SEETRU LTD
ALBION DOCKSIDE WORKS, HANOVER PLACE, BRISTOL BS1 6UT. ENGLAND.
TEL 0117 927 9204. FAX 0117 929 8193.

INSTALLATION, OPERATING AND MAINTENANCE INSTRUCTIONS FOR THE QUICKFLEX GAUGE

GENERAL DESCRIPTION

The Quickflex gauge is a lightweight reflex gauge with screwdown valves.

The column is similar to that used on our Seeflex marine gauge and consists of 1 or more toughened borosilicate reflex glass windows on a stainless steel column with a front bezel made of carbon steel coated with black polyester paint stoved at 200°C. Alternatively a stainless front bezel can be supplied.

The valves are similar to those used on our Quickmount gauges. Two types of screwdown valves are available. the 'Standard' and the A.S.V. type which contains an automatic safety valve. The head of this valve is clearly marked A.S.V.

Note:- With the A.S.V type if there is a serious breakage the abnormal flow acting on the ball forces it forward to seal on the seat in the body thus checking the flow of liquid from the tank.
Both these valves can be supplied in 'Bronze Construction' or 'Stainless Steel Construction' with seals in Nitrile, Viton, Ethylene Propylene or Neoprene to suit tank contents.

Note 1/ A drain valve may be fitted into the bottom collar if required.
2/ A valveless unit can be fitted in place of the top valve unit if required.

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INSTALLATION INSTRUCTIONS

Installation must be undertaken by qualified technicians and to good engineering practice. In addition, users attention is drawn to our joint responsibility to ensure that the Health and Safety at Work Act is not contravened by incorrect installation, commissioning or servicing.

The Quickflex gauge is usually supplied with the screwdown valves separate from the column. If the valves are assembled into the column they should be removed by unscrewing the retaining nuts and sliding the valves out of the collars. Take care not to damage the 'O' rings in the grooves either side of the collars. Screw the valves into the tank bosses with fibre washer in position and tighten valves against fibre washers to seal. Use spanner flats provided. Slide the gauge collars over the valve bodies (now protruding from the tank) Ensure 'O' rings are in position in groove either side of the collars.

If the gauge valve centre distance is in excess of 1000mm intermediate supports are supplied. These require packing plates to be welded to the tank wall. If present, equally space the support pads along the gauge at not more than 1000mm spaces. Tack weld the pads to the tank. Loosen the support brackets and remove the gauge column from the tank (slide off from valves) complete the welding of the support pads.

Refit gauge column onto the valve bodies ensure 'O' rings are in position in grooves either side of the collars and refit retaining nuts onto valve bodies and tighten (do not over tighten as this may cause damage to the seals & components). Then fit bolts through support brackets and into pads and tighten.

Note it is possible to adjust the gauge valve centre distance by plus or minus 5mm by sliding the top gauge collar in or out. If the collar is removed completely do not push it back through the gland this would damage the internal seals. If the collar is pulled out follow this procedure. Remove the gland nut, P.T.F.E spacer and 'O' ring from the gauge collar housing. Assemble these components onto the collar stem in this sequence, first metal gland nut second white P.T.F.E. spacer third 'O' ring. Then fit collar complete into housing and tighten gland nut.

GAUGES OVER 3 METERS IN LENGTH

Long gauges are broken down to 3m maximum lengths. These gauge lengths must be joined together end on end as installation progresses. This is easier done if the lower portion of the gauge is attached to the tank first.

The connecting plate, stiffening plate and gaskets will already be fastened to one gauge section this should not be disturbed, proceed as follows:

Remove the nuts and bolts from the gauge section which will join to the connecting plate. Fit top section in position on lower section, ensure that the gaskets are correctly aligned, refit nuts and bolts and tighten to 3Nm (26lb ins). Continue installation as though a one piece gauge.

WARNING

Connecting plates are designed to join sections vertically and will not support the gauge sections in a horizontal position.

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OPERATING INSTRUCTIONS

TO OPEN GAUGE

1. Open top valve fully
2. Open bottom valve very slowly until fully open

The level in the tank should now register in the gauge (see note below)

TO CLOSE GAUGE

1. Close both valves

To Drain Gauge (gauges fitted with drain valve)

1. Close both valves(top & bottom)
2. Remove drain valve cap (if fitted)
3. Unscrew ferrule on drain valve (down to stop)
4. Gauge will now drain through drain valve spout
5. After draining make sure ferrule is screwed back up tight.
6. Replace drain valve cap (if fitted)

TO TAKE SAMPLE

1. Close both valves
2. Remove drain valve cap (if fitted)
3. Unscrew ferrule on drain valve (down to stop)
4. Open bottom valve very slowly
5. Obtain sample
6. Close bottom valve
7. Screw Drain valve ferrule back up tight
8. Replace drain valve cap (if fitted)

Note:- If the gauge valves are fitted with automatic safety valve (A.S.V. stamped on head) the lower valve must be opened slowly to prevent A.S.V. snapping shut. If the A.S.V. has closed normal operation may be resumed by the following means:-

1. Close bottom valve which when fully closed reopens the A.S.V
2. Open bottom valve 1 1/2 turns approx to allow liquid to find its own level. Then fully open.

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MAINTENANCE

IMPORTANT

1. Before undertaking maintenance on gauge, drain sight tube. If tube cannot be drained tank should be drained below level of lower connection. On valveless close circuit gauges, tank must always be drained below level of lower connection.
2. Ensure gauge and tank are not pressurised.
3. Ensure discharge of gauge to tank content will not create a hazard etc.
4. In the paragraphs which follow the numbers in () refer to part numbers in the diagram on page 7.

A) TO REMOVE GAUGE COLUMN FROM TANK

1. Close top & bottom valves
2. Drain gauge
3. Remove gauge retaining nuts (on end of valves)
4. Unscrew the intermediate support clamping bolts (if fitted)
5 Slide the gauge column complete with 'O' rings in collar grooves off of valve
6. Check and renew 'O' rings either side of collars and under retaining nut if required
7. Refit gauge column onto valves (make sure 'O' rings are correctly fitted into grooves either side of the collars
8. Refit retaining nuts (do not overtighten)
9. Refit the intermediate support clamping bolts and tighten (if fitted)
10. Close drain valve (if fitted)
11. Open top and bottom valves and check for leaks (see note re A.S.V. valves)

B) TO REPLACE A REFLEX GLASS UNIT OR REFLEX GLASS UNIT GASKET

Remove the gauge from the tank as section A above. Place the gauge across supports such that you have access to both front and back faces. Take care not to damage the end collars. Indentify the reflex glass or gasket to be replaced and remove the relevant front bezel. The front bezel retaining bolts should be removed starting with the bolts nearest to the ends of the reflex glass.

If the section being dismantled is an end section the valve collar unit will become detached when removing the retaining bolts. If so, discard the collar unit seal, but retain the collar unit.
As you detach the front bezel remove and discard the cushion gasket. Remove the reflex glass. Remove and discard the reflex seal. Reverse the procedure to assemble the gauge. New gaskets and seals must be used during re-assembly. The front bezel retaining bolts must be tightened, starting with the bolts nearest the centre of the reflex glass. Before final tightening, align the front bezel, cushion gasket and reflex glass. This is necessary to ensure proper sealing. Torque tighten the retaining bolts to 3Nm (26 lbs in). This torque must be checked after pressure testing to 4 barg for 4 minutes.
Refit gauge column to tank as instructions 7 to 11 in section A

C) TO INSPECT OR RENEW SCREW-DOWN SEALS (22 & 24) IN TOP VALVE

1. Drain tank below level of connection
2. Unscrew retaining nut (26) to facilitate removal of retaining clip (21)
3. Completely remove valve plunger (25) by unscrewing
4. Inspect and renew 'O' rings (23 & 24) if required
5. Check internal passages are clear
6. To re-assemble, screw valve plunger (25) into valve body (20)
7. Refit retaining clip (21), check 'O' ring (22) is in position screw on retaining nut (26)
8. Refill tank and check for leaks

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D) TO INSPECT OR RENEW SCREW-DOWN SEALS (23 & 24) IN BOTTOM VALVE UNIT

1. Drain tank below level of connection
2. Unscrew retaining nut (26) to facilitate removal of retaining clip (21)
3. Completely remove valve (29) by unscrewing
4. Inspect and renew 'O' rings (23 & 24) if required
5. Check internal passages are clear
6. To re-assemble screw Valve (29) into Valve body (28)
7. Refit retaining clip (21) check 'O' ring (22) is in position. Screw on retaining nut (26)
8. Refill tank and check for leaks

E) TO INSPECT OR RENEW DRAIN VALVE SEALS (15 & 16)

1. Drain gauge
2. If inaccessible remove gauge from tank using steps 1 to 4 of section A
3. Unscrew cap (if fitted)
4. Remove circlip (19)
5. Completely remove ferrule (18) by unscrewing
6. Remove loose pin (17) by easing out from bore
7. Pull out plunger (14) complete with 'O' rings (15 & 16)
8. Inspect and renew 'O' rings (15 & 16) if required
9. Check internal passages of plunger (14) and collar (7) are clear
10. To re-assemble place plunger (14) into collar (7) refit pin (17)
11. Screw up ferrule (18) replace circlip (19) refit cap (if fitted)
12. Refit gauge to tank using steps 6 to 10 of section A

F) TO INSPECT OR RENEW AUTOMATIC SAFETY VALVE BALL (30) IN VALVE UNIT.

1. Drain tank below level of connection
2. Remove gauge from tank using steps 1 to 4 of section A
3. Remove valve unit (32) by unscrewing unit from tank boss
4. Inspect or renew fibre washer (27)
5. Remove retaining clip (31) from back of valve unit (32)
6. Inspect or renew ball (30) and clip (31) if required
7. Check internal passages are clear and ball seat is clean and smooth
8. To re-assemble replace ball (30) and clip (31)
9. Check that tank boss face is smooth and clean
10. Screw valve unit (32) into tank boss with washer (27) in position
11. Refit gauge to tank using steps 6 to 10 of section A
12. Refill tank and inspect for leaks

G) TO INSPECT OR RENEW FIBRE WASHERS (27)

1. Drain tank below level of connection
2. Remove gauge from tank using steps 1 to 4 of section A
3. Unscrew and remove valve unit (12 and 32) from tank boss
4. Inspect and renew washers (27) if required
5. Check tank boss face is smooth and clean
6. To re-assemble, screw valve unit (12 and 32) into tank boss with washer in position
7. Refit gauge to tank using steps 6 to 10 of section A
8. Refill tank and check for leaks

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OPERATING FAULTS

FAULT	PROBABLE CAUSE	RECTIFICATION	*
Gauge not filling	Empty tank	Fill	
	Obstruction in gauge	Clear	
	Obstruction in valve	Clear	
Filling to incorrect level	Incorrect use of gauge	See note 1 & 2	
	Incorrectly Installed	See note 3	
Broken sight glass	Mis-use	Renew	B
	Misalignment	Renew check tank face flat	B
Valves not sealing	'O' Ring Damage	Renew	C, D or E
Leaks from collar seal	Loose retaining nut	Tighten	A
	Damaged 'O' ring	Renew	A
Sight glass or gaskets leaking	Loose front bezel	Tighten bolts in sequence	B
	Damaged gaskets	Renew	B
Leaking from tank boss	Valve body loose	Tighten	G
	Fibre washer damaged	Renew	G
Drain valve leaking	'O' rings damaged	Renew	E

* = Maintenance Paragraph.

NOTE 1
It must be appreciated that the automatic safety valve, the head of which is marked ASV, is very sensitive to a sudden flow of liquid through the valve unit and that the sudden surge of liquid into an empty gauge from a full tank is a good assimilation of a broken sight tube and, therefore the safety valve would close preventing the tank contents from reaching the sight tube. In order to prevent this occurring, the lower valve must be opened very slowly. If the automatic safety valve has sealed off the sight tube, normal operation may be resumed by the following means:-

1. Close bottom valve which when fully closed reopens the ASV.
2 Open bottom valve 1 1/2" turns approx to allow liquid to find its own level, then open fully.

NOTE 2
It should be noted that as this gauge is fitted with valves at the top and bottom, the tank liquid level shown may be incorrect if the bottom valve only is operated. This is due entirely to the upper valve being closed trapping air in the upper part of the sight tube so that the column of liquid is unable to find its natural level. This is corrected by opening the upper valve.

NOTE 3
If the gauge is installed on piping runs, the pipes should be rigid and adequate support should be provided for the gauge. In addition the piping runs should be installed so that they run down from tank to gauge and hence to self venting as any trapped air pockets will cause the gauge to read incorrectly.

NOTE 4
Before draining gauge, taking samples or undertaking any maintenance work on the gauge ensure discharge of gauge or tank contents will not create a hazard to personnel, particular attention being given to hazardous fluids, system temperature and pressure.

NOTE 5
Suitable protection should be taken when operating the gauge at temperatures above 50°C. Avoid thermal shock of the glass.

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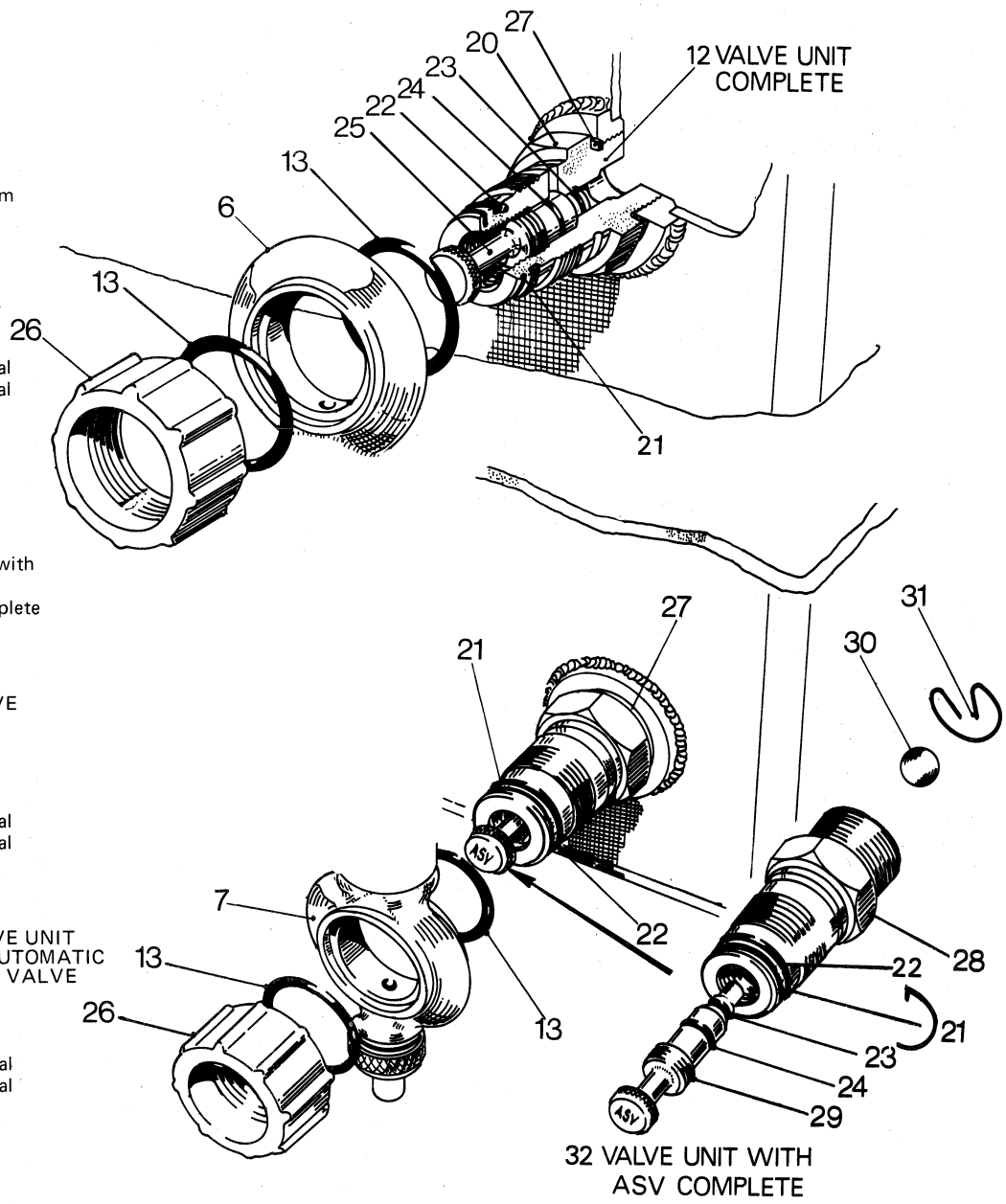
PARTS LIST

Item No.	Off	Description
6	1	Gauge Collar – Top
7	1	Gauge Collar – Bottom
12	1	Valve Unit complete
13	4	Collar 'O' Ring
20	1	Body
21	2	Retaining Clip
22	2	Retaining Nut Seal
23	2	Screw-down Valve Seal
24	2	Screw-down Valve Seal
25	1	Screw-down Valve
26	2	Retaining Nut
27	2	Fibre Washer
28	1	Body
29	1	Screw-down Valve
30	1	½'' Dia Ball St. Steel
31	1	Retaining Clip
32	1	Valve Unit complete with ASV
33	1	Drain Valve unit complete

Item No.	Off	Description
12	1	SCREWDOWN VALVE UNIT COMPRISING:
20	1	Body
21	1	Retaining Clip
22	1	Retaining Nut Seal
23	1	Screw-down Valve Seal
24	1	Screw-down Valve Seal
25	1	Screw-down Valve
26	1	Retaining Nut
27	1	Fibre Washer
32	1	SCREWDOWN VALVE UNIT COMPLETE WITH AUTOMATIC SAFETY SHUT-OFF VALVE COMPRISING:
21	1	Retaining Clip
22	1	Retaining Nut Seal
23	1	Screw-down Valve Seal
24	1	Screw-down Valve Seal
26	1	Retaining Nut
27	1	Fibre Washer
28	1	Body
29	1	Screw-down Valve
30	1	½'' Dia Ball St. Steel
31	1	Retaining Clip



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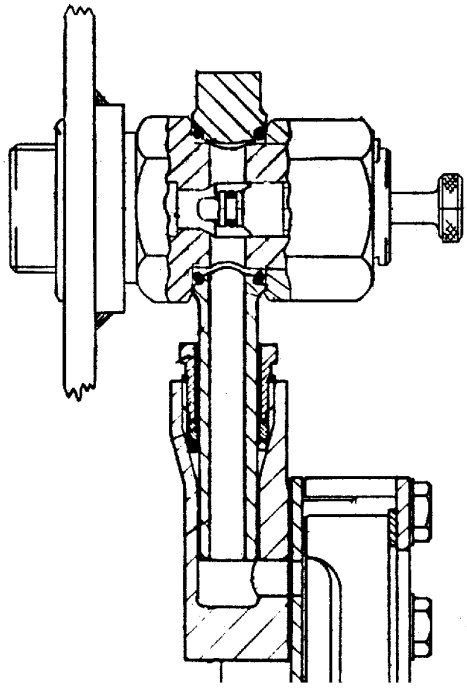

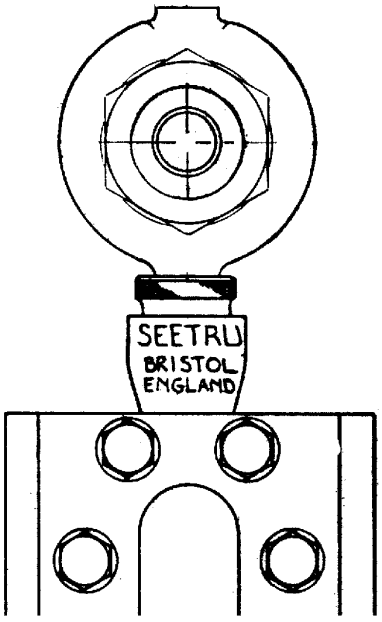

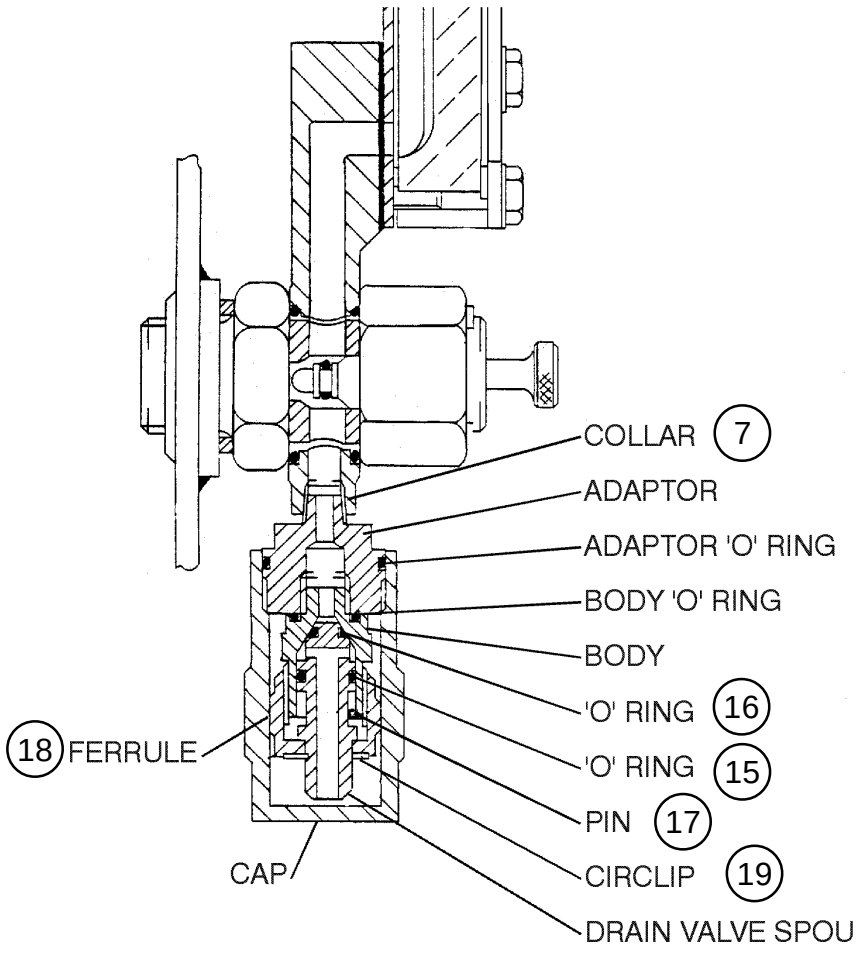

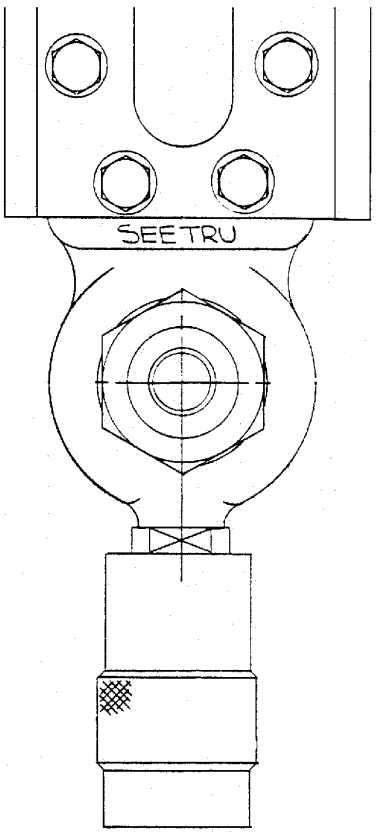

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