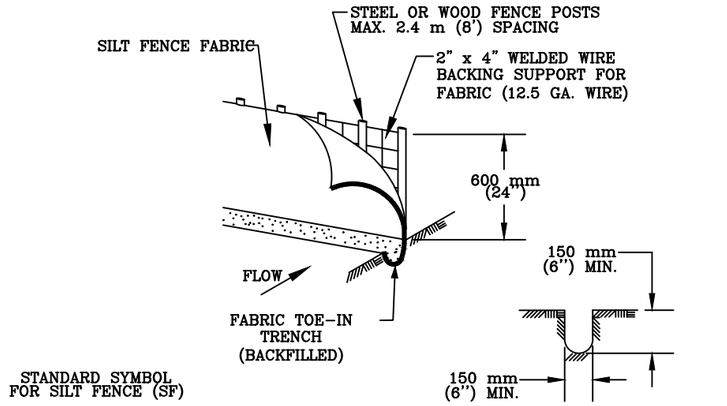
ISOMETRIC PLAN VIEW

N.T.S.

Figure 1-27 Schematic of a Triangular Filter Dike (NCTCOG, 1993)

EROSION CONTROL MAINTENANCE NOTES

1. INSPECTION SHOULD BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHOULD BE MADE PROMPTLY AS NEEDED BY THE CONTRACTOR.
2. INSPECT AND REALIGN DIKES AS NEEDED TO PREVENT GAPS BETWEEN SECTIONS.
3. ACCUMULATED SILT SHOULD BE REMOVED AFTER EACH RAINFALL, AND DISPOSED OF IN A MANNER WHICH WILL NOT CAUSE ADDITIONAL SILTATION.
4. AFTER THE SITE IS COMPLETELY STABILIZED, THE DIKES AND ANY REMAINING SILT SHOULD BE REMOVED. SILT SHOULD BE DISPOSED OF IN A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.



STANDARD SYMBOL FOR SILT FENCE (SF)

SF

L=

TRENCH CROSS SECTION

1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.

3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 inches) DEEP AND 150 mm (6 inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

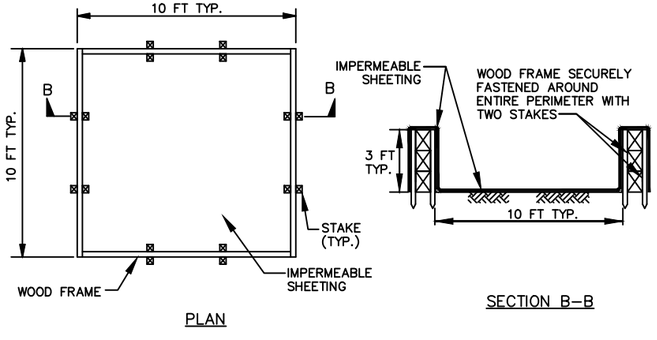
4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.

5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTY AS NEEDED.

6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

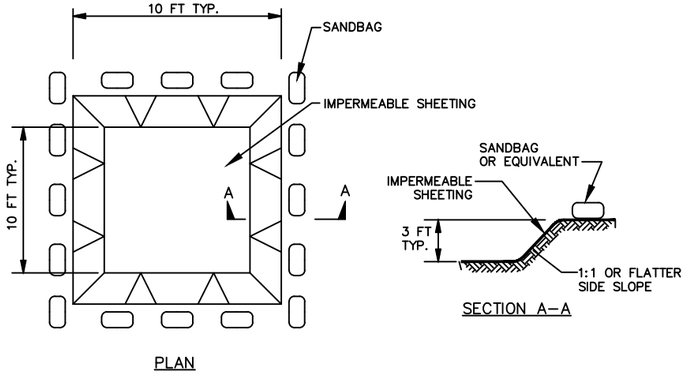
CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT		SILT FENCE	
RECORD COPY SIGNED BY MORGAN BYARS	09/01/2011 ADOPTED	THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD.	STANDARD NO. 642S-1



PLAN

SECTION B–B

WASHOUT STRUCTURE WITH WOOD PLANKS



PLAN

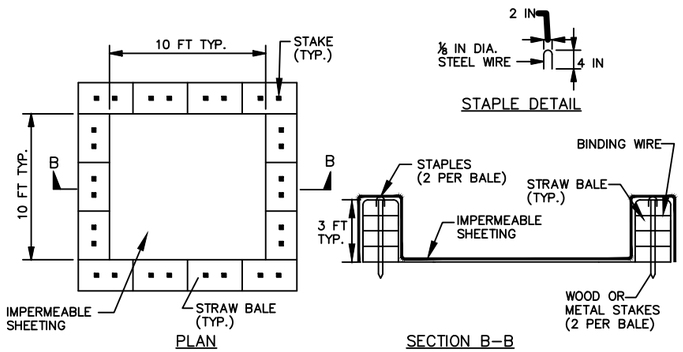
SECTION A–A

EXCAVATED WASHOUT STRUCTURE

STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED PROFESSIONAL ENGINEER

8/22/2023

ONSITE CONCRETE WASHOUT STRUCTURE



PLAN

SECTION B–B

NOTE: CAN BE TWO STACKED BALES OR PARTIALLY EXCAVATED TO REACH 3 FT DEPTH

WASHOUT STRUCTURE WITH STRAW BALES

CONSTRUCTION SPECIFICATIONS

1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 50 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER AND SOLIDS AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL, AND DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINER. WET–VACUUM STORED LIQUIDS THAT HAVE NOT EVAPORATED AND DISPOSE OF IN AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.

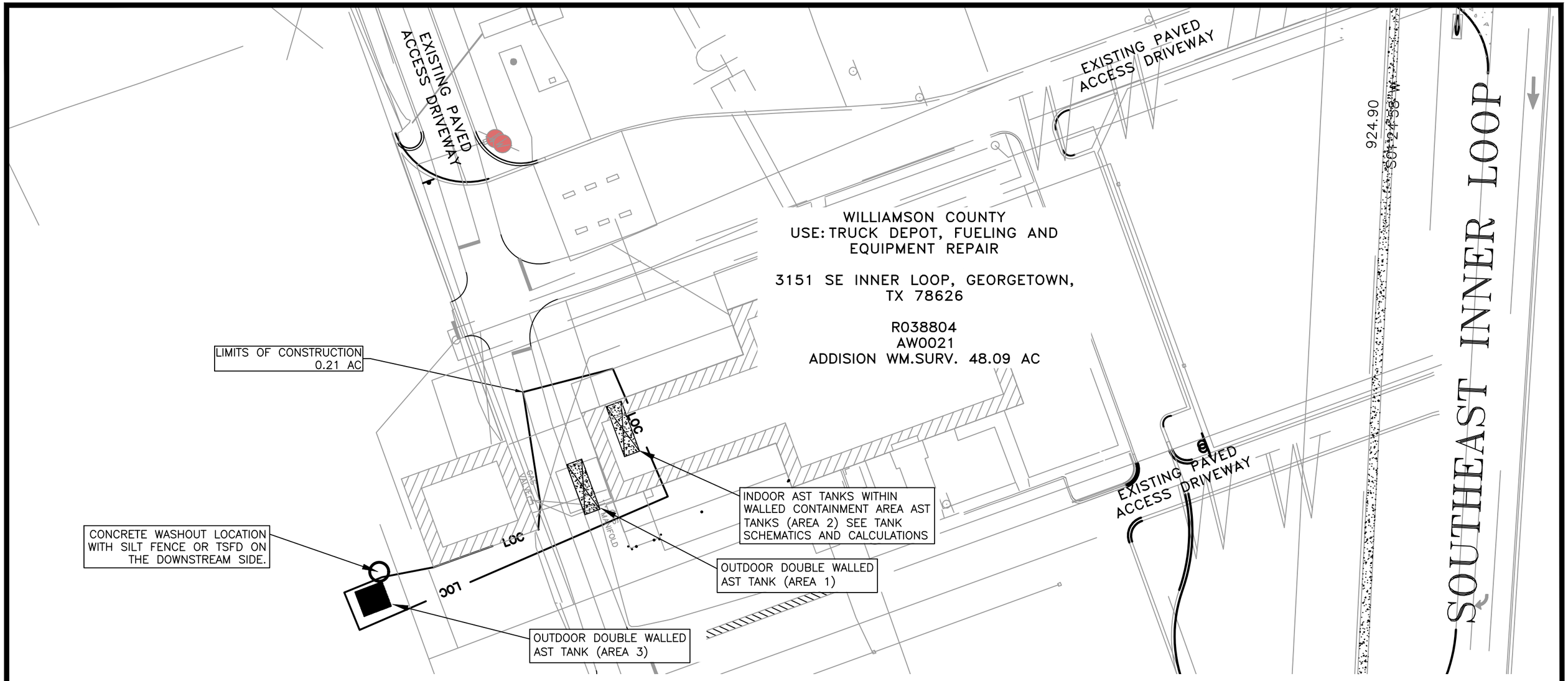
ESC DETAILS

EXCELL FUELING SYSTEMS

WILCO R&B AST PLANS

SANDLIN SERVICES, LLC
ENGINEERING | CONSULTING

TBPELS FIRM #21356



1. DRAINAGE AREA TO LIMITS OF CONSTRUCTION ARE LESS THAN 0.3 AC. USE TSD PER THIS PLAN.
2. FILTER FABRIC SHOULD LAP OVER ENDS SIX (6) INCHES TO COVER DIKE TO DIKE JUNCTION EACH JUNCTION SHOULD BE SECURED BY SHOAT RINGS.
3. POSITION DIKE PARALLEL TO THE CONTOURS, WITH THE END OF EACH SECTION CLOSELY ABUTTING THE ADJACENT SECTIONS.

STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

LEGEND

PROPERTY BOUNDARY

PROPOSED ABOVE GROUND STORAGE TANKS

NOTES

1. ALL PROPERTY BOUNDARIES ARE APPROXIMATE
2. ABOVE GROUND STORAGE TANK SIZE AND SPECIFICATION TO BE PER AST APPLICATION TO LCRA
3. TANK LOCATION AND SIZE IS ESTIMATED AND WILL BE FIELD VERIFIED.

N

0 30' 60' 120'

SCALE: 1" = 60'

IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE

AST SITE LAYOUT

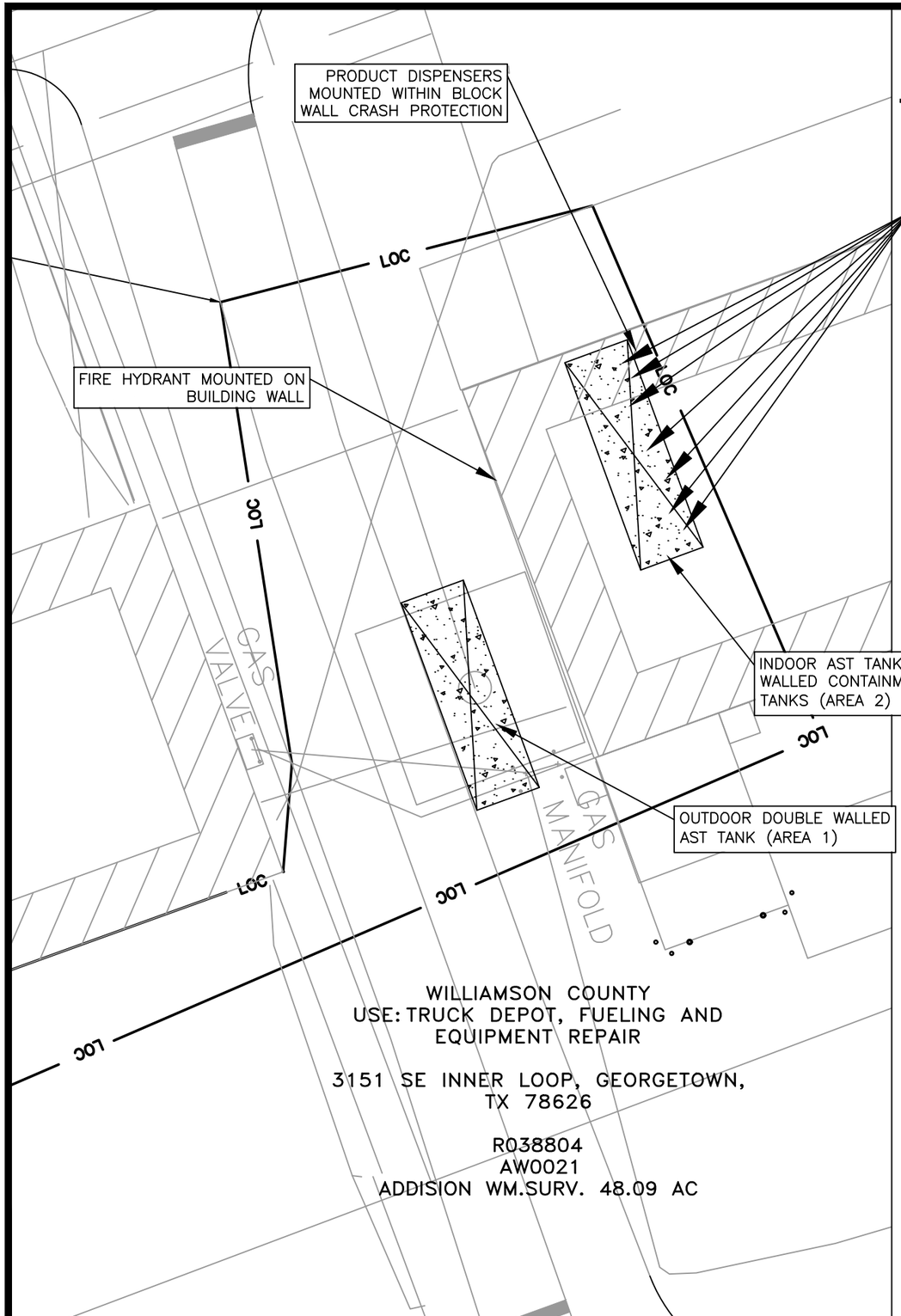
EXCELL FUELING SYSTEMS

WILCO R&B AST PLANS

SHEET 3 OF 4

SANDLIN SERVICES, LLC
ENGINEERING | CONSULTING

TBPELS FIRM #21356



WILLIAMSON COUNTY
USE: TRUCK DEPOT, FUELING AND EQUIPMENT REPAIR

3151 SE INNER LOOP, GEORGETOWN, TX 78626

R038804
AW0021
ADDISION WM.SURV. 48.09 AC

LEGEND

PROPERTY BOUNDARY

PROPOSED ABOVE GROUND STORAGE TANK

TANKS (AREA 2)
WITHIN EXISTING MASONRY CONTAINMENT

7 X 130 GAL & 2 X 240 GAL OIL/WASTE OIL TANKS WITH ENGINEERED CONTAINMENT (SEE MANUFACTURE DRAWINGS)
2085 GAL REQUIRED

N

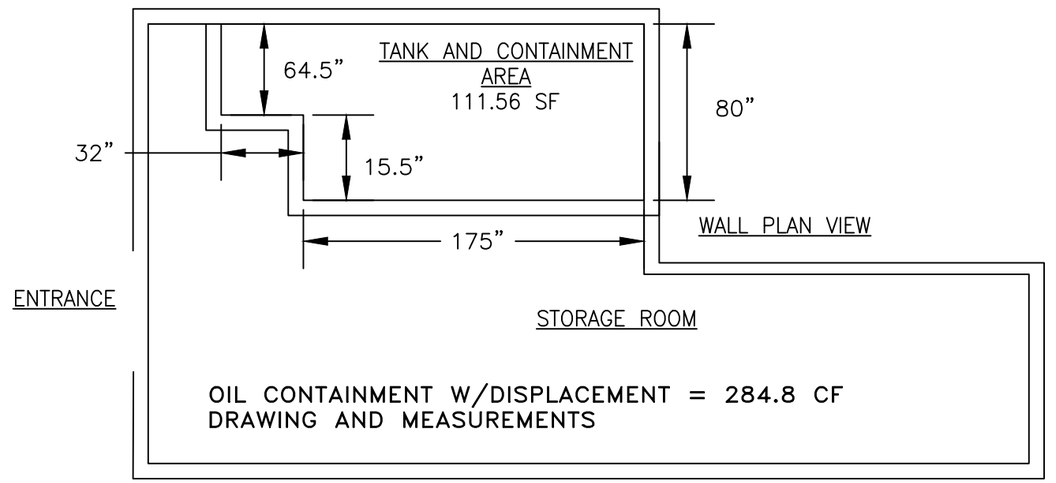
0 10' 20' 40'
SCALE: 1" = 20'

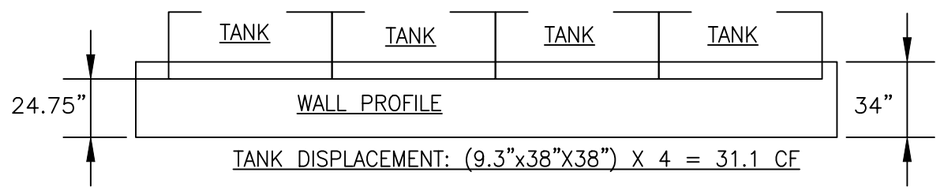
IF DRAWING BAR DOES NOT MEASURE 2" THIS PRINT IS NOT TO SCALE

STATE OF TEXAS
NICHOLAS R. SANDLIN
124404
LICENSED
PROFESSIONAL ENGINEER

8/22/2023

DETAILED TANK SCHEMATIC
N.T.S





CONTAINMENT CALCULATIONS:
–TOTAL TANK CAP.: 1390.0 GAL
–REQUIRED CONTAINMENT: 2085.0 GAL
–PROVIDED CONTAINMENT: 2130.5 GAL

NOTES

1. ALL PROPERTY BOUNDARIES ARE APPROXIMATE
2. ABOVE GROUND STORAGE TANK SIZE AND SPECIFICATION TO BE PER AST APPLICATION TO TCEQ
3. TANK LOCATION IS ESTIMATED AND WILL BE FIELD VERIFIED.

TANK LAYOUT

EXCELL FUELING SYSTEMS

WILCO R&B AST PLANS

SHEET 4 OF 4

ENGINEERING | CONSULTING
SANDLIN
SERVICES, LLC

TBPELS FIRM #21356

Agent Authorization
TCEQ-0599

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Judge Bill Gravell, Jr.,
Print Name

Williamson County Judge,
Title - Owner/President/Other

of Williamson County,
Corporation/Partnership/Entity Name

have authorized Chad M. Copeland, P.G., PWS
Print Name of Agent/Engineer

of Ranger Environmental Services, LLC
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

I also understand that:

1. The applicant is responsible for compliance with 30 Texas Administrative Code Chapter 213 and any condition of the TCEQ's approval letter. The TCEQ is authorized to assess administrative penalties of up to $10,000 per day per violation.

2. For those submitting an application who are not the property owner, but who have the right to control and possess the property, additional authorization is required from the owner.

3. Application fees are due and payable at the time the application is submitted. The application fee must be sent to the TCEQ cashier or to the appropriate regional office. The application will not be considered until the correct fee is received by the commission.

4. A notarized copy of the Agent Authorization Form must be provided for the person preparing the application, and this form must accompany the completed application.

5. No person shall commence any regulated activity on the Edwards Aquifer Recharge Zone, Contributing Zone or Transition Zone until the appropriate application for the activity has been filed with and approved by the Executive Director.

SIGNATURE PAGE:

Bill Gravell Jr.
Bill Gravell Jr. (Jul 9, 2023 07:59 CDT)
Applicant's Signature

07-09-2023
Date

THE STATE OF Texas §

County of Williamson §

BEFORE ME, the undersigned authority, on this day personally appeared Bill Gravell, Jr. known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that (s)he executed same for the purpose and consideration therein expressed.

GIVEN under my hand and seal of office on this 09 day of July, 2023.

ANDREA L. SCHIELE
Notary Public, State Of Texas
Notary ID# 126562040
Comm. Exp. 02-23-2025

NOTARY PUBLIC

Andrea L. Schiele
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 02.23.2025

Agent Authorization Form
For Required Signature
Edwards Aquifer Protection Program
Relating to 30 TAC Chapter 213
Effective June 1, 1999

I Judge Bill Gravell, Jr.,
Print Name

Williamson County Judge,
Title - Owner/President/Other

of Williamson County,
Corporation/Partnership/Entity Name

have authorized Nick Sandlin, P.E.
Print Name of Agent/Engineer

of Sandlin Services, LLC
Print Name of Firm

to represent and act on the behalf of the above named Corporation, Partnership, or Entity for the purpose of preparing and submitting this plan application to the Texas Commission on Environmental Quality (TCEQ) for the review and approval consideration of regulated activities.

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Bill Gravell Jr. (Jul 9, 2023 07:59 CDT)
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GIVEN under my hand and seal of office on this 09 day of July, 2023.

ANDREA L. SCHIELE
Notary Public, State Of Texas
Notary ID# 126562040
Comm. Exp. 02-23-2025

NOTARY PUBLIC

Andrea L. Schiele
Typed or Printed Name of Notary

MY COMMISSION EXPIRES: 02.23.2025

Edwards Aquifer Protection Program Ranger Enviromental Services, LLC

Final Audit Report 2023-07-09

Created:	2023-07-07
By:	Rebecca Pruitt (becky.pruitt@wilco.org)
Status:	Signed
Transaction ID:	CBJCHBCAABAAX0_WRENfjYXv0mGRgR-1SWylDvcYGzdw

"Edwards Aquifer Protection Program Ranger Enviromental Services, LLC" History

Document created by Rebecca Pruitt (becky.pruitt@wilco.org)
2023-07-07 - 4:47:15 PM GMT- IP address: 66.76.4.65

Document emailed to bgravell@wilco.org for signature
2023-07-07 - 5:05:28 PM GMT

Email viewed by bgravell@wilco.org
2023-07-09 - 12:58:37 PM GMT- IP address: 66.76.4.65

Signer bgravell@wilco.org entered name at signing as Bill Gravell Jr.
2023-07-09 - 12:59:25 PM GMT- IP address: 66.76.4.65

Document e-signed by Bill Gravell Jr. (bgravell@wilco.org)
Signature Date: 2023-07-09 - 12:59:27 PM GMT - Time Source: server- IP address: 66.76.4.65

Document emailed to Andrea Schiele (aschiele@wilco.org) for signature
2023-07-09 - 12:59:28 PM GMT

Email viewed by Andrea Schiele (aschiele@wilco.org)
2023-07-09 - 4:09:09 PM GMT- IP address: 104.47.65.254

Document e-signed by Andrea Schiele (aschiele@wilco.org)
Signature Date: 2023-07-09 - 4:11:43 PM GMT - Time Source: server- IP address: 66.76.4.65

Agreement completed.
2023-07-09 - 4:11:43 PM GMT

Application Fee Form
TCEQ-0574

Application Fee Form

Texas Commission on Environmental Quality
Name of Proposed Regulated Entity: Williamson County Central Maint Facility
Regulated Entity Location: 3151 SE Inner Loop, Georgetown, Texas 78626
Name of Customer: Williamson County
Contact Person: Kevin Teller Phone: 512-643-3368
Customer Reference Number (if issued):CN 600897888
Regulated Entity Reference Number (if issued):RN 102476660

Austin Regional Office (3373)

☐ Hays ☐ Travis ☒ Williamson

San Antonio Regional Office (3362)

☐ Bexar ☐ Medina ☐ Uvalde
☐ Comal ☐ Kinney

Application fees must be paid by check, certified check, or money order, payable to the **Texas Commission on Environmental Quality**. Your canceled check will serve as your receipt. **This form must be submitted with your fee payment**. This payment is being submitted to:

☒ Austin Regional Office
☐ Mailed to: TCEQ - Cashier
Revenues Section
Mail Code 214
P.O. Box 13088
Austin, TX 78711-3088

☐ San Antonio Regional Office
☐ Overnight Delivery to: TCEQ - Cashier
12100 Park 35 Circle
Building A, 3rd Floor
Austin, TX 78753
(512)239-0357

Site Location (Check All That Apply):

☐ Recharge Zone ☐ Contributing Zone ☒ Transition Zone

Type of Plan	***Size***	***Fee Due***
Water Pollution Abatement Plan, Contributing Zone Plan: One Single Family Residential Dwelling	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Multiple Single Family Residential and Parks	Acres	$
Water Pollution Abatement Plan, Contributing Zone Plan: Non-residential	Acres	$
Sewage Collection System	L.F.	$
Lift Stations without sewer lines	Acres	$
Underground or Aboveground Storage Tank Facility	10 Tanks	$ 6,500
Piping System(s)(only)	Each	$
Exception	Each	$
Extension of Time	Each	$

Signature: _____

Date: 08/23/2023

Application Fee Schedule

Texas Commission on Environmental Quality
Edwards Aquifer Protection Program 30 TAC Chapter 213 (effective 05/01/2008)

Water Pollution Abatement Plans and Modifications

Contributing Zone Plans and Modifications

Project	*Project Area in Acres*	*Fee*
One Single Family Residential Dwelling	< 5	$650
Multiple Single Family Residential and Parks	< 5 5 < 10 10 < 40 40 < 100 100 < 500 ≥ 500	$1,500 $3,000 $4,000 $6,500 $8,000 $10,000
Non-residential (Commercial, industrial, institutional, multi-family residential, schools, and other sites where regulated activities will occur)	< 1 1 < 5 5 < 10 10 < 40 40 < 100 ≥ 100	$3,000 $4,000 $5,000 $6,500 $8,000 $10,000

Organized Sewage Collection Systems and Modifications

Project	*Cost per Linear Foot*	*Minimum Fee-Maximum Fee*
Sewage Collection Systems	$0.50	$650 - $6,500

Underground and Aboveground Storage Tank System Facility Plans and Modifications

Project	*Cost per Tank or Piping System*	*Minimum Fee-Maximum Fee*
Underground and Aboveground Storage Tank Facility	$650	$650 - $6,500

Exception Requests

Project	*Fee*
Exception Request	$500

Extension of Time Requests

Project	***Fee***
Extension of Time Request	$150

Core Data Form
TCEQ-10400

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided.)*

☐ New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application.)*

☐ Renewal *(Core Data Form should be submitted with the renewal form)*

☒ Other **EAPP - AST Facility Plan**

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 600897888		RN 102476660

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy)

☐ New Customer ☒ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* — *If new Customer, enter previous Customer below:*

Williamson County

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
NA	NA	746000978	NA

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☒ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☒ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☒ **Yes** ☐ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☒ Owner & Operator ☐ Other:
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant

15. Mailing Address:

3151 SE Inner Loop							
City	Georgetown	**State**	TX	**ZIP**	78626	**ZIP + 4**	

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
	kevin.teller@wilco.org

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*

(512) 943-3368		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☒ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

Williamson County Cental Maint Facility

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	3151 SE Inner Loop							
	City	Georgetown	**State**	TX	**ZIP**	78626	**ZIP + 4**	
24. County	Williamson							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:		
26. Nearest City	**State**	**Nearest ZIP Code**

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	30.627995		**28. Longitude (W) In Decimal:**	-97.644335	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
30	37	40.80	-97	38	39.61

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
9121	9229	912104	

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

Maintanence for County Services

34. Mailing Address:	**3151 SE Inner Loop**							
	City	**Georgetown**	**State**	**TX**	**ZIP**	**78626**	**ZIP + 4**	
35. E-Mail Address:	**kevin.teller@wilco.org**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(512) 943-3368		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☒ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
		11000352		
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☐ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:

SECTION IV: Preparer Information

40. Name:	Chad M. Copeland, P.G., PWS	41. Title:	Senior Project Manager

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(512) 335-1785	124	(512) 335-0527	chad@rangerenv.com

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	Williamson County	Job Title:	Williamson County Judge	
Name *(In Print)*:	Judge Bill Gravell, Jr.		Phone:	(512) 943- 1550
Signature:	Bill Gravell Jr. Bill Gravell Jr. (Jul 9, 2023 07:59 CDT)		Date:	07-09-2023