

## 1. Introduction

This bulletin addresses the use of Flexpipe (FP150/FP301/FP601), Flexpipe High Temperature (FP301HT/FP601HT), and Flexcord (FC901) products in high pressure gas applications, which primarily includes gas lift/gas injection service. High pressure gas lines can be considered any gas line operating at 750 psi or greater. This bulletin is intended to be a guide to ensure proper installation and operation of the pipeline by outlining potential causes of damage to Flexpipe pipe and how to address them.

## 2. Installation

### Traceability and Quality Control

- Flexpipe trained contractors with valid training cards must be used on all Flexpipe CPS product installations.
- For high pressure gas lines, Flexpipe strongly recommends including the use of the Daily Field Reports for traceability and quality control in their scope of contractor work (traceability includes installer training cards and who installed which fittings, including fitting serial numbers) or to have Flexpipe Field Operations install the fittings and complete the Daily Field Reports. For a more detailed record of the fitting installation, taking pictures of each fitting prior to taping for reference is also recommended.
- Flexpipe offers contractors the use of the iLINE Mobile Integrity software to streamline the collection and storage of Daily Field Reports. The mobile application allows installers to digitally document the fitting installation in real time, helping with errors such as lost or damaged paper work. Finished records are available for viewing and storage in the iLINE customer portal.
- Flexpipe recommends and can perform contractor assessments on high pressure gas line installations.

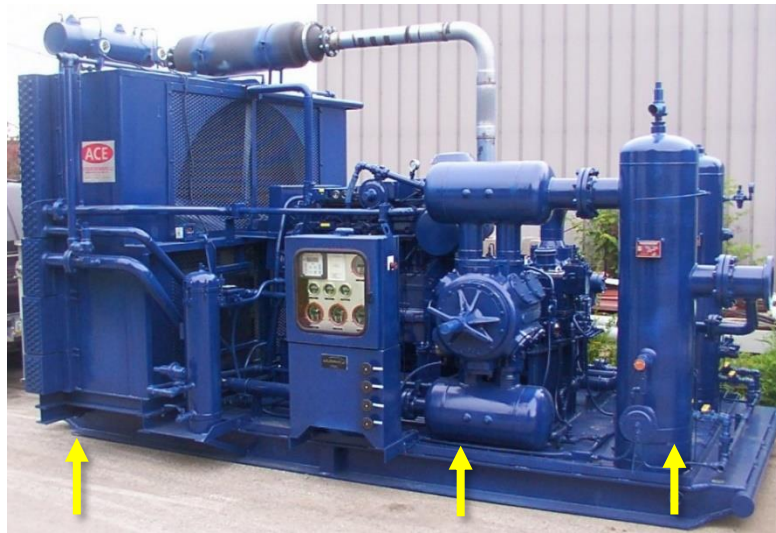
### General

- There must be a minimum of 50 feet of steel pipe installed between the reciprocating compressor discharge flange and the Flexpipe pipeline on gas lines. This will allow for dissipation of vibration and attenuation of pressure pulsations.

### Burial Depths

- It is required to bury any high-pressure gas lines due to the hazard of stored energy. Flexpipe strongly recommends burial of the end fittings, with a steel pipe transition to above ground.
- Discuss with Flexpipe engineering for guidance on temporary surface installations or other special circumstances.
- General areas along the pipeline right of way and including oil and gas lease areas, shall have depth of cover not less than 2 ft (0.6 m). Flexpipe engineering strongly recommends not less than 4 ft (1.2 m) of cover for high pressure gas lines.
- Areas with vehicle and equipment traffic, or areas with personnel present, shall have depth of cover not less than 4 ft (1.2 m).
- Flexpipe strongly recommends casing the bore for all Highway, Railway, and water crossings. For heavy vehicular traffic, installation of casing or extra burial depth should be considered.
- Any backfill embedment material shall have a soil modulus of 1000 psi or greater, and must be cleared of any rocks larger than 3 in (75 mm) within 6 in (150 mm) of the pipe.

### 3. Operation



Intercooler

Compressor

Scrubber

**Figure 1: Typical Reciprocating Compressor with Scrubbers and Intercooler**

#### Temperature

- FP and FC product line has a maximum allowable operating temperature of 140°F / 60°C.
- FPHT product line has a maximum allowable operating temperature of 180°F / 82°C.
- Adequate protection systems such as compressor coolers and high temperature shutdown alarms, are required to prevent the gas compressor discharge temperature from exceeding the Flexpipe spoolable product's maximum allowable operating temperature.
- Temperature monitoring on the compressor discharge or upstream of Flexpipe pipe is required.
- Do not operate the pipeline if the maximum allowable operating temperature of the Flexpipe pipe is exceeded for any amount of time. If the maximum allowable operating temperature is exceeded, shut down the compressor. Contact Flexpipe for further guidance.
- Flexpipe engineering offers temporary temperature and pressure profile monitoring. If needed, please contact your Flexpipe account manager to arrange for monitoring.
- Special care should be taken during maintenance and startups to monitor and not exceed the maximum allowable operating temperature.

#### Depressurization

- In order to reduce the potential for liner collapse in gas applications using FP or FPHT at service temperatures above 38 °C (100 °F), it is required to slowly depressurize the pipeline (i.e. no more than 500 psi per hour) to 100 psi and hold for a period of time as indicated below. This is to allow enough time for some of the gas in the annular space to vent out to the atmosphere, and to allow the pipeline to cool. Where this hold period may be too operationally restrictive, contact Flexpipe for case-by-case guidance.
  - 100 to 120 °F, hold at 100 psi for 1 hour
  - 121 to 140 °F, hold at 100 psi for 2 hours
  - 141 to 160 °F, hold at 100 psi for 8 hours
  - 161 to 180 °F, hold at 100 psi for 24 hours

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Revision # 2

### 4. Revision Table

<b>Rev.</b>	<b>Date</b>	<b>Revisions</b>	<b>Revised By</b>	<b>Reviewed By</b>
1	June 25, 2021	Initial release.	Austin Mendenhall	Blaine Weller