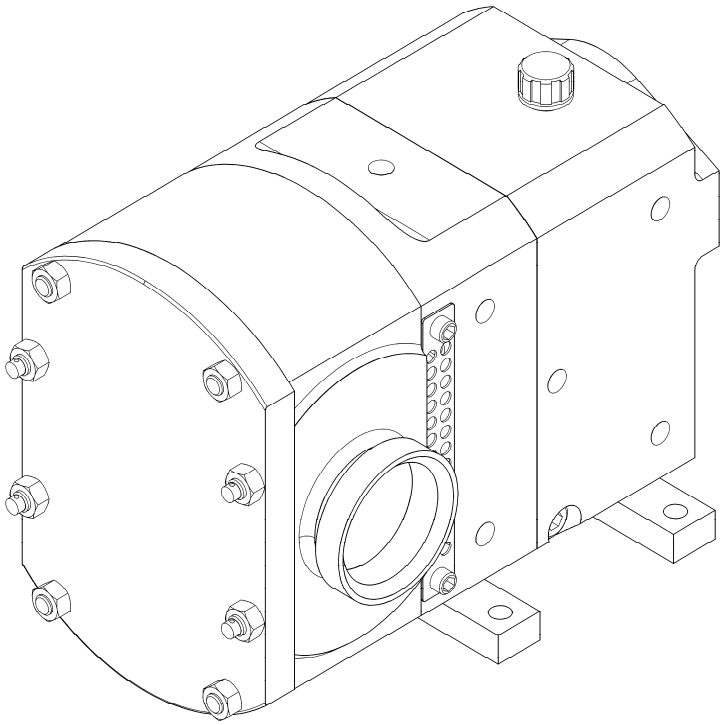
Instruction Manual

ATEX Addendum to STP Manual

DRUM

A Gardner Denver Product



ESE02403-EN1 2013-01

Original manual

Table of contents

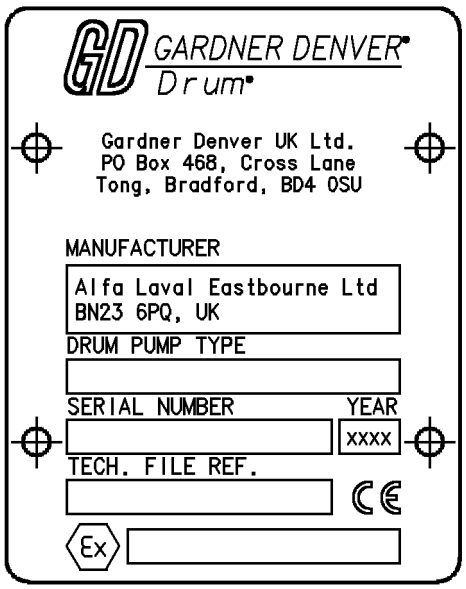
The information herein is correct at the time of issue but may be subject to change without prior notice

2.1 ATEX Directive 94/9/EC

The ATEX Directive 94/9/EC covers equipment and protective systems that will be used in areas endangered by potentially explosive atmospheres created by the presence of flammable gases, vapors and dusts. Rotary Lobe Pumps supplied with an ATEX symbol are classified for use in potentially explosive atmospheres under ATEX Directive 94/9/EC Group II, Categories 2 and/or 3.

Type of Equipment:		Rotary Lobe Positive Displacement Pumps
Equipment Group:		Group II category 2 G (zone 1) and D (zone 21)
	and/or	Group II category 3 G (zone 2) and D (zone 22)
		Temperature class T4, T3 and T2
Ignition Protection used:		EN13463-1, EN13463-5 (c), EN13463-6 (b), EN13463-8 (k)

2.2 ATEX marking



Typical nameplate
- Pump type
- Serial no.
- Production year
- Reference of technical file at notified body: 9612-9604
- ATEX marking

Unsafe practices and other important information are emphasized in this manual.
Warnings are emphasized by means of special signs, see description in Standard Instruction Manual section 1.6

3 Safety

3.1 Special conditions for safe use

⚠
- Ensure checks and running conditions for the pump unit during operation to be according to “Operation” section 5 .
- Never operate the pump outside maximum duty conditions as described in table 7.2 unless confirmed in writing from the pump manufacturer.

3.2 General information

⚠
- Always make sure that the Serial Number Stamped on the pump nameplate matches the number shown on the Declaration and on the Seal Operating Data in Section 7.2 .
- Always check that the components and equipment supplied is suitable for the area intended and corresponds with the order acknowledgement.
- Always read this ATEX addendum thoroughly before using the pump and read the safety instructions in the Standard Instruction Manual prior to handling, installing, operating or maintaining the pump.
- Always order genuine spare parts using the serial number of the pump, stated on the pump nameplate, for identification purposes.
- Always ensure that intentionally or potentially mixing of fluids do not create hazardous reactions/situations (eg. process media and flush media)

Education:
Only Gardner Denver personnel or Gardner Denver approved operators with the necessary knowledge about the pump supplied including the mechanical seals can only carry out any installation or maintenance work relating to the pump unit.
Necessary knowledge includes the understanding of the:
- function of the pump unit including the mechanical seal
- maintenance/service procedures of the pump unit including the mechanical seals.
- safety instructions.
- operational limits for the pump unit including the mechanical seals

Installation
- Always read section 4 “Installation”

Operation
- Always read section 5 “Operation”

Maintenance
- Always read section 6 “Maintenance”

4.1 Installation

⚠

- **Always** follow the Installation instructions in the Standard Instruction Manual in conjunction with this addendum
- **Always** ensure that instructions for all ATEX compliant equipment and components are followed
- **Always** make sure that pump gearbox is electrically earthed
- **Always** read section 5 “Operation” before pump start up
- **Ensure** correct alignment of pump and drive unit
- **Never** install the pump or pump unit at an angle of more than 5° from the horizontal plane
- **Never** cover up pump gearbox in any way that will reduce the cooling effects intended

5 Operation

5.1 Operation

⚠

Pump units
- **Always** read the operations instructions in the Standard Instruction Manual
- **Always** read “Technical information” for shaft seals in section 7.1
- **Always** make a visual inspection of the pump unit at startup to ensure there are no malfunctions e.g. leaks, abnormal noises or vibrations etc.
- **Always** remove the rotorcase cover to drain the pump head
- **Ensure** that the temperature of the saddle, if fitted, does not exceed the Temperature Class rating (eg. T4 is 135°C)
- **Never** run pump with suction side and/or pressure side blocked
- **Never** use a heating/cooling media in saddles, that can cause a hazardous situation in case of leakage
- **Never** run the pump dry
- **Never** operate the pump above its specified design pressure. We recommend for additional safety the use of suitable overpressure device

5.2 Daily Checks

Shaft seals, all types:
- Ensure there is no unacceptable leakage and consider replacement mechanical seals.

Pump:
- Ensure the oil levels to be correct with no signs of oil contamination.
- Ensure there are no signs of overheating.
- Ensure there are no abnormal running conditions such as loose components, abnormal noise, vibration or oil leakage.
- Ensure the pump duty conditions never exceed the limits specified in ‘Seal Operation Data’ section 7.2.
- Ensure that any dust deposits are removed.

6.1 General Maintenance Guidelines

6.1 General Maintenance Guidelines
- **Always** follow the Maintenance instructions in the Standard Instruction Manual
- **Always** read “Technical information” section 7.1 and the “Seal Operation Data” section 7.2
- **Always** read section 5 “Operation” before starting up the pump unit after maintenance

Pump Gearbox
It is essential to ensure the oil level to be correct as specified in the standard instruction manual. Recommended oil as follows:

BP Enersyn SG 150
Castrol Alphasyn
PG 150 Mobil
Glygoyle 30 Shell
Tivela S 150 Texaco
Synlybe CLP 220
Mobil Glygoyle 22

Pump Gearbox bearings changing intervals
Gearbox bearings should be renewed after 6000 hours operation.

Mechanical Seals
Replace the mechanical seals every 2 years or 9000 hours whichever comes first. Only genuine original Gardner Denver spare parts shall be used. Please contact your local Gardner Denver distributor for STP pumps.

6.2 Ordering Spare Parts

6.2 Ordering Spare Parts

When ordering spare parts please quote Pump Serial No.

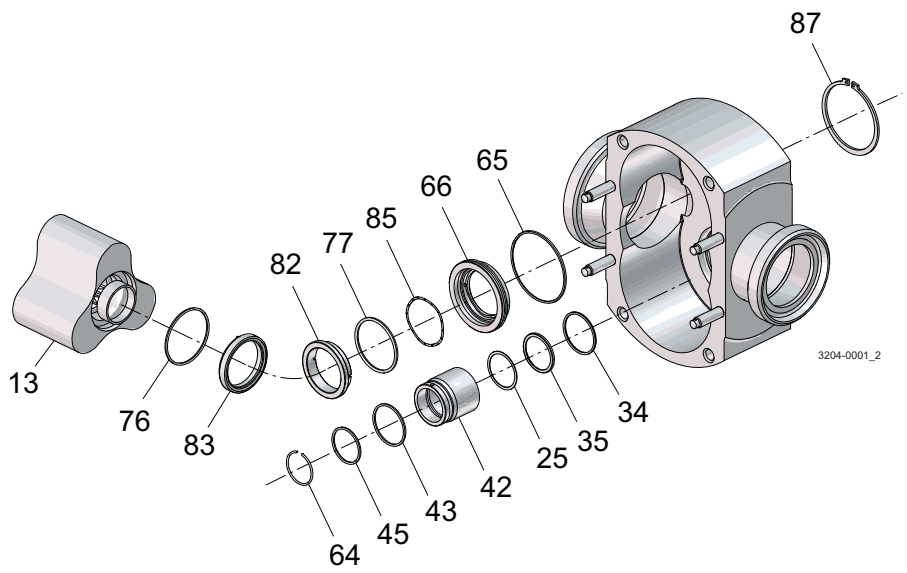
6 Maintenance

6.3 Mechanical seals

Mechanical seals should not be removed unless they are to be replaced.

6.3.1 STP Single mechanical seal

Refer to section 12 in Standard Instruction Manual



Item	Description
13	Rotor
25	Rotor alignment shim
34	Shaft O-ring
35	Setting ring
42	Seal sleeve
43	Rotor O-ring
45	Shaft O-ring
64	Shaft sleeve retainer circlip
65	Housing O-ring
66	Seal housing
76	Rotary seal ring O-ring
77	Stationary seal ring O-ring
82	Stationary seal ring
83	Rotary seal assembly
85	Wave spring
87	Carrier retaining circlip

Seal removal

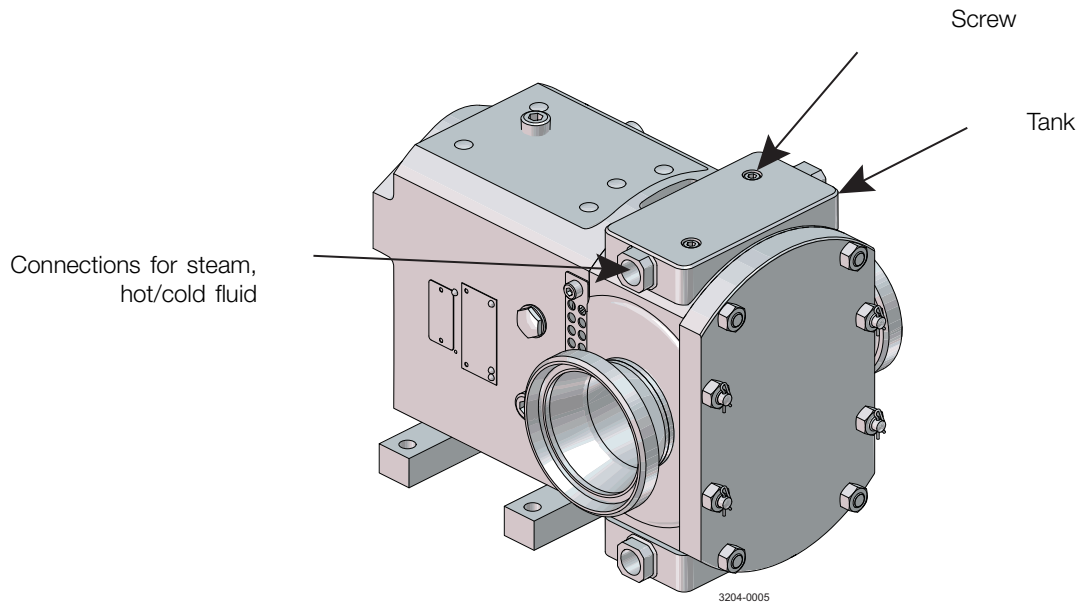
1. Undo rotorcase retaining nuts.
2. Remove rotorcase.
3. Remove circlip via use of circlip pliers.
4. Push seal housing through front of rotorcase.

Seal fitting

1. Ensure the seal housings and seal recesses are clean.
2. Lightly lubricate the ‘o’ rings and springs with a silicon grease (food quality if required).
3. Position the wave springs (85) into the seal housing (66).
4. Fit the static face (82) with associated ‘o’ ring to the seal housing recess. Ensure location pins engage correctly.
5. Press the rotating faces (83) into the rotor bores ensuring the drive pins locate correctly.
6. Position the seal housing loosely in the rotorcase with the flat inside the rotorcase aligned. Once correctly aligned push the seal housing into the rotorcase. Check the seal housing is below the back face of the rotorcase.
7. Fit circlip (87) to rear of seal housing.
8. Fit rotorcase and tighten the retaining nuts to the recommended torque figure.
9. Wipe all lapped seal face surfaces until clean.

6.4 Heating/Cooling devices

STP pumps have the option of being fitted with tanks to the rotorcase. These are primarily used for heating the pumphead so as to maintain the pumped media temperature. They may also be used for cooling purposes.



The maximum allowable pressure and temperature of heating/cooling fluid is 3.5 bar (50 psi) and 90°C (194°F) respectively.

7 Technical data

7.1 Shaft Seals

The correct function of a mechanical seal is largely dependent upon its lubrication and cooling of the sealing surfaces. It is therefore extremely important to avoid any dry-running of the seal faces since this can cause excessive generation of heat and thus the possibility of exceeding the specified temperature class.

STP Single Mechanical Seal (Inserted Carbon versus Stainless Steel faces)

On this seal arrangement the seal interface film is the pumped media. The pumped media acts as a coolant and lubricant for the seal faces. The process must be controlled/monitored to ensure the seal faces do not exceed 110 degC.

7.2 Seal Operation Data

This pump is only validated for applications involving media listed, operating at duties up to the stated maximum temperatures, pressure and pump running speeds, as stated in the table below.

If the application is not covered in this table written approval is required from the pump manufacturer.

Pumped Media	Maximum Operating Temperature degC	Maximum Operating Pressure bar	Maximum Operating Speed rpm	Elastomer
Alcohol	20degC below alcohol boiling point, never to exceed 100 degC	6	750	FEP encapsulated
Solvent	20degC below solvent boiling point, never to exceed 100 degC	6	750	FEP encapsulated
Acetone	36	6	750	EPDM
Styrene	110	6	750	FEP encapsulated
Infeneum SV261	85	6	500	FPM
Dichloromethane	20	6	750	FEP encapsulated
Oxalic Acid	60	6	750	FPM
Resin	20degC below solvent boiling point, never to exceed 110 degC	6	750	FEP encapsulated