



CATALOGUE REVISION_15.10.14



Petroleum Handling Equipment Catalogue //



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**API BOTTOM LOADING COUPLERS &
ANCILLARIES //**

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Features & Benefits

-  NEW bumper ring protects against glancing blows.
-  3 Year Warranty on all metal parts.*
-  Tapered lead-in of coupler ensures failsafe alignment with tank adaptor.
-  Instant "snap on" fixture to tank adaptor.
-  Four wrap-around extended triggers lock the coupler securely in place.
-  SAFELOAD will not open unless connected correctly nor uncouple until fully closed.
-  Compression spring energised main seal.
-  All seals may be replaced in-situ using the correct tools and procedure.
-  Wear critical components tested to simulate over 5 years continual service.
-  Trigger design allows full alignment and connection even if loading arms are crossed over.
-  Release handle has fewer parts so it is very easy to strip down.
-  The shaft and nut assembly is easy to maintain.
-  The double seal arrangement stops dirt from entering the seal pocket.

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*under standard environmental conditions.
See www.fortvale.com/FVETCOFSALE.pdf (paragraph 9)

Service Guidelines

Fort Vale recommends a monthly visual inspection on couplers over 6 months old. It should be noted that the life of the coupler is not only determined by the frequency of use but also by the product carried.

 Operating Instructions for Safeload semi-automatic coupler - **OPIN21**

For list of **Spares Kits**, please see separate datasheet, reference **AD022**.

4" MK3 SAFELOAD Semi-Automatic Coupler - The Fort Vale Safeload semi-automatic coupler for bottom loading has a unique wrap-around trigger design that follows the profile of the loading adaptor, covering more than 60% of its circumference.

4" TTMA inlet flange. Outlet connection complies with API RP 1004. Materials of construction - hard anodised aluminium, nitrided steel and stainless steel. Fitted with Viton B seals as standard. Operating instructions included.

Seal options - See Range

Options - Low profile release handle.

Specification

Part Number : **CE94/2500XX**

Weight	12.15 Kg
Design Pressure (MAWP)	6 Bar (87 PSI)
Test Pressure	10 Bar (145.0 PSI)
Max. Surge Pressure	15 Bar (217.5 PSI)

Compliant with ATEX Group II, Cat 2; EN 13083 & API RP1004 (2003).

Range

Part No.	Seal Specification	Temp. Range
CE94/2500	Viton B	-13°C to +50°C +9°F to +122°F
CE94/2500GF	Viton GFLT-S	-23°C to +50°C -9°F to +122°F
CE94/2500MF	Ultra-low temp. Fluorocarbon	-40°C to +50°C -40°F to +122°F
CE94/2500PF	Perfluoroelastomer	-15°C to +50°C +5°F to +122°F

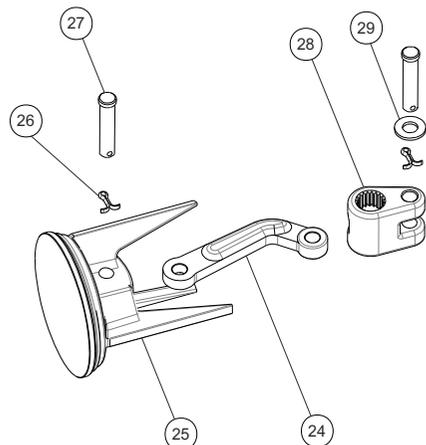
Associated Parts

Associated Parts	Part Number
Extended inlet spool piece – *See Note	94/22XX
Loading adaptor wear gauge	94/2150
Parking nose – Bottom Loading Coupler	94/25PC
Coupler seal replacement tool	400/9420
4" TTMA Check valve	94/3690XX/X

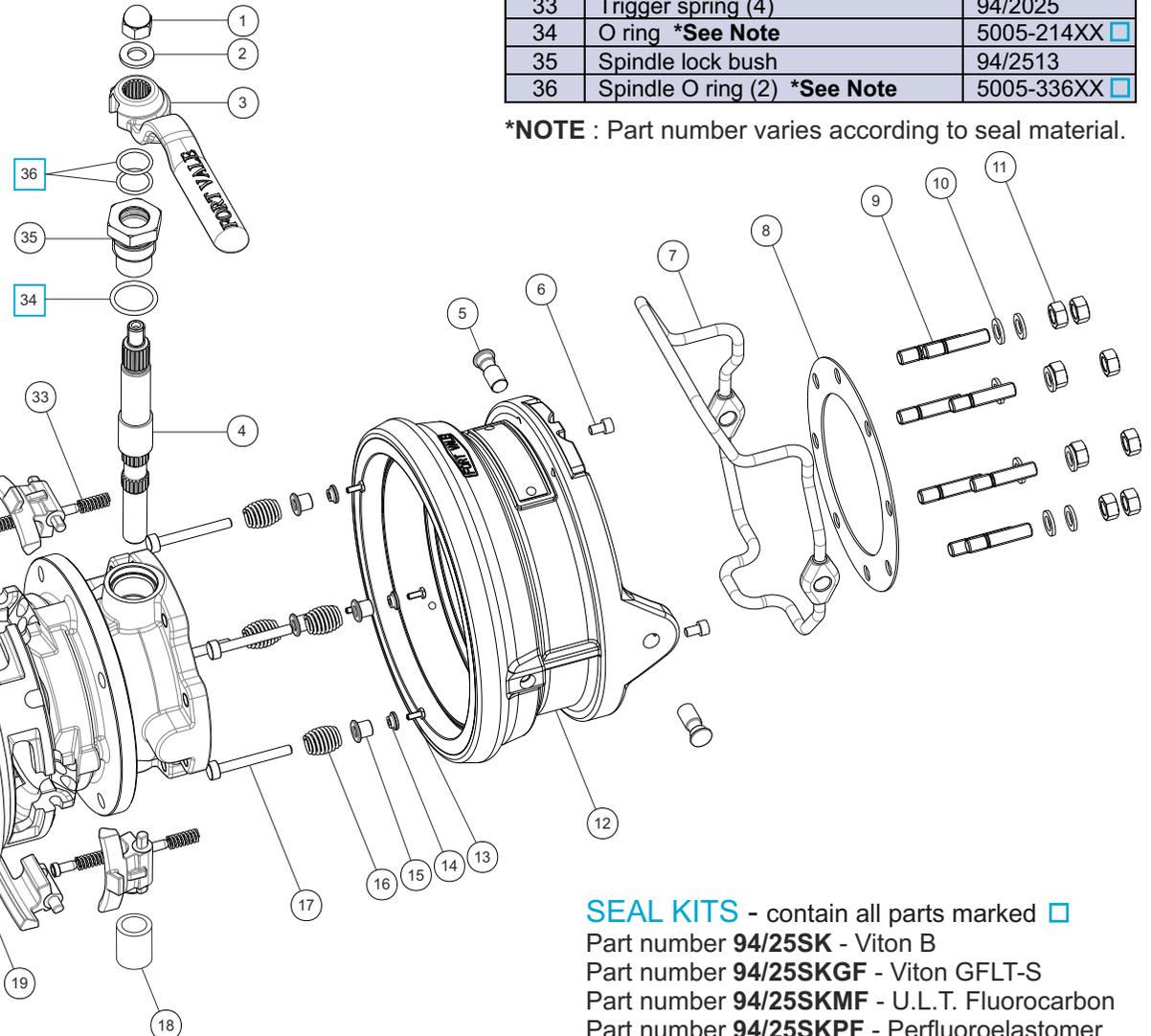
***NOTE** : "XX" indicates variable length
Minimum length : 120mm

Item	Description	Part No.
1	M12 domed nut	5112-050
2	M12 washer	5123-003
3	Splined handle	94/2575
4	Spindle	94/2511
5	Release handle pivot pin (2)	94/2577
6	M6 capscrew (2)	5111-061
7	Release handle assembly	94/2580
8	4" TTMA gasket	94/1044
9	Inlet flange stud (8)	94/1040
10	M10 flat section spring washer (8)	5113-002
11	M10 full nut (8)	5112-002
12	Outer housing and ring assembly	94/2504
13	M4 hexhead setscrew (4)	5111-064
14	Spring retainer washer (4)	94/2529
15	Guide bush (4)	94/2048
16	Spring (4)	10146
17	Spring retainer (4)	94/1016
18	Spindle bush	94/2522
19	Inner housing	94/2501
20	Seal carrier O ring *See Note	94/1034XX <input type="checkbox"/>
21	Seal carrier	94/2507
22	Wiper O ring *See Note	5005-584XX <input type="checkbox"/>
23	Main seal *See Note	94/1006XX <input type="checkbox"/>
24	Lever arm	94/1009
25	Poppet	94/2518

***NOTE :** Part number varies according to seal material.



Part Number : CE94/2500



Item	Description	Part No.
26	Split pin (2)	5118-050
27	Pivot pin (2)	94/1054
28	Splined crank block	94/2528
29	M10 washer	5113-025
30	Energizing spring (8)	94/2024
31	Extended locking trigger (4)	94/2555CE
32	Trigger spring guide (4)	94/2026
33	Trigger spring (4)	94/2025
34	O ring *See Note	5005-214XX <input type="checkbox"/>
35	Spindle lock bush	94/2513
36	Spindle O ring (2) *See Note	5005-336XX <input type="checkbox"/>

***NOTE :** Part number varies according to seal material.

SEAL KITS - contain all parts marked
 Part number **94/25SK** - Viton B
 Part number **94/25SKGF** - Viton GFLT-S
 Part number **94/25SKMF** - U.L.T. Fluorocarbon
 Part number **94/25SKPF** - Perfluoroelastomer



4" SAFELOAD Manual Coupler - The Fort Vale Safeload manual coupler for bottom loading has a unique wrap-around trigger design that follows the profile of the loading adaptor, covering more than 60% of its circumference.

4" TTMA inlet flange. Outlet connection complies with API RP 1004. Materials of construction - hard anodised aluminium, nitrided steel and stainless steel. Fitted with Viton B seals as standard.

Seal options - See Range

Features & Benefits

- 3 Year Warranty on all metal parts.*
- Tapered lead-in of coupler ensures failsafe alignment with tank adaptor.
- Four wrap-around extended triggers lock the coupler securely in place.
- SAFELOAD will not open unless correctly connected and may not be uncoupled until fully closed.
- Compression spring energised main seal.
- All seals may be replaced in-situ using the correct tools and procedure.
- New trigger design also stops the twist if arms are crossed over, keeping the coupler nose in line with the adaptor.
- The new shaft and nut assembly is easier to maintain.
- The new double seal arrangement stops dirt from entering the seal pocket.

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*under standard environmental conditions.
See www.fortvale.com/FVETCOFSALE.pdf (paragraph 9)

Service Guidelines

Fort Vale recommend a monthly visual inspection on couplers over 6 months old. It should be noted that the life of the coupler is not only determined by the frequency of use but also by the product carried.

Safeload Manual Coupler Operating Instructions available - **OPIN31**

For list of **Spares Kits**, see over page. Spares kits also indicated on separate datasheet, reference **AD022**.

Specification

Part Number : **CE94/2700**

Weight	10.2 Kg
Design Pressure (MAWP)	6 Bar (87 PSI)
Test Pressure	10 Bar (145.0 PSI)
Design Temperature Range	See Table below
Max. Surge Pressure	15 Bar (217.5 PSI)

Compliant with ATEX Group II, Cat 2; EN 13083 & API RP1004 (2003).

Range

Part No.	Seal Specification	Temp. Range
CE94/2700	Viton B	-13°C to +50°C +9°F to +122°F
CE94/2700GF	Viton GFLT-S	-23°C to +50°C -9°F to +122°F
CE94/2700MF	Low temp. Fluorocarbon	-40°C to +50°C -40°F to +122°F
CE94/2700PF	Perfluoroelastomer	-15°C to +50°C +5°F to +122°F

Associated Parts

Associated Parts	Part Number
Extended inlet spool piece – *See Note	94/22XX
Loading adaptor wear gauge	94/2150
Parking nose – Bottom Loading Coupler	94/25PC
Coupler seal replacement tool	400/9420
4" TTMA Check valve	94/3690XX/X

***NOTE** : "XX" indicates variable length
Minimum length : 120mm

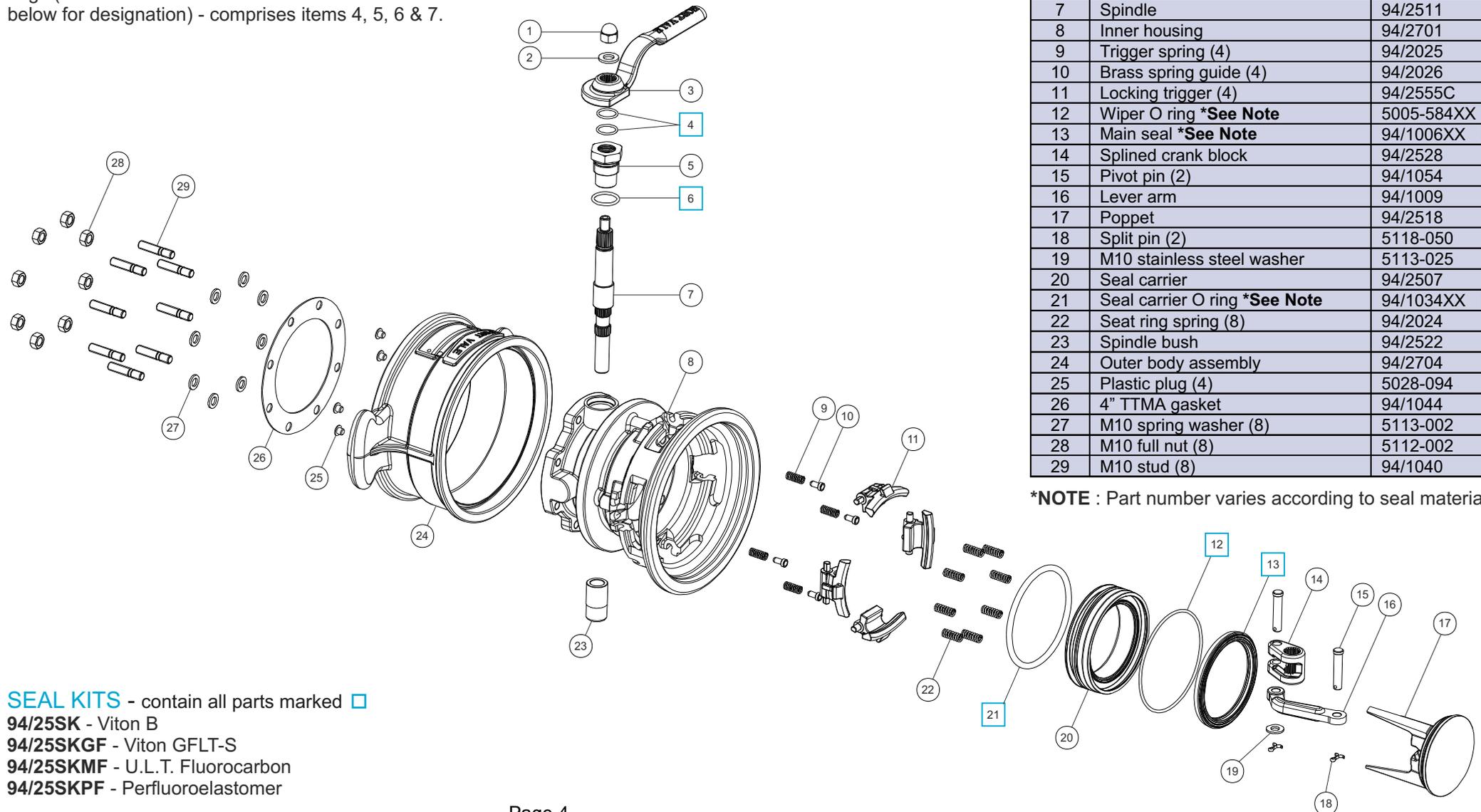
SPARES KITS

94/27SA3 - splined handle sub-assembly - comprises items 1, 2 & 3.

94/25SA4 - poppet sub-assembly - comprises items 14, 15, 16, 17, 18 & 19.

94/25SA5XX - spindle and bush sub-assembly with O rings (XX denotes seal material - see **SEAL KITS** below for designation) - comprises items 4, 5, 6 & 7.

Part Number : CE94/2700



Item	Description	Part No.
1	M12 domed nut	5112-050
2	M12 washer	5123-003
3	Splined handle	94/2775
4	Viton O ring (2) *See Note	5005-336XX <input type="checkbox"/>
5	Spindle lock bush	94/2513
6	Viton O ring *See Note	5005-214XX <input type="checkbox"/>
7	Spindle	94/2511
8	Inner housing	94/2701
9	Trigger spring (4)	94/2025
10	Brass spring guide (4)	94/2026
11	Locking trigger (4)	94/2555C
12	Wiper O ring *See Note	5005-584XX <input type="checkbox"/>
13	Main seal *See Note	94/1006XX <input type="checkbox"/>
14	Splined crank block	94/2528
15	Pivot pin (2)	94/1054
16	Lever arm	94/1009
17	Poppet	94/2518
18	Split pin (2)	5118-050
19	M10 stainless steel washer	5113-025
20	Seal carrier	94/2507
21	Seal carrier O ring *See Note	94/1034XX <input type="checkbox"/>
22	Seat ring spring (8)	94/2024
23	Spindle bush	94/2522
24	Outer body assembly	94/2704
25	Plastic plug (4)	5028-094
26	4" TTMA gasket	94/1044
27	M10 spring washer (8)	5113-002
28	M10 full nut (8)	5112-002
29	M10 stud (8)	94/1040

*NOTE : Part number varies according to seal material.

SEAL KITS - contain all parts marked

94/25SK - Viton B

94/25SKGF - Viton GFLT-S

94/25SKMF - U.L.T. Fluorocarbon

94/25SKPF - Perfluoroelastomer

**Part Number - 94/3690XX/X**

The 4" TTMA Check Valve with fluid transfer hole suits the 4" Safeload range of bottom loading couplers.

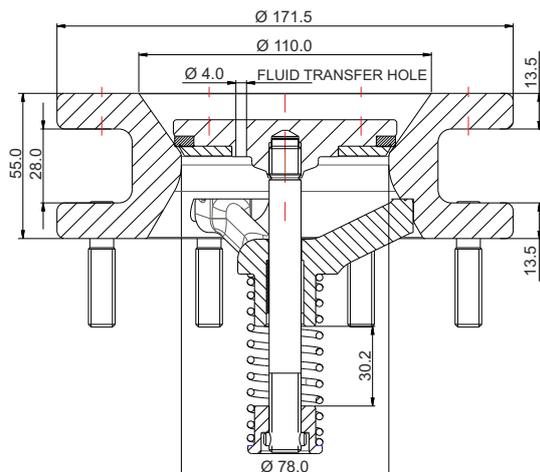
It is designed for use on a flexible hose as a secure secondary closure - i.e. the Safeload coupler may be removed from the loading arm for maintenance without needing to drain the hose fully, thereby reducing loss of fuel. The Safeload Check valve also prevents fraudulent gravity drainage and theft of the fuel in the loading arm.

Inlet flange (hose connection) drilled 8 x 11mm holes equi-spaced on a 149.2mm PCD (4" TTMA). Manufactured in aluminium and stainless steel, fitted with Viton B seal as standard.

Options - Alternative seal materials available. Spring pressure options dependant upon static head pressure in the hose.

Fitting Details

Weight : 2.43 Kg


Range

X value in above part number indicates variables :

94/3690XX/X - Seal option

Part No.	Seal Specification	Temp. Range
94/3690/X	Viton B	-13°C to +50°C +9°F to +122°F
94/3690GF/X	Viton GFLT-S	-23°C to +50°C -9°F to +122°F
94/3690MF/X	Ultra-low temp. Fluorocarbon	-40°C to +50°C -40°F to +122°F

94/3690XX/X - Spring pressure option

Part No.	Poppet spring pressure rating
94/3690XX/1	Spring setting 0.13 Bar
94/3690XX/2	Spring setting 0.2 Bar
94/3690XX/3	Spring setting 0.3 Bar
94/3690XX/4	Spring setting 0.4 Bar

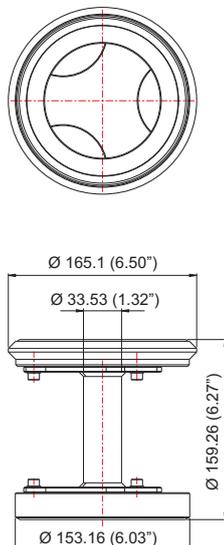


4" API Coupler Seal Replacement Tool - this tool may be used to assist the replacement of the spindle seals and seal carrier seals on a 4" API Coupler either in-situ on the loading gantry or dismantled from the loading gantry.

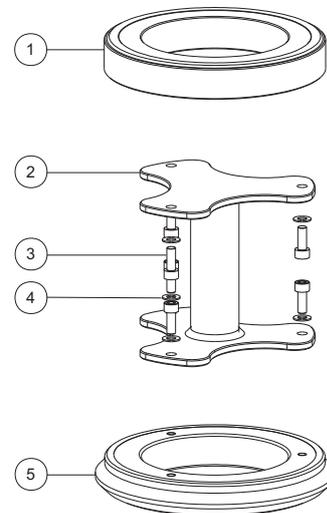
Weight 4.5 Kg

Fitting Details

Part Number : 400/9420



Parts Drawing



Item	Description	Part No.
1	Seal carrier replacement seal	94/2112
2	Handle assembly seal replacement tool	94/2116
3	M6 x 16mm cap screw (6)	5111-015
4	M6 plain washer (6)	5113-001
5	4" API coupler spindle seal replacement	94/2111

Instructions

CAUTION!

The loading gantry must be drained and isolated when using this tool to replace seals with a coupler in-situ on a gantry. A safe working procedure must be followed when using this tool to prevent product discharge from the loading gantry.

To replace the spindle seals in a Fort Vale API coupler in the closed and interlocked position.

Insert the formed end into the inner housing of the coupler and press sharply against the triggers. This will snap the outer body forward and release the handle interlock. Turn the operating handle to open the coupler. The poppet will travel into the tool and stop in the part opened position. This will release the internal energy applied to the spindle in the closed position.

Follow the standard maintenance procedure to replace the spindle seal.

To replace the seal carrier seals in a Fort Vale API coupler in the closed and interlocked position.

Insert the plain end into the inner housing of the coupler and press sharply against the triggers. This will snap the outer body forward and release the handle interlock. Remove the tool and slowly open the coupler. The seal carrier housing can be accessed.

Follow the standard maintenance procedure to replace the spindle seal.

Spares Kits for 4" API Safeload Couplers



Spares are available as individual components or as kits, for your convenience. Standard seal options are Viton B and Viton GFLT-S. Other materials are available.

CE94/2500XX Semi-automatic series



94/25SK : Viton B		
94/25SKGF : Viton GFLT-S		
94/25SKMF : U.L.T. Fluorocarbon		
94/25SKPF : Perfluoroelastomer		
Seal kit for 4" Safeload coupler, comprising:		
Part No.	Qty	Description
94/1006XX	1	Main seal (*Note)
94/1034XX	1	Carrier O ring (*Note)
5005-584XX	1	Wiper O ring (*Note)
5005-336XX	2	Internal spindle bush O ring (*Note)
5005-214XX	1	External spindle bush O ring (*Note)

94/25SA2

Release handle sub-assembly to suit 4" Safeload semi-automatic coupler, comprising:

Part No.	Qty	Description
94/2580	1	Release handle
94/2577	2	Pivot pin
5111-061	2	Cap screw

94/25SA3

Splined handle sub-assembly to suit 4" Safeload semi-automatic coupler, comprising:

Part No.	Qty	Description
94/2575	1	Handle
5112-050	1	M12 domed nut
5123-003	1	M12 washer

94/25SA4

Poppet assembly to suit 4" Safeload coupler, comprising:

Part No.	Qty	Description
94/1009	1	Lever arm
5118-050	2	Split pin
5113-025	2	M10 washer
94/2518	1	Poppet machining
94/1054	2	Pivot pin
94/2528	1	Splined crank block

94/25SA5XX

Spindle and bush sub-assembly with O rings. To suit 4" Safeload coupler, comprising:

Part No.	Qty	Description
5005-214XX	1	External spindle bush O ring (*Note)
5005-336XX	2	Internal spindle bush O ring (*Note)
94/2511	1	Splined handle spindle
94/2513	1	Spindle lock bush

CE94/2700XX Manual series



94/25SK : Viton B		
94/25SKGF : Viton GFLT-S		
94/25SKMF : U.L.T. Fluorocarbon		
94/25SKPF : Perfluoroelastomer		
Seal kit for 4" Safeload coupler, comprising:		
Part No.	Qty	Description
94/1006XX	1	Main seal (*Note)
94/1034XX	1	Carrier O ring (*Note)
5005-584XX	1	Wiper O ring (*Note)
5005-336XX	2	Internal spindle bush O ring (*Note)
5005-214XX	1	External spindle bush O ring (*Note)

94/27SA3

Splined handle sub-assembly to suit 4" Safeload manual coupler, comprising:

Part No.	Qty	Description
94/2775	1	Handle
5112-050	1	M12 domed nut
5123-003	1	M12 washer

94/25SA4

Poppet assembly to suit 4" Safeload coupler, comprising:

Part No.	Qty	Description
94/1009	1	Lever arm
5118-050	2	Split pin
5113-025	2	M10 washer
94/2518	1	Poppet machining
94/1054	2	Pivot pin
94/2528	1	Splined crank block

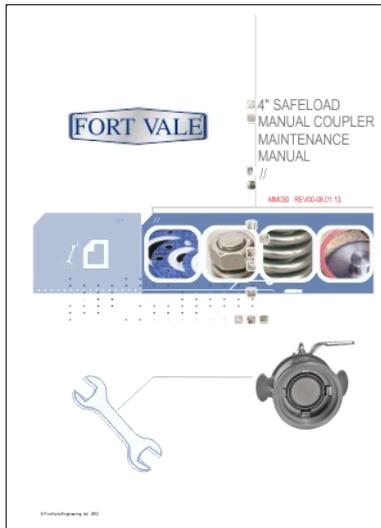
94/25SA5XX

Spindle and bush sub-assembly with O rings. To suit 4" Safeload coupler, comprising:

Part No.	Qty	Description
5005-214XX	1	External spindle bush O ring (*Note)
5005-336XX	2	Internal spindle bush O ring (*Note)
94/2511	1	Splined handle spindle
94/2513	1	Spindle lock bush

*Note : XX denotes variable seal material.

Maintenance Manuals

Maintenance Manuals - give step-by-step instructions on how to dismantle, repair, re-build and test products in our range.

Each procedure is described in a simple and concise way and is supported by over 60 photographs in full colour.

Manuals may be supplied fully laminated for a long-lasting, wipe-clean finish.

The manual includes: API Installation & Operation; API Nose Wear Gauge use; Main Seal & O Ring replacement; Carrier O Ring replacement; Spindle seal replacement; Spares list & Coupler drawings.

Model/Part	Paper Copy	Laminated Copy
MK2 Safeload CE94/2000 semi-automatic coupler	MM009	LMM009
MK3 Safeload CE94/2500 semi-automatic coupler	MM021	LMM021
4" Safeload CE94/2700 manual coupler	MM030	LMM030

Spares Kits for MK2 Safeload Coupler 94/2000



Spares are available as individual components or as spares kits, for your convenience.

94/20SK		
Seal kit for 4" API Safeload Coupler – comprising:-		
Part No.	Qty	Description
94/1006	1	Main seal
94/1034	1	Carrier O Ring
5005-381	2	Spindle O Ring
5005-624	1	Spindle Bush Ring

94/SA3		
Handle sub-assembly to suit 4" API Safeload Coupler – comprising:-		
Part No.	Qty	Description
94/1020	1	Handle
94/1046	1	Handle Clamp Plate
5111-043	2	M8 x 30 Capscrews

94/SA5		
Spindle and bush sub-assembly with O ring seals. To suit 4" API Safeload Coupler – comprising:-		
Part No.	Qty	Description
94/2011	1	Spindle
94/2010	1	Locating bush
5005-381	2	Viton O ring
5005-624	1	Viton O ring

94/SA4		
Poppet Assembly for 4" API Safeload Coupler – comprising:-		
Part No.	Qty	Description
94/1009	1	Lever arm
94/1018	1	4" API poppet
94/1028	1	Crank block
94/1029	2	Brass washer
94/1054	2	Pivot pin
5228-009	2	Split pin



Maintenance Tool & Operating Instructions



4" API Coupler seal replacement tool, part number **400/9420**, allows the outer housing to come forward enabling access to seal carrier and seals.

Compatible with all Safeload Coupler models.



Also available is our separate data sheet on Operating Instructions for the Fort Vale Loading Adaptor Wear Gauge.

Please quote reference **OPIN32**.





Part number : 94/2150

The Fort Vale 4" loading adaptor gauge is designed to check the wear of both the outside diameter and the contact face that the coupler latches to. It slides easily onto the adaptor and locates in a central position on a unit that conforms to the dimensions and tolerances of EN 13083 and API RP1004.

The gauge became mandatory in the U.K. in 2006 under section B.12.2 of the recognized industry standard "Safe Loading Pass for Trailers and Tank Equipment."

Materials of construction - gauge bar aluminium, all other parts stainless steel.

 Supplied with Operating Instructions - OPIN32.

Features & Benefits

 Designed to check the wear of the loading adaptor on the tanker in three ways:-

1. Will check if the loading adaptor is undersized on diameter.
2. Indicates if there is wear to the rear latching face.
3. Shows if the nose is oversize, due to delamination of the band on rear latching face.

 The gauge itself can be checked on a new adaptor.

 The blocks, if showing any sign of wear, can be swapped over to recreate a new gauging dimension.

 Invaluable tool as part of a maintenance review programme.



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Parking Noses

The Parking Noses are designed to reduce the risk of accidental damage to the coupler on a gantry and reduce the ingress of dirt or foreign material. Can be drilled to take a sensor.

94/25PC PARKING NOSE FOR 4" API COUPLER

To suit Fort Vale coupler CE94/2500XX & CE94/2700.
4 holes M12 x 1" deep on 5" PCD
Manufactured in Aluminium.



The 103/5000 nozzle has a new handle arrangement that can be opened in either direction for driver convenience.

There is an optional latching system that prevents the nozzle from being opened accidentally. All the locking parts are made from stainless steel in order to give both strength and corrosion resistance.

Changes to some internal nozzle components bring commonality across the range and new seal material gives longer life and smoother operation. As a result of these upgrades, the flow rate has significantly increased, yet it is still the same lightweight, easy-to-handle size.

Features

-  1½" BSP (F) swivel inlet
-  1½" BSP (F) fixed outlet
-  Compact
-  Lightweight
-  Handle can be opened in both directions
-  Larger bore & ball size increase flow rate
-  PTFE & Nitrile seals
-  Optional latching model available



Specification

Part Number : 103/5000

Weight 1.63 Kg
Design Flow Rate 450 litres / minute

Range

Part No.	Description
103/5000	1½" swivel inlet, 1½" fixed outlet, new handle
103/5200	1½" swivel inlet, 1½" fixed outlet, new latching handle
103/4000	Upstream anti-drain valve, old style handle
103/4200	Upstream anti-drain valve, new latching handle

Associated Parts

Part Number	Description
103/50SK	Seal kit
103/50RK	Repair kit
303/1000	1½" BSP inlet swivel assembly
10114GM	1½" BSPT (M) x 2" BSP (F) outlet swivel
10115AL	2" BSP aluminium standard straight spout, plain end
10115/7	2" BSP aluminium reducing spout, 1¼" end
10115/8	2" BSP aluminium reducing spout, 1 5/8" end



Developed to cope with the higher flow demands of modern tankers assuming suitability of the accompanying receiving vessel and the type of fluid being transferred. This model offers both inlet and outlet swivels as standard on the nozzle.

The new handle arrangement can be opened in either direction for driver convenience.

There is an optional latching system that prevents the nozzle from being opened accidentally. All the locking parts are made from stainless steel in order to give both strength and corrosion resistance.

Features

-  Heavy duty cast Aluminium body
-  PTFE & Nitrile seals
-  1½" BSP (F) swivel inlet
-  2" BSP (F) swivel outlet
-  Handle can be opened in both directions
-  Optional latching model available

Specification

Part Number : 303/5000

Weight 2.56 Kg
Design Flow Rate 450 litres / minute

Range

Part No.	Description
303/5000	1½" BSP swivel inlet, 2" BSP swivel outlet, with new handle
303/5200	1½" BSP swivel inlet, 2" BSP swivel outlet, with new latching handle

Associated Parts

Part Number	Description
303/50SK	Seal kit
303/50RK	Repair kit
303/1000	1½" BSP inlet swivel assembly
303/0050	2" BSP (F) x 2" BSP (M) outlet swivel (with anti-drain)
303/0055	2" BSP (F) x 2" BSP (M) outlet swivel (no anti-drain)
10115AL	2" BSP aluminium standard straight spout, plain end
10115/7	2" BSP aluminium reducing spout, 1¼" end
10115/8	2" BSP aluminium reducing spout, 1 5/8" end



Standard Spouts



Part No.	Description
10115AL	Aluminium Cast Spout, 2" BSP (M) connection, plain end



Reducing Spouts



Part No.	Description
10115/7	1 1/4" diameter Aluminium Cast Spout, 2" BSP (M) connection
10115/8	1 5/8" diameter Aluminium Cast Spout, 2" BSP (M) connection



Nozzle Spares



For previous production models

Part No.	Description
103/00RK	Original Nozzle Repair Kit
103/00SK	Original Nozzle Seal Kit
303/00RK	Highflow Nozzle Repair Kit
303/00SK	Highflow Nozzle Seal Kit

For current production models

103/50RK	Original Nozzle Repair Kit
103/50SK	Original Nozzle Seal Kit
303/50RK	Highflow Nozzle Repair Kit
303/50SK	Highflow Nozzle Seal Kit
213/00RK	Superflow Nozzle Repair Kit
213/00SK	Superflow Nozzle Seal Kit



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