A.P. 113. SECTION 3A

AIR PUBLICATION 4515-Z
VOL. 3 PART 1
NOVEMBER 1964

SAUNDERS VALVE Co EQUIPMENT

ILLUSTRATED PARTS CATALOGUE

BY COMMAND OF THE DEFENCE COUNCIL

MINISTRY OF DEFENCE

FOR USE IN THE ROYAL AIR FORCE

MEMORANDUM OF INSTRUCTIONS

1. CONTENTS

This Catalogue is prepared by the Air Force Department and lists the parts embodied in Saunders Valve Equipment.

R.A.F. Vocabulary Section 27FS has been allotted for spare parts which are peculiar to this Equipment.

2. DEMANDS

Parts are to be demanded under the Vocabulary Section quoted in the above paragraph 1, except where the Catalogue shows that a part is held under a different Vocabulary Section. The demand must quote the appropriate Vocabulary Section and Reference Number for each item.

Unreferenced parts are not normally provisioned as spares and demands for such items must quote the Vocabulary Section and Makers Part Number. The location of each part within the equipment should be clearly indicated.

Demands are to be prepared in accordance with the procedure laid down in A.P.830 Volume 1 or B.R.4.

3. LOCAL MANUFACTURE

Parts annotated "LM" are to be manufactured from local resources. If the manufacture of such items is beyond the capacity of the Unit, the demand is to be endorsed "Unable to manufacture locally".

4. MAJOR REPAIR

"M.R." indicates that an item is required for major repair purposes only and will not normally be held in store by Units other than those authorised to undertake major repair of the equipment.

5. UNITS PER ASSEMBLY

The number quoted is the quantity required per next higher assembly in the position shown except "attaching parts" which quote the quantity required to attach one item. The letters AR in the part number column indicate the quantity is "as required". Where an item is listed for reference purposes only, the letters (RF) are quoted.

6. CLASSIFICATION OF EQUIPMENT

The Class of Equipment is indicated by a single letter laid down in A.P. 830 Volume 1 or B.R. 14.

7. CONDITION OF SUPPLY (I.C.Y. CODE)

Condition of Supply is indicated by one of the following letters and is quoted against parts which are not directly interchangeable.

V.	Open up holes on assembly
W.	Partially assembled
X.	Ream on assembly
Y.	Drill on assembly
Z.	Trim on assembly

8. OBSOLESCENT STOCK

An asterisk in the Part Number Column indicates that no further purchases of the item will be made but the part is to be used until stocks are exhausted.

9. MODIFICATIONS

When items are affected by a modification the "Mod No." is quoted in the Nomenclature.

Modifications incorporated in the Catalogue are listed in the Modification Record.

10. AMENDMENTS

Amendments to the Catalogue will be published as and when necessary. They will be numbered consecutively and the Amendment Record Sheet is to be completed for each Amendment List embodied.

A summary of Amendment Lists distributed is published in Defence Council Instructions.

CATALOGUE INSTRUCTIONS

1. GENERAL

This Catalogue covers all Saunders Valve Company Equipment fitted to military aircraft. For convenience the catalogue has been divided into Chapters, one to each fluid e.g. fuel, oil, hydraulic and water. Each chapter is sub-divided into Sections, one for each type of valve, e.g. Taper Plug, Spherical Plug, Non-return etc.

2. METHOD OF LISTING PARTS

Items are listed in mechanical breakdown order and are indented to show assembly and detail relationship as follows:-

1.2.3.4.5.6.7

Installation of Main Assembly
. Detail parts of installation or main assembly.
. . Detail parts of assembly
. . Sub-assembly
. . . Detail parts of sub-assembly
. . . Sub-sub-assembly
. . . . Detail part of sub-sub-assembly.

3. PART NUMBERS

All piece parts are alloted a part number by the manufacturer as shown in the Part No. Column. Where the manufacturer allots a Part no. for a "bought out" item the sub-contractors Part or Type no. is quoted in the nomenclature.

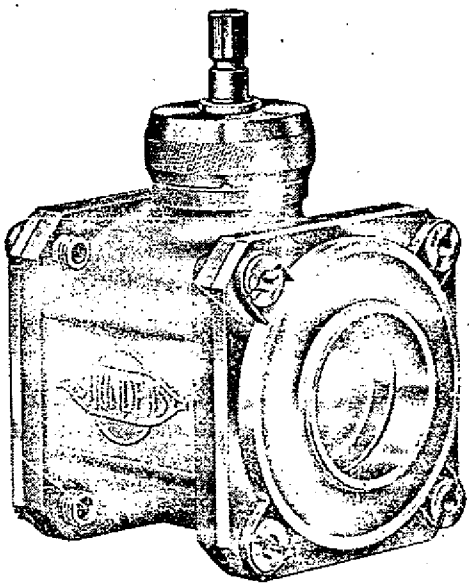
The Index of Part numbers lists the Part Nos. in numerical sequence each with its location identified by Chapter/Section/Figure/ Index No.

4. REFERENCE NUMBERS

All piece parts allocated a Reference number are listed in numerical order in the Index of Reference Numbers. The location of each item is identified by Chapter/Section/Figure/Index number.

SAUNDERS AERO LTD

S. P. TYPE. Mark 2.
MANUAL OPERATION

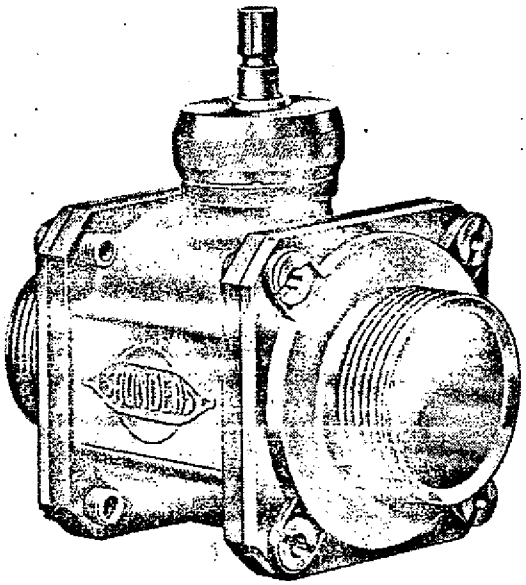


The Saunders Mark 2 Series of Spherical Plug Cocks differs in detail only, from the basic design and retains the triple-diaphragm sealing which prevents internal leakage past the plug seats and external leakage from the spindle housing.

SPHERICAL PLUG. The spherical plug is ground and lapped to the plastic seats, which are spring-loaded and flexibly mounted in the body.

ANNULAR DIAPHRAGMS. Two resilient, annular diaphragms seal off the plug seats from the pipeline fluid, preventing any leakage and providing the flexible mountings for the seats. Fluid pressure from the pipeline augments the spring pressure so that tightness of the seal increases as the pressure rises. This combination of spring and fluid pressure compensates for expansion and contraction due to temperature changes and counteracts wear at these points.

FULL BORE. The bore is of pipline equivalent throughout and, being without pockets or constrictions, permits 100 per cent. flow.



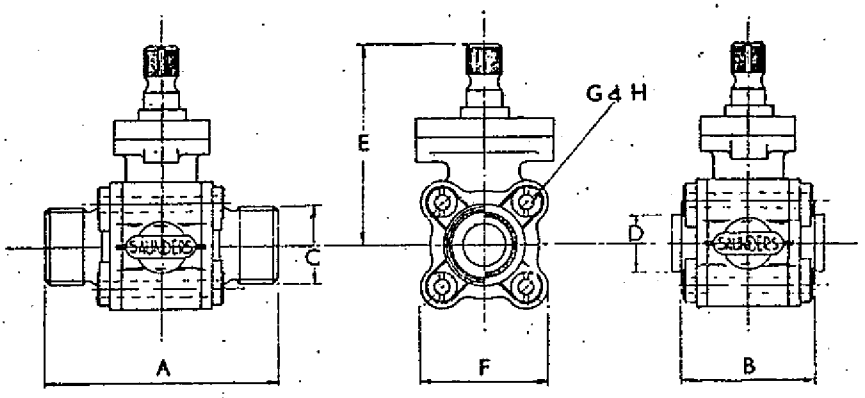
SPLINED SPINDLE. The squared-end spindle of the Mark 1 Cocks is replaced by a finely serrated end to agree with standard aircraft controls and, to ensure correct assembly, a keyway is cut.

SPINDLE DIAPHRAGM. A flexible sleeve diaphragm, by uniting the moving spindle with the fixed body,makes leakage to atmosphere at this usually vulnerable point impossible and renders a gland unnecessary. The spindle diaphragm is not subject to line fluid pressure in the OPEN or CLOSED positions and can be removed for renewal without removing the cock from the line or draining the system.

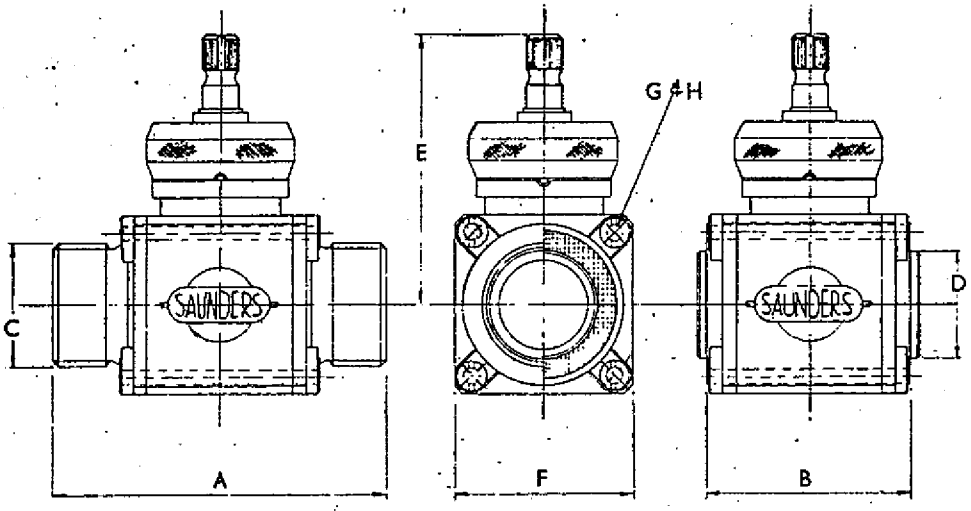
BODY. Flush or screwed ends are optional and, in either case, hollow bolt construction is employed, permitting the insertion or removal of inner attachment bolts without disturbing cock ends or bolts. In this form the cock is more versatile than the Mark 1 design, simplifying dismantling and maintenance work and rendering attachment direct to tanks, fittings and assemblies more convenient. Flush end cocks are fitted with synthetic sealing rings. Screwed end cocks have standard B.S.P. threads.

SAUNDERS S.P. Cocks have been type-tested at the Company's laboratories and by the Royal Aircraft Establishment and are approved by the M.O.S. and A.R.B. as conforming to Specification A.D.102.

S. P. TYPE. Mark 2.
OVERALL SIZES & WEIGHTS



TYPE NO.	SIZE		A	B	C	D Diameter	E	F	G Holes	H P.C.D.	Lbs.	Grams
20A03	⅜ in.	Inches	2.43		⅜ B.S.P.		2.09	1.32	4 B.A.	1.25	.33	148.5
		Mm.	61.7				53.1	33.5		31.75		
20A04	¼in.	Inches	2.59	1.41	¼ B.S.P.	.58	2.09	1.32	4 B.A.	1.25	.33	148.5
20B04		Mm.	65.8	35.8		14.7	53.1	33.5		31.75	.30	136.5
31A05	½ in.	Inches	3.04		½ B.S.P.		2.70	1.75	4 B.A.	1.85	.759	344.0
		Mm.	77.2				68.7	44.5		46.99		
31A06	¾ in.	Inches	3.14	1.94	¾ B.S.P.	.90	2.70	1.75	4 B.A.	1.85	.78	344.5
31B06		Mm.	79.8	49.3		22.9	68.7	44.5		46.99	.77	349.2
31A08	1 in.	Inches	3.50	2.14	1 B.S.P.	1.10	2.80	1.88	4 B.A.	2.10	.948	429.9
31B08	1 in.	Mm.	88.9	54.4		28.0	71.1	47.8		53.33	.905	410.5
41A10	1¼ in.	Inches	4.00	2.60	1¼ B.S.P.	1.40	2.95	2.25	2 B.A.	2.56	1.47	669.0
41B10		Mm.	101.6	66.0		35.6	73.7	57.2		65.01	1.40	637.4
51A12	1½ in.	Inches	4.66	3.13	1½ B.S.P.	1.65	3.27	3.00	2 B.A.	3.25	2.033	921.7
51B12		Mm.	118.4	79.5		41.9	83.1	76.2		82.54	1.85	889.5



SAUNDERS VALVE CO. LTD., CWMBRAN MONMOUTHSHIRE.

Directors . J. C. BILLINGHAM A. L. TRUMP . P. T. STEPHENS . D. BECKER . P. C. E. ROSE

Telephone CWMBRAN [redacted] Telegrams SAUNVAL CWMBRAN

2044

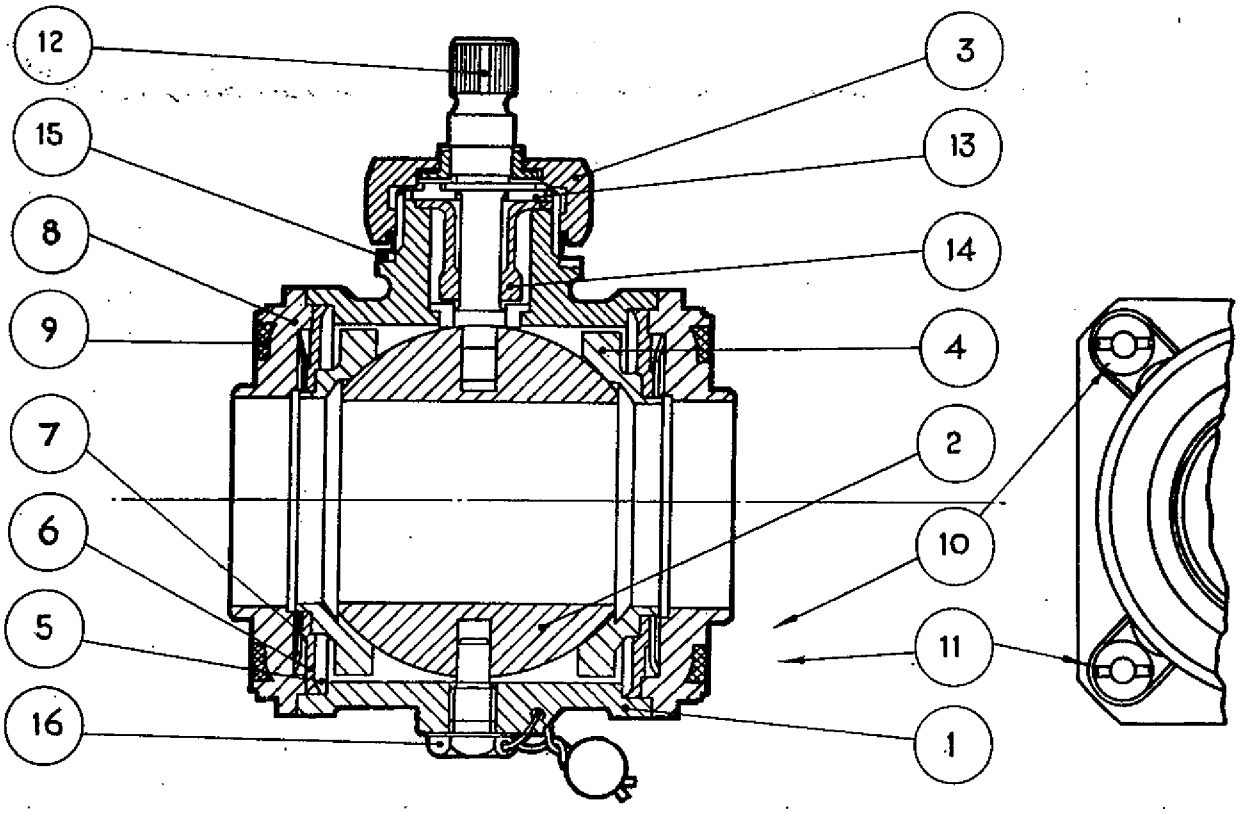


Fig.5.

L51B12, Valve, $1\frac{1}{2}$" Dia. Spherical Plug

REF. NO.	FIGURE & INDEX NO.	PART NO.	NOMENCLATURE 1 2 3 4 5 6 7	UNITS PER ASSEMBLY	CONDITION OF SUPPLY M/R	CLASS OF EQUIPMENT L/M
2225	5-[redacted]	L51B12	Valve 1½" S.P.	-		A
-	1	5112/1	. Body Assembly	1		-
5991	2	5012/16A	. Plug	I		C
5977	3	3008/1	. Cap	1		C
5989	4	5012/5	. Seat	2		C
2629	5	5012/11	. Washer, Seat	2		C
2630	6	5012/10	. Diaphragm Seat	2		C
2631	7	5012/7	. Spring	2		C
5993	8	5112/4	. End, Flush	2		C
2940	9	5112/5	. Ring, Sealing	2		C
2776	10	4110/6	. Screw	8		C
5438	11	4110/8	. Washer, Lock	8		C
5994	12	5112/6	. Spindle	1		C
2637	13	3008/15	. Washer, Stop	1		C
2627	14	3008/16	. Diaphragm, Spindle	1		C
2628	15	3008/11	. Washer, Locking	1		C
2632	16	5012/17	. Pin, Bearing	1		C

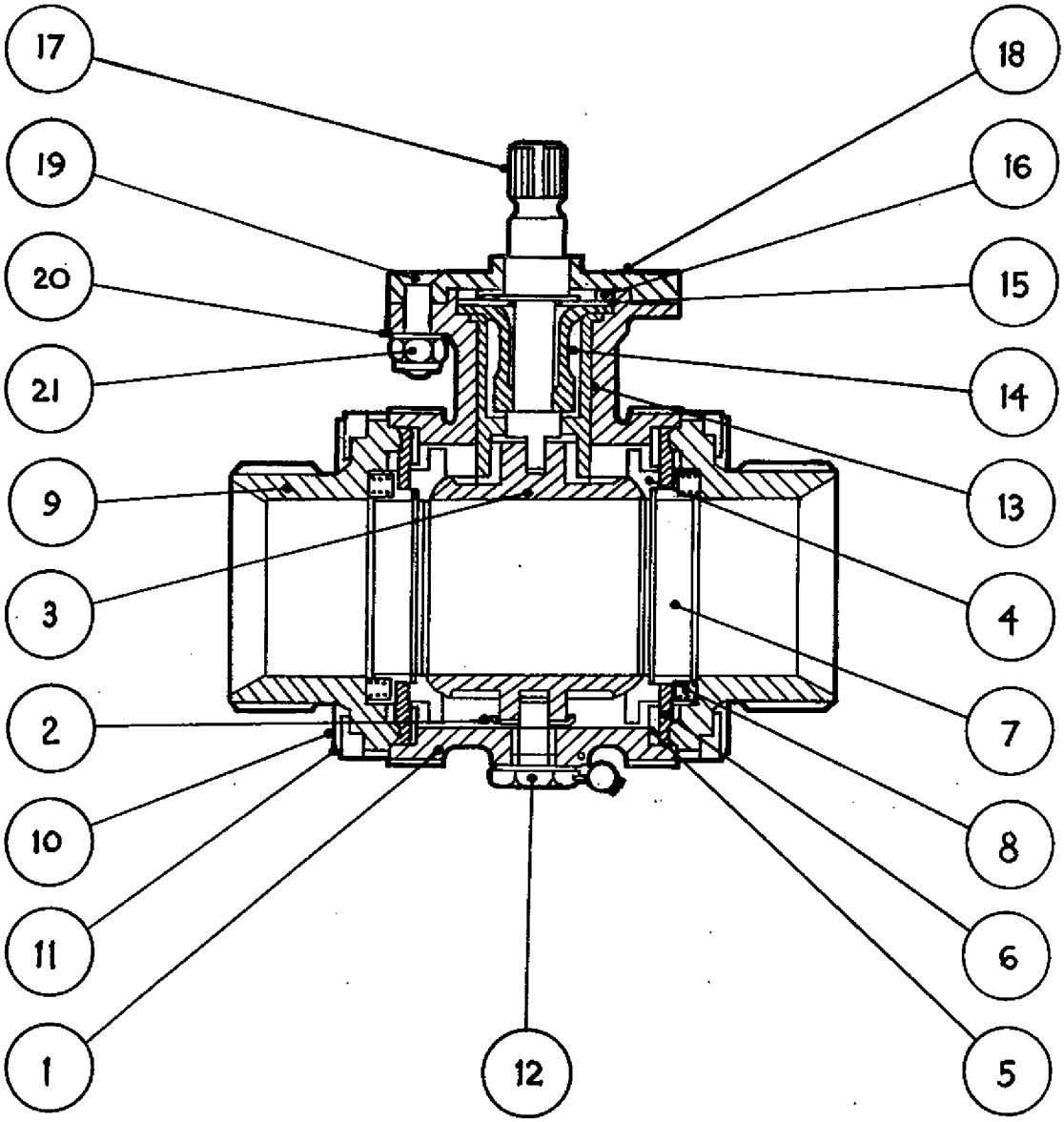


Fig.8.

42A10, Valve, $1\frac{1}{4}$" Dia. Spherical Plug

REF. No.	FIGURE & INDEX No.	PART No.	NOMENCLATURE 1 2 3 4 5 6 7	UNITS PER ASSEMBLY	CONDITION OF SUPPLY M/R	CLASS OF EQUIPMENT
2226	8-	42A10	Valve, $1\frac{1}{4}$", S.P.	-		B
-	1	4210/1	. Body	1		-
2770	2	4210/28	. Washer, bearing	1		C
5984	3	4210/3	. Plug, assembly	1		C
5985	4	4210/12	. Seat	2		C
2771	5	4210/11	. Washer, seat	2		C
5611	6	4210/8	. Diaphragm, seat	2		C
2772	7	4210/14	. Ring, thrust	2		C
2773	8	SVS110/2	. Spring	12		C
2774	9	4210/7	. Connection, end	2		C
2776	10	4110/6	. Screw, hollow	8		C
5438	11	4110/8	. Washer, lock	8		C
2892	12	4210/20	. Pin, bearing	1		C
5986	13	4210/21	. Sleeve, bearing	1		C
2627	14	3008/16	. Diaphragm, spindle	1		C
2777	15	4210/23	. Washer, spindle	1		C
2778	16	4210/16	. Washer, stop	1		C
2779	17	4210/19	. Spindle	1		C
5988	18	4210/26	. Cap	1		C
28D/9709461	19	AS1242/3C	. . Bolt, 2 B.A.	3		C
28W/9419402	20	SP.13/C	. Washer	3		C
28M/9433473	21	AGS2002/C/1	. Nut, 2 B.A. stiff	3		C

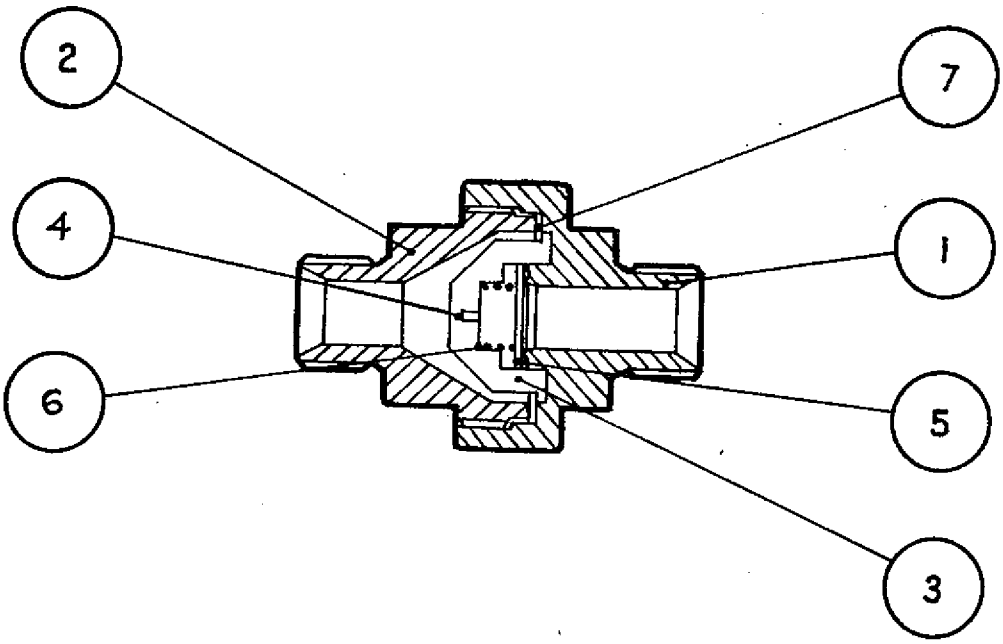


Fig. 14

N1002, Valve, $\frac{1}{4}$" Dia. Non-Return

REF. NO.	FIGURE & INDEX NO.	PART NO.	NOMENCLATURE 1 2 3 4 5 6 7	UNITS PER ASSEMBLY	CONDITION OF SUPPLY M/R	CLASS OF EQUIPMENT L/M
2661	14-	N1002	Valve ¼" B.S.P. Non-return	-		B
-	1	N1002/1	. Body N.R. Valve I.H.	1		
-	2	N1002/2	. Body N.R. Valve O.H.	1		
6226	3	N1002/6	. Cage Plate 'T'	1		C
6227	4	N1002/7	. Cage Plate 'B'	1		C
6228	5	N1002/8	. Plate Valve	1		C
-	6	N1002/9	. Spring	1		
6225	7	N1002/5	. Washer	1		C

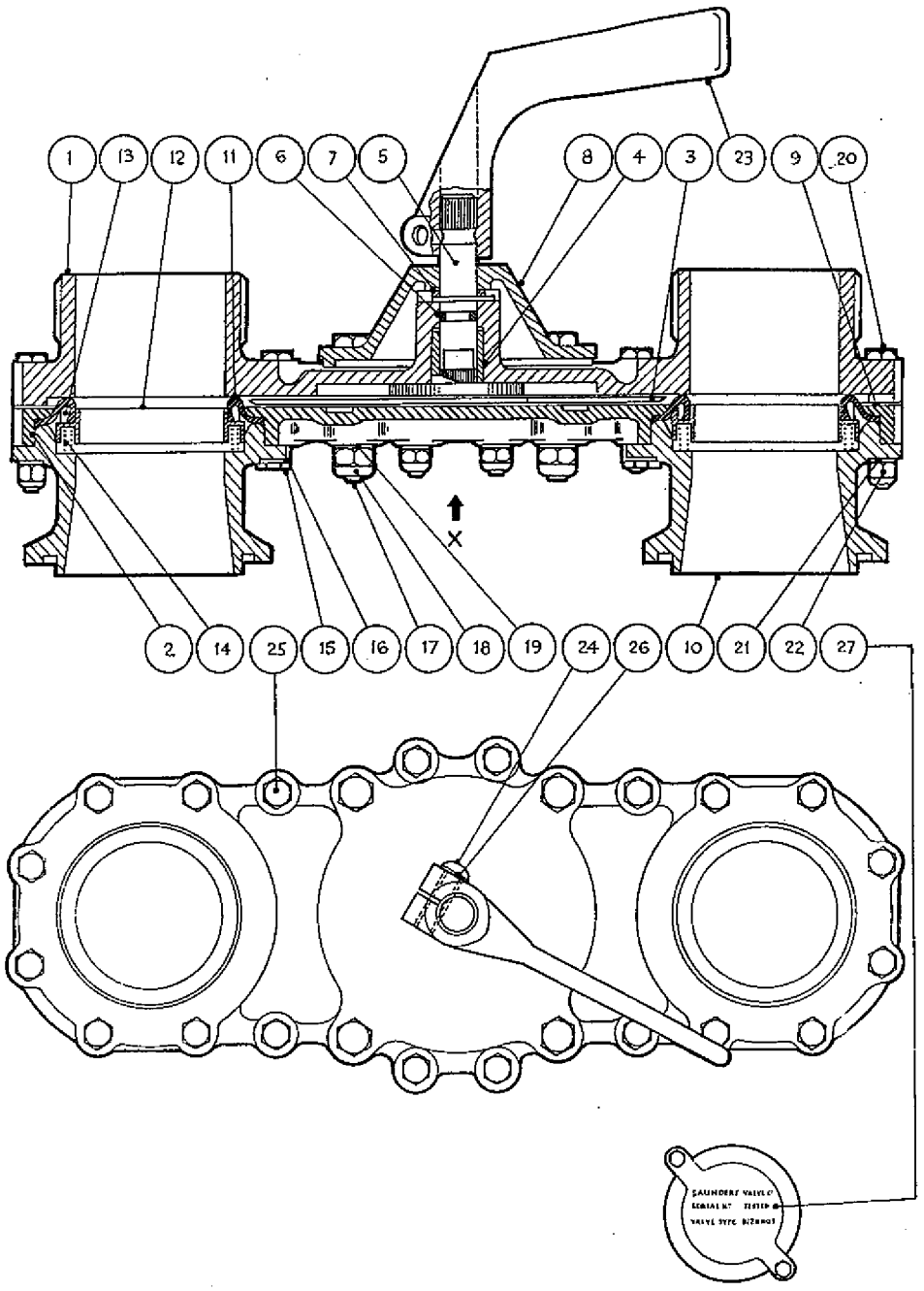


Fig. 1

812BR03, Valve, $1\frac{1}{2}$" Twin Gate

REF. NO.	FIGURE & INDEX NO.	PART NO.	NOMENCLATURE 1 2 3 4 5 6 7	UNITS PER ASSEMBLY	CONDITION OF SUPPLY M/R	CLASS OF EQUIPMENT L/M
2242	1-	812BRO3	Valve 1½" Twin Aero Gate			A
-	1	9387	. Body	1		
-	2	9389	. Body	1		
-	3	9391	. Gate, Valve	2		
-	4	9392	. Arm, Crank	1		
-	5	9393	. Spindle	1		
5609	6	SVS101D5	. 'O' Ring	1		C
-	7	9394	. Washer	1		
-	8	9395	. Retainer, Spindle	1		
-	9	9397	. Gasket	1		
-	10	9398	. End, Clamp	2		
-	11	9399	. Diaphragm, Seat	2		
-	12	9400	. Ring, Thrust	2		
-	13	9401	. Collar	2		
5039	14	SVS110/1	. Spring	12		C
-	15	9402	. Bolt 4 B.A.	4		
28W/9416642	16	SP47/B	. Washer 4 B.A. Spring	4		C
28D/1011019	17	A25/8C	. Bolt 2 B.A.	4		C
28M/10328	18	AGS2002/C/1	. Nut 2 B.A. Stiff	4		C
2105	19	1278	. Washer	4		C
28D/1011011	20	A25/8B	. Bolt 4 B.A.	12		C
-	21	1916/1	. Washer	20		
28M/10327	22	AGS2002/B/1	. Nut 4 B.A. Stiff	20		C
7672	23	9403	. Handle	1		C
28S/9992533	24	A32/C/20	. Screw 2 B.A. Round	1		C
28D/109984	25	A25/7B	. Bolt, 4 B.A.	8		C
28W/9416643	26	SP47C	. Washer 2 B.A. Spring	1		C
-	27	9407	. Nameplate	1		

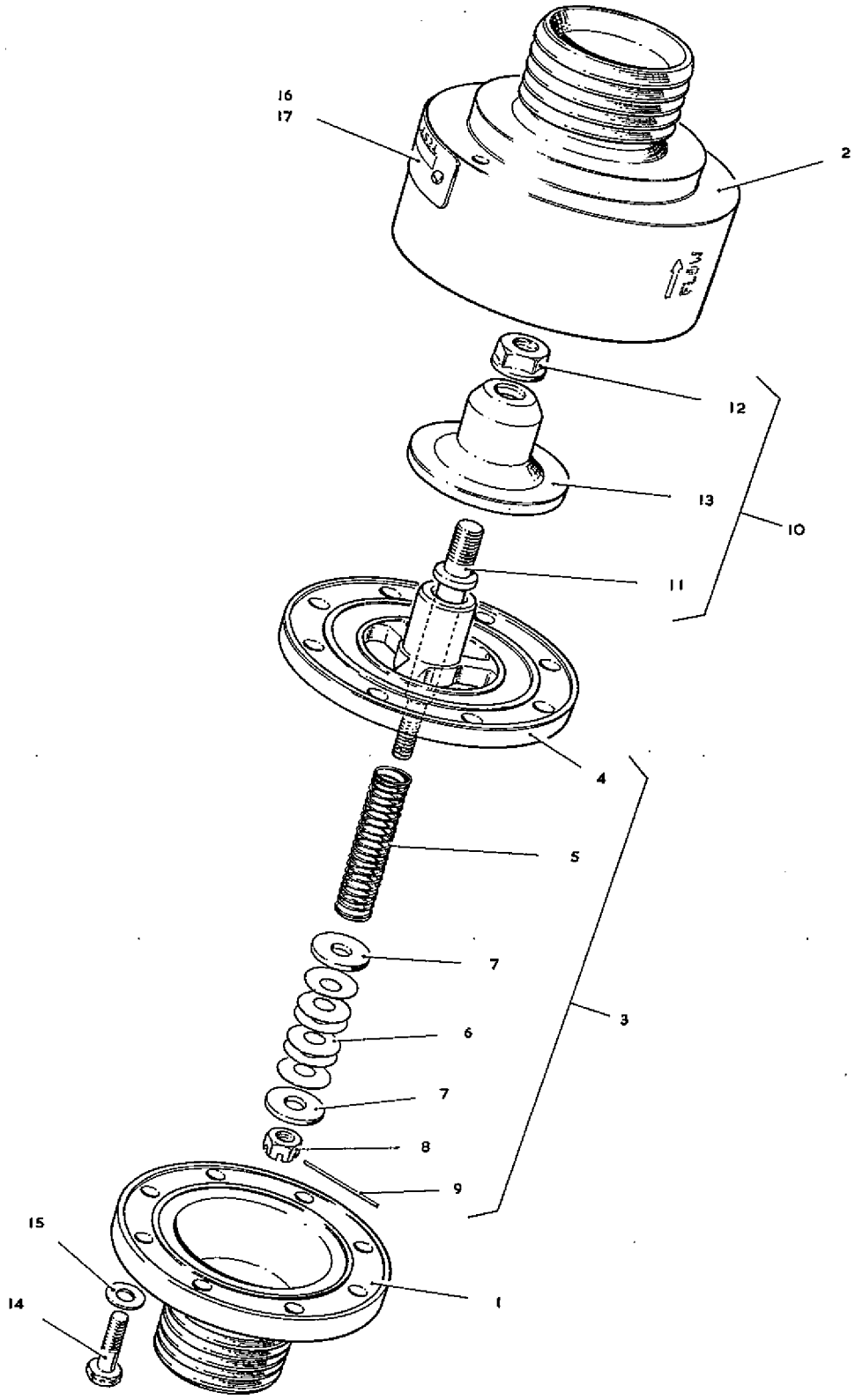


Fig. 25

708AA25/B, Valve, 1" Hot air, Non-return

REF. No.	FIGURE & INDEX No.	PART No.	NOMENCLATURE 1 2 3 4 5 6 7	UNITS PER ASSEMBLY	CONDITION OF SUPPLY M/R	CLASS OF EQUIPMENT
1455562	25-	708AA25/B	Valve, 1"dia., hot air, non-return	-		A
-	1	11943	. Connection, inlet end	1		-
-	2	12531	. Connection, outlet end	1		-
1454302	3	14471	. Housing assembly	1		C
	4	14519	. . Housing	1		-
5443	5	SVS112/7	. . Spring	1		C
1455829	6	SVS141/7	. . Spring, disc	6		C
1455828	7	14093	. . Washer	2		C
28M/9480974	8	A105/DS	. . Nut, No. 10 U.N.F.	1		C
-	9	-	. . Wire, spring, 18 swg, st. steel	AR		-
1455827	10	14701	. . Valve assembly	1		C
-	11	14521	. . . Spindle	1		-
28M/1301352	12	AS8623/E	. . . Nut, self-locking, $\frac{1}{4}$" U.N.F.	1		C
-	13	14520	. . . Valve	1		-
-	14	12532	. Bolt, 2 B.A.	8		-
28W/9128924	15	SP.14/C	. Washer, 2 B.A.	8		C
-	16	SVS105/2	. Label	1		-
5960	17	SVS120/1	. Screw, P.K.	2		C

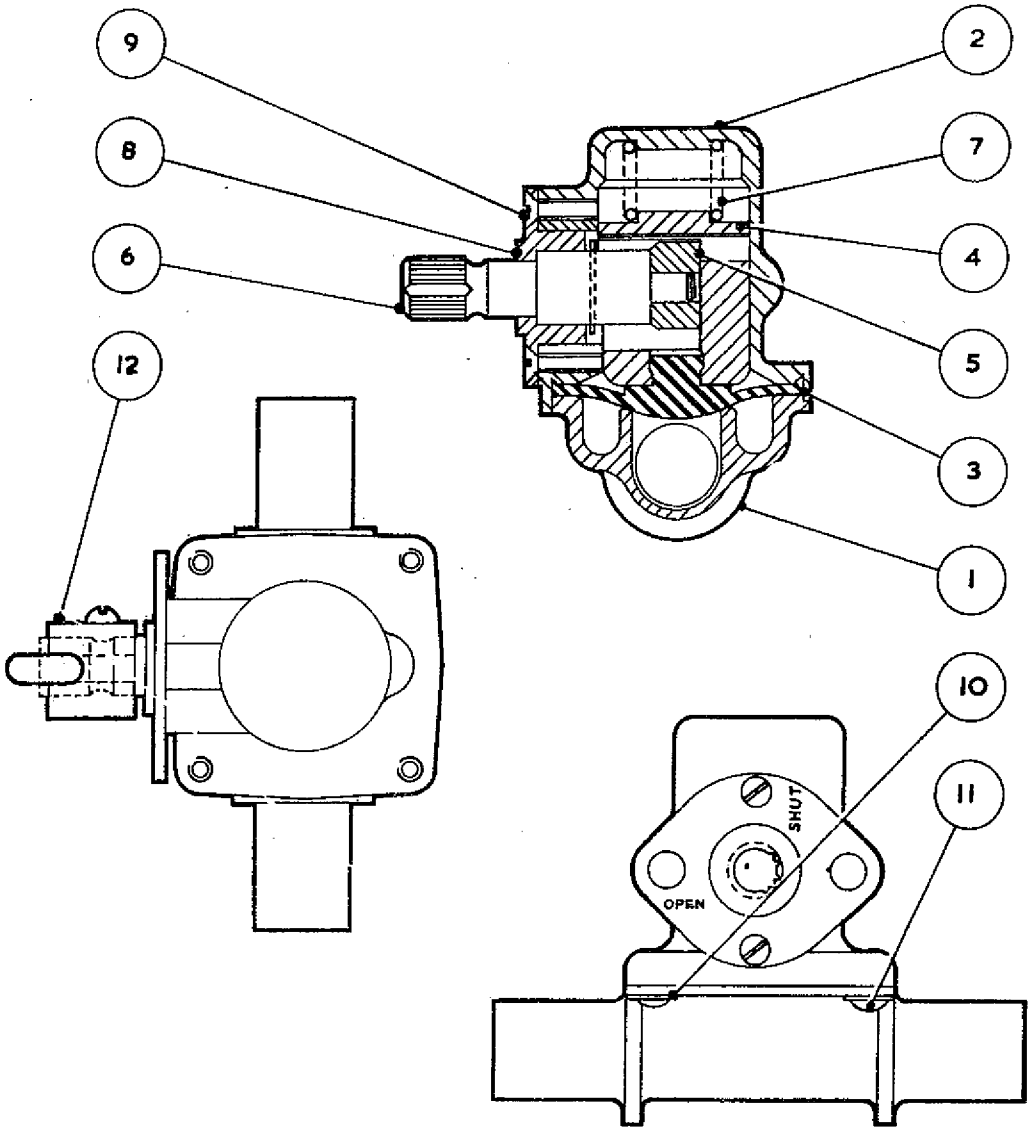


Fig. 4

605DR07, Valve, $\frac{5}{8}$" Dia. Water

REF. NO.	FIGURE & INDEX NO.	PART NO.	NOMENCLATURE 1 2 3 4 5 6 7.	UNITS PER ASSEMBLY	CONDITION OF SUPPLY M/R	CLASS OF EQUIPMENT L/M
6373	4-	605DR07	Valve $\frac{5}{8}$" Dia. Water	-		B
-	1	11420	. Body	1		-
-	2	7520	. Housing Assembly	1		-
6093	3	7522	. Diaphragm	1		C
6390	4	7521	. Compressor	1		C
6391	5	7523	. Roller	1		C
6392	6	11448	. Spindle Assembly	1		C
6393	7	7592	. Spring	1		C
6538	8	11494	. Retainer	1		C
28S/9139723	9	A/37/B10	. Screw 4 B.A. C'sk	2		C
28W/9419448	10	AGS2035B	. Washer 4 B.A. Shakeproof	4		C
28S/15950	11	A36/B10	. Screw 4 B.A. RD. HD.	4		C
2241	12	A102/3	. Handle Assembly	1