



Standard Range of Safeload Petroleum Handling Equipment



CONTENTS

Safeload Petroleum Handling Equipment

Catalogue

Safeload Loading Arm

Loading Arm System	3
--------------------	---

Safeload Bottom Loading API Couplers & Adaptors

4" Semi-Automatic API Coupler	5
4" Semi-Automatic High-Pressure API Coupler	9
4" Manual API Coupler	13
4" Bottom Loading Adaptor	17

Safeload Accessories

4" TTMA Check Valve	19
Safeload Wear Gauges, Tools and Spares Kits	21

Appendix

Bolt Torque Guide & Step Loading Procedure	25
Client Responsibilities	27
Fort Vale Worldwide	29

THIS PAGE IS INTENTIONALLY BLANK



Safeload Loading Arm System

Part No: 94/70XX/XXXX



Specification

Nominal size

DN100

Inlet/riser pipe connection

8 x 19mm holes on a 190.5mm PCD - 4" ANSI 150

Outlet/coupler swivel connection

8 x 11mm holes on a 149.2mm PCD - 4" TTMA

Configurations

Bottom loading: drop hose; A frame; low profile

Top loading: pantograph; long reach

Left hand or right hand

Operation

Balance adjustment is controlled by gas springs and protected by a limiter bolt

Swivel Properties

All have an internal earth system for electrical continuity

Options

Base swivel stop device to prevent collision from over-rotation

Materials

Base swivel: stainless steel

Balance mechanism: stainless steel

Intermediate swivel: stainless steel or aluminium

Coupler swivel: stainless steel or aluminium

Swivel primary seal: a range is available, refer to Seal Data

Swivel secondary seal: PTFE

Swivel tertiary seal: Fortyt

Component Parts

Description	Part No.
Complete balance mechanism *Note	94/7000XX
Base swivel only *Note	94/7015XX
Intermediate swivel *Note	94/7X25XX
Coupler swivel *Note	94/7X20XX

NOTE: The specification changes the Part No.

Related Parts

Description	Part No.
4" ASA 150 graphite inlet gasket	5005-902G
Loading arm assembly kit	94/7AK
Swivel grease nipple kit	94/7GNK
Swivel stop device: stop plate & stop bar	94/7079/XXA 94/7081

We supply a range of spools, drop hoses and API couplers. Please contact us to discuss your specification

Seal Data

Seal Material	Seal Temp Min/Max
Viton B	-13°C / 70°C
Viton GFLT-S	-23°C / 70°C
Ultra low temp. fluorocarbon	-40°C / 70°C
PTFE	-40°C / 70°C

Design Conditions

Design Pressure (MAWP):	16 Bar
Test Pressure:	24 Bar
Design Temperature Min:	-40°C (metal parts)
Design Temperature Max:	70°C (metal parts)

NOTE: The Design Conditions are for the specified part number only.

Design Codes

All components obey ATEX & PED

THIS PAGE IS INTENTIONALLY BLANK



Safeload Semi-Automatic API Coupler

Part No: CE94/2500XX



Specification

Nominal size

DN100

Inlet connection

4" TTMA

Outlet connection

Compatible with API RP 1004

Properties

4 wrap-around triggers that connect with over 60% of the loading adaptor circumference

Materials

Contact parts: hard anodised aluminium & stainless steel
Main seal: A range is available, refer to Seal Data p3.

Design Conditions

Weight:	12.6 Kg
Design Pressure (MAWP):	6 Bar
Test Pressure:	10 Bar
Maximum Surge Pressure:	15 Bar
Design Temperature Min/Max:	Refer to Seal Data, p3

NOTE: The Design Conditions and Section View dimensions are for the specified part number only.

Design Codes

The Safeload coupler obeys:
ATEX Group II, Cat 2
EN 13083
API RP1004 (2003)
Energy Institute Specification: Couplers for the bottom loading of petroleum road tankers

Range

Description	Part No.
With stainless steel handle *Note 1	CE94/2500XX
With aluminium handle *Note 1	CE94/2400XX

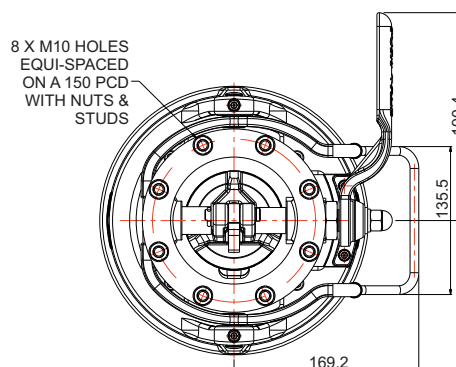
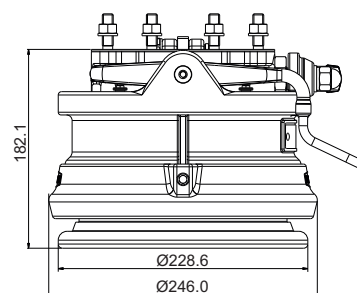
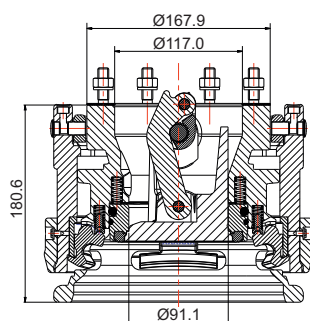
NOTE 1: The seal material changes the Part No.

Related Parts

Description	Part No.
Loading adaptor wear gauge	94/2150
Coupler parking nose	94/25PC
Coupler seal replacement tool	400/9420
Coupler wear gauge	94/3050
4" TTMA check valve *Note 2	94/36XXXX/X

NOTE 2: The valve specification changes the Part No.

Section View

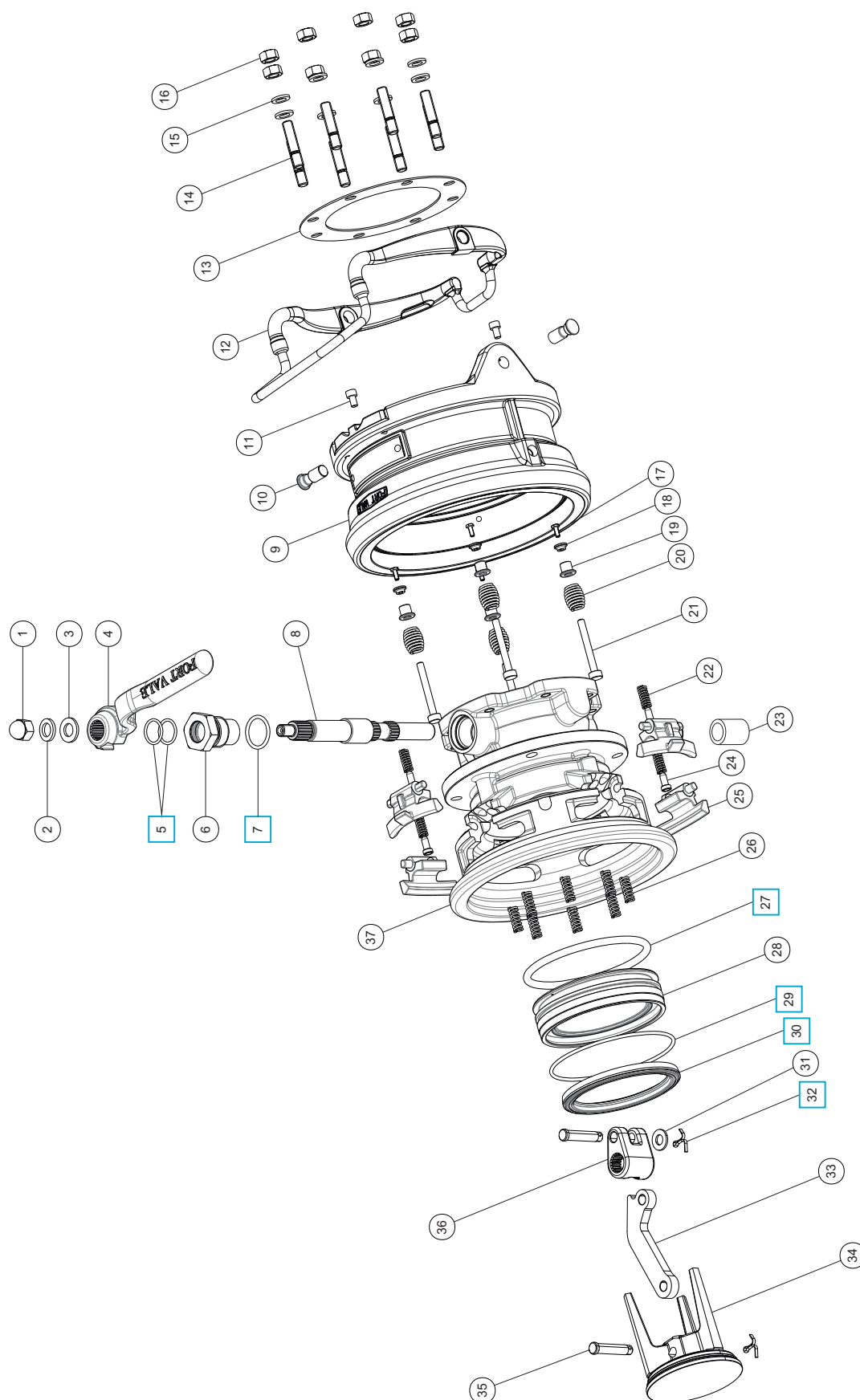




Safeload Semi-Automatic API Coupler

Part No: CE94/2500XX

Parts Drawing





Safeload Semi-Automatic API Coupler

Part No: CE94/2500XX

Parts List

Item	Description	Part No.
1	M12 domed nut	5112-050
2	M12 spring washer	5113-010
3	M12 washer	5123-003
4	Splined handle	94/2575
5	Spindle O ring (2) *Note	5005-336XX <input type="checkbox"/>
6	Spindle lock bush	94/2513
7	Bush O ring *Note	5005-214XX <input type="checkbox"/>
8	Spindle	94/2511
9	Outer housing & ring assembly	94/2504
10	Release handle pivot pin (2)	94/2577
11	M6 capscrew (2)	5111-061
12	Release handle	94/3080
13	4" TTMA gasket	94/1044
14	Inlet flange stud (8)	94/1040
15	M10 flat spring washer (8)	5113-002
16	M10 full nut (8)	5112-002
17	M4 hex head set screw (4)	5111-064
18	Spring retainer washer (4)	94/2529
19	Guide bush (4)	94/2048
20	Spring (4)	10146
21	Spring retainer (4)	94/1016
22	Trigger spring (4)	94/2025
23	Spindle bush	94/2522
24	Trigger spring guide (4)	94/2026
25	Extended locking trigger (4)	94/2555CE
26	Energizing spring (8)	94/2024
27	Seal carrier O ring *Note	94/1034XX <input type="checkbox"/>
28	Seal carrier	94/2507
29	Wiper O ring *Note	5005-584XX <input type="checkbox"/>
30	Main seal *Note	94/1006XX <input type="checkbox"/>
31	M10 washer	5113-025
32	Split pin (2)	5118-050 <input type="checkbox"/>
33	Lever arm	94/1009A
34	Poppet	94/2518
35	Pivot pin (2)	94/1054
36	Splined crank block	94/2528
37	Inner housing	94/2501

NOTE: The specification changes the Part No.

Seal Data

Seal Material	Seal Temp. Min/Max	Seal Colour	Coupler Part No.
Viton B	-13°C/50°C	Black	CE94/2500
Viton GFLT-S	-23°C/50°C	Grey	CE94/2500GF
Ultra low temp. fluorocarbon	-40°C/50°C	Brown	CE94/2500MF
Perfluoroelastomer	-15°C/50°C	Green	CE94/2500PF

Seal Kit - All parts marked ☐ in the Parts List

Seal Material	Part No.
Viton B	94/25SK
Viton GFLT-S	94/25SKGF
ULT fluorocarbon	94/25SKMF
Perfluoroelastomer	94/25SKPF

THIS PAGE IS INTENTIONALLY BLANK



Safeload Semi-Automatic High-Pressure API Coupler

Part No: CE94/3000XX



Specification

Nominal size

DN100

Inlet connection

4" TTMA

Outlet connection

Compatible with API RP 1004

Properties

4 wrap-around triggers that connect with over 50% of the loading adaptor circumference and interlock safety latch

Materials

Contact parts: hard anodised aluminium & stainless steel
Main seal: A range is available, refer to Seal Data p3.

Design Conditions

Weight:	12.9 Kg
Design Pressure 1* / 2** (MAWP):	10 Bar / 16 Bar
Test Pressure 1* / 2**:	15 Bar / 24 Bar
Design Temperature Min/Max:	Refer to Seal Data, p3

*1: Coupler Open Connected

**2: Coupler Closed Disconnected

NOTE: The Design Conditions and Section View dimensions are for the specified part number only.

Design Codes

The Safeload coupler obeys:

ATEX Group II, Cat 2

EN 13083

API RP1004 (2003)

Energy Institute Specification: Couplers for the bottom loading of petroleum road tankers

Range

Description	Part No.
With stainless steel handle *Note 1	CE94/3000XX
With aluminium handle *Note 1	CE94/3100XX

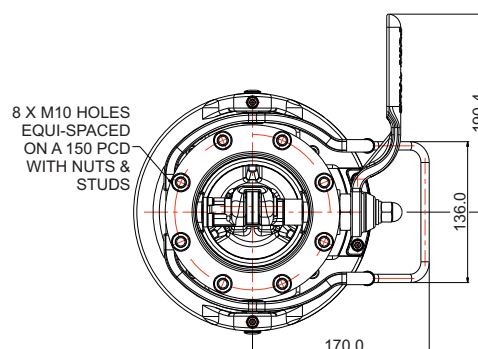
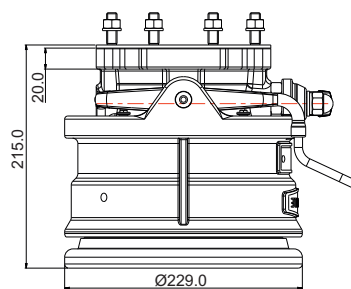
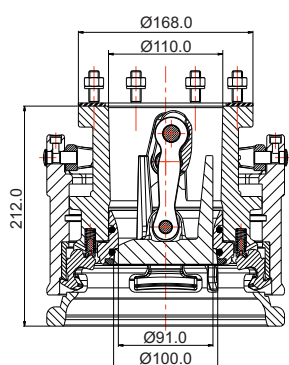
NOTE 1: The seal material changes the Part No.

Related Parts

Description	Part No.
Loading adaptor wear gauge	94/2150
Coupler parking nose	94/25PC
Coupler seal replacement tool	400/9440
Coupler wear gauge	94/3050
4" TTMA check valve *Note 2	94/36XXXX/X

NOTE 2: The valve specification changes the Part No.

Section View

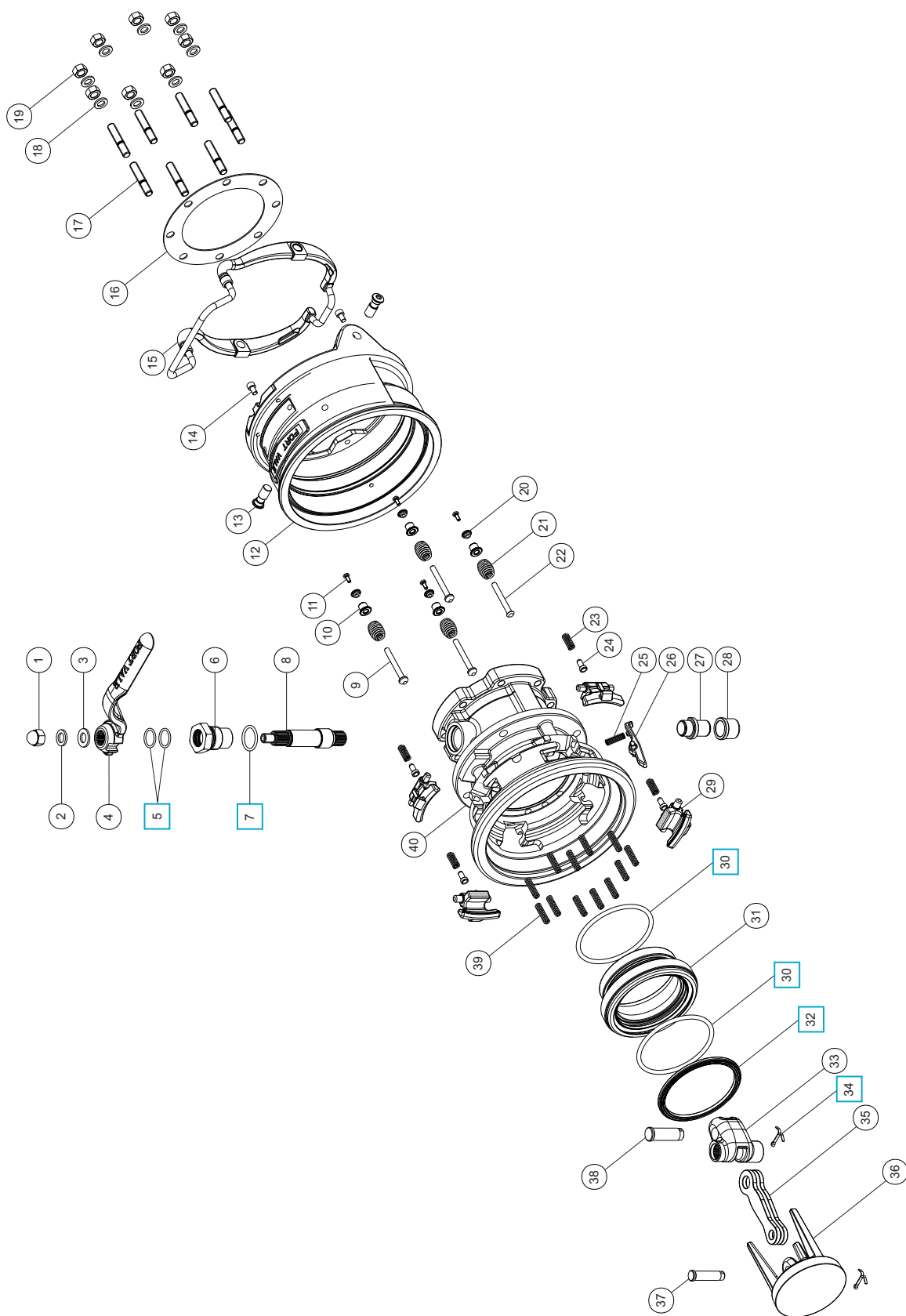




Safeload Semi-Automatic High-Pressure API Coupler

Part No: CE94/3000XX

Parts Drawing





Safeload Semi-Automatic High-Pressure API Coupler

Part No: CE94/3000XX

Parts List

Item	Description	Part No.
1	M12 domed nut	5112-050
2	M12 spring washer	5113-010
3	M12 washer	5123-003
4	Splined handle	94/2575
5	Spindle O ring (2) *Note	5005-336XX <input type="checkbox"/>
6	Spindle lock bush	94/3013
7	Bush O ring *Note	5005-214XX <input type="checkbox"/>
8	Spindle	94/3011
9	Standard spring retainer (3)	94/1016
10	Spring retainer guide bush (4)	94/2048
11	M4 hex bolt (4)	5111-064
12	Actuating ring assembly	94/3004
13	Release handle pivot pin (2)	94/2577
14	M6 cap screw (2)	5111-061
15	Release handle assembly	94/3080
16	4" TTMA gasket	94/3044
17	Inlet flange stud (8)	94/3040
18	M10 washer (8)	5113-002
19	M10 full nut (8)	5112-002
20	Spring retainer washer (4)	94/2529
21	Anti-drain spring (4)	10146
22	Short spring retainer (1)	94/3016
23	Latch spring (4)	94/2025
24	Spring guide (4)	94/2026
25	Interlock spring	94/3026
26	Interlock latch	94/3005
27	Stub spindle	94/3012
28	Spindle bush	94/3022
29	Latch (4)	94/3055
30	Seal carrier O ring (2) *Note	94/3035XX <input type="checkbox"/>
31	Seal carrier	94/3007
32	Face seal *Note	94/3006XX <input type="checkbox"/>
33	Splined crank block	94/3028
34	Split pin (2)	5220-008 <input type="checkbox"/>
35	Connecting rod (2)	94/3009
36	Poppet	94/3018
37	Pivot pin	94/3053
38	Pivot pin	94/3054
39	Seat ring spring (12)	94/3024
40	Inner body housing	94/3001

NOTE: The specification changes the Part No.

Seal Data

Seal Material	Seal Temp. Min/Max	Seal Colour	Coupler Part No.
Viton B	-13°C/50°C	Black	CE94/3000
Viton GFLT-S	-23°C/50°C	Grey	CE94/3000GF
Ultra low temp. fluorocarbon	-40°C/50°C	Brown	CE94/3000MF
Perfluoroelastomer	-15°C/50°C	Green	CE94/3000PF

Seal Kit - All parts marked ☐ in the Parts List

Seal Material	Part No.
Viton B	94/30SK
Viton GFLT-S	94/30SKGF
ULT fluorocarbon	94/30SKMF
Perfluoroelastomer	94/30SKPF

THIS PAGE IS INTENTIONALLY BLANK



Safeload Manual API Coupler

Part No: CE94/2700XX



Specification

Nominal size

DN100

Inlet connection

4" TTMA

Outlet connection

Compatible with API RP 1004

Properties

4 wrap-around triggers that connect with over 60% of the loading adaptor circumference

Materials

Contact parts: hard anodised aluminium & stainless steel
Main seal: A range is available, refer to Seal Data p3.

Design Conditions

Weight:	10.2 Kg
Design Pressure (MAWP):	6 Bar
Test Pressure:	10 Bar
Maximum Surge Pressure:	15 Bar
Design Temperature Min/Max:	Refer to Seal Data, p3

NOTE: The Design Conditions and Section View dimensions are for the specified part number only.

Design Codes

The Safeload coupler obeys:
ATEX Group II, Cat 2
EN 13083
API RP1004 (2003)
Energy Institute Specification: Couplers for the bottom loading of petroleum road tankers

Range

Description	Part No.
With stainless steel handle *Note 1	CE94/2700XX
With aluminium handle *Note 1	CE94/2800XX

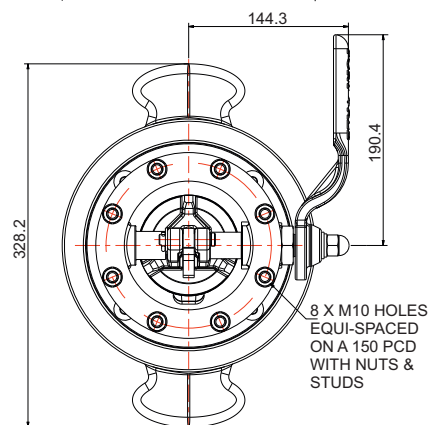
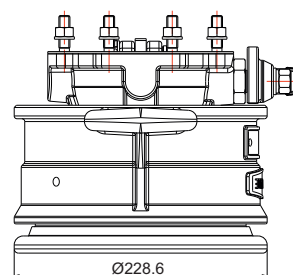
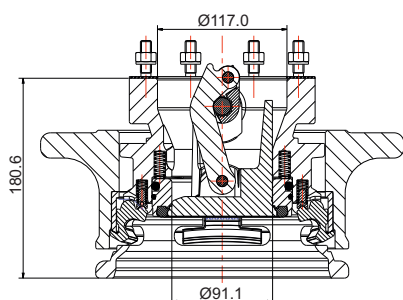
NOTE 1: The seal material changes the Part No.

Related Parts

Description	Part No.
Loading adaptor wear gauge	94/2150
Coupler parking nose	94/25PC
Coupler seal replacement tool	400/9420
Coupler wear gauge	94/3050
4" TTMA check valve *Note 2	94/36XXXX/X

NOTE 2: The specification changes the Part No.

Section View

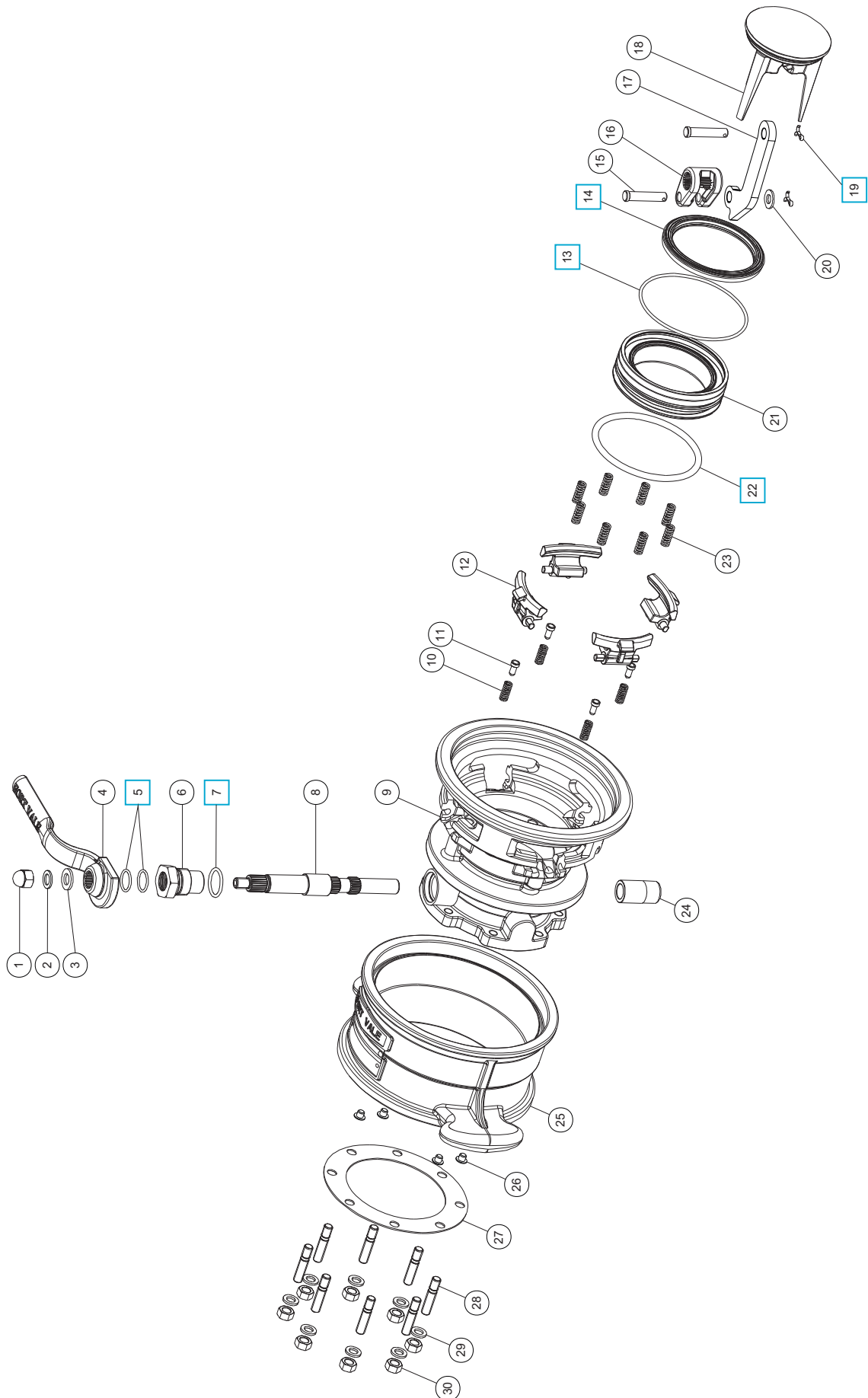




Safeload Manual API Coupler

Part No: CE94/2700XX

Parts Drawing





Safeload Manual API Coupler

Part No: CE94/2700XX

Parts List

Item	Description	Part No.
1	M12 domed nut	5112-050
2	M12 spring washer	5113-010
3	M12 washer	5123-003
4	Splined handle	94/2775
5	Spindle O ring (2) *Note	5005-336XX <input type="checkbox"/>
6	Spindle lock bush	94/2513
7	Bush O ring *Note	5005-214XX <input type="checkbox"/>
8	Spindle	94/2511
9	Inner housing	94/2501
10	Trigger spring (4)	94/2025
11	Brass spring guide (4)	94/2026
12	Locking trigger (4)	94/2555
13	Wiper O ring *Note	5005-584XX <input type="checkbox"/>
14	Main seal *Note	94/1006XX <input type="checkbox"/>
15	Pivot pin (2)	94/1054
16	Splined crank block	94/2528
17	Lever arm	94/1009A
18	Poppet	94/2518
19	Split pin (2)	5118-050 <input type="checkbox"/>
20	M10 stainless steel washer	5113-025
21	Seal carrier	94/2507
22	Seal carrier O ring *Note	94/1034XX <input type="checkbox"/>
23	Seat ring spring (8)	94/2024
24	Spindle bush	94/2522
25	Outer body assembly	94/2704
26	Plastic plug (4)	5028-094
27	4" TTMA gasket	94/1044
28	M10 stud (8)	94/1040
29	M10 spring washer (8)	5113-002
30	M10 full nut (8)	5112-002

NOTE: The specification changes the Part No.

Seal Data

Seal Material	Seal Temp. Min/Max	Seal Colour	Coupler Part No.
Viton B	-13°C/50°C	Black	CE94/2700
Viton GFLT-S	-23°C/50°C	Grey	CE94/2700GF
Ultra low temp. fluorocarbon	-40°C/50°C	Brown	CE94/2700MF
Perfluoroelastomer	-15°C/50°C	Green	CE94/2700PF

Seal Kit - All parts marked ☐ in the Parts List

Seal Material	Part No.
Viton B	94/25SK
Viton GFLT-S	94/25SKGF
ULT fluorocarbon	94/25SKMF
Perfluoroelastomer	94/25SKPF

THIS PAGE IS INTENTIONALLY BLANK



4" Safeload Bottom Loading Adaptor

Part No: 385/5200X



Specification

Nominal size

DN100

Inlet connection

Flanged: 8 x 11mm holes on a 149.2mm PCD - 4" TTMA

Outlet/coupler connection

Compatible with API RP 1004

Properties

With manually operated handle

Materials

Contact parts: 316 stainless steel

Main seal: A range is available, refer to Fort Vale

Alternatives are available, refer to Range

Design Conditions

Weight:	9.3 Kg
Design Pressure (MAWP):	5 Bar
Test Pressure:	25 Bar
Design Temperature Min:	-20°C
Design Temperature Max:	70°C

NOTE: The Design Conditions and Section View dimensions are for the specified part number only.

Design Codes

BS EN 13083

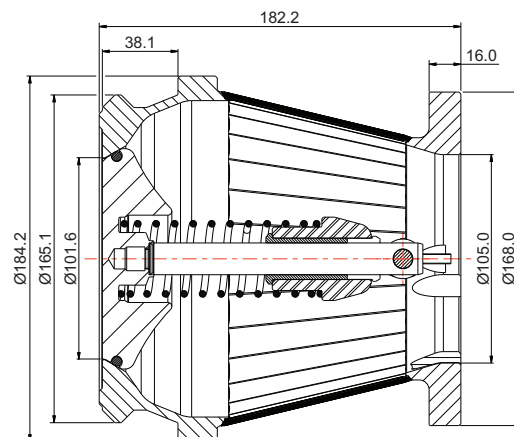
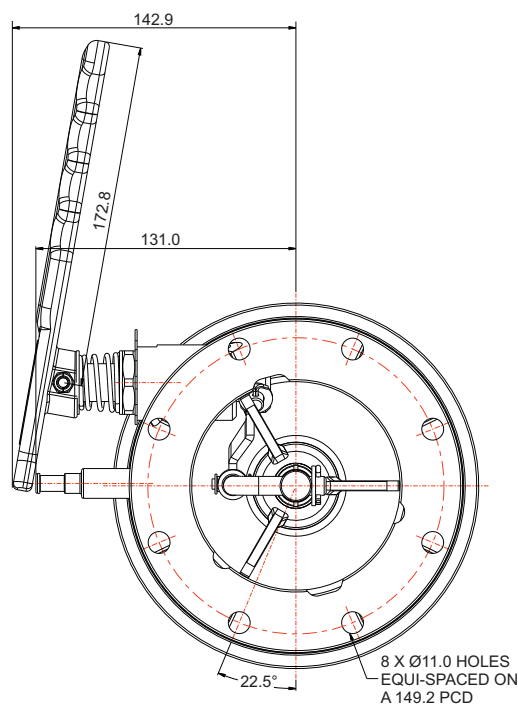
BS EN 14432

Range

Description	Part No.
Adaptor with handle *Note	385/5200X
Adaptor, no handle *Note	385/5300X

NOTE: The seal material changes the Part No.

Section View

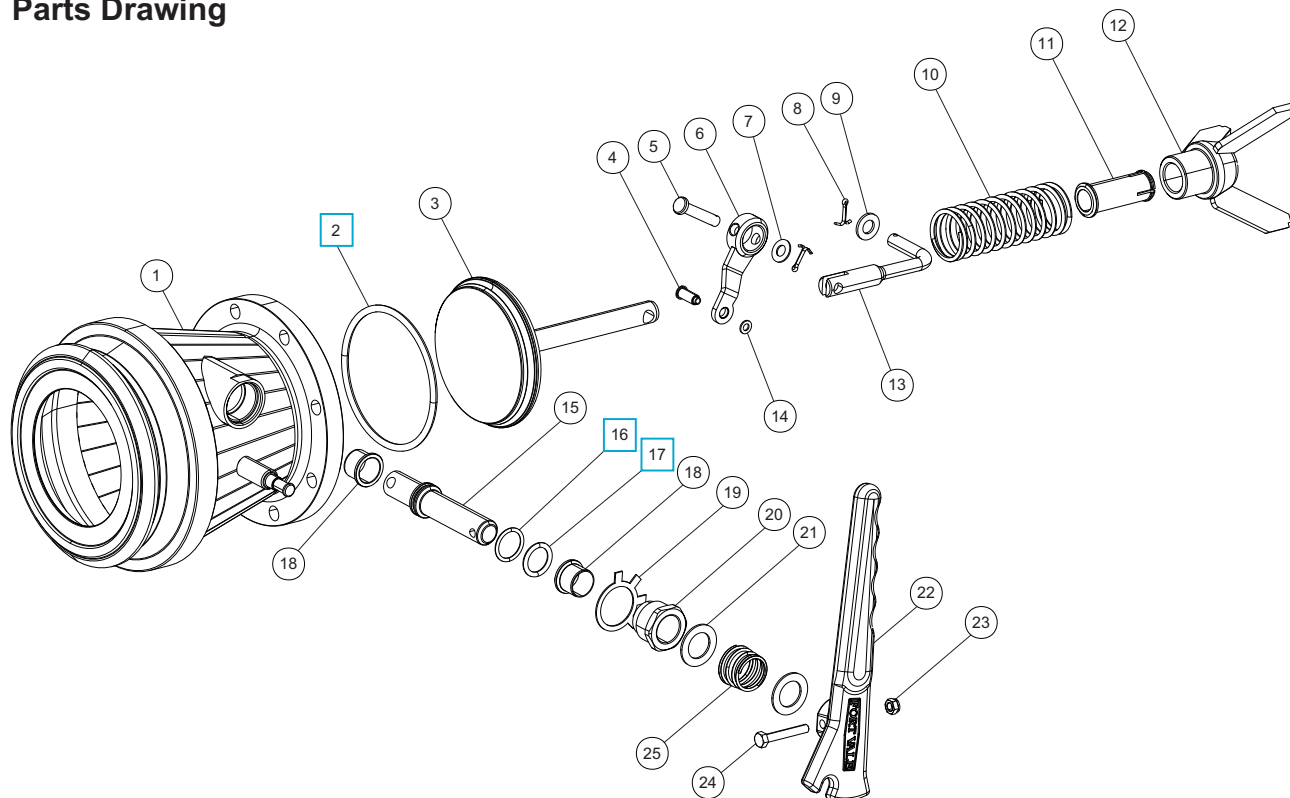




4" Safeload Bottom Loading Adaptor

Part No: 385/5200X

Parts Drawing



Parts List

Item	Description	Part No.
1	Body	385/5210
2	Main seal *Note	XXXX-XXX
3	Poppet	385/5215
4	Pivot pin	385/5223
5	Clevis pin	1860/0408
6	Crank arm	385/5225
7	M8 washer	5113-005A4
8	Split pin (2)	5118-016
9	M10 washer	5113-009
10	Poppet spring	5104-1037
11	Barbed bearing bush	385/5042
12	Spider	385/5220
13	Link arm	385/5222
14	5mm washer	5113-015
15	Spindle	385/5207
16	Perfluoroelastomer O ring	5005-384
17	PTFE O ring	5005-113
18	Spindle guide bush (2)	385/5205
19	Locking washer	853/7029
20	Stuffing gland nut	385/5208
21	PTFE thrust washer (2)	385/5008
22	Handle	385/5007
23	M6 locking nut	5112-013
24	M6 hex bolt	5111-045
25	Handle spring	5104-695

NOTE: The valve specification changes the Part No.

Seal Kit - All parts marked in the Parts List

Main Seal Material	Part No.
Nitrile	385/5200SKN
Viton	385/5200SKV
Fortyt	385/5200SKF



4" TTMA Check Valve with Secondary Check Valve

Part No: 94/3679XX/X



Specification

Nominal size

DN100

Inlet/hose connection

Flanged: 8 x M10 holes on a 149.2mm PCD - 4" TTMA

Outlet/coupler connection

Flanged: 8 x 11mm holes on a 149.2mm PCD - 4" TTMA

Spring pressure

0.13 Bar, 0.2 Bar, 0.3 Bar, 0.4 Bar

Properties

The poppet has a secondary check valve to relieve back-pressure

Materials

Contact parts: aluminium & stainless steel

Main seal: A range is available, refer to Seal Data

Design Conditions

Weight:	2.6 Kg
Design Pressure (MAWP):	6 Bar
Test Pressure:	9 Bar
Design Temperature Max:	Refer to Seal Data

Seal Data

Seal Material	Seal Temp Min/Max
Viton B	-13°C / 50°C
Viton GFLT-S	-23°C / 50°C
Ultra low temp. fluorocarbon	-40°C / 50°C

NOTE: The Design Conditions and Section View dimensions are for the specified part number only.

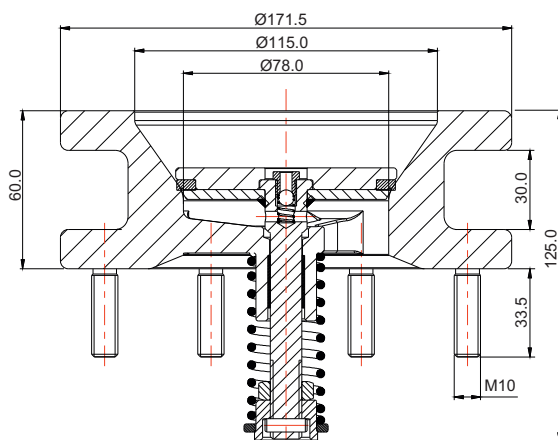
Range

Description	Part No.
Poppet with check valve *Note	94/3679XX/X
Poppet with fluid transfer hole *Note	94/3691XX/X

NOTE: The valve specification changes the Part No.

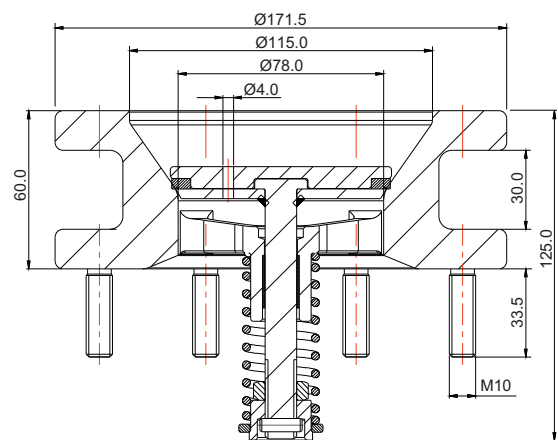
Section View

Part No. 94/3679XX/X



Section View

Part No. 94/3691XX/X



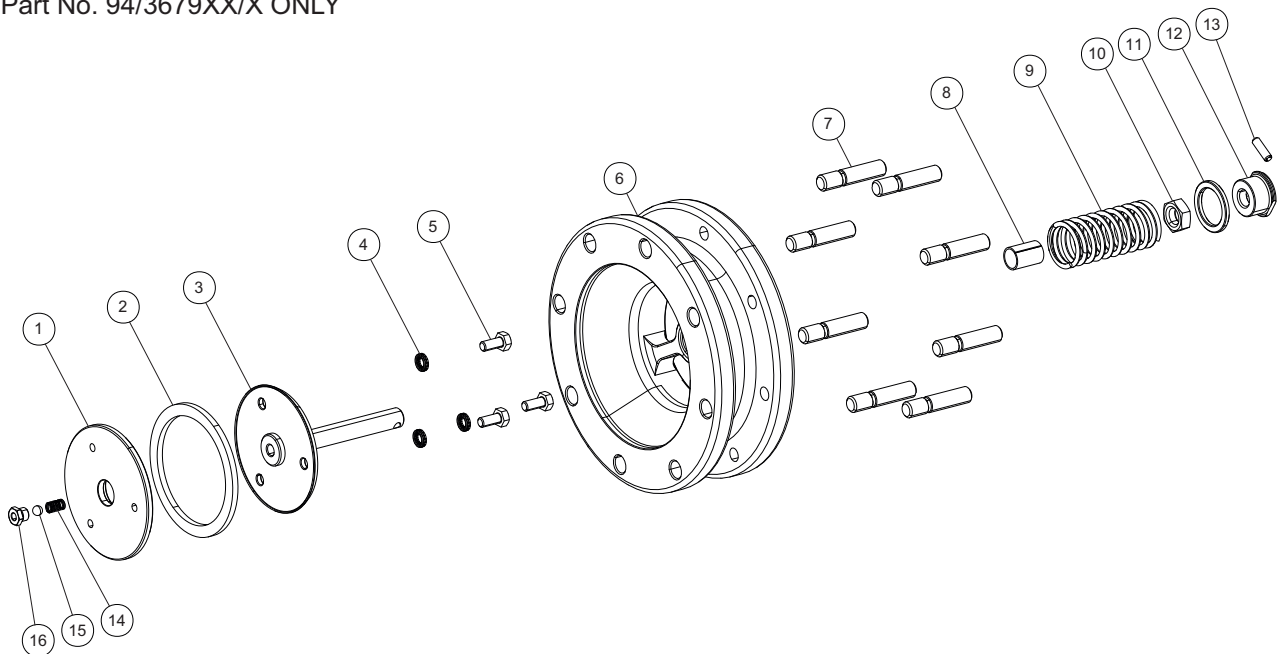


4" TTMA Check Valve with Secondary Check Valve

Part No: 94/3679XX/X

Parts Drawing

Part No. 94/3679XX/X ONLY



Parts List

Part No. 94/3679XX/X ONLY

Item	Description	Part No.
1	Poppet base plate	94/3710/1
2	Poppet seal *Note	94/3696XX
3	Poppet	94/3664
4	M6 Nord Lock washer pair (3)	5113-180
5	M6 hex bolt (3)	5111-190
6	Body	94/3694
7	M10 stud (8)	94/1040
8	Bearing	94/3688
9	Poppet spring *Note	94/3674/X
10	M12 half nut	5112-017
11	Spring washer	94/3681
12	Stop collar	94/3684
13	5mm roll pin	5128-122
14	Spring	5104-115
15	6mm ball	94/3661
16	Check valve nipple	94/3662

NOTE: The valve specification changes the Part No.



Safeload Wear Gauges, Tools & Spares Kits

Accessories & Spare Parts



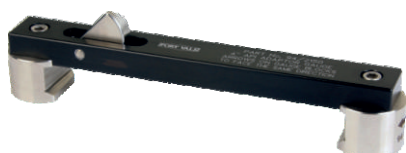
We supply a selection of wear gauges, special tools and kits to check the condition and do scheduled maintenance on the Safeload range of equipment.

We recommend that you use the correct special tools and only genuine spare parts. These will help you do maintenance and repairs quickly and easily without causing damage.

A selection of step-by-step maintenance instruction manuals is also available, please contact us.

CAUTION: To do maintenance, you must have experience and qualifications related to equipment installation on pressure vessels and systems.

Loading Adaptor Wear Gauge



Part No: 94/2150

Couplers, dump adaptors and caps can cause wear to the diameter and rear contact face of loading adaptors. A worn loading adaptor can cause an incorrect connection and product leakage.

The wear gauge helps you check the condition of the adaptor. It will show:

- if the loading adaptor diameter is under-size.
- if the loading adaptor diameter is over-size (caused by de-lamination of the steel on the rear contact face).
- if there is too much wear to the rear contact face.
- if the wear is less than the permitted limit and the loading adaptor is satisfactory.

The wear gauge is also compatible with the Fort Vale coupler parking nose, part no. 94/25PC.

Related Document: Operating Instructions OPIN32

Safeload Coupler Wear Gauge



Part No: 94/3050

The Safeload coupler wear gauge helps you check the condition of the coupler latches and operating mechanism. It will show:

- if there is too much wear to the latches.
- if there is some wear to the latches and you must schedule maintenance.
- if the wear is less than the permitted limit and the coupler is satisfactory.

The coupler wear gauge is compatible with semi-automatic, high-pressure and manual Safeload couplers.

Related Document: Operating Instructions OPIN33



Safeload Wear Gauges, Tools & Spares Kits

Accessories & Spare Parts

Safeload Coupler Seal Replacement Tool



Part No: 400/94X0

The Safeload coupler seal replacement tool helps you set the coupler in the correct position to give access to replace the seals.

The tool has two different faces, one to let you replace the main seal and seal carrier O rings and the other to let you replace the spindle O rings.

Range

Description	Part No.
Compatible with standard semi-automatic & manual coupler	400/9420
Compatible with high-pressure coupler	400/9440

Seal Kits

We supply seal kits in a range of seal materials for our Safeload couplers, please refer to the coupler data sheet for more information.

Safeload Accessory Kits

Description	Part No.
Seal kit for MK2 Safeload coupler, part no. 94/2000 (pre-2007)	94/20SK
Loading arm assembly kit	94/7AK
Loading arm swivel grease nipple kit	94/7GNK
Loading arm base swivel stop device: stop plate & stop bar	94/7079/XXA 94/7081

Related Parts

We also recommend our range of compatible accessories:

- API coupler parking nose
- Loading arm spools
- Drop hoses

Please contact us for more information about these parts.



APPENDIX

Catalogue

A	Bolt Torque Guide & Step Loading Procedure
---	--

B	Client Responsibilities - Valves & Accessories
---	--

THIS PAGE IS INTENTIONALLY BLANK



Bolt Torque Guide & Step Loading Procedure

Installation & Operating Instructions

Flange Bolting

CAUTION: Weld-distortion and too much tightening force will cause damage to a flange.

It is important not to cause damage to weld-in flanges and mating flanges. If a flange is damaged it will not give a satisfactory seal when a gasket and secondary mating flange is installed.

Bolt-stress can decrease after initial tightening. The cause can be deformation of the gasket material, particularly with soft materials such as a CNAF/PTFE envelope gasket.

Best procedure recommends that, after initial bolting, the flange joint is tightened again after a period of time. Most gasket manufacturers advise a period of 24 hours. ASME PCC-1-2000 GUIDELINES FOR PRESSURE BOUNDARY BOLTED FLANGE JOINT ASSEMBLY advises a minimum period of 4 hours.

Bolt torque calculations are based on a flat flange to within 0.15mm.

Recommended bolt torque values will be reduced if a lubrication is used.

Bolt Torque

Bolt Torque Values

Fort Vale bolt torque values are given as a reference guide only and are based on:

- the use of a CNAF/PTFE gasket.
- unlubricated fasteners.
- a flange flat to within 0.15mm.

CAUTION: If you use a different gasket material, a lubricant or a flange with distortion, you must re-calculate the torque value.

Bolt Torque Procedure

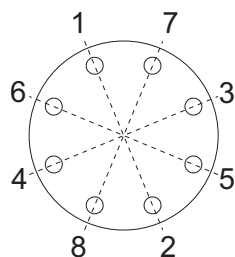
To install flanged parts correctly:

- Examine the mating flange of the part.
- If the flange is marked with a torque value, obey that torque value.
- If there is no torque value marked on the mating flange, obey the bolt torque values given in Table BT1.
- Tighten the bolts evenly in sequence. Refer to Figure BT1.
- Obey the Step Loading Procedure (ASME PCC-1-2000). Refer to the next page.

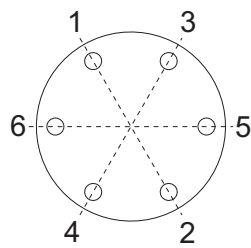
Table BT1

Thread	Torque Value
M10	30 Nm (22 lbf.ft)
M12	65 Nm (48 lbf.ft)
M16	81 Nm (60 lbf.ft)

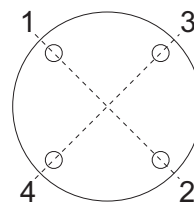
Figure BT1



8 HOLE PATTERN



6 HOLE PATTERN



4 HOLE PATTERN



Bolt Torque Guide & Step Loading Procedure

Installation & Operating Instructions

Step Loading Procedure

To install flanged parts correctly, obey the Step Loading Procedure extract from ASME PCC-1-2000:

Install

Hand tighten, then “snug up” to 15 Nm (10 lbf.ft) to 30 Nm (20 lbf.ft) (not to exceed 20% of Target Torque). Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening before proceeding.

Round 1

Tighten to 20% to 30% of Target Torque. Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening before proceeding.

Round 2

Tighten to 50% to 70% of Target Torque. Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening before proceeding.

Round 3

Tighten to 100% of Target Torque. Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening before proceeding.

Round 4

Continue tightening the bolts, but on a rotational clockwise pattern until no further nut rotation occurs at the Round 3 Target Torque value. For indicator bolting, tighten bolts until the indicator rod retraction readings for all bolts are within the specified range.

Round 5

Time permitting, wait a minimum of 4 hr and repeat Round 4; this will restore the short-term creep relaxation/embedment losses. If the flange is subjected to a subsequent test pressure higher than its rating, it may be desirable to repeat this round after the test is completed.



Client Responsibilities - Valves & Accessories

Installation, Operation & Maintenance Instructions

Compatibility

Make sure that the function and technical specification of the valve/accessory is compatible with the vessel service conditions and the cargo. This includes, but is not limited to:

- dimensions.
- pressure/vacuum setting.
- air/vapour/liquid flow capacity.
- maximum allowable working pressure.
- test pressure.
- minimum/maximum design temperatures.
- materials of construction.

Maintenance and Inspection

Fort Vale valves and accessories have a long life if you use them correctly in compatible service conditions. It is not necessary to lubricate the parts, but we recommend that you do the inspections that follow:

Inspections at regular intervals:

1. Examine the valve to make sure there is no damage, wear or corrosion.
2. Examine the valve and adjacent area to make sure there is no leakage of cargo.
3. Examine the fasteners to make sure they are not loose.
4. Make sure the valve operates correctly.

CAUTION: If you operate the valve with very corrosive cargo, or near its temperature and/or pressure limit (very high or very low temperature and/or pressure), do the inspections more frequently.

Also, schedule regular maintenance based on how frequently the valve is used, the type of cargo and the service conditions.

Inspections after 2½ years of service or a minor incident:

1. Examine the valve to make sure there is no damage, wear or corrosion.
2. Make sure the valve operates correctly.
3. Do a pressure test on the valve.

Inspections after 5 years of service or a major incident:

1. Disassemble and clean the valve.
2. Replace all the valve seals and do a pressure test.

Replacement Parts

Do not adapt or change the valve. If you install a replacement part, it must be a genuine Fort Vale part.

WARNING: If you install a part that is not genuine, there is a risk of:

- injury to personnel.
- permanent damage to the valve.
- permanent damage to the vessel.
- valve malfunction.

External Fire

If you install the valve in an area where there is a risk of external fire, you must install compatible accessories to prevent damage to the valve.

Compatibility of Accessories

Accessory components must cause no interference with the valve's function. Accessories must be made from compatible materials that will cause no damage to the valve materials. Do not install an accessory that will cause an increased load on the valve, such as mechanical, static, dynamic or thermal load.

Mis-use

Obey the instructions and recommended procedures in the installation and operating instructions. Obey the pressure and temperature markings on the valve and on the drawing. Use the valve/accessory for its correct function only. Fort Vale accept no liability or responsibility for incorrect use of the valve/accessory.

THIS PAGE IS INTENTIONALLY BLANK



Our subsidiaries are located in:

US Office

126 N. Virginia
La Porte
TX 77571
USA

Tel: +1 281 471 8100

Fax: +1 281 471 8116

Email: ussales@fortvale.com

Head Office

Calder Vale Park
Simonstone Lane
Simonstone, Burnley
Lancashire, BB12 7ND, UK

Tel: +44 (0) 1282 687120

Fax: +44 (0) 1282 687110

Email: sales@fortvale.com

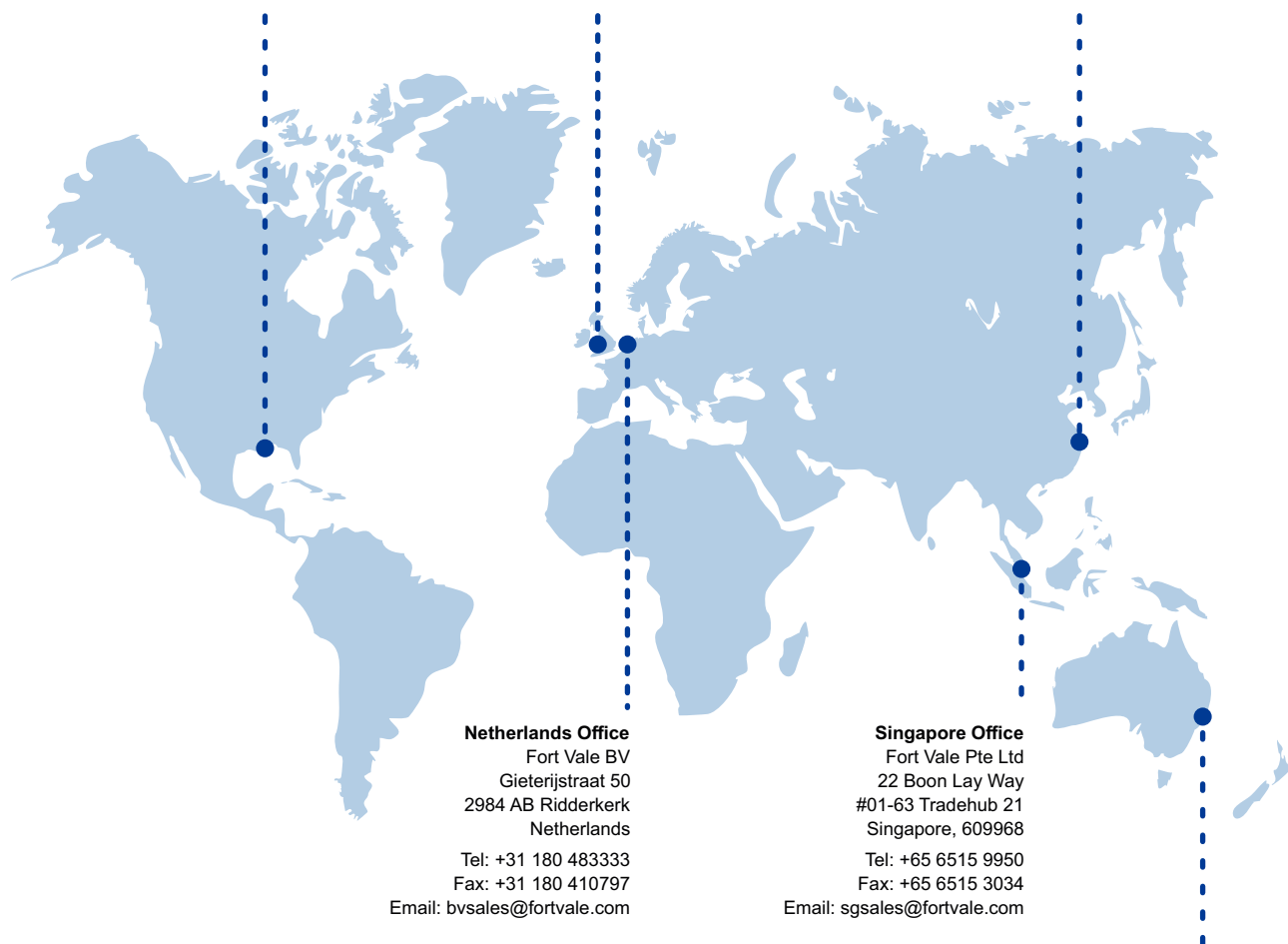
China Office

Fort Vale Engineering Shanghai Ltd
Building 11 88 Yuanshan Road
Xinzhuang Industry Park
Shanghai 201108 China

Tel: +86 21 6442 1367

Fax: +86 21 6442 1376

Email: cnsales@fortvale.com



Netherlands Office

Fort Vale BV
Gieterijstraat 50
2984 AB Ridderkerk
Netherlands

Tel: +31 180 483333

Fax: +31 180 410797

Email: bvsales@fortvale.com

Singapore Office

Fort Vale Pte Ltd
22 Boon Lay Way
#01-63 Tradehub 21
Singapore, 609968

Tel: +65 6515 9950

Fax: +65 6515 3034

Email: sgsales@fortvale.com

Australia Office

Fort Vale Australia Pty Ltd
Bellwood Business Park
Unit 14, 49 Bellwood Street
Darra, Queensland, 4076

Tel: +61 7 3189 5059

Email: ausales@fortvale.com

We also have Authorised Distributors around the world to provide you with product sales and after-market services.
To find your nearest distributor, please visit our website - www.fortvale.com

