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MANUAL INSTRUCTION No. **124-8/10** FOR  
STORAGE, INSTALLATION, OPERATION  
AND MAINTENANCE FOR STARLINE BALL  
VALVES TYPE **MULTIPORT No.8-9.**

REFERENCE:  
STARLINE CATALOGUE  
Q.A.M. AND PURCHASE ORDER

Page :  
**1 of 1**

## N.8 THREE AND FOUR WAY

ITEM NO.	Q.TY	PART NAME
1	1	Handle
**2 a b	2	Handle nut
*3	1	Packing ring
**4	2	Spring washers
**5	1	Antistatic stem
6	1	Gland packing
*7	1	Thrust washer
*8	1	"O"ring stem
**9	1	Ball
*10	2	Seats
*11	2	Body seals
12	1	Body
13	2	End connectio
14	1	Stop-pin
16	Note 1	Bolts
**17	1	Stop washer
*18	2	Ring Seal
19	2	Seat Retainer
20	1	Name Plate

\* Start-up : 5% of ordered quantit  
\* Suggested materials after 2 years service  
\*\* Suggested materials after 5 years service

**Note 1:**  
for DN08 to DN40 n°4 bolts for size  
for DN50 n°6 bolts for size  
for DN65 N°8 bolts for size.

ORDER N. : ..... ITEM N. : .....

VALVE SIZE		SEAT AREA		STEM AREA			BODY SEAL AREA	
FULL BORE	REDUCED BORE	PART N.10 SEATS	PART N.18 SEAT SEALS	PART N.3 PACKING RING	PART N.7 THRUST WASHER	PART N.8 O RING STEM	PART N.11 FIRST SEAL	
DN								
08 ⊥		T ⊥	V ⊥	T ⊥	T ⊥	V ⊥	G ⊥	
10 ⊥	15 ⊥	R ⊥	N ⊥	R ⊥	S ⊥	N ⊥	S ⊥	
15 ⊥	20 ⊥	S ⊥	H ⊥	S ⊥	P ⊥	H ⊥	T ⊥	
20 ⊥	25 ⊥	B ⊥	E ⊥	G+S ⊥	... ⊥	E ⊥	... ⊥	
25 ⊥	32 ⊥	... ⊥	... ⊥			I ⊥		
32 ⊥	40 ⊥					... ⊥		
40 ⊥	50 ⊥							
50 ⊥	65 ⊥							
65 ⊥	80 ⊥							

When G is used on top there is a ring in S 0,6mm for antiextrusion

TABLE WITH TIGHTNESS VALUES FOR HANDLE NUT 2A-2B and BODY BOLTS 16

VALVE SIZE	HANDLE NUT 2 A and LOCK NUT 2 B			BODY BOLTS PART No. 16		
	DIMENSIONS	Nm	INCH LBS	DIMENSIONS	Nm	INCH LBS
DN 08-10	M10x1	8	70	M8x17	35	310
DN 15	M12x1.25	15	130	M8x17	35	440
DN 20	M12x1.25	15	130	M10x22	50	440
DN 25	M15x1.25	25	220	M10x22	50	440
DN 32-40	M15x1.5	25	220	M12x30	70	620
DN 50	M22x1.5	40	335	M12x35	70	620
DN 65	M24x2	50	440	M12x35	70	620

## **1.0 SCOPE**

This manual is intended as a guide to assist customers or end-users for storage , installation, and maintenance of Starline ball valves in the standard arrangements. For this reason subsequent additions and special instruction to the present manual will be provided in case of special ball valve, critical services or customer requirements.

## **2.0 APPLICABILITY**

This manual is applicable to Starline ball valves.

## **3.0 STORAGE**

### **3.1 INFORMATION ON SURFACE PROTECTION (EXTERNAL/INTERNAL) AND PACKING DETAILS.**

- a- before shipment from Starline factory all c.s. valves (A105-LF2) are protected against corrosion by phosphated treatment.
- b- all S.S. valves (304-316-F51-F44-F321 etc.)are pickled and passivated
- c- a pure vaseline oil is used as lubricant on all internal surfaces, this may be removed with a solvent if found objectionable. All valves are adequately packed into a strong cardboard case in such a way to avoid any possible damage during transport and storage period before use.

### **3.2 CAUTION AND MAINTENANCE PERIOD**

#### **3.3 IF BALL VALVES ARE NOT DESTINATED FOR IMMEDIATE USE FOLLOWING CAUTIONS MUST BE TAKEN:**

- a- if possible it would be advisable to leave the ball valves in their own packing cases during the entire period of storage.
- b- ball valve must remain in open position during all this time
- c- in order to prevent any damage, the protective plastic cover on the ends of the valves shall not be removed.

### **3.4 ATMOSPHERIC PROTECTION**

- a- it is advisable to store the valve in waterproof conditions in a building with an adequate roof. Ball valves shall be protected to safeguard against all the environments: humidity, moisture, rain, dust, dirt, sand, mud, salt air, salt spray and seawater.
- b- all valves complete with actuators are to be stored in closed and dry conditions.

### **3.5 LONG STORAGE PERIOD**

Valves to be stored for a long time shall be checked by the quality control personnel every 6 months; every 3 months when valves are actuated.

### **3.6 MAINTENANCE DURING STORAGE PERIOD**

- a- internal surface must be inspected to check complete dust or other foreign parts absence
- b- old rust or any dust must be removed by wiping with proper solvent
- c- after cleaning, ball valves must be lubricated by using an adequate lubricant
- d- ball valves must be operated for a least 2 complete cycles

## **4.0 INSTALLATION**

### **4.1 THE BALL VALVES MAY BE INSTALLED IN ANY POSITION USING A STANDARD PIPE FITTING PRACTICES**

#### **4.2 INFORMATION AND CAUTION BEFORE INSTALLATION OF THE VALVE**

- a- pipe must be free of tension
- b- pipe must be flushed to clean the dirt, burrs, calamines, welding residues etc. which would damage ball and seats
- c- protective plastic cover must be removed only at the moment of installation
- d- at the moment of the shipment the ball is lubricated with a pure vaseline oil, which can be easily removed with a solvent if required
- e- ball valves normally have a space between ball and inside cavity of the body which could trap the product, care should be taken to drain the cavity.
- f- care should always be taken to install the automated ball valves. Check for a correct actuator rotation and well done electrical connection

### **4.3 INSTALLATION OF THREADED ENDS**

Use conventional sealant such as hemp core, ptfе etc

### **4.4 INSTALLATION OF WELDED ENDS BALL VALVES**

**A** SW - BW with short ends instructions for welding the valve on the line: 1- tack weld in four points on all end-caps 2- lift-out the center piece and complete the welding 3- insert the center piece and control for easy operation

**B** WELDED NIPPLES - or integral nipple instructions for welding the valves on the line: tack weld in four points on all the ends and then complete the welding without dismantling the valve and control for easy operation

### **4.6 INSTALLATION OF FLANGED ENDS**

Easy fitting on the adequate bolts, nuts and gaskets.

## **5.0 OPERATION**

CAUTION! during the operation the ball valves must be in complete OPEN/CLOSE stop position in order to ensure their smooth and efficient working and long duration of seats. Leaving the ball in half open position could eventually cause damage to the soft seats.

### **5.1 MANUAL OPERATION**

The change on flow direction is done by turning the handle a quarter turn (90°) or 180°. On configuration 180° the intermediate position 90° do not have any mechanical stop system

On top of the stem it is assembled a visual indicator (camm) which is indicating with the yellow pins the port configuration and actual status.

## **6.0 MAINTENANCE**

CAUTION! Before starting the maintenance be sure that all pressure on the pipe is relieved.

- the ball valves if correctly used, normally do not need any internal lubrication and maintenance. However, when necessary, ball, or seats can be replaced only by relatively qualified personnel following the instruction of the manual without needs to use any machinery.

- for further information about the recommended SPARE PARTS LIST please check drawing, catalogue or contact the factory.

### **6.1 STEAM LEAKAGE**

If leakage is evident on stem packing area, it can be eliminated by increasing the tightness of the lock nut 2B. In case leakage is still persisting the replacement of the stem packing 3 is recommended. For handle nut and lock nut (2A-2B) tightness see table.

### **6.2 BODY SEALS LEAKAGE**

Check for the tightness of the body bolts 16 according to table in case it is still leaking, it is necessary to replace the body seals 11-18.

### **6.3 IN LINE OR SEATS LEAKAGE**

Check that valve is in fully closed position if so and the leakage is persisting the valve must be disassembled to replace damaged parts.

### **6.4 SAFETY PRECAUTION BEFORE REMOVING THE BALL VALVE FROM THE LINE FOR DISASSEMBLE**

a- check that all pressure is exhausted from the line (upstream and downstream) and half open the ball to ensure that no pressure is trapped in the body cavity. In other words it must be drained of all fluid/gas and pressure.

b- remove the valve from the line and cycle valve at minimum 1 full cycle to ensure that any pressure trapped is released

c- CAUTION! If the fluid in the line and into the valve is toxic, inflammable, corrosive or damaging for any other reason, it is advisable to take following precaution during the valve repairing:

- use protective eye mask or glasses
- use gloves, overalls and suitable footwear
- ensure that running water and fire extinguisher is easily available at any moment

## **7.0 VALVE DISASSEMBLY TO INSPECT AND/OR REPLACE BODY SEALS, SEATS, PACKING AND BALL**

- a- take out all body bolts 16 and remove end connections from the body.
- b- put the lever in line with one of the lateral ways.
- c- remove seats retainers 19 (including inserted seat 10) and all related sealing parts 11-18
- d- extract the ball from the central port, be careful not to damage the ball
- e- remove the fourth seat (if valve is four way it will be a seat retainer 19 + inserted seat 10)
- f- remove handle nut 2A, handle 1, stop washer 17, lock nut 2B, spring washer 4, gland packing 6
- g- push the stem 5 into the body 12. Remove packing rings 7 from body and o-ring 8 plus thrust-washer 7 from stem.
- d- remove seats from the seat retainer taking care of not damaging the edges of the seat retainer.

## **8.0 INSPECTION AND REPLACEMENT**

With the valve completely disassembled, clean and examine all the following components:

- a- surface of the ball: any surface defect, particularly in the seating area will be extremely detrimental to the performance of the valve and therefore the ball should be replaced if found defective
- b- seats: replacement of seats is recommended (see point d at 7.0)
- c- stem seals and body seals: also to be discharged and replaced by a new one
- d- remaining components of the valve: after cleaning it is required a careful examination for wear, corrosion and mechanical, damages particularly on threaded components. If components are found defective they should be replaced.

## **9.0 RE-ASSEMBLY**

Clean inside of body and stem housing. A light oil/grease compatible with line fluid can be used on ball, seats and stem surfaces.

### **9.1 STEM RE-ASSEMBLY**

- a- replace thrust washer and o-ring 7-8 and then insert the stem from inside body
- b- install the packing ring 3, gland packing 6, spring washer 4 and lock nut 2B and tighten. To avoid rotation of stem, apply temporarily the handle install stop washer 17, handle 1, handle nut 2A and tighten (see values given in the table)

### **9.2 BALL, SEATS AND SEALS RE-ASSEMBLY**

- a- insert the seat 10 on the blind side of the body.
- b- insert the ball from the central way and rotate it to the correct setting position (see catalogue n.8-9 for port configurations)
- c- insert the seat retainers 19 (assembled with seat 10), ring seals 18, and body seal 11.
- d- apply the first end cap on the frontal way (3 way configuration) and tight bolts firmly (see values given in table)
- e- apply the other two end caps (lateral) and tight bolts alternating left and right in order to give a similar and constant pressure on the seat retainers.
- f- for vertical L configuration apply first the two lateral end caps and tight bolts alternating left and right and then apply the end cap on the vertical port and tight bolts firmly.
- g- for four way apply all the four end caps and tight bolts alternate on all the four ends in a circular way in order to give a constant pressure on the seat retainers.
- h- apply on top of the stem the visual indicator (camm) with the correct orientation as per re-assembled ball position.

## **10.0 TESTING**

- a- after having completed the re-assembly check for the manoeuvrability of the valve and make sure that ball rotates freely
- b- if facilities are available, test the ball valve to the appropriate specification