



Meggitt Fuelling Products

Avery-Hardoll
Whittaker Controls

Under hydrant valve UVMY1000 series

Installation, operation and maintenance manual

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AMENDMENT RECORD

AMENDMENT/ ISSUE NO.	CHAPTER/ PAGE	REASON	DATE

Avery-Hardoll

It is the aim of Avery-Hardoll to maintain a policy of continuous progress and for this reason reserve the right to modify specifications without notice. This manual provides the information required to install, service and overhaul the equipment. Although every effort has been made to ensure absolute accuracy, Avery-Hardoll does not hold itself responsible for any inaccuracies that may be found.

HEALTH AND SAFETY AT WORK ACT 1974

REFERENCE: CHAPTER 37, PART 1, SECTION 6

Avery-Hardoll take every care to ensure that, in accordance with the above Act, our products, as far as is reasonably practical in an industrial environment, are when operated and maintained in accordance with the appropriate manual, safe without risk to health.

PRODUCT SAFETY

In the interest of safety it is strongly recommended by Avery-Hardoll that the following details receive strict attention.

For the Purpose of Definition, the word PRODUCT applies to any product sold by Avery-Hardoll.

- 1 The Product is used only with fluids stated as acceptable by Avery-Hardoll.
- 2 The Product, whilst in service, must not be subjected to pressures greater than the Maximum Working Pressure or tested to pressures greater than the Test Pressure as specified in the manual.
- 3 The Product must only be coupled/connected to equipment considered acceptable by Avery-Hardoll.
- 4 The Product must be handled using the lifting handles where fitted, or in accordance with the manual.
- 5 The Product must not be misused or handled in any way liable to cause damage.
- 6 The Product must be inspected for any signs of damage prior to use e.g. cracks, damaged seals, seized or tight operating mechanisms.
- 7 The Product must be subjected to a regular maintenance programme, either in accordance with the manual or as agreed with Avery-Hardoll.
- 8 Only technically competent personnel should repair or maintain the Product and only parts supplied by Avery-Hardoll may be used.
- 9 Products covered by warranty may not be modified in any way without prior written permission of Avery-Hardoll.
- 10 Products not in service, must be stored in a clean area, and should not be subjected to excessive temperature, humidity, sunlight, or strong artificial light. Products should be protected to prevent damage or the ingress of foreign matter.
- 11 Where applicable, attention should be drawn to dangers resulting from the generation of static electricity in product flow lines. We strongly recommend account is taken of BS5958 parts 1 and 2.x
- 12 This equipment is not suitable for use with Liquid Petroleum Gas (L.P.G).

WARNINGS

DO NOT HANDLE O-RING SEALS IF THEIR MATERIAL APPEARS CHARRED, GUMMY OR STICKY. USE TWEEZERS AND WEAR NEOPRENE OR PVC GLOVES. DO NOT TOUCH ADJACENT PARTS WITH UNPROTECTED HANDS. NEUTRALIZE ADJACENT PARTS WITH A SOLUTION OF CALCIUM HYDROXIDE. IF THE DEGRADED MATERIAL OR ADJACENT PARTS TOUCH THE SKIN, DO NOT WASH OFF WITH WATER, SEEK IMMEDIATE MEDICAL AID FOR POSSIBLE CONTAMINATION WITH HYDROFLUORIC ACID. HYDROFLUORIC ACID IN CONTACT WITH SKIN HAS DELAYED SYMPTOMS OF CONTAMINATION. IT IS EXTREMELY TOXIC.

BEWARE OF STORED ENERGY IN THE DOUBLE TORSION SPRING.

DO NOT EXCEED PRESSURES AND TEMPERATURES QUOTED OR SERIOUS INJURY AND COMPONENT FAILURE MAY OCCUR.

PRIOR TO OPERATING THE HOSE UNIT, ENSURE THAT ALL AIRPORT/LOCAL PROCEDURES HAVE BEEN COMPLIED WITH.

NEVER USE THE NOZZLE OPERATING LEVER TO START OR STOP FUEL FLOW.

NO SOLVENTS, CLEANING AGENTS, GREASES OR OTHER MATERIALS ARE TO BE USED ON INTERNAL SURFACES IN CONTACT WITH FUEL. CLEANING IS TO BE CARRIED OUT USING CLEAN AVIATION FUEL ONLY.

WORK MUST BE CARRIED OUT ONLY BY SUITABLY QUALIFIED PERSONNEL.

PRIOR TO COMMENCING WORK, ENSURE THAT ALL AIRPORT/COMPANY SAFETY PROCEDURES HAVE BEEN COMPLIED WITH.

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ASSOCIATED PUBLICATIONS

Manual No. L005 – GBMY5050M2 Environmental Pit Box

Manual No. TP0015 – PVMY1100 Hydrant Pit Valve

Manual No. TP0035 – PVMY1000 Hydrant Pit Valve

Manual No. TP0036 – PVMY2000 Hydrant Pit Valve

Chapter 1

INTRODUCTION

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1 GENERAL

1.1 The Avery-Hardoll Under Hydrant System has a choice of carbon steel or stainless steel bodies. All internal components are manufactured in stainless steel. The compact design allows a choice of three flange face to face dimensions and four flange configurations.

2 APPLICATION

2.1 The Under Hydrant Shut-off Valve is installed between the ground box flange and the Pit Valve. (See Fig. 1.1)

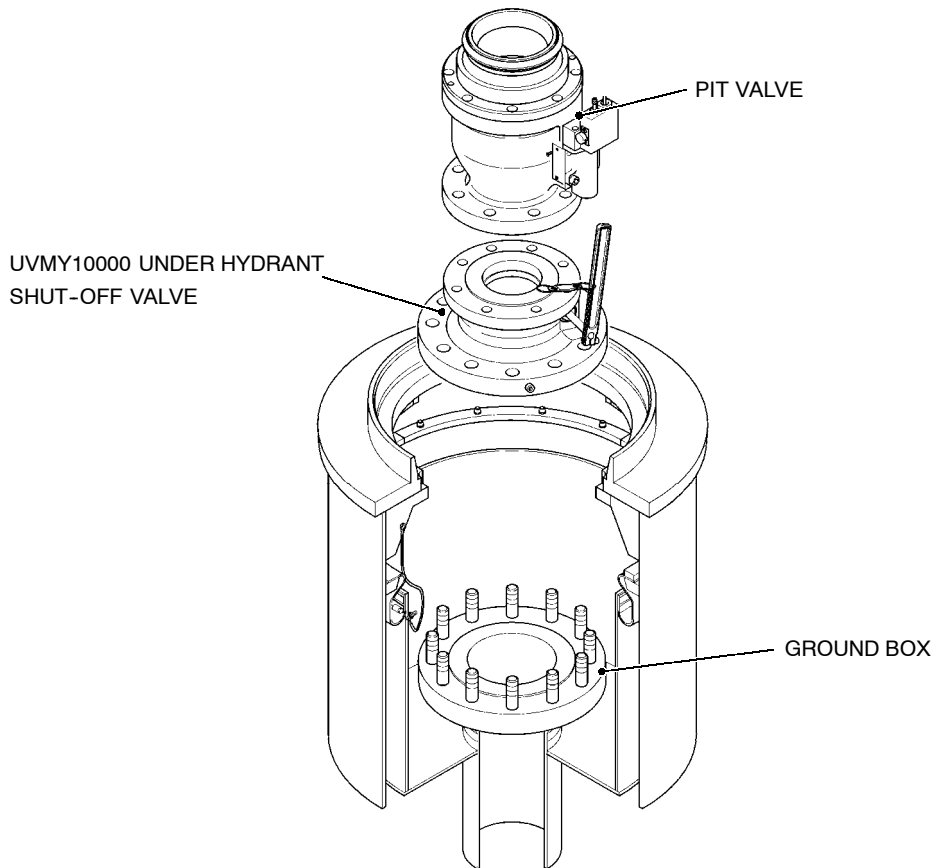


Fig 1.1 Under Hydrant Valve Installation

3 UNIT IDENTIFICATION

3.1 The units are available in two standard configurations:

- UVMY1011C - Carbon Steel Body
- UVMY1011S - Stainless Steel Body

Other special builds are available and can be ordered by referring to the table below:

3.2 The valve has a choice of four flange configurations and three body length dimensions.

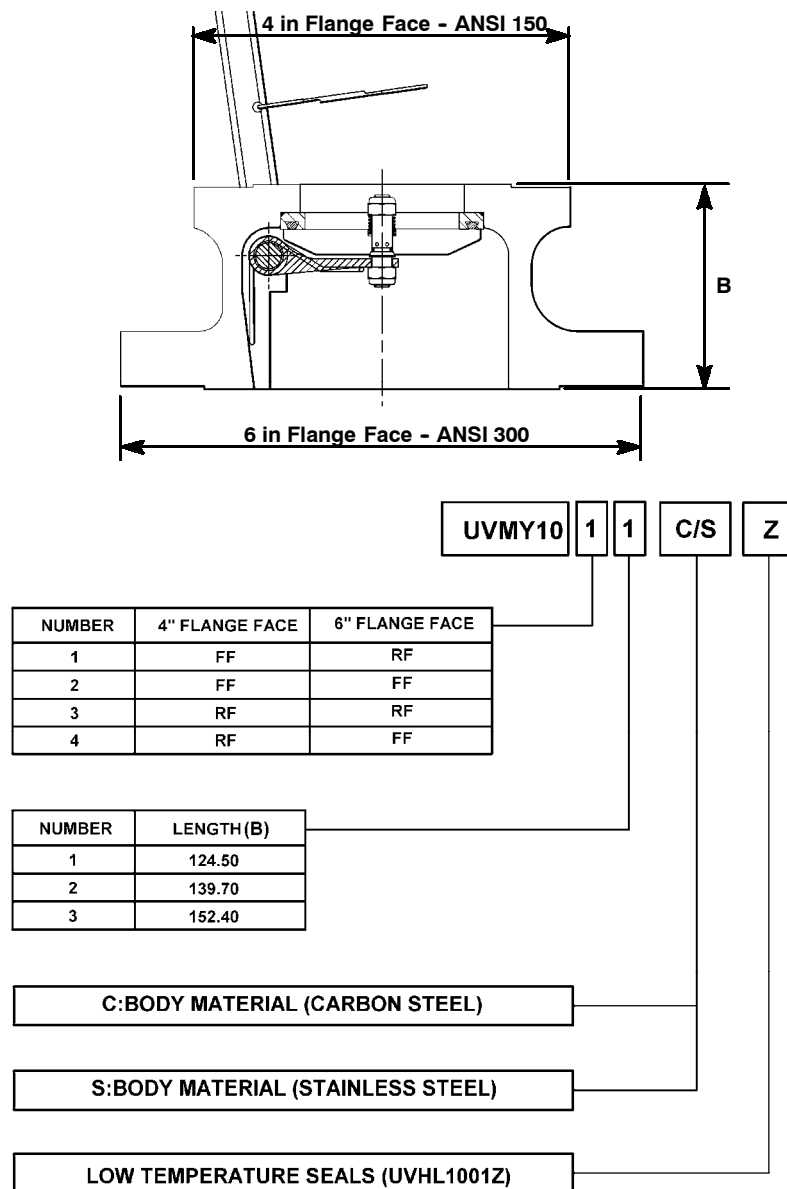


Table 1.1 Special Builds

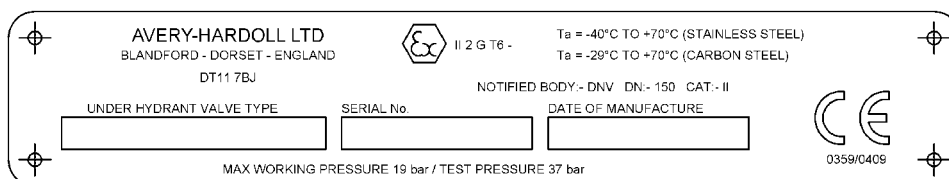


Fig 1.2 Identification Label

Chapter 2

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1 UNDER HYDRANT VALVE

- 1.1 The valve comprises a carbon or stainless steel body with stainless steel valve components.
- 1.2 The operating handle, through a shaft, opens and closes the valve disc which seals against an 'O' ring seal. The valve disc is held against the seal with a double torsion spring installed around the shaft.
- 1.3 The valve disc incorporates a pilot valve. The pilot valve opens against a compression spring and automatically equalises pressure when the handle is first operated.
- 1.4 Normally the valve is held open by a chain connected between the lever and the valve body. It is closed by unhooking the chain from the body.

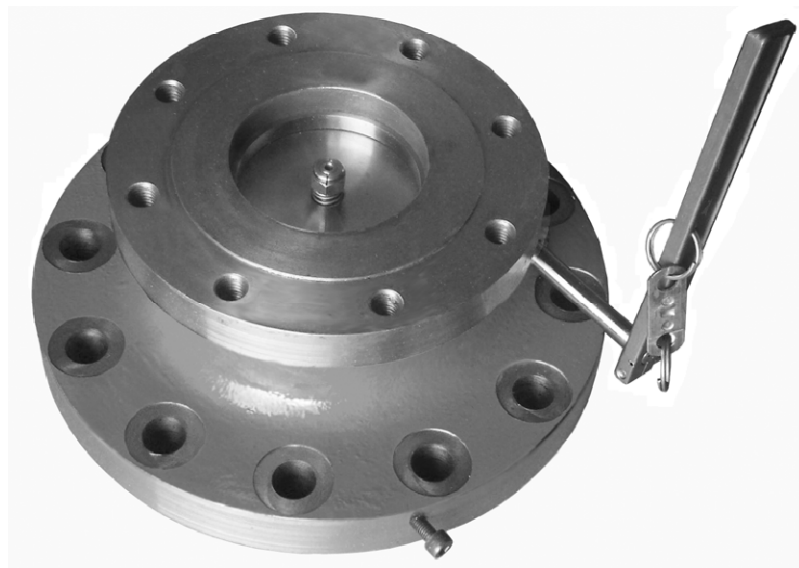


Fig 2.1 UVMY1000 Series Under Hydrant Valve

2 FUSIBLE LINK

- 2.1 A fusible link is fitted in the chain and is designed to fail in a fire at 93 deg C closing the valve down instantaneously, thus shutting off the fuel supply to the pit valve.

Chapter 3

SPECIFICATION

WARNING

DO NOT EXCEED PRESSURES AND TEMPERATURES QUOTED IN THIS CHAPTER OR SERIOUS INJURY AND COMPONENT FAILURE MAY OCCUR.

1 STANDARDS

1.1 The Under Hydrant Valve is built to comply with the following standards:

- Complies with all the requirements of the IP and the API
- British Standard Aerospace Specification - 4C14
- International Standards Organisation, recommendation 45
- NATO Standardisation Agreement - STANAG 3105.
- ATEX Approval
- PED CAT 2

2 MATERIALS

2.1 Components in contact with fuel are manufactured from the following materials:

Carbon Steel version:

- Stainless Steel and Carbon Steel
- PTFE
- High nitrile and fluorocarbon rubbers

Stainless Steel version:

- Stainless Steel
- PTFE
- High nitrile and fluorocarbon rubbers

3 OPERATING ENVIRONMENT

3.1 The system into which this equipment is fitted is to be designed to offer the protection from overpressurisation and overheating above the working parameters stated in 3.3.

3.2 Suitable filtration is to be included in pipeline upstream of the UHV to ensure foreign bodies do not prevent the valve from shutting in the event of a fire.

3.3 The following units and ancillaries are operational under the following conditions:

Maximum safe working pressure (gauge)	19 bar (275 psi)
Test pressure (gauge)	37.2 bar (540 psi)
Max. working temperature	70 deg C (158 deg F)
Min. working temperature	
Carbon Steel	-29 deg C (-20 deg F)
Stainless Steel	-40 deg C (-40 deg F)

4 STORAGE LIFE

4.1 Storage life of units is 3 years, limited by deterioration of seals and O-rings only.

5 DIMENSIONS AND WEIGHT

5.1 For dimensions please refer to Table 1.1 in Chapter 1 - Introduction.

Gross Weight	28 kg (62 lb)
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Chapter 4

INSTALLATION AND OPERATION

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WARNING

PRIOR TO INSTALLING OR OPERATING THE VALVE UNIT, ENSURE THAT ALL AIRPORT/LOCAL PROCEDURES HAVE BEEN COMPLIED WITH.

1 INSTALLING THE UNDER HYDRANT VALVE

CAUTION

This valve must NEVER be subjected to high air or gas pressure.

- 1.1 In accordance with airport/company rules ensure that the hydrant line is depressurised and drained of fuel.
- 1.2 Referring to the relevant manual, remove the existing Pit Valve or blanking plate if fitted, from the ground box riser pipe flange. Remove and discard the gasket (2).
- 1.3 Ensure that the riser pipe flange is clean and in good condition. Place the new gasket (2) over the riser pipe flange.
- 1.4 Remove the transit caps from the Under Hydrant Valve. Ensure the flanges are clean and in good condition.
- 1.5 Secure two 5/8 in. UNC threaded eyebolts to the upper flange, in any two diametrically opposed holes. Using appropriate lifting tackle, carefully lower the Under Hydrant Valve onto the riser pipe flange studs. Remove and keep the two eyebolts. Assemble the 12 plain washers and nuts finger tight on the studs. If there are no studs fitted, align holes and assemble the 12 bolts, plain washers and nuts finger tight.
- 1.6 Using the special spanner (Fig 4.2) and a suitable torque wrench, tighten the nuts evenly, in stages, in the sequence shown in Fig 4.3. Finally torque the nuts to 15, 30, 60 and then 90 lb-ft (20, 40, 80 and 122 Nm).
- 1.7 Ensure that the Pit Valve flange is clean and in good condition. Place the new gasket (1) over upper flange of the Under Hydrant Valve.
- 1.8 **Ensure orientation of Pit Valve allows free movement of UHV Operating Lever.**
- 1.9 If fitted, remove transit cap from the pit valve flange and, using the lifting handle kit set, carefully lower the Pit Valve onto upper flange of the Under Hydrant Valve. Assemble the 8 bolts and plain washers finger tight. If necessary refer to the relevant Pit Valve manual.
- 1.10 Using the special spanner (Fig 4.2) and a suitable torque wrench. Tighten the bolts evenly, in stages, in the sequence shown in Fig 4.3. Finally torque the nuts to 15, 30, 60 and then 90 lb-ft (20, 40, 80 and 122 Nm).

- 1.11 Open the Under Hydrant Valve.
- 1.12 Pressurise the hydrant line, check the valve connections for leaks and correct operation.

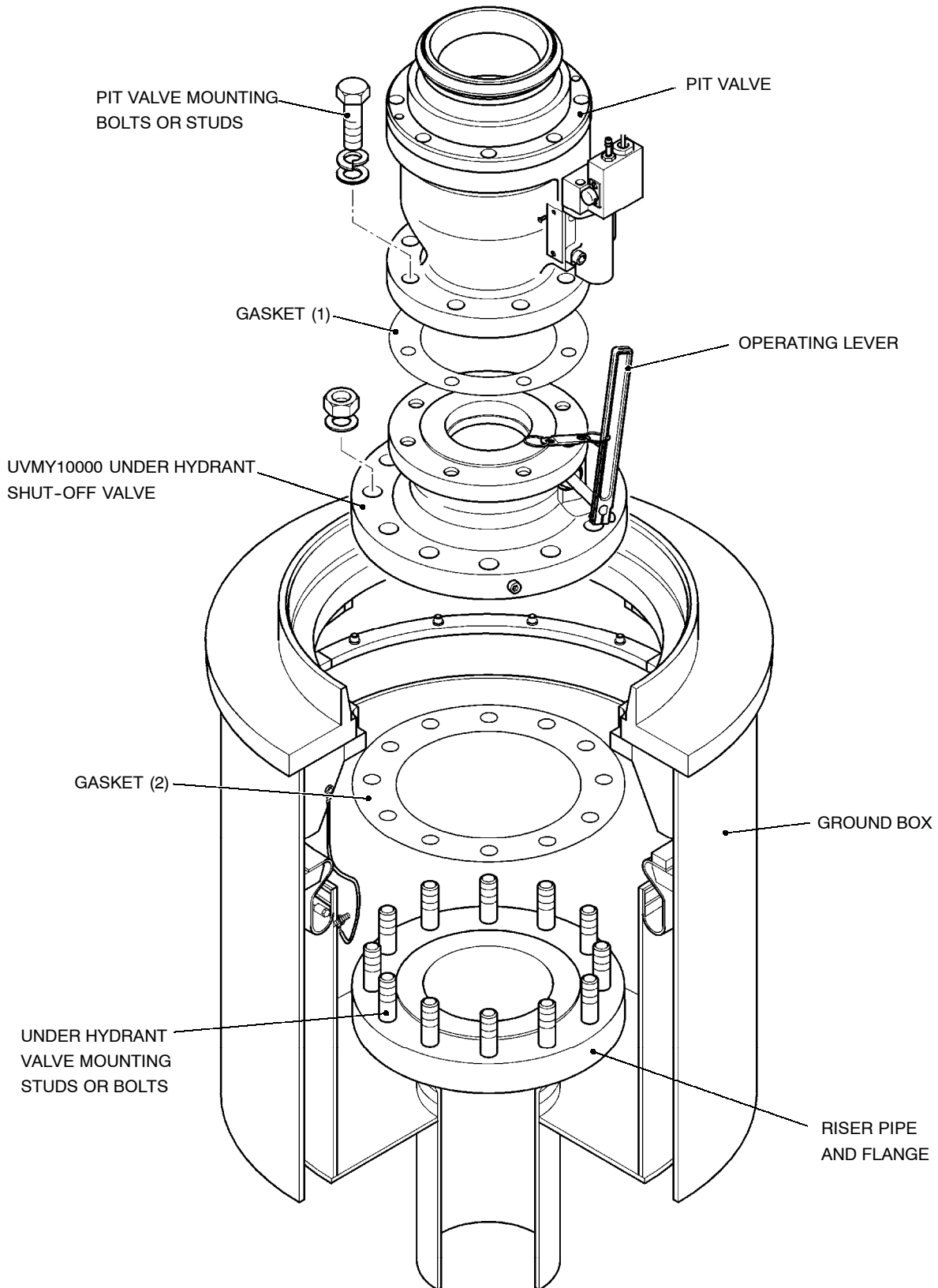


Fig 4.1 Under Hydrant Valve Installation

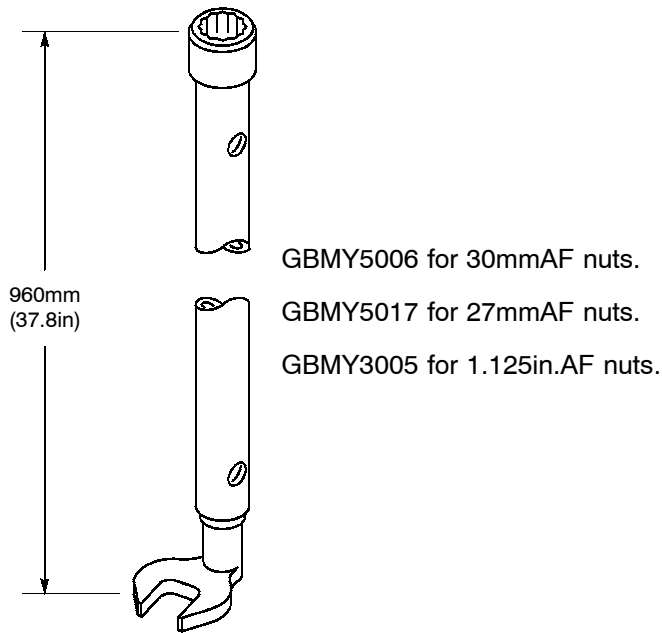


FIG 4.2 SPECIAL SPANNER

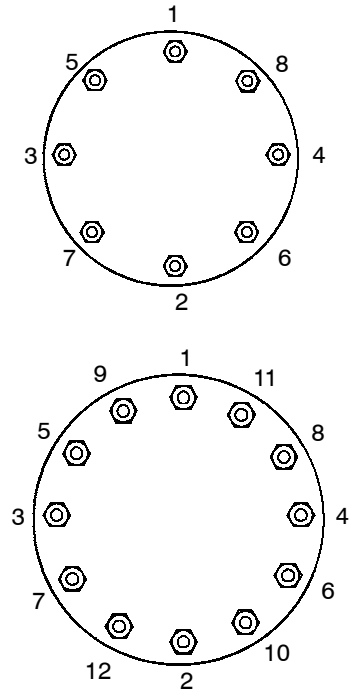


FIG 4.3 NUT TIGHTENING SEQUENCES

2 OPERATING THE UNDER HYDRANT VALVE

- 2.1 If a Pit Valve fails, isolate the fuel flow from the hydrant system using the Under Hydrant Valve.

CAUTION

Do not damage the Fusible Link.

- 2.2 Rotate the Operating Lever a small amount counter-clockwise. Disconnect the keyring from the screw on the valve body.
- 2.3 Holding the Operating Lever, carefully allow the valve to shut by letting the torsion spring rotate the lever clockwise until it stops. **DO NOT LET THE VALVE SHUT WITH FORCE BY LETTING GO OF THE LEVER.**
- 2.4 Using the special spanner (Fig 4.2), remove the Pit Valve and gasket. If necessary refer to relevant Pit Valve manual. Return the Pit Valve for service or repair.
- 2.5 If the Pit Valve is to be left off for a period of time it is recommended to fit a suitable blanking plate to the upper flange face of the Under Hydrant Valve, using a new gasket (1) and 8 bolts with plain washers.
- 2.6 Using the special spanner (Fig 4.2) and a suitable torque wrench. Tighten the bolts evenly, in stages, in the sequence shown in Fig 4.3. Finally torque the nuts to 15, 30, 60 and then 90 lb-ft (20, 40, 80 and 122 Nm).
- 2.7 To fit a replacement Pit Valve refer to previous INSTALLATION section.
- 2.8 Rotate the Operating Lever anticlockwise to open the valve. Secure keyring to the screw on the valve body.

Chapter 5

INSPECTION, MAINTENANCE AND OVERHAUL

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1 GENERAL

WARNING

IF THE UNDER HYDRANT VALVE HAS FAILED, THE COMPLETE HYDRANT SYSTEM, OR RELEVANT PART SHOULD BE ISOLATED AND ANY REMAINING FUEL DRAINED FROM THE SYSTEM BEFORE REMOVAL.

IF THE UHV HAS BEEN INVOLVED IN A FIRE INCIDENT AND HAS BEEN EXPOSED TO TEMPERATURES ABOVE 250 DEG C, IT IS TO BE DISPOSED OF. THE UHV CONTAINS O-RING SEALS AND THEREFORE PARTICULAR ATTENTION MUST BE PAID TO RELEVANT ENVIRONMENTAL RESTRICTIONS RELATING TO DISPOSAL OF EQUIPMENT CONTAINING FLUOROCARBONS.

DO NOT HANDLE O-RING SEALS IF THEIR MATERIAL APPEARS CHARRED, GUMMY OR STICKY. USE TWEEZERS AND WEAR NEOPRENE OR PVC GLOVES. DO NOT TOUCH ADJACENT PARTS WITH UNPROTECTED HANDS. NEUTRALIZE ADJACENT PARTS WITH A SOLUTION OF CALCIUM, HYDROXIDE. IF THE DEGRADED MATERIAL OR ADJACENT PARTS TOUCH THE SKIN, DO NOT WASH OFF WITH WATER, SEEK IMMEDIATE MEDICAL AID FOR POSSIBLE CONTAMINATION WITH HYDROFLUORIC ACID. HYDROFLUORIC ACID IN CONTACT WITH SKIN HAS DELAYED SYMPTOMS OF CONTAMINATION. IT IS EXTREMELY TOXIC.

WORK MUST BE CARRIED OUT ONLY BY SUITABLY QUALIFIED PERSONNEL.

PRIOR TO COMMENCING WORK, ENSURE THAT ALL AIRPORT/COMPANY SAFETY PROCEDURES HAVE BEEN COMPLIED WITH.

- 1.1 Before dismantling any unit ensure that all special tools, materials and replacement parts are available. Only Avery-Hardoll supplied parts and special tools are to be used.
- 1.2 On completion of overhaul, and during installation, units should be checked for leakage as detailed in Chapter 6.

2 ROUTINE INSPECTION AND MAINTENANCE

WARNING

NO SOLVENTS, CLEANING AGENTS, GREASES OR OTHER MATERIALS ARE TO BE USED ON INTERNAL SURFACES IN CONTACT WITH FUEL. CLEANING IS TO BE CARRIED OUT USING CLEAN AVIATION FUEL ONLY.

2.1 Daily

Before each refuelling operation, carefully inspect all components for damage paying particular attention around component mating faces and operating lever/spindle for leaks. Damaged units must be withdrawn from service and returned to the Meggitt Fuelling Products, Avery-Hardoll service department for overhaul. Check condition of Fusible Link.

2.4 Annually

Renew all seals. Check condition of springs.

NOTE:

The above maintenance frequencies are the minimum recommended but local company instructions must be observed.

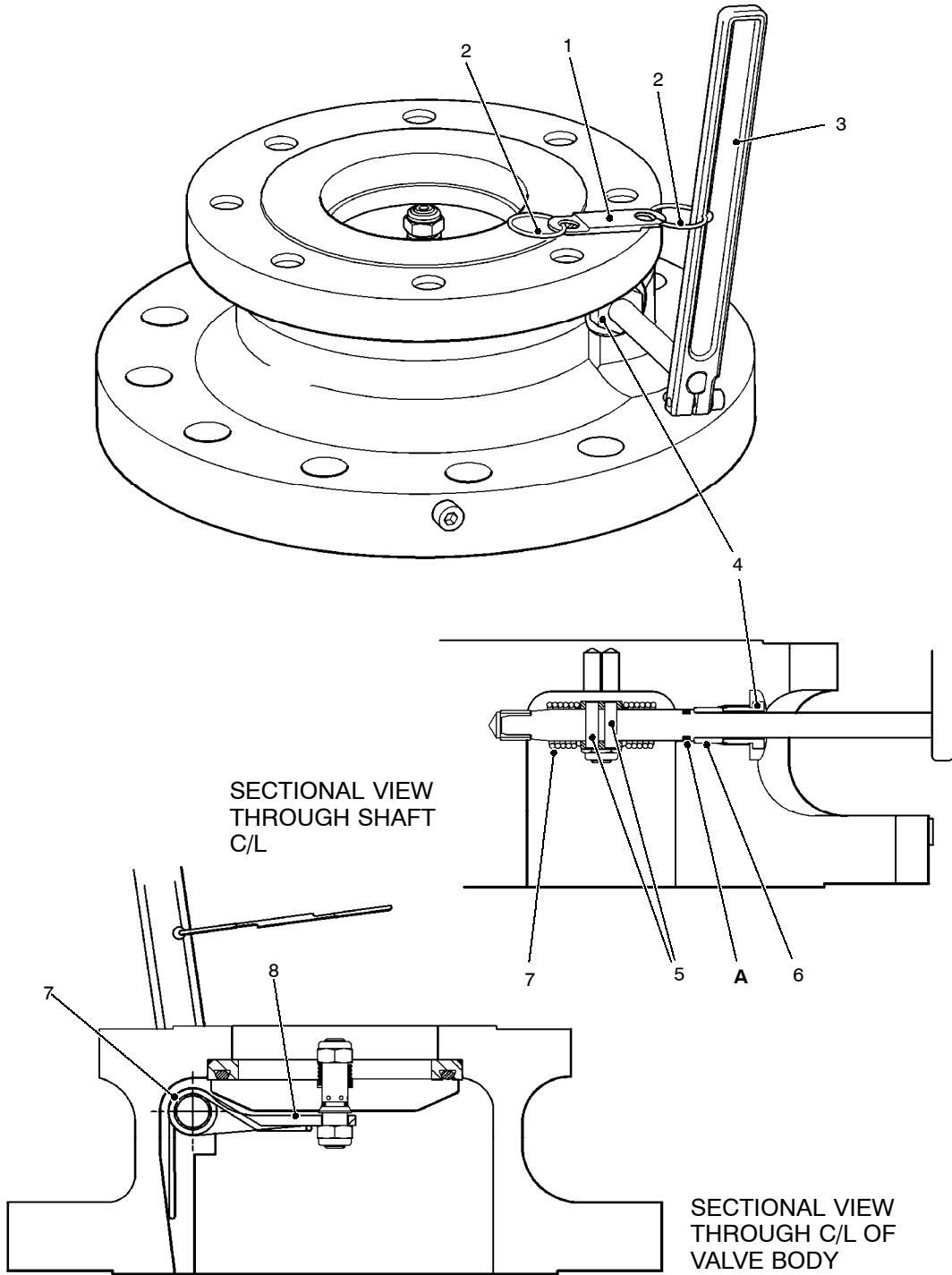


Fig 5.1 Under Hydrant Valve Assembly

TABLE 5.1 - SPECIAL TOOLS AND MATERIALS

ITEM	PART NUMBER	DESCRIPTION
1	ZMLZ0230-25	General Purpose Grease
2	ZMLZ0230-1	Loctite 270

3 OPERATING LEVER AND FUSIBLE LINK (Fig 5.1)

3.1 Disassembly

- 3.1.1 Remove the Fusible Link (1) with Keyrings (2) from Operating Lever (3).
- 3.1.2 Loosen the Locking Nut (4) and slide it along the shaft.
- 3.1.3 Using a suitable pin punch, drift out the two Tension Pins (5).
- 3.1.4 Carefully slide out the lever and shaft assembly together with Locking Nut (4) and Bush (6)

WARNING

WHEN REMOVING DOUBLE TORSION SPRING BEWARE OF STORED ENERGY.

- 3.1.5 Remove the Double Torsion Spring (7).
- 3.1.6 Remove the disc valve and pilot valve assembly with hinge (8).

3.2 Cleaning and Inspection

- 3.2.1 Clean all metal components using a lint free cloth moistened with the relevant aviation fuel. Ensure that residues of seal and O-ring material are removed from grooves and sealing faces.
- 3.2.2 Examine parts for damage or wear. Renew any defective parts and all used seals and O-rings. Refer to spares list for replacement parts.
- 3.2.3 If Bush (6) is badly worn, the lever and shaft assembly together with Locking Nut (4) and Bush (6), or complete valve if necessary, should be returned to Avery-Hardoll for evaluation.

NOTE:

If the fusible link is damaged in any way, it should be replaced.

3.3 Assembly

- 3.3.1 Assemble the parts in the reverse order of dismantling and note the following:
 - (a) Lubricate the O-ring seals with clean fuel before fitting.
 - (b) Grease body between O-ring (A) and Outer Bush (6) using item 1 (Table 5.1) before installing the lever and shaft assembly.
 - (c) Beware of the stored energy in the double torsion spring.
 - (d) Assemble the Locking Nut (4) using item 2 (Table 5.1).

4 DISC VALVE AND PILOT VALVE (Fig 5.2)

4.1 Disassembly

- 4.1.1 Holding Nut (1) with a suitable ring spanner, remove Nut (7) and Hinge (6).
- 4.1.2 Remove Nut (1) with Compression Spring (2).
- 4.1.3 Withdraw Pilot Valve (5) from Valve Disc (3).
- 4.1.4 Remove O-ring (4) from Pilot Valve (5).

4.2 Cleaning and Inspection

- 4.2.1 Clean all metal components using a lint free cloth moistened with the relevant aviation fuel. Ensure that residues of seal and O-ring material are removed from grooves and sealing faces.
- 4.2.2 Examine parts for damage or wear. Renew any defective parts and all used seals and O-rings. Refer to spares list for replacement parts.

4.3 Assembly

- 4.3.1 Assemble the parts in the reverse order of dismantling.

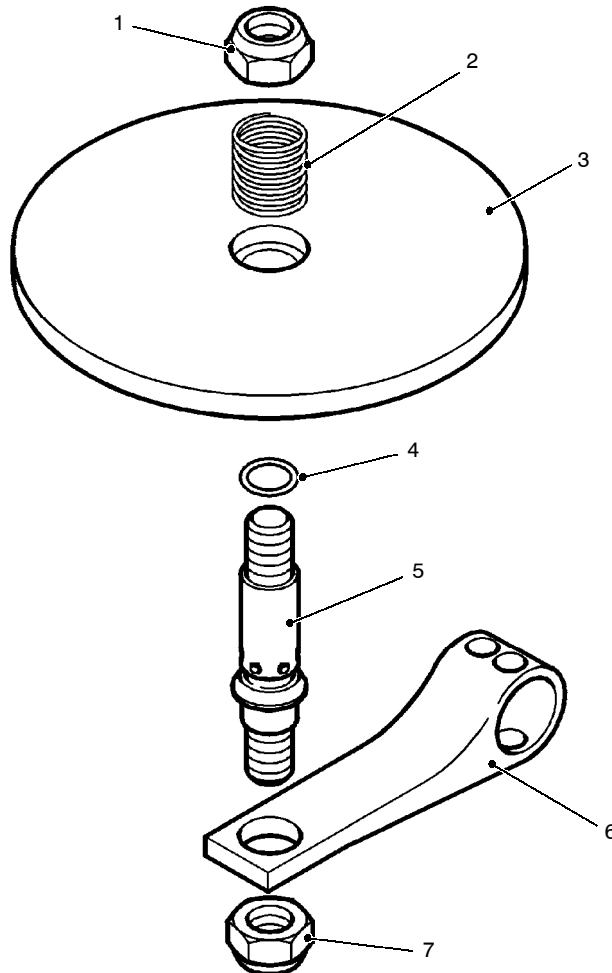


Fig 5.2 Disc Valve and Pilot Valve exploded view

Chapter 6

TESTING AND FAULT FINDING**CONTENTS**

Para

- 1 General
- 2 Visual Checks

WARNING

PRIOR TO INSPECTING THE VALVE UNIT, ENSURE THAT ALL AIRPORT/LOCAL PROCEDURES HAVE BEEN COMPLIED WITH.

1 GENERAL

- 1.1 **It is strongly advised that if any major leakage or other fault is found with the equipment, it should be returned to our Servicing Department at Meggitt Fuelling Products, Avery-Hardoll for more comprehensive investigation and testing. Avery-Hardoll advise only visual leakage checks when the valve is fitted to a hydrant system.**
- 1.2 The following leakage checks are to be carried out by suitably qualified engineers when units have been overhauled as described in Chapter 5.

2 VISUAL CHECKS (with UHV and Pit Valve installed)

- 2.1 Check for any signs of leakage around the Under Hydrant Valve flange joints with Pit Box riser pipe and Pit Valve, refer to Chapter 4, Fig 4.1. If any leakage is detected isolate the Hydrant flow and remove the UHV as set out in Chapter 4.
- 2.2 Inspect both valve flange faces for damage or distortion. If there is major damage return defective equipment to Avery-Hardoll. Renew gaskets as necessary.
- 2.3 Inspect for leakage around the Operating Lever Locking Nut and Bush area. If any leakage is detected return complete unit to Avery-Hardoll for evaluation. Refer to Chapter 5, Fig 5.1.

Chapter 7

SPARE PARTS CATALOGUE

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2	Spare parts details		
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7.1	Nozzle assembly		2

1 GENERAL

- 1.1 Only parts supplied by Avery-Hardoll are to be used to repair this equipment.
- 1.2 When ordering spare parts please quote the following information:
 - (a) Publication number and issue
 - (b) Fig/Item number
 - (c) Part number and description
 - (d) Quantity

2 SPARE PARTS DETAILS

- 2.1 The following tables of spare parts also contain the relevant attaching parts, i.e. screws, washers, nuts, etc, which may fail as a result of repeated removal and insertion.

NOTES

- (1) '+' in the Fig/Item column indicates Item is not illustrated.
- (2) 'REF' in the Qty column indicates Item is for reference purposes only and is **not available** as a spare.
- (3) '*' in the Fig/Item column indicates Item is recommended as a spare part

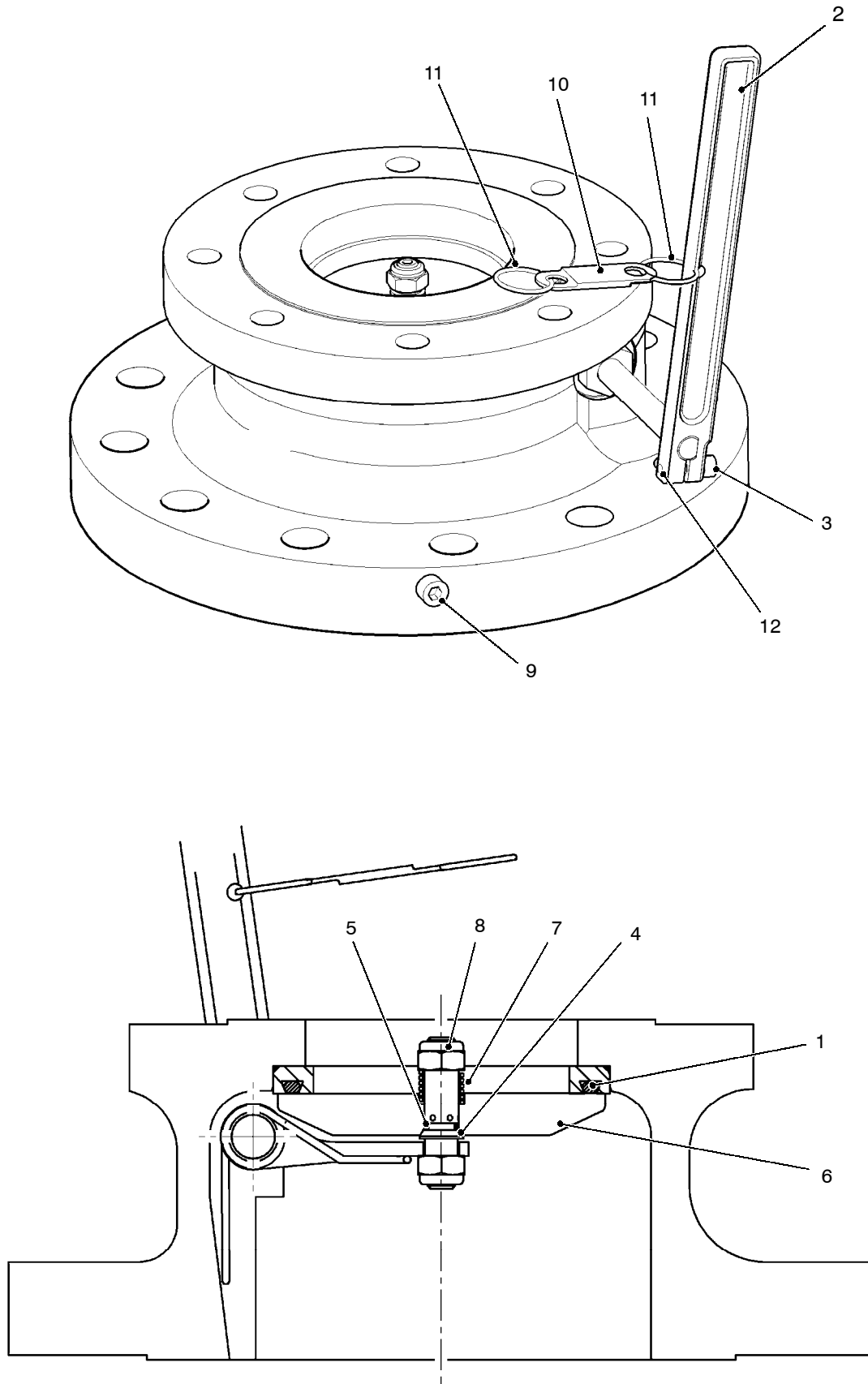


Fig 7.1 Under Hydrant Valve Assembly

SPARE PARTS IDENTIFICATION (FIG 7.1)

Item	Part Number	Description	Qty
-	UVMY1000	Under Hydrant Valve	REF
1	ZO3E346210A	. 'O' Ring	1
2	UVSZ107	. Handle	1
3	ZS3225M08030A	. Screw M6 x 20 long	1
4	UVSZ108	. Pilot Valve	1
5	ZO32E012070A	. 'O' Ring	1
6	UVSZ109	. Disc	1
7	ZMSZ0101-16	. Compression Spring	1
8	ZMSZ0284-4	. Nut M10	2
9	ZS3225M08030A	. Screw M8 x 30 long	1
10	ZMMZ0320-14	. Fusible Link	1
11	ZASZ0098-12	. Keyring	1
12	ZT4001E0414A	. Pin, Tension 1/8" Dia x 7/8" long	1

