

## 2 STANDARD

### FORGED STEEL BALL VALVES



PED 97/23 EC



Certificate N°: RPS 0160304/01

ATEX 94/9 CE



Tech. File N° ST01 ATEX

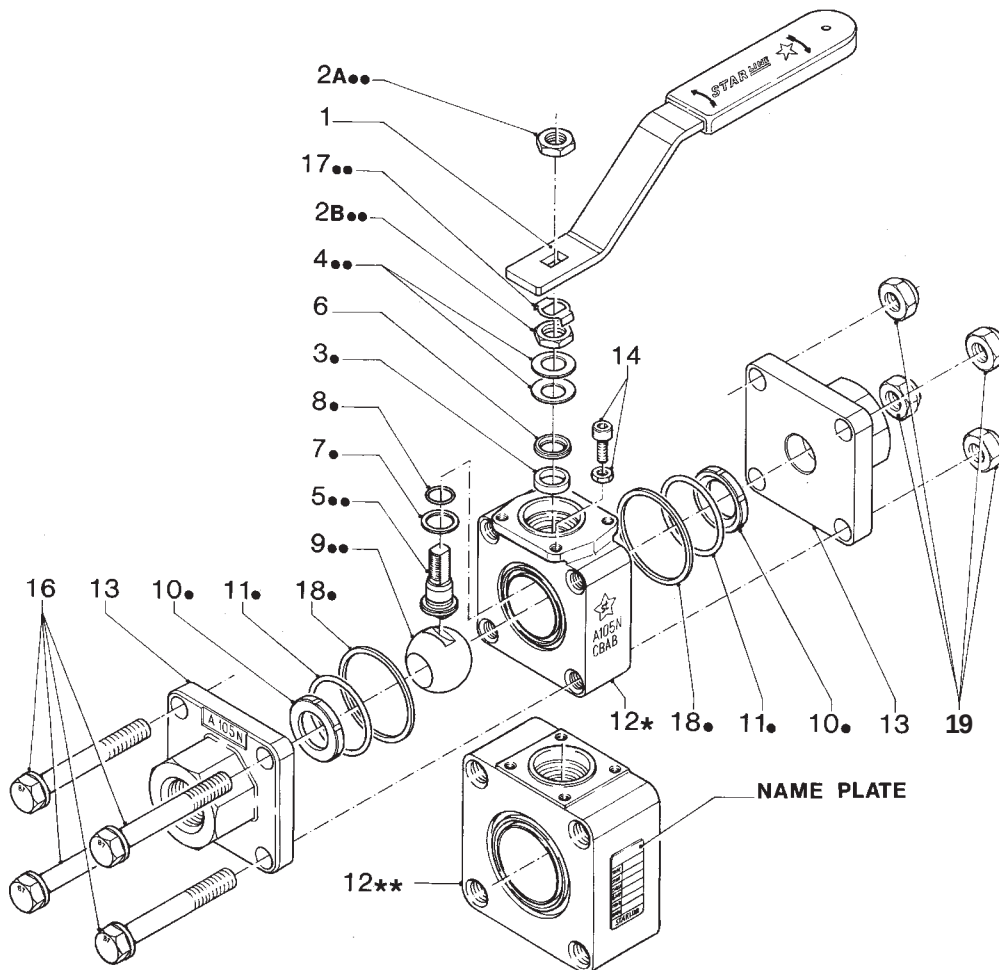


P-8871

MAC/10699/2/TO/99

6D-0233

TYPE APPROVED



• Suggested materials after 2 years service  
• Empfohlene ersatzteile für 2 Jahre betrieb  
• Pièces de rechange conseillées pour 2 ans de service  
• Recambios aconsejados para 2 años de servicio

•• Suggested materials after 5 years service  
•• Empfohlene ersatzteile für 5 Jahre betrieb  
•• Pièces de rechange conseillées pour 5 ans de service  
•• Recambios aconsejados para 5 años de servicio

★ Body shape for size  
1/4" to 3/4" Full Bore  
1/2" to 1" Reduced Bore

★★ Body shape for size  
1" to 1 1/2" Full Bore  
1 1/4" to 2" Reduced Bore

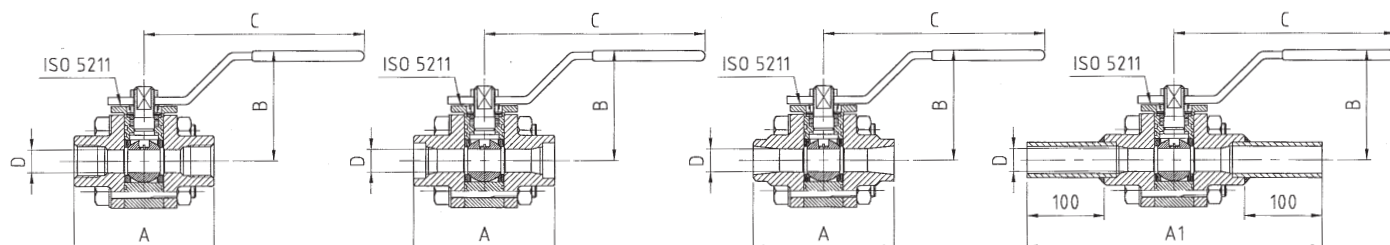
| STARLINE   |      |                                          | FULL BORE                               | N 123 SGV                        | N 126 TGT                        |
|------------|------|------------------------------------------|-----------------------------------------|----------------------------------|----------------------------------|
| Figure No. |      |                                          | REGULAR BORE                            | N 223 SGV                        | N 226 TGT                        |
| ITEM       | Q.TY | Part name<br>Bezeichnung                 | Designation<br>Componentes              | A105/F316                        | F316/F316                        |
| 1          | 1    | Handle<br>Handhebel                      | Levier<br>Maneta                        | C.S. Galvanized<br>Plastic cover | C.S. Galvanized<br>Plastic cover |
| • 2        | 2    | Nut<br>Mutter                            | Ecrou<br>Tuerca                         | C.S. Cadmium<br>Plated           | S.S. 316                         |
| • 3        | 1    | Packing ring<br>Stopfbuchsenpackung      | Guamiture<br>Junta eje                  | Graphite                         | Graphite                         |
| • 4        | 2    | Spring washer<br>Tellerfedern            | Rondelle ressort<br>Arandela            | Special S.S.                     | Special S.S.                     |
| • 5        | 1    | Antistatic stem<br>Antistatische spindel | Tige antistatique<br>Eje antiestatico   | S.S. 316                         | S.S. 316                         |
| 6          | 1    | Gland packing<br>Druck ring              | Fouloir<br>Estopada                     | S.S. 316                         | S.S. 316                         |
| • 7        | 1    | Thrust washer<br>Spindeldichtung         | Rondelle butée<br>Junta eje             | Reinf. PTFE                      | PTFE                             |
| • 8        | 1    | «O» Ring stem<br>«O» Ring spindel        | Joint torique<br>Torica eje             | VITON                            | VITON                            |
| • 9        | 1    | Ball<br>Kugel                            | Sphère<br>Espera                        | S.S. 316                         | S.S. 316                         |
| • 10       | 2    | Seats<br>Sitzring                        | Sièges<br>Asientos                      | Reinf. PTFE "S"                  | PTFE                             |
| • 11       | 2    | Body seal<br>Gehäusedichtung             | Joint de corps<br>Junta cuerpo          | VITON                            | PTFE                             |
| 12         | 1    | Body<br>Gehäuse                          | Corps<br>Cuerpo                         | ASTM A105                        | A182 F316                        |
| 13         | 2    | End connections<br>Anschlußstutzen       | Embout<br>Terminales                    | ASTM A105                        | A182 F316L                       |
| 14         | 1    | Stop-pin<br>Anschlag                     | Butée<br>Tope                           | S.S. 304                         | S.S. 304                         |
| 16         | 4    | Bolts<br>Gehäuseschraube                 | Vis<br>Goujon                           | ASTM A193<br>B7 Galvanized       | ASTM A193 B8                     |
| • 17       | 1    | Stop washer<br>Sicherungsscheiße         | Rondelle-frein<br>Arandela de seguridad | S.S. 304                         | S.S. 304                         |
| • 18       | 2    | Body seal<br>Gehäusedichtung             | Joint de corps<br>Junta de cuerpo       | Free Asbestos<br>NA35            | Free Asbestos<br>NA35            |
| 19         | 4    | Nuts<br>Mutter                           | Ecrous<br>Tuerca                        | ASTM A194-2H<br>Galvanized       | ASTM A194-GR.8                   |

BSP Parallel: BS21 Rp - ISO 228/1 - ISO 7/1Rp  
BSP Taper: BS21 Rc - ISO 7/1Rc - DIN 2999/1  
NPT: ANSI B1 20.1

S.W.: ANSI B16.11- BS 5351  
Instruction for welding the valve on the line:  
With the valve in open position tack-weld in four points on both ends. Lift-out the center piece and complete the welding. Insert the center piece and control for easy operation.

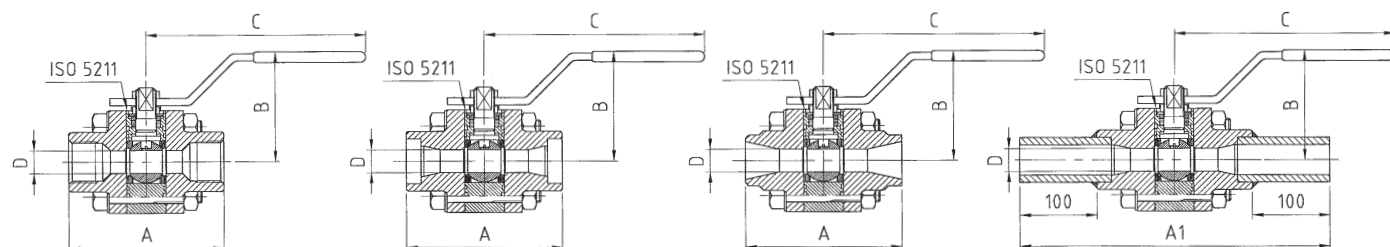
B.W.-P.E.: ANSI B16.25 Sch. 5S-10S-40-80-XS  
Note: other overall lengths are available on request.  
Instruction for welding the valve on the line: with the valve in open position tack-weld in four points on both ends. Lift-out the center piece and complete the welding. Insert the center piece and control for easy operation.

WELDED NIPPLES: ANSI B36.10 B.W. - P.E. SCH. 40-80-XS  
Note: other overall lengths are available on request.  
Instruction for welding the valve on the line: with the valve in open position tack-weld in four points on both ends and then complete the welding without dismantling the valve.



| FULL BORE  |      |                      |      |     |      |      |          |
|------------|------|----------------------|------|-----|------|------|----------|
| VALVE SIZE |      | DIMENSIONS mm / Inch |      |     |      |      | ISO 5211 |
|            |      | A                    | A1   | B   | C    | D    |          |
| DN 8       | 8    | 75                   | 275  | 67  | 152  | 11.1 | F03      |
| Inch 1/4"  | 2.95 | 10.8                 | 2.63 | 6   | 0.44 | 2.4  |          |
| DN 10      | 10   | 75                   | 275  | 67  | 152  | 11.1 | F03      |
| Inch 3/8"  | 2.95 | 10.8                 | 2.63 | 6   | 0.44 | 2.2  |          |
| DN 15      | 15   | 80                   | 280  | 70  | 152  | 14.2 | F03      |
| Inch 1/2"  | 3.15 | 11                   | 2.75 | 6   | 0.56 | 2.8  |          |
| DN 20      | 20   | 100                  | 300  | 80  | 193  | 21   | F04      |
| Inch 3/4"  | 3.94 | 11.8                 | 3.15 | 7.5 | 0.83 | 5    |          |

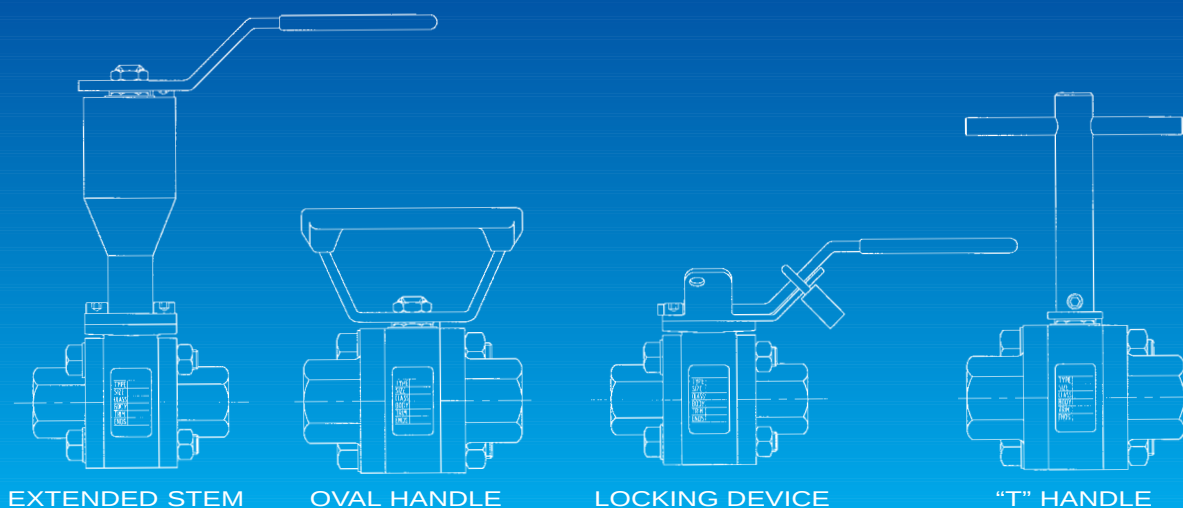
| REDUCED BORE |      |                      |      |     |      |      |          |
|--------------|------|----------------------|------|-----|------|------|----------|
| VALVE SIZE   |      | DIMENSIONS mm / Inch |      |     |      |      | ISO 5211 |
|              |      | A                    | A1   | B   | C    | D    |          |
| DN 15        | 15   | 75                   | 275  | 67  | 152  | 11.1 | F03      |
| Inch 1/2"    | 2.95 | 10.8                 | 2.63 | 6   | 0.44 | 2.2  |          |
| DN 20        | 20   | 80                   | 280  | 70  | 152  | 14.2 | F03      |
| Inch 3/4"    | 3.15 | 11                   | 2.75 | 6   | 0.56 | 2.8  |          |
| DN 25        | 25   | 100                  | 300  | 80  | 193  | 21   | F04      |
| Inch 1"      | 3.94 | 11.8                 | 3.15 | 7.5 | 0.83 | 5    |          |



| FULL BORE   |      |                      |      |     |      |      |          |
|-------------|------|----------------------|------|-----|------|------|----------|
| VALVE SIZE  |      | DIMENSIONS mm / Inch |      |     |      |      | ISO 5211 |
|             |      | A                    | A1   | B   | C    | D    |          |
| DN 25       | 25   | 110                  | 310  | 92  | 193  | 25.4 | F04      |
| Inch 1"     | 4.33 | 12.2                 | 3.62 | 7.5 | 1    | 7    |          |
| DN 32       | 32   | 120                  | 320  | 108 | 225  | 31.7 | F05      |
| Inch 1 1/4" | 4.72 | 12.6                 | 4.25 | 9   | 1.25 | 9.5  |          |
| DN 40       | 40   | 140                  | 340  | 113 | 225  | 38   | F05      |
| Inch 1 1/2" | 5.51 | 13.4                 | 4.45 | 9   | 1.5  | 12.8 |          |

| REDUCED BORE |      |                      |      |     |      |      |          |
|--------------|------|----------------------|------|-----|------|------|----------|
| VALVE SIZE   |      | DIMENSIONS mm / Inch |      |     |      |      | ISO 5211 |
|              |      | A                    | A1   | B   | C    | D    |          |
| DN 32        | 32   | 110                  | 310  | 92  | 193  | 25.4 | F04      |
| Inch 1 1/4"  | 4.33 | 12.2                 | 3.62 | 7.5 | 1    | 6.8  |          |
| DN 40        | 40   | 120                  | 320  | 108 | 225  | 31.7 | F05      |
| Inch 1 1/2"  | 4.72 | 12.6                 | 4.25 | 9   | 1.25 | 9.2  |          |
| DN 50        | 50   | 140                  | 340  | 113 | 225  | 38   | F05      |
| Inch 2"      | 5.51 | 13.4                 | 4.45 | 9   | 1.5  | 12.1 |          |

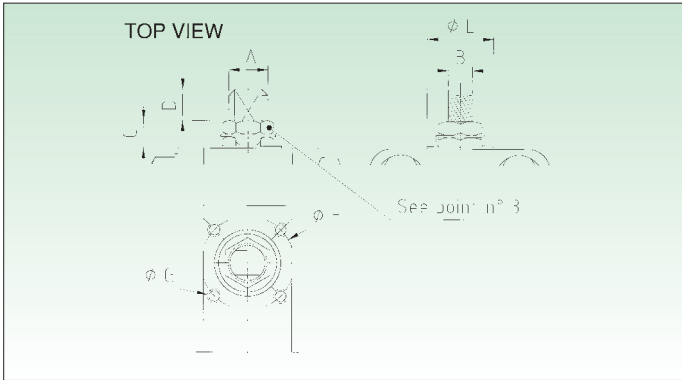
## DIFFERENT CONFIGURATIONS





HOW TO TRANSFORM A MANUAL OPERATED VALVE IN AUTOMATED VALVES

- 1) Take out the handle nut
- 2) Take out the handle
- 3) For sizes: 1/4" - 3/8" - 1/2" F.B. or 1/2" - 3/4" R.B. handle nut is not to be fitted  
For bigger sizes the handle nut has to be fitted



DIMENSIONS AND TORQUE TO SELECT ACTUATOR SUITABLE FOR STARLINE BALL VALVES

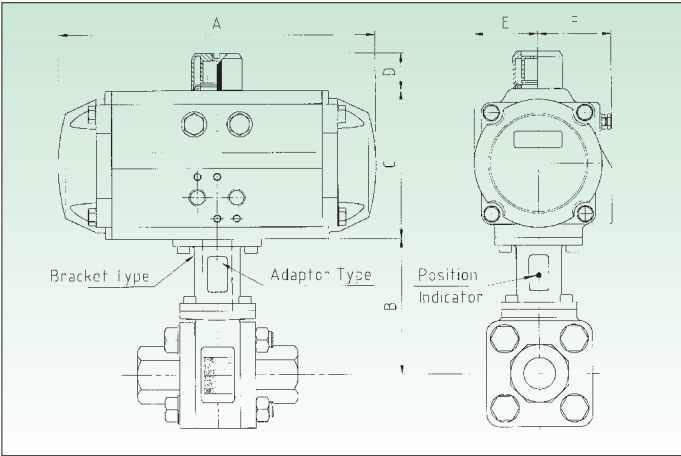
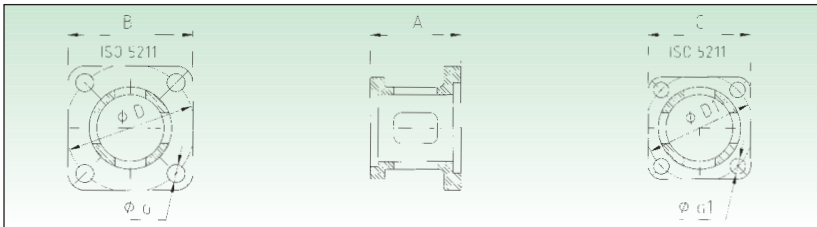
| VALVE SIZE |           | DIMENSIONS |    |          |     |     |     |    |    |       | ISO 5211 | BREAK AWAY TORQUE Nm |
|------------|-----------|------------|----|----------|-----|-----|-----|----|----|-------|----------|----------------------|
| FULL BORE  | RED. BORE | A          | B  | C        | D   | ØE  | ØF  | ØG |    |       |          |                      |
| Inch       | DN        | Inch       | DN | mm       | mm  | mm  | mm  | mm | mm | mm    |          |                      |
| 1/4"       | 8         | -          | -  | M10x1    | 5.5 | 5.4 | 3.6 | 25 | 36 | M5x8  | F03      | 9                    |
| 3/8"       | 10        | 1/2"       | 15 | M10x1    | 5.5 | 5.4 | 3.6 | 25 | 36 | M5x8  | F03      | 9                    |
| 1/2"       | 15        | 3/4"       | 20 | M10x1    | 5.5 | 6   | 3.6 | 25 | 36 | M5x8  | F03      | 12                   |
| 3/4"       | 20        | 1"         | 25 | M12x1.25 | 7.5 | 5   | 9   | 30 | 42 | M5x8  | F04      | 18                   |
| 1"         | 25        | 1.1/4"     | 32 | M12x1.25 | 7.5 | 10  | 10  | 30 | 42 | M5x8  | F04      | 25                   |
| 1.1/4"     | 32        | 1.1/2"     | 40 | M15x1.5  | 8.9 | 14  | 13  | 35 | 50 | M6x10 | F05      | 30                   |
| 1.1/2"     | 40        | 2"         | 50 | M15x1.5  | 8.9 | 14  | 14  | 35 | 50 | M6x10 | F05      | 35                   |

\*BREAK AWAY TORQUE AT MAX. WORKING PRESSURE WITH SEATS TYPE PTFE + 25% C. GRAPHITE 'S' FOR SEATS IN VIRGIN PTFE 'T' -5%.  
CONVERSION FACTORS: 1Nm= 0,7376 Lb-in / 1 lb.ft.= 1.365 Nm / 1 Nm= 8,86 Lb-in

It must be understood that many factor can influence the torque of ball valves in field service. For this reason to SELECT PROPER ACTUATOR it must be used the "TORQUE ADJUSTMENT FACTORS" table no. A003/94.

|                                 |   |               |   |                        |   |                     |   |                        |   |                         |   |                                         |
|---------------------------------|---|---------------|---|------------------------|---|---------------------|---|------------------------|---|-------------------------|---|-----------------------------------------|
| NET BREAK AWAY TORQUE OF VALVES | + | PROCESS MEDIA | + | FREQUENCY OF OPERATION | + | PROCESS TEMPERATURE | + | VALVE SEATING MATERIAL | + | SUGGESTED SAFETY FACTOR | = | TORQUE TO SELECT ACTUATOR OR GEAR IN Nm |
|---------------------------------|---|---------------|---|------------------------|---|---------------------|---|------------------------|---|-------------------------|---|-----------------------------------------|

"STARLINE" BRACKETS ISO 5211 IN STAINLESS STEEL



THE BELOW TABLE REFERS TO AIR TORQUE ACTUATORS

| VALVE SIZE |           | DOUBLE ACTING ACTUATOR |    |       |    |     |    |      |      |                           |              |              |
|------------|-----------|------------------------|----|-------|----|-----|----|------|------|---------------------------|--------------|--------------|
| FULL BORE  | RED. BORE | DIMENSIONS (mm)        |    |       |    |     |    |      |      | ACTUATOR TYPE             | BRACKET TYPE | ADAPTOR TYPE |
| Inch       | DN        | Inch                   | DN | A     | B  | C   | D  | E    | F    |                           |              |              |
| 1/4"       | 8         | -                      | -  | 140.5 | 65 | 69  | 20 | 29   | 41.5 | AT 051 DA ISO F04-CH11    | ST1          | A1/E         |
| 3/8"       | 10        | 1/2"                   | 15 | 140.5 | 65 | 69  | 20 | 29   | 41.5 | AT 051 DA ISO F04-CH11    | ST1          | A1/E         |
| 1/2"       | 15        | 3/4"                   | 20 | 158.5 | 67 | 85  | 20 | 36   | 47   | AT 101 DA ISO F05-CH14    | ST1          | A1/A         |
| 3/4"       | 20        | 1"                     | 25 | 158.5 | 73 | 85  | 20 | 36   | 47   | AT 101 DA ISO F05-CH14    | ST2          | A2/A         |
| 1"         | 25        | 1.1/4"                 | 32 | 210.5 | 73 | 102 | 20 | 42.5 | 52   | AT 201 DA ISO F05F07-CH14 | ST2          | A2/B         |
| 1.1/4"     | 32        | 1.1/2"                 | 40 | 210.5 | 82 | 102 | 20 | 42.5 | 52   | AT 201 DA ISO F05F07-CH14 | ST3          | A3/E         |
| 1.1/2"     | 40        | 2"                     | 50 | 210.5 | 86 | 102 | 20 | 42.5 | 52   | AT 201 DA ISO F05F07-CH14 | ST3          | A3/E         |

| VALVE SIZE |           | SPRING RETURN ACTUATOR |    |       |    |     |    |      |      |                            |              |              |
|------------|-----------|------------------------|----|-------|----|-----|----|------|------|----------------------------|--------------|--------------|
| FULL BORE  | RED. BORE | DIMENSIONS (mm)        |    |       |    |     |    |      |      | ACTUATOR TYPE              | BRACKET TYPE | ADAPTOR TYPE |
| Inch       | DN        | Inch                   | DN | A     | B  | C   | D  | E    | F    |                            |              |              |
| 1/4"       | 8         | -                      | -  | 158.5 | 65 | 85  | 20 | 36   | 47   | AT 101 S10 ISO F05-CH14    | ST1          | A1/A         |
| 3/8"       | 10        | 1/2"                   | 15 | 158.5 | 65 | 85  | 20 | 36   | 47   | AT 101 S10 ISO F05-CH14    | ST1          | A1/A         |
| 1/2"       | 15        | 3/4"                   | 20 | 210.5 | 67 | 102 | 20 | 42.5 | 52   | AT 201 S10 ISO F05F07-CH14 | ST1          | A1/A         |
| 3/4"       | 20        | 1"                     | 25 | 210.5 | 73 | 102 | 20 | 42.5 | 52   | AT 201 S10 ISO F05F07-CH14 | ST2          | A2/A         |
| 1"         | 25        | 1.1/4"                 | 32 | 247.5 | 73 | 115 | 20 | 49.5 | 56.8 | AT 251 S10 ISO F05F07-CH17 | ST2          | A2/E         |
| 1.1/4"     | 32        | 1.1/2"                 | 40 | 268.5 | 82 | 127 | 20 | 56   | 67   | AT 301 S10 ISO F05F07-CH17 | ST3          | A3/A         |
| 1.1/2"     | 40        | 2"                     | 50 | 268.5 | 86 | 127 | 20 | 56   | 67   | AT 301 S10 ISO F05F07-CH17 | ST3          | A3/A         |

General Remarks:

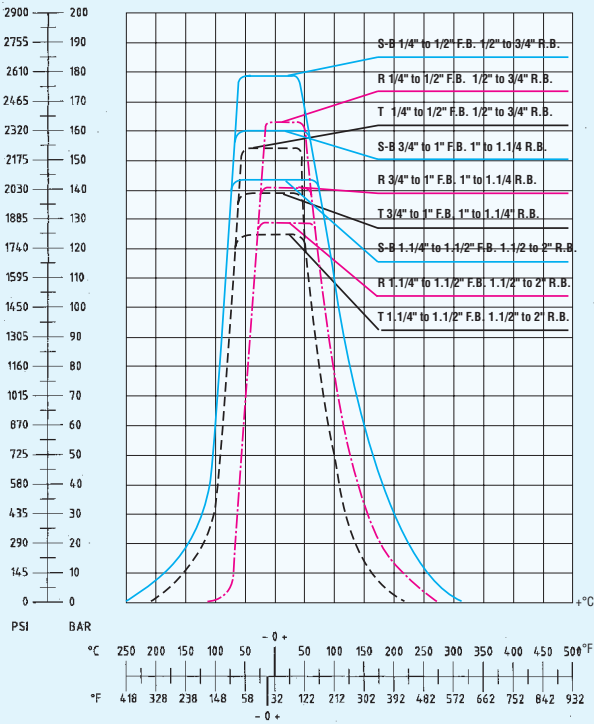
- 1) The above actuators have been selected considering an air supply of 80 psi or 5,6 bar.
- 2) On spring return actuators teh N. of spring per side is 5.
- 3) For different air supply please see Air Torque Catalogue.
- 4) Bracket and adaptor are dimensioned to fit Air Torque actuators.
- 5) When air supply for actuator is lower than 5,6 bar bigger actuator must be selected and bracket plus adaptor become special

| TYPE OF BRACKET | DIMENSIONS (mm) |      |      |       |     |     |    | ISO 5211    |
|-----------------|-----------------|------|------|-------|-----|-----|----|-------------|
|                 | A               | B    | C    | D     | D1  | d   | d1 |             |
| ST1             | 35              | 48.5 | 36.5 | 42-50 | 36  | 6-7 | 6  | F03/F04-F05 |
| ST2             | 35              | 48.5 | 40   | 50    | 42  | 7   | 6  | F04/F05     |
| ST3             | 39              | 48.5 | 48.5 | 50    | 50  | 7   | 7  | F05/F05     |
| ST35            | 45              | 65.5 | 48.5 | 70    | 50  | 9   | 7  | F05/F07     |
| ST4             | 45              | 65.5 | 65.5 | 70    | 70  | 9   | 9  | F07/F07     |
| ST5             | 56              | 92   | 92   | 102   | 102 | 11  | 11 | F10/F10     |

DESCRIPTION

|                  |                                                                                                                                                                |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CONSTRUCTION     | : THREE PIECES BOLTED CONSTRUCTION - SOLID BALL - ANTI BLOW OUT PROOF STEM DESIGN<br>SOFT SEATS - ANTISTATIC DEVICE - ISO 5211 ON THE TOP FOR EASY AUTOMATION. |
| SIZE             | : DN 8 ÷ 40 FULL BORE -- DN 15 ÷ 50 REDUCED BORE<br>1/4" ÷ 1.1/2" FULL BORE -- 1/2" ÷ 2" REDUCED BORE                                                          |
| CLASS            | : PN 16 ÷ 100 or ASME 150 ÷ 800 LBS or 1000 ÷ 2000 WOG                                                                                                         |
| TEMPERATURE      | : -100°C UP TO + 260°C                                                                                                                                         |
| MATERIAL         | : ASTM A105 - 316 - 316L                                                                                                                                       |
| DESIGN           | : ASME B16.34 - ASME B31.1 - BS5351 - P.E.D. 97/23/EC - ATEX 94/9 CE                                                                                           |
| MARKING          | : MSS SP25                                                                                                                                                     |
| CE 0038          | : ACCORDING TO DIRECTIVE 97/23/CE - MODULE H CATEGORY III - NOTIFIED BODY LLOYD'S REGISTERED<br>CERTIFICATE NR. RPS 01060304/01                                |
| Ex IM2/II 2GD    | : ACCORDING TO ATEX 94/9 CE - TECHNICAL FILE NR. ST01 ATEX                                                                                                     |
| TEST CERTIFICATE | : UNI EN 10204 TYPE 3.1B UNLESS OTHERWISE REQUIRED                                                                                                             |
| SERVICES         | : FOR GENERAL SERVICES AND CHEMICAL INDUSTRIES                                                                                                                 |

PRESSURE/TEMPERATURE LIMITATIONS OF SEAT SEAL



MAXIMUM WORKING PRESSURE (WOG/CWP)

| VALVE SIZE    | FULL BORE             | REDUCED BORE | 1/4" | 3/8" | 1/2" | 3/4"   | 1"     | 1.1/4" | 1.1/2" |
|---------------|-----------------------|--------------|------|------|------|--------|--------|--------|--------|
|               |                       |              | 1/2" | 3/4" | 1"   | 1.1/4" | 1.1/2" | 2"     |        |
| SEAT MATERIAL | Reinforced PTFE (S-B) | Psi          | 2580 | 2580 | 2580 | 2320   | 2320   | 2060   | 2060   |
|               |                       | Bar          | 178  | 178  | 178  | 160    | 160    | 142    | 142    |
|               | Reinforced PTFE (R)   | Psi          | 2350 | 2350 | 2350 | 2030   | 2030   | 1860   | 1860   |
|               |                       | Bar          | 162  | 162  | 162  | 140    | 140    | 128    | 128    |
|               | Virgin PTFE (T)       | Psi          | 2250 | 2250 | 2250 | 2000   | 2000   | 1800   | 1800   |
|               |                       | Bar          | 155  | 155  | 155  | 138    | 138    | 124    | 124    |

CLASS RATING

| VALVE SIZE    | FULL BORE             | 1/4"      | 3/8" | 1/2" | 3/4"   | 1"     | 1.1/4"    | 1.1/2" |
|---------------|-----------------------|-----------|------|------|--------|--------|-----------|--------|
|               |                       | 1/2"      | 3/4" | 1"   | 1.1/4" | 1.1/2" | 2"        |        |
| SEAT MATERIAL | Reinforced PTFE (S-B) | 150 ÷ 800 |      |      |        |        |           |        |
|               | Reinforced PTFE (R)   | 150 ÷ 800 |      |      |        |        | 150 ÷ 600 |        |
|               | Virgin PTFE (T)       | 150 ÷ 800 |      |      |        |        | 150 ÷ 600 |        |

SEAT MATERIALS

|                                 |       |
|---------------------------------|-------|
| "T" = PTFE Virgin               | ----- |
| "R" = PTFE + 15% Fiberglass     | ----- |
| "S" = PTFE + 20% C. 5% Graphite | ----- |
| "B" = PTFE +60% Bronze          | ----- |

FLOW DATA

The following flow rates were determined for ball valves in fully open position and a water temperature of 60°F (15°C).  
Kv value is the full capacity flow rate through the ball valve in cubic metres per hour (m³/h) with a pressure drop of 1 bar.  
Cv value is the full capacity flow rate through the ball valve in gallons/min. of water at 60°F with a pressure drop of 1 psi.

REDUCED BORE

| VALVE SIZE | 1/2" | 3/4" | 1"   | 1.1/4" | 1.1/2" | 2"  |
|------------|------|------|------|--------|--------|-----|
| Cv         | 8    | 13   | 32   | 48     | 82     | 120 |
| KV         | 6,8  | 11   | 27,5 | 41     | 70     | 103 |

FULL BORE

| VALVE SIZE | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1.1/4" | 1.1/2" |
|------------|------|------|------|------|----|--------|--------|
| Cv         | 8    | 8    | 12   | 30   | 45 | 78     | 115    |
| KV         | 6,8  | 6,8  | 10   | 26   | 38 | 67     | 99     |

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