



## 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 instructions to the present manual will be provided in case of special ball valves, 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

#### 3.2.1 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.

#### 3.2.2 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.

#### 3.2.3 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.

#### 3.2.4 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 at least 2 complete cycles

## 4.0 HANDLING

For valves bigger than 1" it is advisable to use flat slings to be applied between the hoister and the ends hub. No other system is advisable since it could be risky

## 5.0 INSTALLATION

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

### 5.2 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. The valve must be kept in OPEN POSITION during installation and 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

### 5.3 INSTALLATION OF THREADED ENDS

Use conventional sealant such as hemp core, ptfе etc

### 5.4 INSTALLATION OF WELDED ENDS BALL VALVES

with valve in open position tack weld in four points on both ends and then complete the welding without dismantling the valve and control for easy operation

### 5.6 INSTALLATION OF FLANGED ENDS

Easy fitting on the adequate bolts, nuts and gaskets.

## 6.0 OPERATION

CAUTION! during the operation the ball valves must be in either complete OPEN or CLOSED 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.

### 6.1 MANUAL OPERATION

The opening and closing of the valve is done by turning the handle a quarter turn (90°)

- a. Valve is in open position when the handle is in line with the valve and pipe line
- b. Valve is in closed position when the handle is across the pipe line
- c. Or Gear Box

### 6.2 AUTOMATED OPERATION

Valve can be automatically operated by: A pneumatic actuators (DA or SR), B hydraulic actuators, C electrical actuators.

In this case no stop is fitted on the valve since it is normally a part of the actuators.

## 7.0 MAINTENANCE

Maintenance on Starline valves is negligible since no lubrication is necessary.

Should the maintenance be required, the 3 pieces valves permit very easy service directly on site, reducing both time required and costs involved. Only few spares are needed, as you can see at page 1 of this manual.

-Caution! Before starting the maintenance, be sure that all the pressure on the pipe is relieved.

### 7.1 VALVE DISASSEMBLY

- a. Set the valve in open position, take out the adaptor bolts (part. n. 16) and close the ball
- b. Remove the adaptor flange (part.n.13), ball (part.n.19), seats (part.n.10)and body seals (part.n.11-18)
- c. Remove the handel nut ( part.n.2a), handle ( part.n.1), stop washer ( part. n. 17), lock nut ( part. n.2b), spring washer ( part.n.4), gland packing( part.n.6).
- d. Push the stem ( part.n.5) into the body( part.n.12),remove the packing ring ( part.n.3) from the body and o-ring ( part.n.8), plus thrust wascher ( part.n.7) from stem.
- e. Repeat all the points for the other side ( not applicable for singol block and bleed )
- f. Underscrew the handel sotp dowel (part. N. 50a) and take out the handle ( part. n. 50 )
- g. Underscrew the packing nut and the lock nut ( part. n. 51 – 51a )
- h. Underscrew the needle body bolts ( part. n. 55), take out the needle body ( part. n.54) from the body (part. n. 12) .
- i. Take out the needle o-ring (part. n. 58) and needle gasket (part. n. 57)
- j. Underscrew the needle stem ( part. n. 56)
- k. Take out the the spring washer, gland packing, packing ring and antiextrusion ring ( part.n. 52 a,b,c,d )

At this point the valve is completely disassembled and you can proceed to replace all the parts as suggested at page 1 of this manual. Please take into consideration that all these operations should be performed as much as possible in clean conditions.

### 7.2 SEAT (part. n. 10) REPLACEMENT

### 7.3 BODY/FLANGE SEAL (part. n. 11) AND BODY/FLANGE FIRE SEAL (part. n.18) REPLACEMENT

### 7.4 THRUST WASHER (part. n. 7) REPLACEMENT

### 7.5 STEM O-RING (part. n. 8) REPLACEMENT

### 7.6 STEM PACKING (part. n. 3) REPLACEMENT

### 7.7 NEEDLE O-RING (part. n. 58) AND NEEDLE GASKET (part. n. 57) REPLACEMENT

### 7.8 NEEDLE PACKING RING ( part. n. 52b) REPLACEMENT

### 7.9 VALVE REASSEMBLY

After having completed the above replacements, you can proceed to valve reassembly as below.

Take care to clean the valve before reassembly operations!

- a. Replace thrust washer (part. n. 7) and o-ring (part. n. 8) and them insert the stem from the body .
- b. Istall the packing ring (part. n. 3), gland packing (part. n. 6), spring washer (part. n. 4), lock nut (part. n.2b) and tighten. To avoid rotation of stem, apply temporarily the handle. Install stop washer (part. n. 17), handle (part. n.1) and handle nut (part. n. 2a) .
- c. Place the stem in close position and insert the seat (part. n.10) and the ball (part. n. 9) in the same position.
- d. Rotate the ball in open position, insert the body seals,
- e. Put the adaptor flange (part.n. 13), with seat (part.n.10) on the body .
- f. Tighten the adaptor bolts (part. n. 16) being careful to do it correctly (first bolt and then the corresponding one at 180°).
- g. Operate the valve to verify that everything is all right.
- h. Operate the valve and perform at least 10 complete rotations at 360° to allow each part to be assesed in its own housing.
- i. Repeat the same operations (points a +h) for the other side ( not applicable for singol block and bleed )
- j. Insert the needle stem (part. n. 56) in the needle body (part. n.54), install the needle gasket (part.n.57) and needle o-ring (part.n.58)
- k. Put the needle (part n. 54) on the body ( part. n. 12 ) and take care not to damage the needle gasket (part. n. 57) or the needle o-ring (part. n. 58)
- l. Tighten the needle bolts (part. n. 55) being careful to do it correctly (first bolt and then the corresponding one at 180°).
- m. Insert the antiextrusion ring, packing ring, gland packing and spring washer ( part.n. 52 d,c,b,a ) in the needle body (part. n.54)
- n. Tighten the packing nut and the lock nut ( part. n. 51 – 51a )
- o. Insert the handle ( part. n. 50 ) in the needle stem ( part. n. 56) and fix with the handel sotp dowel (part. N. 50a)

At this point the valve is ready to be put in the line again.

For more informations about the recommended spares, please check carefully at page 1 of this manual.