LEAFIELD MARINE LIMITED

GENERAL USER MANUAL
FOR
GAS INFLATION SYSTEM (TORSIONAL)

M-07-UM-GIST

March 2022

FOR INFORMATION ONLY _ WILL NOT BE KEPT UP TO DATE

CONTENTS

CHANGE RECORD

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SECTION 1

INTRODUCTION

1. IMPORTANT INFORMATION

This user manual is provided by LEAFIELD MARINE LIMITED to ensure the safe handling, storage, installation and servicing of the LEAFIELD GAS INFLATION SYSTEM (TORSIONAL) when used with CO_2/N_2, CO_2, N_2 or air.

For the LEAFIELD GAS INFLATION SYSTEM, CUTTER TYPE, use Manual LEL-20018. For the LEAFIELD GAS INFLATION SYSTEM WITH PRESSURE GAUGE, use Manual M-07-UM-GISPG.

Use only cylinders approved for use up to the maximum working pressure of the Cylinder Valve.

Care should be taken that the pressure at 65°C does not exceed the recommended burst disc (fitted to Break Stem) tolerance. See Table 1 for options and tolerances.

The system is designed to function in temperatures ranging from –30°C to +65°C. It is important that this manual is read and understood prior to any activity being undertaken.

Assembly Pressure Rating (Bar)	Maximum safe pressure at +65°C	Colour Code	Part Number
230	175	Red	03020BSS230
250	190	White	03020BSS250
275	209	Blue	03020BSS275
300	228	Yellow	03020BSS300

Table 1: Pressure Tolerances

WARNING: IF NOT SPECIFIED BY THE EQUIPMENT MANUFACTURER, CONTACT LEAFIELD MARINE FOR ADVICE ON CYLINDER FILLING AND REQUIRED CYLINDER SIZES.

2. NOTE

LEAFIELD MARINE LIMITED shall not be deemed by virtue of any of the instructions in this manual to have assumed any of the responsibilities of the Purchaser or his Service Agencies under the Health and Safety at Work Act nor any other Enactment.

Some of the products detailed in this manual are covered by the European Pressure Equipment Directive 2014/68/EU.

3. WARNING AND CAUTION

The following text highlights **WARNING** and CAUTION. These are defined as follows:

A WARNING CALLS ATTENTION TO THE USE OF MATERIALS OR PROCEDURES WHICH MUST BE FOLLOWED PRECISELY TO AVOID INCIDENTS WHICH COULD RESULT IN INJURY, LOSS OF LIFE OR FAILURE TO INFLATE LIFERAFT.

A CAUTION CALLS ATTENTION TO PROCEDURES WHICH MUST BE FOLLOWED TO PREVENT POSSIBLE DAMAGE TO EQUIPMENT WHICH MAY RESULT IN A MALFUNCTION.

SECTION 2

System Components

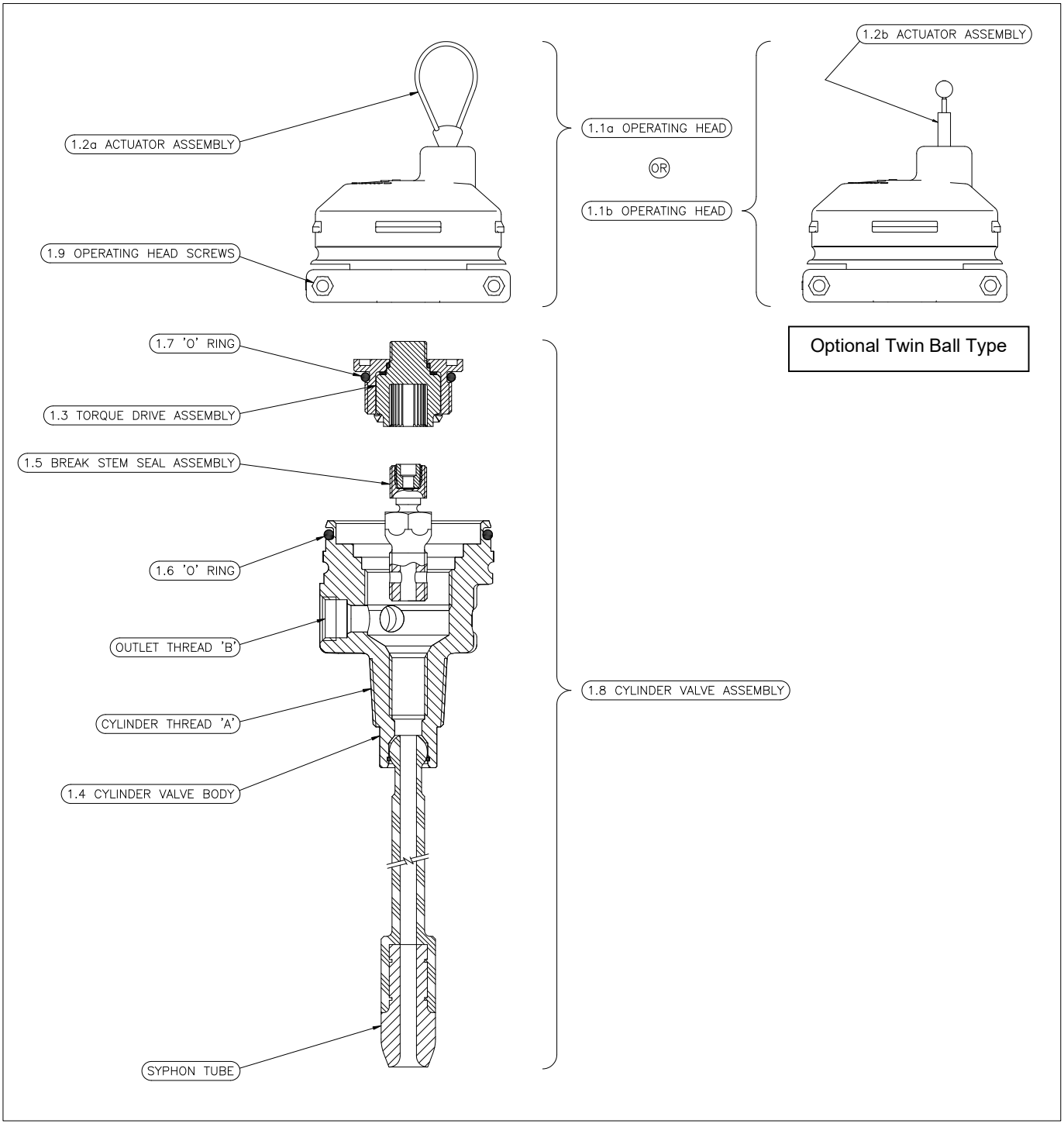

Figure 1

Figure 1 refers

ITEM	DESCRIPTION	PART NUMBER
1.1a	OPERATING HEAD ASSEMBLY (including Actuator Cable Assembly) The earlier Black Operating Head has been superseded by the White Operating Head (see note in Section 7)	**OHT (03010OHT)**
1.1b	OPERATING HEAD ASSEMBLY (TWIN BALL CABLE FOR SOME VACUUM BAG APPLICATIONS)	**1407003**

ITEM	DESCRIPTION	CYLINDER THREAD 'A' OPTIONS	OUTLET THREAD 'B' OPTIONS	TEST PRESSURE OPTIONS
1.8	CYLINDER VALVE ASSEMBLY (including Torque Drive Assembly, Break Stem Seal Assembly & Syphon Tube)	W28.8 x 1/14 To DIN 477	Supplied as Standard: Twin outlet M16 x 1.5 female	SEE TABLE 1, PAGE 1
		3/4”-14 NGT		

NOTE: Outlet threads other than the M16 x 1.5 listed can be provided using adaptors. Please contact Leafield Marine Ltd for options.

WARNING: USE ONLY MOLYKOTE GREASE 111 TO LUBRICATE THE LEAFIELD GAS INFLATION SYSTEM (TORSIONAL).

SECTION 3

SAFE HANDLING OF SYSTEM

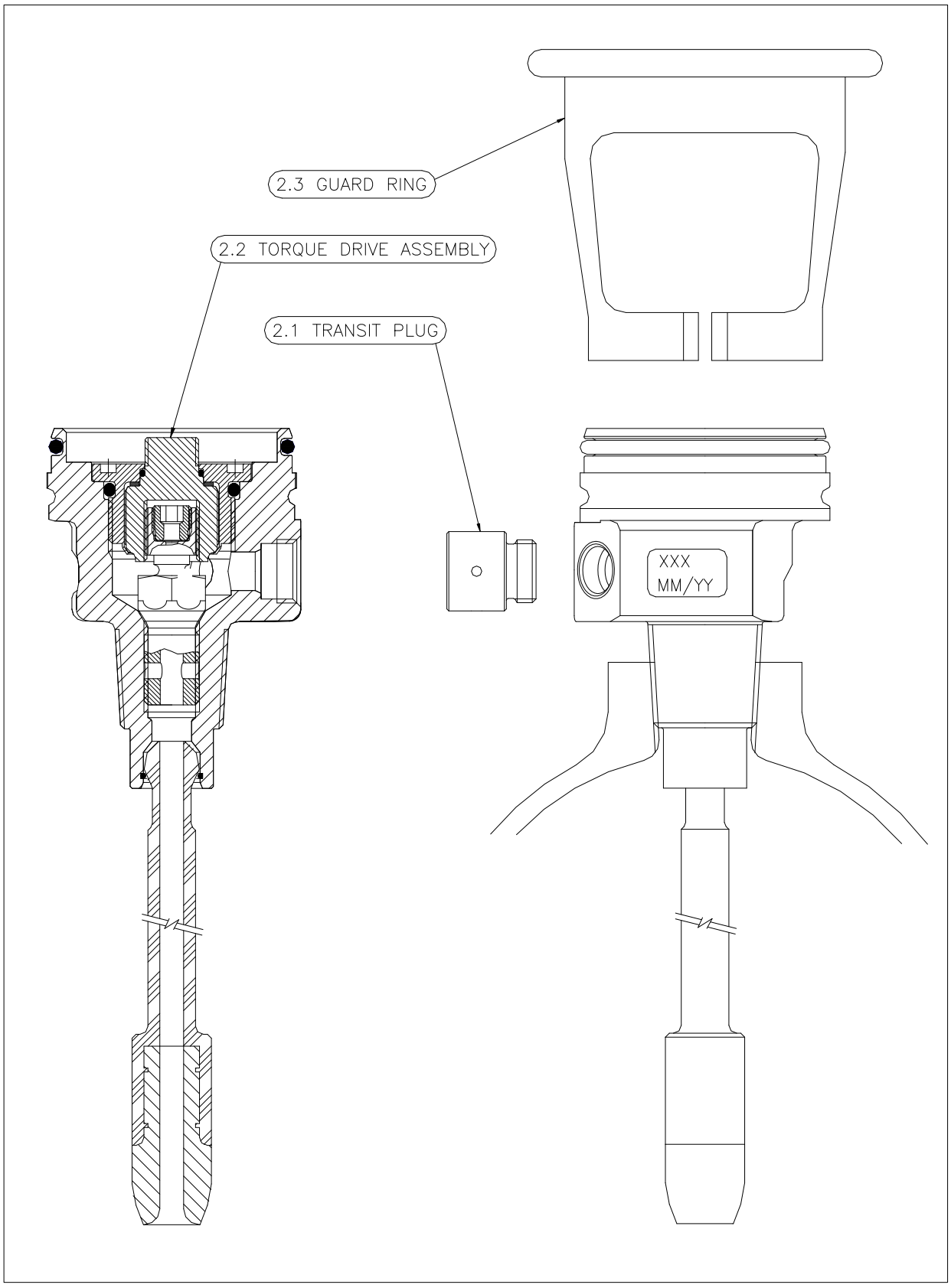

Figure 2

Figure 2 refers

ITEM	DESCRIPTION	PART NUMBER	FUNCTION
2.1	TRANSIT PLUG (M16 PORT) (Two required for twin outlet) See Warnings 1 & 2	19334	SAFETY DEVICE: Fitted to the Cylinder Valve to reduce the blast from the outlet ports if the cylinder is discharged before connecting hoses to an inflatable structure.
2.2	TORQUE DRIVE ASSEMBLY See Warnings 1 & 3	03020TDA	SAFETY DEVICE: Fitted to protect against damage to internal parts and prevent accidental gas release.
2.3	GUARD RING See Warning 4 & Caution 5	BB02	SAFETY DEVICE: Fitted to cylinders over 20 litres water capacity to protect the Cylinder Valve; unless cylinders are transported and handled in cassettes.

1. **WARNING: USE ONLY LEAFIELD PRODUCED TRANSIT PLUG AND TORQUE DRIVE ASSEMBLY.**

2. **WARNING: TRANSIT PLUGS MUST ALWAYS BE FITTED TO CYLINDER VALVE OUTLET WHEN A CHARGED CYLINDER IS STORED UNCONNECTED TO LIFERAFT.**

3. **WARNING: TORQUE DRIVE ASSEMBLY MUST ALWAYS BE FITTED TO CYLINDER VALVE WHEN A CHARGED CYLINDER IS TO BE HANDLED, TRANSPORTED OR STORED.**

4. **WARNING: GUARD RING MUST BE FITTED TO CYLINDERS EXCEEDING 20 LITRES WATER CAPACITY TO PROTECT THE CYLINDER VALVE DURING TRANSIT AND HANDLING; UNLESS THE CYLINDERS ARE TRANSPORTED AND HANDLED IN CASSETTES.**

5. CAUTION: IF A GUARD RING FITTED TO A CYLINDER BECOMES DAMAGED, THE CYLINDER VALVE SHOULD BE CLOSELY INSPECTED AND MUST BE REPLACED IF ANY DAMAGE OR DISTORTION IS FOUND.

SECTION 4

SPECIAL TOOLS FOR ASSEMBLY, CHARGING AND SERVICING

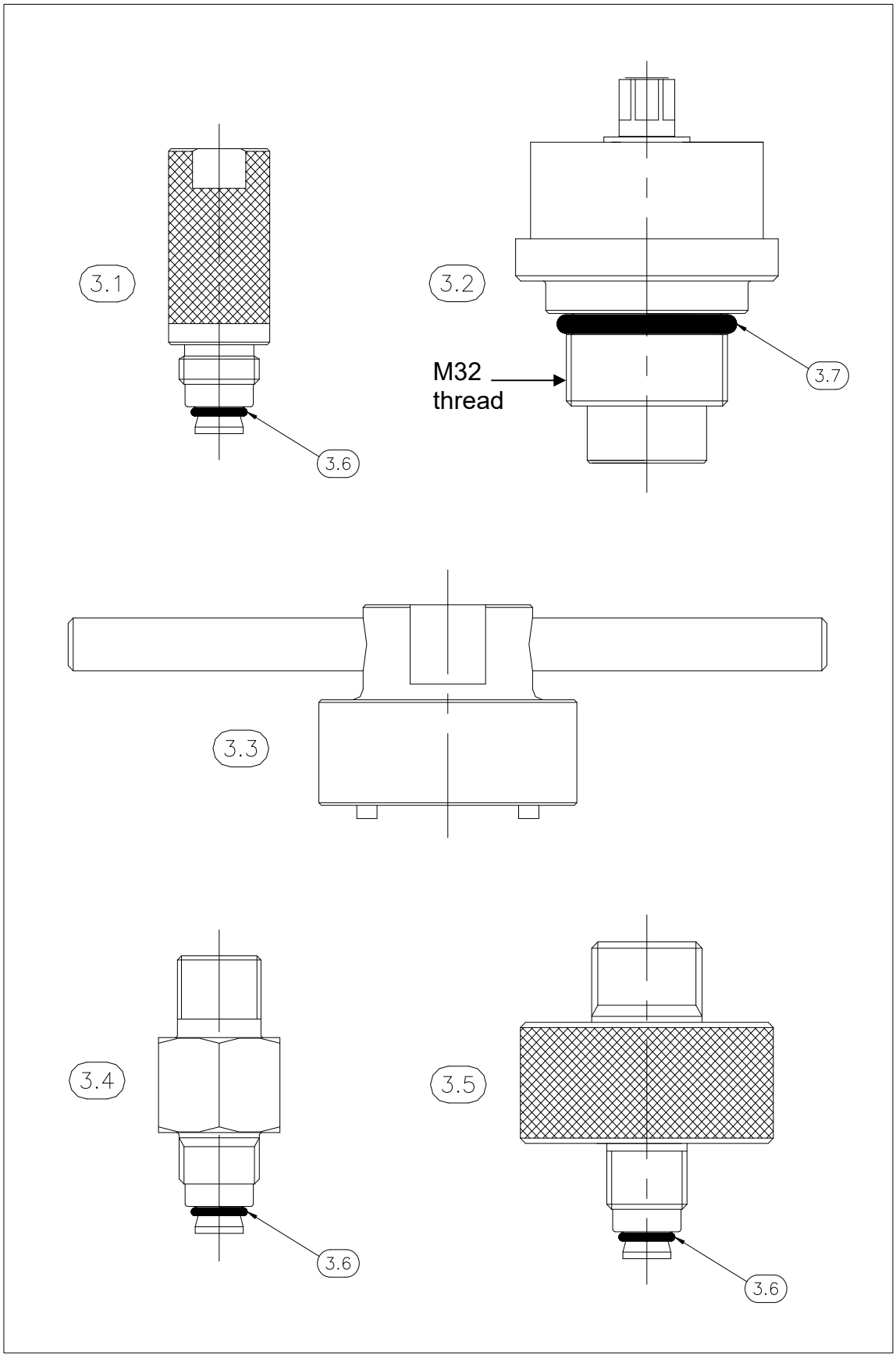

Figure 3

Figure 3 refers

ITEM	DESCRIPTION	PART NUMBER	FUNCTION
3.1	FILLING BUNG See WARNING 2	**0335000**	Used for sealing off secondary port during filling.
3.2	CYLINDER VALVE FILLING TOOL Complete with 'O' Ring Seal See Note 1, CAUTION, WARNINGS 1 & 2	**03240FTA**	To fit, lift and close Break Stem Seal assembly during cylinder filling.
3.3	OPERATING HEAD LOADING TOOL & TORQUE DRIVE ASSEMBLY FITTING TOOL See WARNING 2	**17854**	Used to pull Actuator Cable into Operating Head in re-setting operation and to fit Torque Drive Assembly.
3.4	FILL ADAPTOR 3/8” BSP See WARNING 2	**0617000**	Adaptor to convert outlet port from M16 x 1.5 to attach 3/8”BSP filling hose
3.5	FILL ADAPTOR 0.860” WHITWORTH See WARNING 2	**0333000**	Adaptor to convert filling hose from 0.860” Whitworth to M16 x 1.5

Note 1: Filling Tools are approved by the manufacturer for use up to 300 Bar.

Note 2: For ‘O’ Rings, items 3.6 and 3.7, see spare parts list, Section 12.

CAUTION: FILLING TOOL M32 THREAD MUST BE CHECKED REGULARLY FOR WEAR AND DAMAGE.

WARNING 1: DO NOT USE FILLING TOOL IF M32 THREAD SHOWS SIGNIFICANT WEAR OR DAMAGE.

WARNING 2: USE ONLY THE ABOVE LISTED SPECIAL TOOLS WHEN SERVICING THE LEAFIELD GAS INFLATION SYSTEM (TORSIONAL). STANDARD TOOLS ARE ALSO CALLED FOR IN THE FOLLOWING TEXT.

SECTION 5

CYLINDER VALVE INSTALLATION

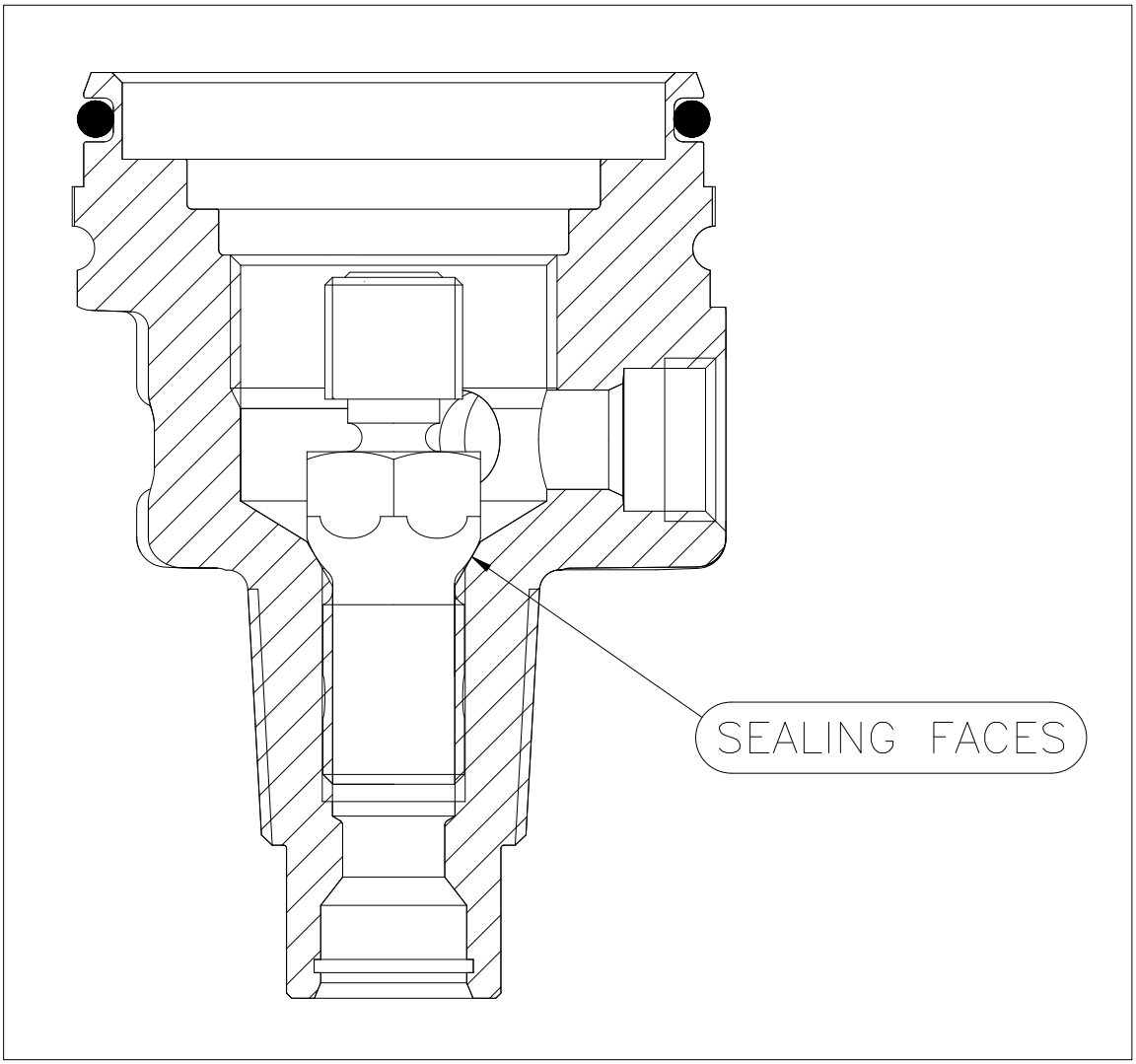

Figure 4

WARNING: THE FOLLOWING CHECKS MUST BE CARRIED OUT PRIOR TO INSTALLATION OF CYLINDER VALVE TO CYLINDER.

Figure 4 refers

1. Ensure that the cylinder and Cylinder Valve threads are compatible and that the cylinder conforms to the standard specified for the working pressure on the Cylinder Valve. Ensure that the cylinder is approved for use in the applicable market.

2. Ensure that the Cylinder threads and interior are clean dry and free from unacceptable corrosion i.e. flaking or pitting.

3. Ensure that the Cylinder Valve threads show no visible sign of damage.

4. Ensure that the Syphon Tube (where fitted) is free to swivel and rotate.

5. Ensure that all Cylinder Valve Bores, recesses and sealing faces are clean and dry.

Note that the Break Stem Seal Assembly may already be fitted to previously unused Cylinder Valves. If so, do not remove prior to filling.

6. Sealing material should be applied to the threads as recommended by the LIFERAFT manufacturer or Leafield Marine Ltd. **No grease or oil should be used on the Cylinder Valve thread when fitting the Valve**.

7. Tighten Cylinder Valve to a torque of **160-170Nm**

CAUTION: IF THE VALVE IS OVER TIGHTENED, THE CYLINDER THREAD IS INCOMPATIBLE OR LUBRICATION IS APPLIED TO THE THREAD, THE VALVE BODY CAN DISTORT AND PREVENT THE BREAK STEM SEALING. THIS WILL OFTEN BE INDICATED BY THE THREAD SQUEAKING AS THE BREAK STEM IS TIGHTENED.

CAUTION: NEVER INSERT ANY IMPLEMENT INTO THE CYLINDER VALVE BODY THAT COULD DAMAGE THE SEALING FACE OR BREAK STEM SEAL ASSEMBLY.

WARNING: ENSURE THE VALVE AND CYLINDER IS CLEAN AND DRY BEFORE ASSEMBLY.

SECTION 6

CYLINDER CHARGING PROCEDURE

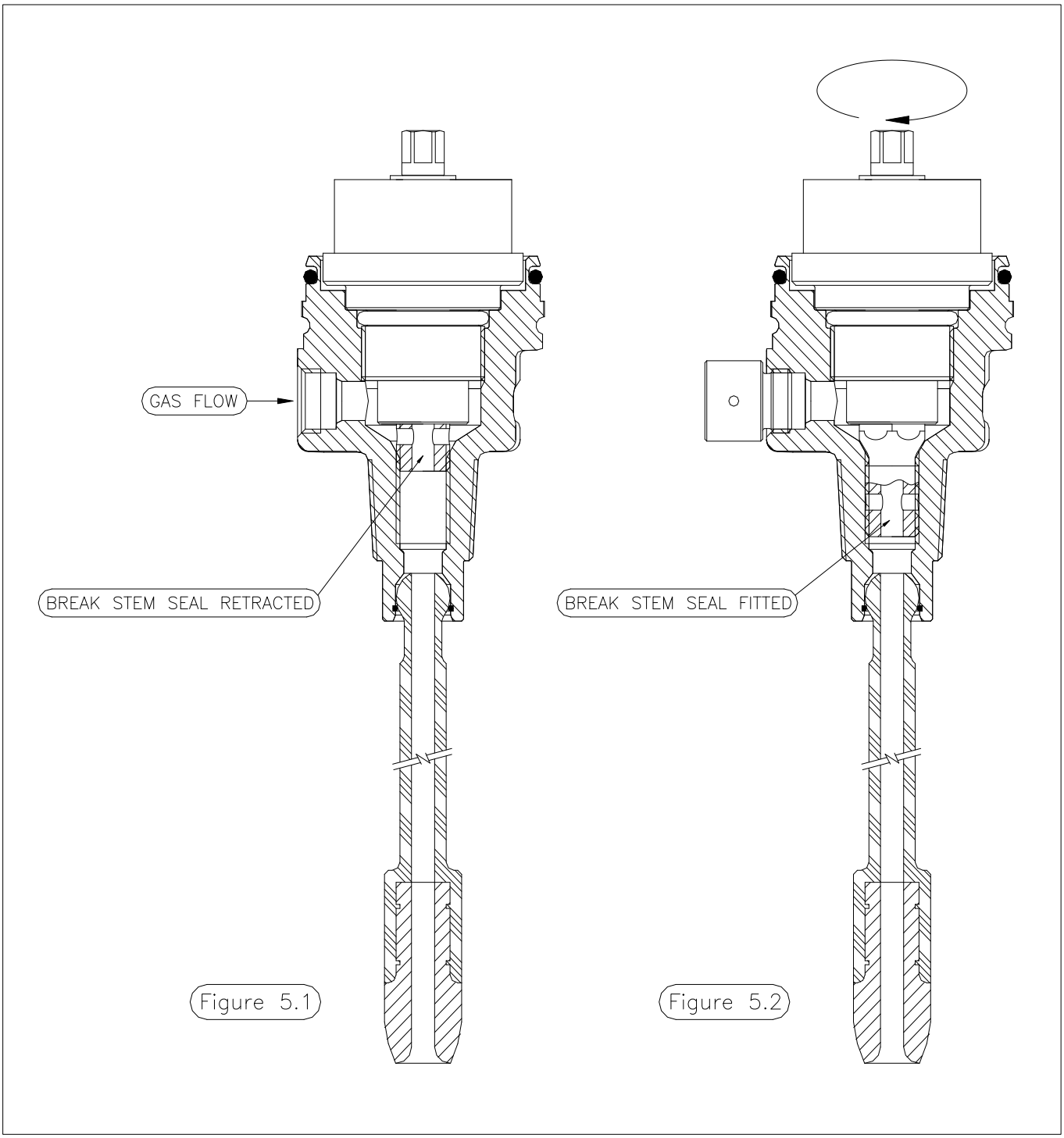

Figure 5

WARNING: ONLY SERVICE TOOL ITEM 3.2 (SEE PAGE 6) IS TO BE USED FOR MANIPULATING BREAK STEM SEAL ASSEMBLY. FAILURE TO DO THIS MAY RESULT IN POTENTIALLY FATAL EXPLOSIVE FRAGMENTATION.

Figure 5.1 refers

Note: If using a new cylinder valve, a Break Stem may already be fitted. If so, go to section 6.4.

1. Ensure that the Sealing Face and Break Stem Seal are clean and free from damage and debris.

2. Ensure the correct Break Stem Seal Assembly is to be fitted. Check that the colour code is as shown in Table 1, page 1. New Break stem Seals also have the pressure engraved on the hexagon.

3. Remove Break Stem Seal Assembly from its protective packaging and assemble into the Cylinder Valve Body, taking care to avoid damage to the sealing face in the Valve. Screw in 2 turns.

CAUTION: DO NOT REMOVE THE GREASE FROM THE BREAK STEM SEAL SPLINE.

4. Engage Filling Tool onto hexagon of Break Stem Seal Assembly. Start to screw down so Filling Tool engages thread of Cylinder Valve. Screw down approximately 5 turns until fully home. Hand tight is sufficient.

5. Using a ring spanner, LIGHTLY screw Filling Tool A/F 12mm shaft clockwise until the Break Stem Seal Assembly is seated. Then unscrew Filling Tool A/F 12mm shaft anti-clockwise for 10 turns.

CAUTION: CHARGING MUST ONLY BE INITIATED WHEN THE BREAK STEM SEAL ASSEMBLY HAS BEEN UNSCREWED AS IN section 6.5 ABOVE.

6. Ensure that the gas charging hose is compatible with the Cylinder Valve outlet. If the Cylinder Valve is twin port, also fit a filling bung (item 3.1, page 6), finger tight, to the other port. (Adaptors available from Leafield Marine, items 3.4 and 3.5, are shown in Figure 3, page 6.)

7. Charge cylinder with required mass of CO_2/N_2, N_2 or air in accordance with LIFERAFT manufacturer's filling procedures.

WARNING: ENSURE THAT THE GAS USED TO FILL THE SYSTEM IS DRY, TO COMPLY WITH ISO 15738, AND THAT NO MOISTURE ENTERS THE SYSTEM WHILST FILLING.

WARNING: ENSURE THAT GAS PRESSURE WILL NOT EXCEED THE SAFE LIMIT OF THE BURST DISC (FITTED TO THE BREAK STEM SEAL) AT 65°C (SEE TABLE 1).

IF NOT SPECIFIED BY THE EQUIPMENT MANUFACTURER, CONTACT LEAFIELD MARINE FOR ADVICE ON CYLINDER FILLING AND REQUIRED CYLINDER SIZES.

Figure 5.2 refers

8. Tighten Break Stem Seal Assembly by turning 12mm A/F shaft of the Filling Tool clockwise to its limit and torque to 40Nm. Shut off gas supplies.

CAUTION: ENSURE THAT A TORQUE WRENCH IS USED WHEN TIGHTENING BREAK STEM SEAL ASSEMBLY AND THAT TORQUE LEVEL IS NOT EXCEEDED.

9. Remove charging hose from Cylinder Valve and immediately fit Transit Plugs to outlet ports. Screw on hand tight.

WARNING: TRANSIT PLUGS MUST ALWAYS BE FITTED TO CYLINDER VALVE OUTLET WHEN CHARGED CYLINDER IS STORED UNCONNECTED TO LIFERAFT.

10. Check that the Break Stem Seal torque is 40Nm before removing the Filling Tool.

11. Remove Filling Tool by unscrewing the knurled body anticlockwise.

CAUTION: ON NO ACCOUNT SHOULD 12mm A/F SHAFT BE TURNED DURING FILLING TOOL REMOVAL AS THIS WILL UNSEAT BREAK STEM SEAL ASSEMBLY AND RESULT IN GAS LOSS.

WARNING: NEVER INSERT ANY OBJECT INTO CYLINDER VALVE BODY WHICH COULD RESULT IN DAMAGE TO BREAK STEM SEAL ASSEMBLY.

WARNING: NEVER ATTEMPT TO TIGHTEN THE BREAK STEM SEAL WITHOUT USING THE CORRECT FILLING TOOL.

Inspect for leaks by applying METHYLATED SPIRITS or ALCOHOL ONLY sufficient to completely immerse the Break Stem Seal Assembly and observe for bubbles. If more than ONE bubble in 60 seconds is evident, the Filling Tool must be refitted (ref. Para. 4 this Section) and the torque checked to its maximum of 40Nm. If a leak persists, the Break Stem Seal Assembly must be slightly retracted, using the Filling Tool, and the cylinder completely vented through Transit Plugs. The Break Stem Seal Assembly must be removed, discarded and a new one fitted. Ensure that all seating surfaces are clean and free from surface contamination and scratches. Ensure that the break stem seal screws freely down to the sealing face on the cylinder valve. If this does not happen, replace the cylinder valve. Check the cylinder thread, then fit and tighten the new cylinder valve and break stem seal to the correct torque wrench settings. Recharge the cylinder as previously described.

WARNING: ENSURE CONDENSATION DOES NOT ENTER THE CYLINDER IF REFILLING IS CARRIED OUT.

12. On satisfactory completion of leak testing, pour off liquid and allow residue to evaporate.

CAUTION: IF A CHEMICAL LEAK TEST IS USED (AS RECOMMENDED BY THE LIFERAFT MANUFACTURER) AVOID THE LIQUID USED COMING INTO CONTACT WITH THE VALVE ASSEMBLY.

WARNING: NEVER USE WATER OR WATER BASED <u>FLUIDS</u> FOR LEAK TESTING.

WARNING: ENSURE THAT THE VALVE IS DRY INTERNALLY, AFTER LEAK TEST AND UNTIL THE ASSEMBLY IS FITTED TO THE RAFT.

WARNING: NEVER USE CLOTH OR INSERT IMPLEMENTS INTO CYLINDER VALVE TO ASSIST WITH DRYING.

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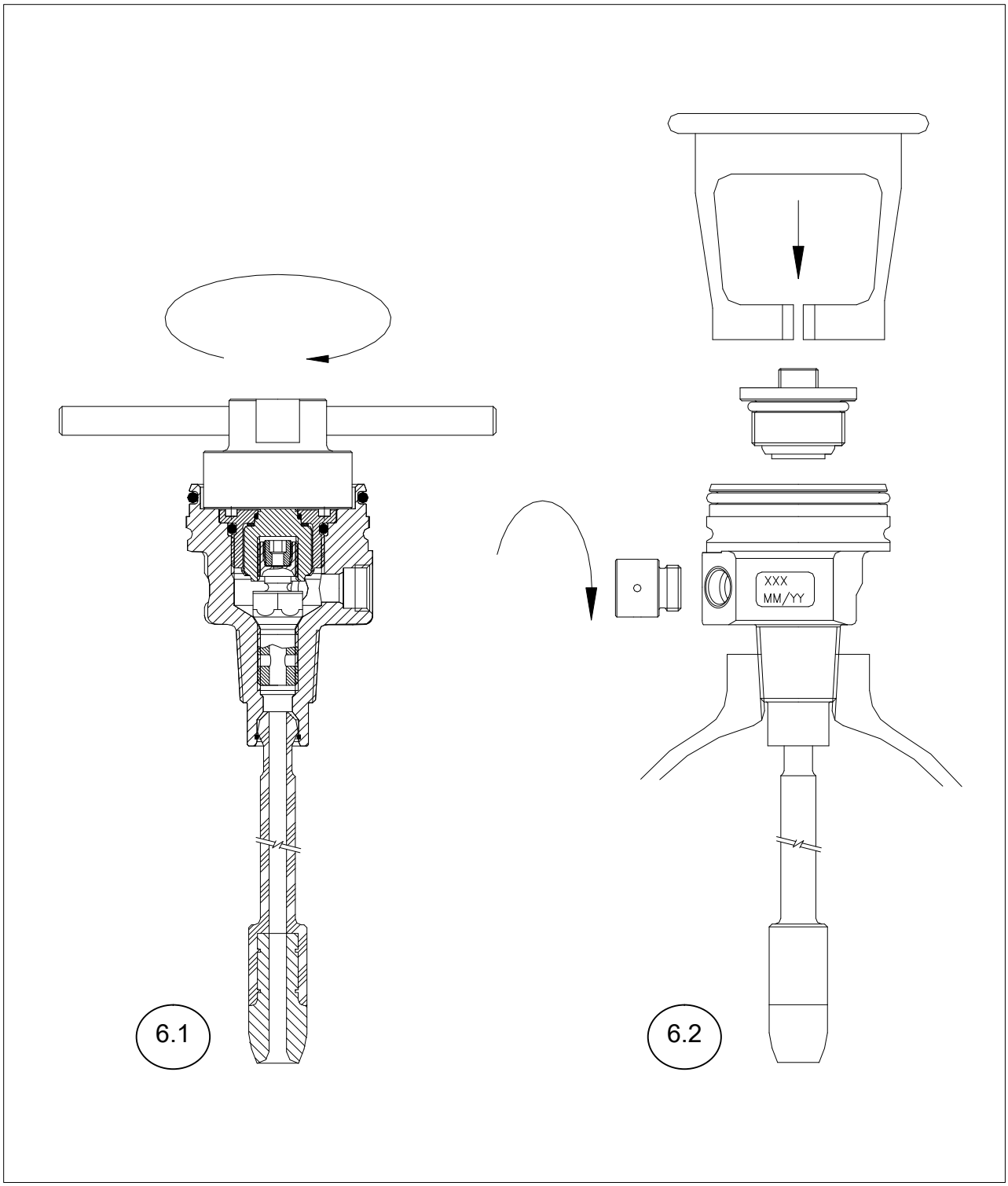


Figure 6

Figure 6.1 refers

14. Before fitting, check that the plastic parts of the Torque Drive Assembly rotate smoothly within the brass housing. If they do not, discard and replace with a new assembly.

15. Screw Torque Drive Assembly fully into the Cylinder Valve Body using tool item 3.3 (see page 6). Hand tight or 4Nm (2.95lb.ft) is sufficient.

Figure 6.2 refers

WARNING: WHERE CYLINDER CAPACITY EXCEEDS 20 LITRES WATER VOLUME, FIT GUARD RING DURING TRANSIT AND HANDLING; UNLESS THE CYLINDERS ARE TRANSPORTED AND HANDLED IN CASSETTES.

WARNING: TORQUE DRIVE ASSEMBLY MUST BE FITTED TO CYLINDER VALVE WHEN CHARGED CYLINDER IS TO BE HANDLED, TRANSPORTED OR STORED.

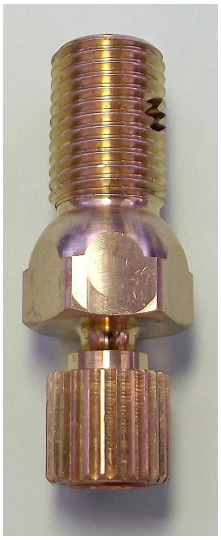
CAUTION: DO NOT STORE CHARGED CYLINDER IN DIRECT SUNLIGHT OR WHERE TEMPERATURE CAN EXCEED 65°C.

SECTION 7

ASSEMBLY OF OPERATING HEAD TO CYLINDER VALVE

IMPORTANT SERVICE NOTE: For technical reasons it has been necessary to update the following parts of this system.

Old Break Stem **Old Operating Head (Black)** **Old Actuator Cable (Black)**

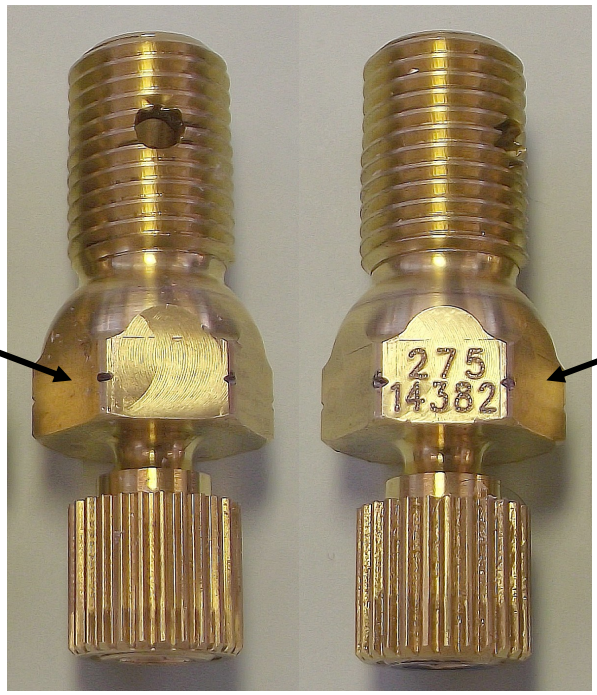


New Break Stem

Please note there are two styles of new Break Stem

All new Break Stems have a notch

Most will also have a batch number



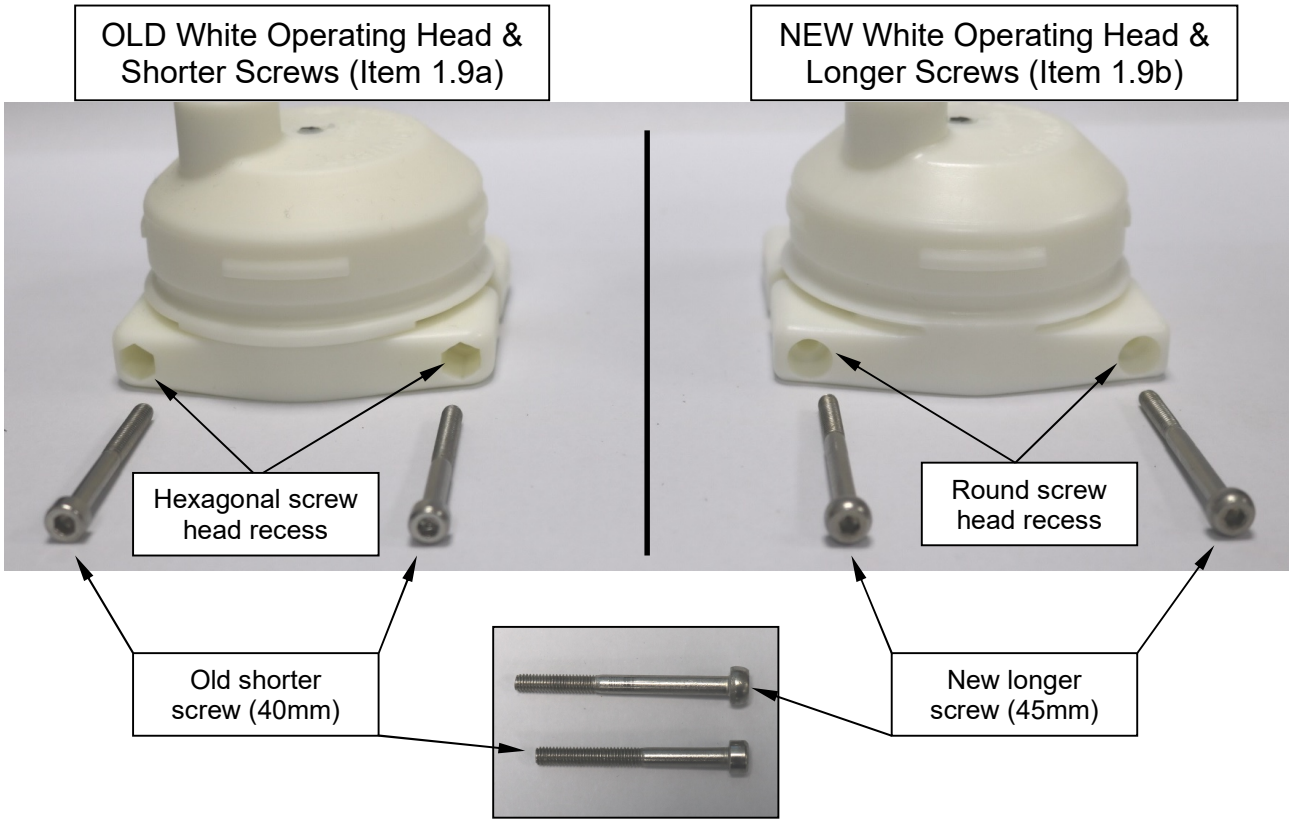
IMPORTANT SERVICE NOTE

New Operating Head (White)

New Actuator Cable (White)

WARNING: TO ENSURE RELIABLE OPERATION, THE NEW BREAKSTEM SHOULD ALWAYS BE USED WITH A WHITE OPERATING HEAD AND WHITE ACTUATOR CABLE.

Operating Heads and screw length pairing (Figure 7.1)



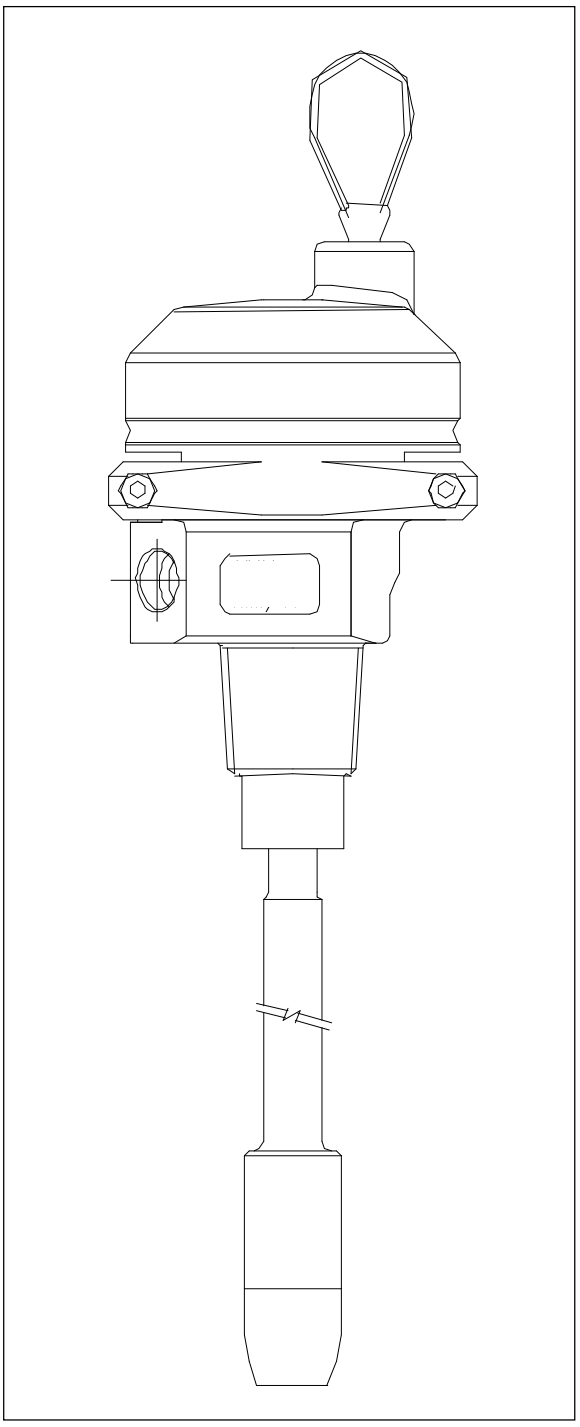


Figure 7.2

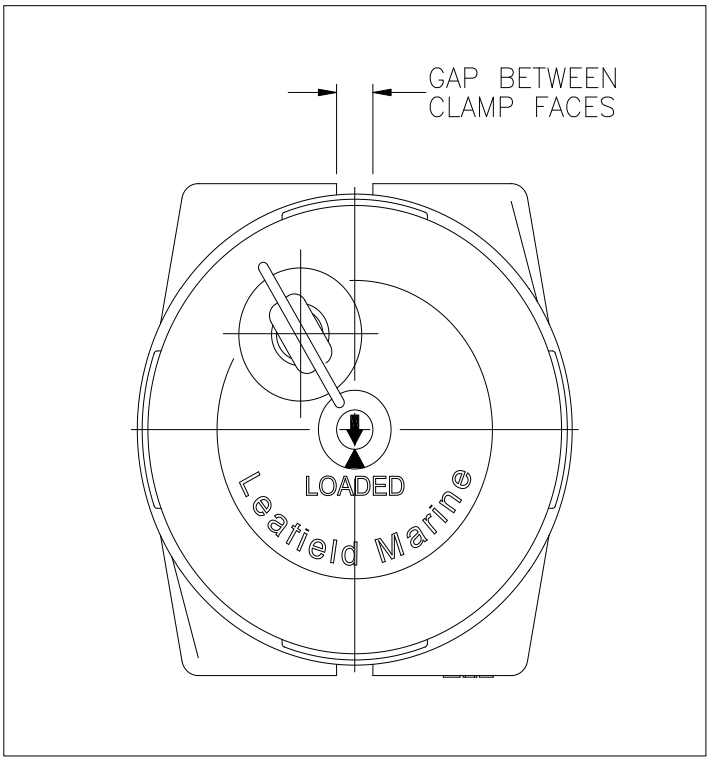


Figure 7.3

1. If not already fitted, lightly grease 'O' Ring Flange Seal (item 1.6, page 2 and Spares item, page 30) with Molykote Grease 111 and fit to neck of Cylinder Valve.

2. Align Operating Head as required and push fully home over the serrated diameter of the valve body.

WARNING: DO NOT ATTEMPT TO ALIGN THE OPERATING HEAD ONCE ON THE VALVE BODY AS THIS CAN CAUSE THE SYSTEM TO FIRE.

3. Check that the loaded indicator arrow on the top of the casing lines up to indicate that the unit is loaded. (See Figure 7.3). If the arrows are not aligned see SECTION 10 – RESETTING OPERATING HEAD AFTER FIRING.

For Black Operating Head Only:

WARNING: TO ENSURE RELIABLE OPERATION, THE BLACK OPERATING HEAD SHOULD NEVER BE USED WITH THE NEW STYLE BREAK STEM.

For all Operating Heads

4. The screws should be tightened using a 3mm AF hexagon key, alternating between the two screws to achieve approximately the same gap between the clamp faces on each side, to a torque of 1.1Nm (0.81 lb. ft). The operating head must be tight on the cylinder valve.
5. The original screws (Item 1.9a - 40mm long) must only be used on the old White Operating Heads with the hexagonal screw head recess, (see Figure 7.1).
   The new longer screws (Item 1.9b - 45mm long) must only be used on the new White Operating Head with the round screw head recess.

WARNING: THE OPERATING HEAD MUST BE CORRECTLY TIGHTENED TO THE CYLINDER VALVE BODY. FAILURE TO TIGHTEN THE HEAD WILL RESULT IN AN INFLATION FAILURE.
IF THE CLAMP FACES MEET DURING TIGHTENING, REPLACE THE OPERATING HEAD. (SEE FIGURE 7.3).

SECTION 8

INSTALLATION TO LIFERAFT

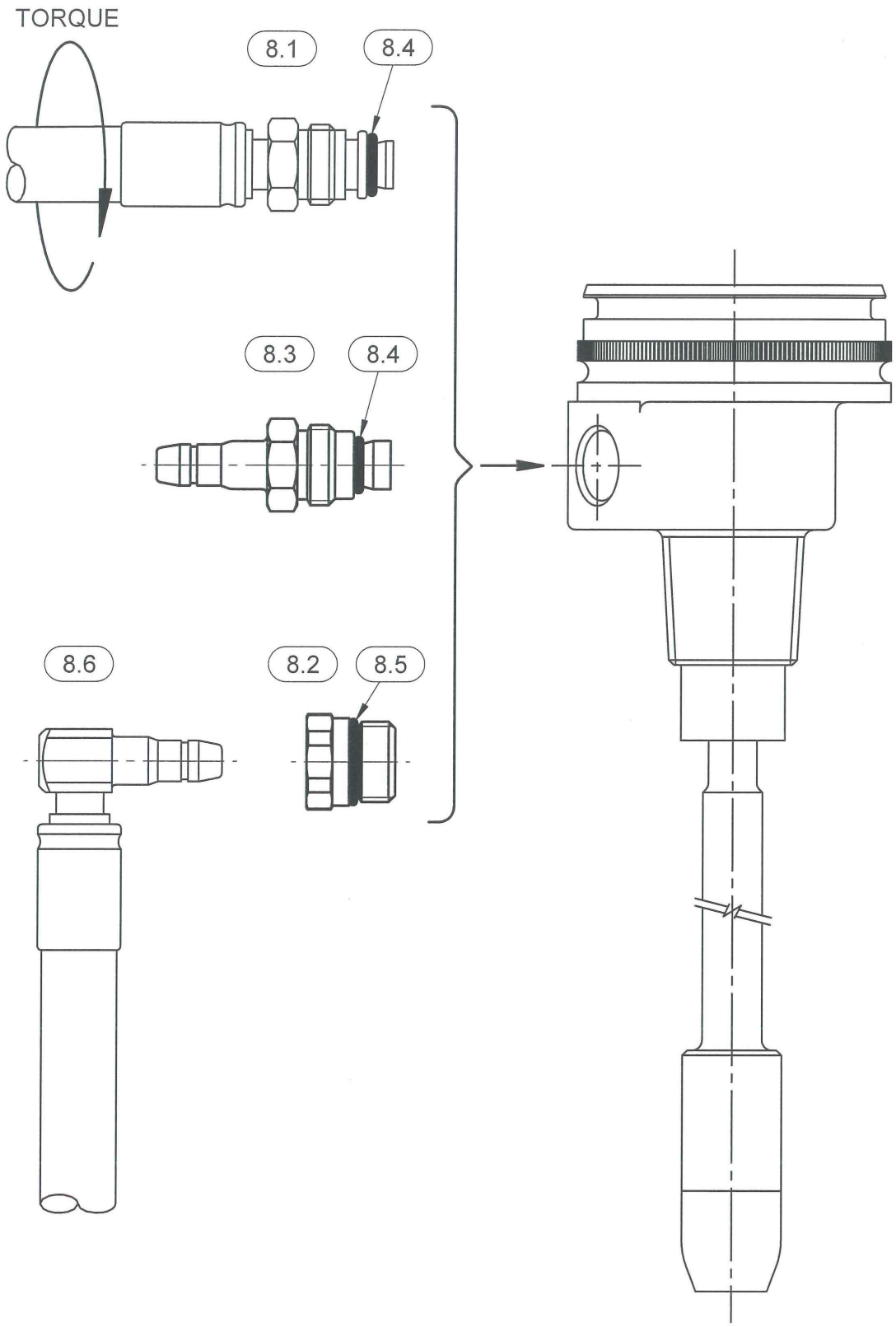


Figure 8

Figure 8 refers

1. Install cylinder complete with Cylinder Valve and Operating Head to liferaft in accordance with LIFERAFT manufacturer's instructions.

2. A Guard Ring is not required when the cylinder is fitted to the liferaft.

3. Rotate cylinder to position the Actuator Cable as required. Remove Transit Plug from Cylinder Valve outlet port and immediately fit the hose.

4. Ensure that hose thread, Cylinder Valve thread and sealing surfaces are compatible and clean. Ensure that any seals that are specified for use with the hose are installed. Fit and tighten hose coupling in accordance with LIFERAFT manufacturer's procedures. Install the hose (Item 8.1, Fig 8) or rigid direct link adapter (Item 8.3, Fig 8) to a torque of 12.2 Nm (9ftLb). If an M16 Nut (Item 8.2, Fig 8) is used, torque to 20Nm (15ftLb).

5. When using M16 nut (Item 8.2, Fig 8), for push fit hose options (Item 8.6, Fig 8), replace the O-ring (Item 8.5, Fig 8) if it is damaged.

CAUTION: WHEN REFITTING A PREVIOUSLY USED HOSE, A NEW ‘O’ RING/SEAL MUST BE USED (Item 8.4, see Spare Parts List, Section 12).

CAUTION: DO NOT OVER-TORQUE THE COMPONENTS. THIS MAY DAMAGE THE ASSEMBLY AND CAUSE A LEAK.

WARNING: IF USING ONE OF THE PUSH-FIT HOSE OPTIONS (Item 8.6, Fig 8), PUSH FULLY INTO THE M16 NUT, (Item 8.2 Figure 8) THEN PULL AND TWIST TO ENSURE THAT THE FITTING IS CORRECTLY ENGAGED. FAILURE TO DO THIS COULD RESULT IN INFLATION FAILURE OR SEVERE PERSONAL INJURY.

Note: See Spares Parts List, Section 12 for items 8.1-8.6 in figure 8.

SECTION 9

OPERATING PROCEDURE

1. The Operating Head is activated by pulling the Actuator Cable with a pull force between **60N** and **110N** over a minimum 50mm distance.

2. Direction of pull can be up to 90° in any direction from axis of cable exit.

3. The Actuator Cable Assembly will pull free from the Operating Head.

4. Gas discharge will be through Cylinder Valve outlet port to connecting hose.

WARNING: IF OPERATION IS CARRIED OUT WITH GAS INFLATION SYSTEM DETACHED FROM LIFERAFT, THEN THE CYLINDER MUST BE ADEQUATELY SECURED AND TRANSIT PLUG FITTED.

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SECTION 10

RESETTING OPERATING HEAD AFTER FIRING

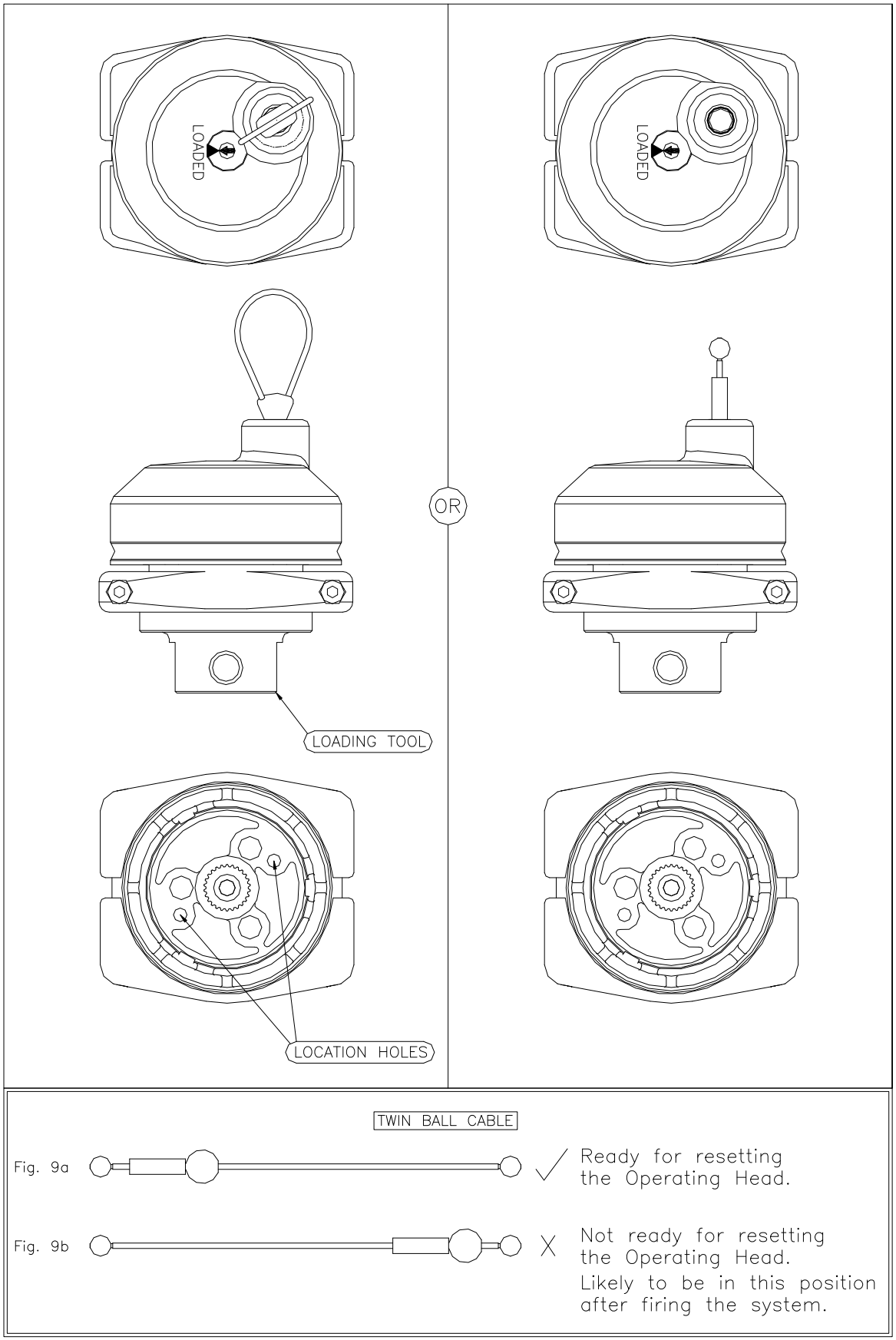

Figure 9

Figure 9 refers

On removal from liferaft

1. Remove the clamp screws retaining Operating Head to Cylinder Valve.

2. Remove Operating Head from Cylinder Valve.

WARNING: IF REMOVING THE OPERATING HEAD FROM A CHARGED CYLINDER, DO NOT TWIST THE OPERATING HEAD AS THIS MAY DISCHARGE THE BOTTLE.

3. Examine Operating Head. Discard if damaged or more than 15 years old. See the date stamp on the top of the Operating Head.
   Discard if the Operating Head is black and the Cylinder is being re-filled. (See Section 7)

4. An Operating Head previously used in a deployment on water **MUST** be flushed through with clean water and dried thoroughly in air.

WARNING: THE OPERATING HEAD IS INTENDED AS A SEALED FOR LIFE UNIT AND MUST NOT BE DISASSEMBLED. IT MUST NOT BE CLEANED WITH SOLVENTS, SOAPS OR CHEMICAL CLEANING AGENTS. THESE MAY DEGRADE SYSTEM COMPONENTS AND CAUSE A MALFUNCTION.

5. Check the Actuator Cable Assembly for condition of sealing ball. Discard if damaged.

   The original Black Operating Head must be fitted with a black Actuator Cable seal. The updated white version must be fitted with an Actuator Cable with a white seal, or a Twin Ball Cable if originally fitted.
   (See section 7)

   WARNING: IF SEALING BALL SHOWS ANY SIGNS OF SURFACE DAMAGE OR DEFORMATION THE ENTIRE CABLE MUST BE DISCARDED AND REPLACED, OR WATER MAY ENTER THE SYSTEM AND CAUSE A MALFUNCTION.

6. Apply a smear of Molykote 111 grease to the rubber seal of Actuator Cable Assembly.

7. Locate the tool (item 3.3, page 6) in a vice, pins upwards.

8. Locate the two pins into the blind holes on the underside of the Operating Head. Grip the outside of the operating head. Turn the Operating Head fully ANTI-CLOCKWISE to expose the circular recess for the metal ball, which can be seen through the cable port in the casing.

9. Push the metal ball of the Actuator Cable into the cable port. Rotate the Operating Head CLOCKWISE to pull the Actuator Cable into the casing. Then push the sealing ball into place in the port. Continue turning until a click is heard and felt. The Operating Head is now reset.

WARNING: BEFORE FITTING A TWIN BALL CABLE ENSURE THAT THE SEALING BALL IS AS SHOWN IN FIGURE 9a. IF NOT SLIDE THE BALL AND SLEEVE TO THE APPROXIMATE POSITION SHOWN.
WHEN THE SYSTEM IS FIRED, THE SEALING BALL IS LIKELY TO HAVE BEEN PULLED TO THE OPPOSITE END OF THE CABLE, AS SHOWN IN FIGURE 9b.

10. The loaded indicator arrow on the top of the casing will line up to indicate that the unit is loaded.

WARNING: THE OPERATING HEAD MUST BE CLICKED INTO THE FULLY LOADED POSITION TO FUNCTION.
IF THERE IS NO CLICK TO INDICATE THAT THE OPERATING HEAD IS LOADED, TURN ANTI-CLOCKWISE, REMOVE THE CABLE AND RELOAD AS ABOVE. IF THERE IS NO CLICK FOR A SECOND TIME, DISCARD THE OPERATING HEAD AND ACTUATOR CABLE AND REPLACE WITH NEW.

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SECTION 11

REFURBISHMENT OF CYLINDER VALVE AFTER FIRING

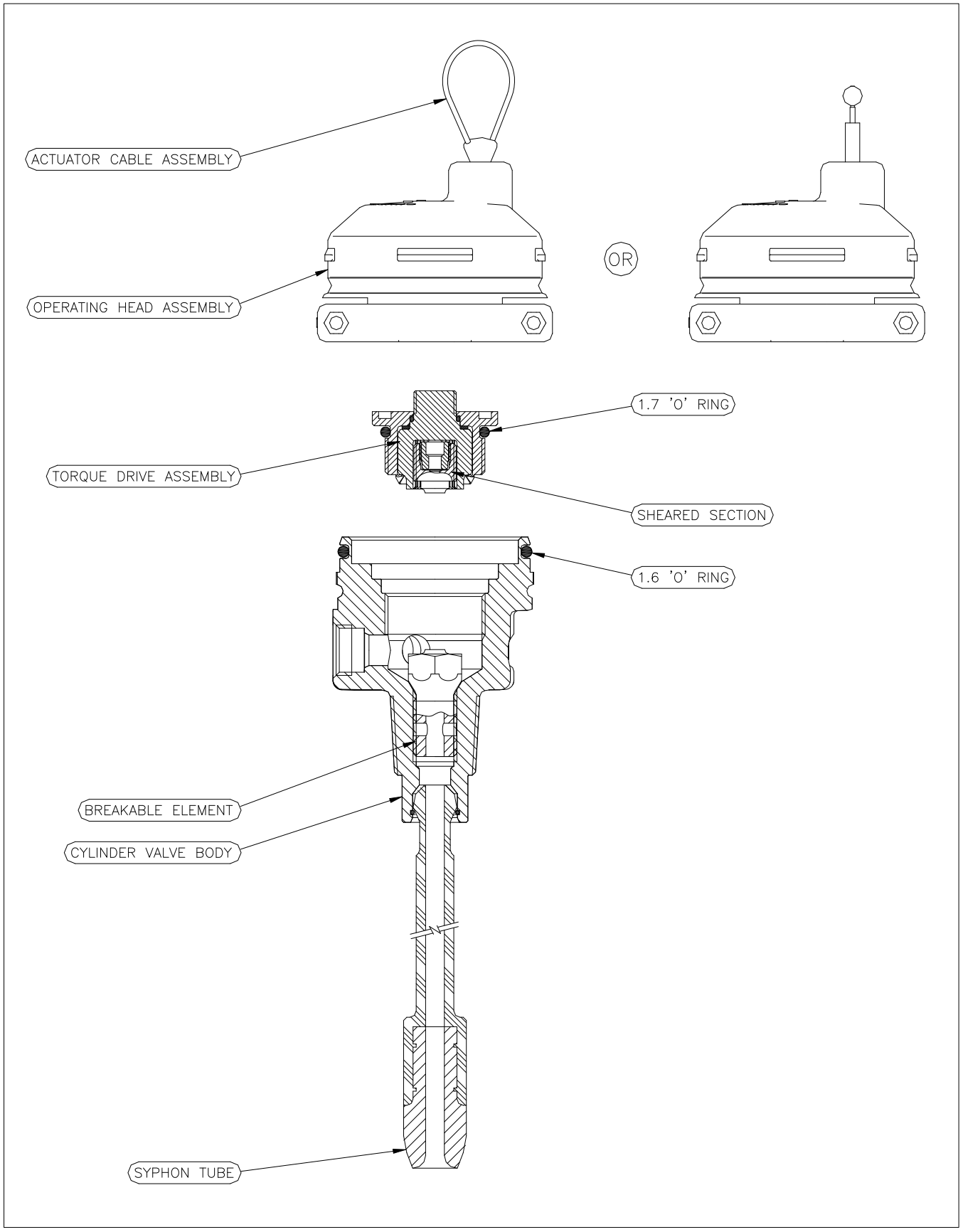

Figure 10

1. Check the exterior of Cylinder Valve. Significant areas of pitting are not acceptable.

2. Remove 'O' Ring Flange Seal from Cylinder Valve and discard.

3. Thoroughly clean and dry the Cylinder Valve Body, ensuring no cleaning solution can enter the cylinder.

WARNING: CYLINDER VALVE MUST NOT BE CLEANED WITH SOLVENTS, SOAPS OR CHEMICAL CLEANING AGENTS. THESE MAY DEGRADE SYSTEM COMPONENTS AND CAUSE A MALFUNCTION.

WARNING: CYLINDER VALVE MUST NOT BE REUSED IF THERE IS ANY SIGNIFICANT DISTORTION, CORROSION OR IMPACT DAMAGE OR IF THERE IS DAMAGE TO EXTERNAL THREADS, HOSE SEATING SURFACE OR BREAK STEM SEAL SEATING SURFACE.

Figure 10 refers

4. Remove Torque Drive Assembly using the Loading Tool (item 3.3, page 6).

5. Replace the ‘O’ Ring (spares item 1.7, page 30). Lightly grease and fit new ‘O’ Ring. Use only Dow Corning Molykote 111 silicone grease.

6. After a normal operation it is usual for a broken part of the Break Stem Seal to be retained in the torque coupling. The broken part must be removed. This is best done using a pair of long-nosed pliers.

7. Remove the broken part of the Break Stem Seal Assembly from the Cylinder Valve using a long-series 17mm socket.

8. Fit Torque Drive Assembly in accordance with Section 6, Para. 15, to act as a protective cap until the cylinder is ready to be refilled.

9. Lightly grease and fit new ‘O’ Ring Flange seal on Cylinder Valve (spares item 1.6, page 30). Use only Dow Corning Molykote 111 silicone grease.

10. Cylinder/Cylinder Valve is now ready for filling in accordance with procedures in Section 6.

WARNING: TRANSIT PLUGS AND TORQUE DRIVE ASSEMBLY MUST ALWAYS BE FITTED TO CYLINDER VALVE WHEN CHARGED CYLINDER IS STORED UNCONNECTED TO LIFERAFT.

SECTION 12

SPARE PARTS LIST

Figures 1, 3 and 8 refer

ITEM	DESCRIPTION	PART NUMBER
1.1	OPERATING HEAD ASSEMBLY (BLACK TYPE) (complete with Actuator Cable Assembly)	**SUPERCEDED BY 1.1a SEE SECTION 7**
1.1a	**OPERATING HEAD ASSEMBLY (WHITE TYPE) (complete with Actuator Cable Assembly)**	**03010OHT**
1.1b	OPERATING HEAD ASSEMBLY (TWIN BALL TYPE) (Complete with Twin Ball Actuator Cable Assembly) FOR SOME VACUUM BAG APPLICATIONS	Various – See Note 2 below
1.2a	ACTUATOR CABLE ASSEMBLY (WHITE TYPE)	1103004
1.2b	ACTUATOR CABLE ASSEMBLY (TWIN BALL CABLE FOR SOME VACUUM BAG APPLICATIONS)	Various – See Note 2 below
1.3	TORQUE DRIVE ASSEMBLY	03020TDA
1.8	VALVE BODY/SYPHON TUBE ASSEMBLY	Various – See Note 1 below
1.5	BREAK STEM SEAL ASSEMBLY	Various – See Table 1, page 1
1.6	'O' RING SEAL (Cylinder Valve)	66300679
1.7/3.7	'O' RING SEAL (Torque Drive Assembly, Filling Tool)	66300680
1.9a	OPERATING HEAD SCREWS - 40mm long (2 off)	78201214 See Figure 7.1
1.9b	OPERATING HEAD SCREWS - 45mm long (2 off)	19416 See Figure 7.1
3.6/8.4	‘O’ RING SEAL	66300749
8.1	HOSE ASSEMBLY	See Note 1 below
8.2	CONNECTOR M16 x 1.5 ‘O’ RING VERSION	0911003
8.5	‘O’ RING for CONNECTOR M16 x 1.5	66300686
8.6	HOSE ASSEMBLY – PUSH FIT	See Note 1 below
Not Drawn	SILICONE GREASE TYPE DOW CORNING MOLYKOTE 111	50800041

Note 1: Hose assemblies (8.1, page 20) and Cylinder Valve assembly variants (1.8, page 3) are available on request.

Note 2: Operating Head Assembly (Section 10) and Actuator Cable Assembly (Twin Ball Type) of different lengths, part numbers are available on request.

WARNING: USE ONLY SPARES MANUFACTURED BY LEAFIELD MARINE LIMITED WHEN SERVICING THE GAS INFLATION SYSTEM. OTHER ITEMS COULD FAIL AND CAUSE INJURY OR DEATH.