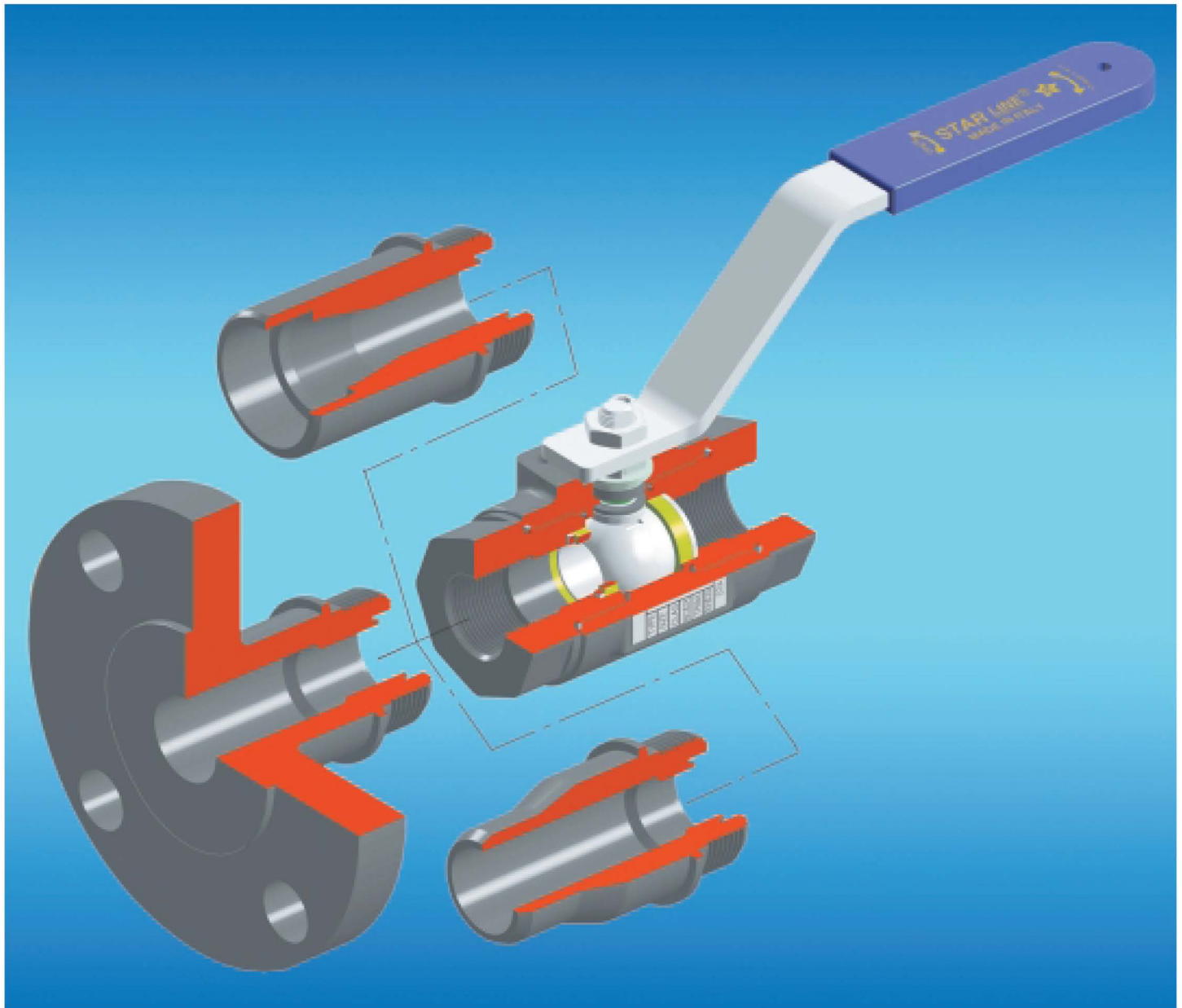
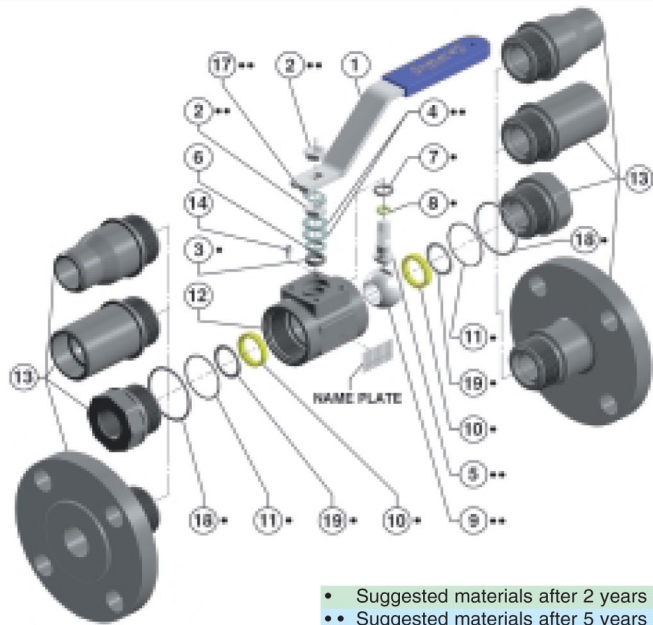


## T1 THREADED STAR FORGED STEEL BALL VALVES



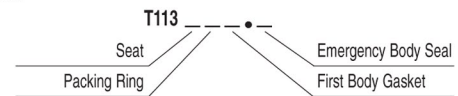


- Suggested materials after 2 years service
- Suggested materials after 5 years service

| STARLINE Figure No. | Full Bore<br>Reduced Bore | T 113                    | T 115                    | T 116                    |
|---------------------|---------------------------|--------------------------|--------------------------|--------------------------|
|                     |                           | -----●-----              | -----●-----              | -----●-----              |
| PART NO             | PART NAME                 | MATERIALS<br>A105 / 316  | MATERIALS<br>LF2 / 316   | MATERIALS<br>316 / 316   |
|                     |                           |                          |                          |                          |
| NP                  | NAME PLATE                | Stainless Steel          | Stainless Steel          | Stainless Steel          |
| 1                   | HANDLE                    | C.S. Zinc Plated+Plastic | C.S. Zinc Plated+Plastic | C.S. Zinc Plated+Plastic |
| •• 2                | HANDLE NUT                | Stainless Steel          | Stainless Steel          | Stainless Steel          |
| • 3                 | PACKING RING              | Graphite - T - S         | Graphite - T - S         | Graphite - T - S         |
| •• 4                | SPRING WASHER             | Special S.S. For Springs | Special S.S. For Springs | Special S.S. For Springs |
| •• 5                | STEM                      | S.S. 316                 | S.S. 316                 | S.S. 316                 |
| 6                   | GLAND PACKING             | S.S. 316                 | S.S. 316                 | S.S. 316                 |
| • 7                 | THRUST WASHER             | Reinforced PTFE          | Reinforced PTFE          | Reinforced PTFE          |
| • 8                 | 'O' RING STEM             | Viton                    | Viton                    | Viton                    |
| •• 9                | BALL                      | S.S. 316                 | S.S. 316                 | S.S. 316                 |
| • 10                | SEATS                     | T - S - N - D - P        | T - S - N - D - P        | T - S - N - D - P        |
| • 11                | FIRST BODY GASKET         | Viton                    | Viton                    | Viton                    |
| 12                  | BODY                      | ASTM A105N               | ASTM A350 LF2            | ASTM A182 F316           |
| 13                  | END CONNECTION            | ASTM A105N               | ASTM A305 LF2            | ASTM A182 F316           |
| 14                  | STOP PIN                  | C.S. Zinc Plated         | Stainless Steel          | Stainless Steel          |
| •• 17               | STOP WASHER               | Stainless Steel          | Stainless Steel          | Stainless Steel          |
| • 18                | EMERGENCY BODY SEAL       | Graphite                 | Graphite                 | Graphite                 |
| • 19                | RING SEAL                 | PTFE - Graphite          | PTFE - Graphite          | PTFE - Graphite          |

Ring Seal (19) are not used when seat material are in T - S

Complete figure No.:



## DESCRIPTION

**DESIGN** : THREE PIECES SCREWED CONSTRUCTION (SEAL WELDED ON REQUEST)  
SOLID BALL - ANTI BLOW OUT PROOF STEM DESIGN - ENCAPSULATED SOFT SEATS - ANTISTATIC DEVICE - ISO 5211 ON THE TOP FOR EASY AUTOMATION  
FIRE TEST APPROVED.

**SIZE** : DN 8 ÷ 80 FULL BORE -- DN 15 ÷ 100 REDUCED BORE  
1/4" ÷ 3" FULL BORE -- 1/2" ÷ 4" REDUCED BORE

**CLASS** : ASME 150 ÷ 1500 LBS or 870 ÷ 5000 WOG/CWP or PN 16 ÷ 250

**MATERIAL** : ASTM A105 - LF2 - 316 - 316L

**CONSTRUCTION** : ASME B16.34 - BS5351 - API6D

**MARKING** : MSS SP25

**TEST CERTIFICATE** : UNI EN 10204 TYPE 3.1B UNLESS OTHERWISE REQUIRED

**FIRE TEST APPROVED** : BS6755 PART 2, - API607 - API6FA

**SERVICES** : FOR PETROLEUM, CHEMICALS, PETROLCHEMICALS, GAS APPLICATION AND ALLIED INDUSTRIES

## 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.

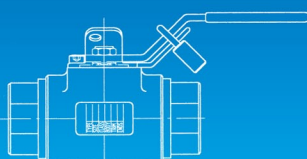
### REDUCED BORE

| VALVE SIZE | - | 1/2" | 3/4" | 1"   | 1.1/4" | 1.1/2" | 2"  | 2.1/2" | 3"  | 4"  |
|------------|---|------|------|------|--------|--------|-----|--------|-----|-----|
| Cv         | - | 15   | 20   | 25   | 32     | 40     | 50  | 65     | 80  | 100 |
| KV         | - | 8    | 13   | 32   | 48     | 82     | 120 | 275    | 460 | 700 |
|            |   | 6,8  | 11   | 27,5 | 41     | 70     | 103 | 236    | 394 | 600 |

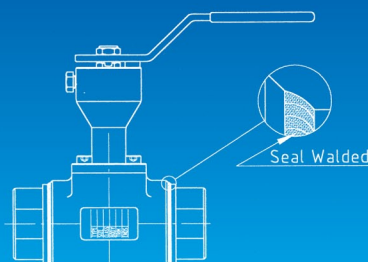
### FULL BORE

| VALVE SIZE | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1.1/4" | 1.1/2" | 2"  | 2.1/2" | 3"  |
|------------|------|------|------|------|----|--------|--------|-----|--------|-----|
| Cv         | 8    | 10   | 15   | 20   | 25 | 32     | 40     | 50  | 65     | 80  |
| KV         | 8    | 8    | 12   | 30   | 45 | 78     | 115    | 265 | 445    | 680 |
|            | 6,8  | 6,8  | 10   | 26   | 38 | 67     | 99     | 227 | 381    | 583 |

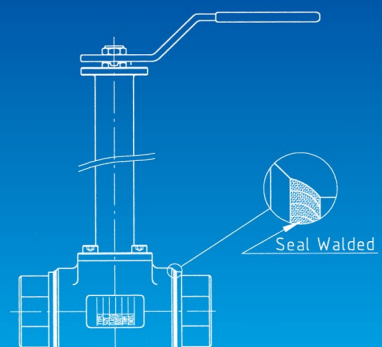
## DIFFERENT CONFIGURATION



LOCKING DEVICE



FUGITIVE EMISSION



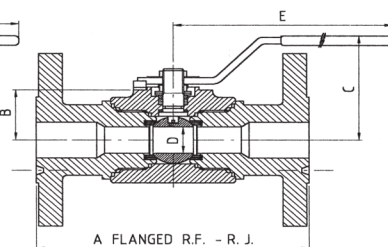
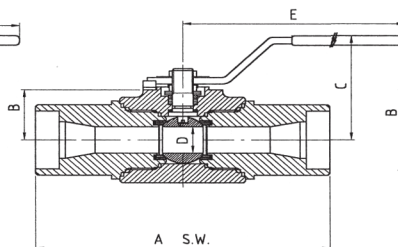
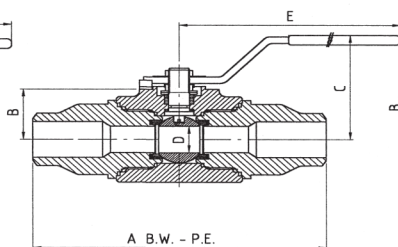
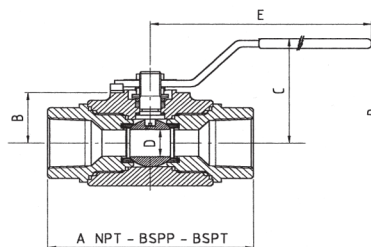
UNDERGROUND SERVICE

BSP Parallel: BS21Rp - ISO 228/1 - ISO 7/1Rp  
BSP Taper: BS21Rc -ISO 7/1Rc - DIN 2999/1  
NPT: ANSI B1 20.1

B.W. - P.E.: ANSI B16.25 Sch. 40 - XS - 80 - 160  
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.

S.W.: ANSI B16.11  
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  
desmantling the valve.

FLANGES in according to ASME / ANSI B 16.5  
FACE to FACE in according to ASME / ANSI B16.10  
Note: when flanges are RF type of finish must be stated on the order



| FULL BORE         |        |                      |                     |         |       |       |       |       |       |       |     |      |      |             |               |     |                     |                     |         |      |       |      |      |
|-------------------|--------|----------------------|---------------------|---------|-------|-------|-------|-------|-------|-------|-----|------|------|-------------|---------------|-----|---------------------|---------------------|---------|------|-------|------|------|
| VALVE<br><br>SIZE |        | DIMENSIONS mm / Inch |                     |         |       |       |       |       |       |       |     |      |      | ISO<br>5211 | WEIGHT KG/LBS |     |                     |                     |         |      |       |      |      |
|                   |        | NPT<br>BSPP<br>BSPT  | B.W<br>P.E.<br>S.W. | A       |       |       |       |       |       |       |     | B    | C    |             | D             | E   | NPT<br>BSPP<br>BSPT | B.W<br>P.E.<br>S.W. | FLANGED |      |       |      |      |
|                   |        |                      |                     | FLANGED |       |       |       |       |       |       |     |      |      |             |               |     |                     |                     |         |      |       |      |      |
|                   |        |                      |                     | 150     |       | 300   |       | 600   |       | 900   |     |      |      |             |               |     |                     |                     | 1500    |      |       |      |      |
|                   |        |                      |                     | RF      | RF    | RJ    | RF    | RJ    | RF    | RJ    | RF  |      |      |             |               |     |                     |                     | RJ      |      |       |      |      |
|                   |        |                      |                     |         |       |       |       |       |       |       |     |      |      |             |               |     |                     |                     |         |      |       |      |      |
| mm                | 8      | 85                   | 127                 | -       | -     | -     | -     | -     | -     | -     | -   | 24   | 67.5 | 11.1        | 152           | F03 | 1                   | 1.4                 | -       | -    | -     | -    | -    |
| Inch              | 1/4"   | 3.34                 | 5                   | -       | -     | -     | -     | -     | -     | -     | -   | 0.95 | 2.65 | 0.44        | 6             |     | 2.2                 | 3.1                 | -       | -    | -     | -    | -    |
| mm                | 10     | 85                   | 127                 | -       | -     | -     | -     | -     | -     | -     | -   | 24   | 67.5 | 11.1        | 152           | F03 | 1                   | 1.4                 | -       | -    | -     | -    | -    |
| Inch              | 3/8"   | 3.34                 | 5                   | -       | -     | -     | -     | -     | -     | -     | -   | 0.95 | 2.65 | 0.44        | 6             |     | 2.2                 | 3.1                 | -       | -    | -     | -    | -    |
| mm                | 15     | 98.5                 | 140                 | 108     | 139.7 | 151   | 165   | 163.5 | 216   | 216   | 216 | 27   | 70   | 14.2        | 152           | F03 | 1.2                 | 1.6                 | 2.8     | 3.3  | 4     | 5.6  | 5.6  |
| Inch              | 1/2"   | 3.87                 | 5.51                | 4.25    | 5.5   | 5.94  | 6.5   | 6.44  | 8.5   | 8.5   | 8.5 | 1.06 | 2.75 | 0.56        | 6             |     | 2.6                 | 3.5                 | 6.2     | 7.3  | 8.8   | 12.3 | 12.3 |
| mm                | 20     | 108                  | 152.5               | -       | 152.5 | 165   | 190.5 | 190.5 | 229   | 229   | 229 | 33.5 | 80   | 21          | 193           | F04 | 2                   | 2.4                 | -       | 4.9  | 5.6   | 8.4  | 8.4  |
| Inch              | 3/4"   | 4.25                 | 6                   | -       | 6     | 6.5   | 7.5   | 7.5   | 9     | 9     | 9   | 1.3  | 3.15 | 0.83        | 7.5           |     | 4.4                 | 5.3                 | -       | 10.8 | 12.3  | 18.5 | 18.5 |
| mm                | 25     | 118                  | 165                 | 127     | 165   | 178   | 216   | 216   | 254   | 254   | 254 | 38   | 92   | 25.4        | 193           | F04 | 2.7                 | 3.8                 | 4.9     | 6.5  | 7.3   | 10.9 | 10.9 |
| Inch              | 1"     | 4.64                 | 6.5                 | 5       | 6.5   | 7     | 8.5   | 8.5   | 10    | 10    | 10  | 1.5  | 3.65 | 1           | 7.5           |     | 5.9                 | 8.4                 | 10.8    | 14.3 | 16    | 24   | 24   |
| mm                | 32     | 137                  | 178                 | -       | 178   | 190.5 | 228.5 | 228.5 | 279.5 | 279.5 | -   | 43.5 | 100  | 31.7        | 225           | F05 | 3.8                 | 4.9                 | -       | 9.5  | 10.3  | 13   | -    |
| Inch              | 1.1/4" | 5.39                 | 7                   | -       | 7     | 7.5   | 9     | 9     | 11    | 11    | -   | 1.7  | 3.95 | 1.25        | 9             |     | 8.4                 | 10.8                | -       | 20.9 | 22.7  | 28.6 | -    |
| mm                | 40     | 150                  | 190.5               | 165     | 190.5 | 203   | 241   | 241   | 305   | 305   | -   | 47.5 | 113  | 38          | 225           | F05 | 5.3                 | 6.7                 | 8.9     | 12.5 | 14.5  | 19   | -    |
| Inch              | 1.1/2" | 5.9                  | 7.5                 | 6.5     | 7.5   | 8     | 9.5   | 9.5   | 12    | 12    | -   | 1.9  | 4.45 | 1.5         | 9             |     | 11.7                | 14.7                | 19.6    | 27.5 | 31.9  | 41.8 | -    |
| mm                | 50     | 158.8                | 216                 | 178     | 216   | 231.5 | 292   | 295   | 368.5 | 371.5 | -   | 58.5 | 118  | 49          | 225           | F05 | 8.5                 | 11.5                | 13.9    | 17.5 | 19.5  | 31   | -    |
| Inch              | 2"     | 6.25                 | 8.5                 | 7       | 8.5   | 9.12  | 11.5  | 11.5  | 14.5  | 14.62 | -   | 2.3  | 4.65 | 1.93        | 9             |     | 18.7                | 25.3                | 30.6    | 38.5 | 42.9  | 68.2 | -    |
| mm                | 65     | 184                  | 241                 | -       | 241   | 257   | 330   | 333   | -     | -     | -   | 70   | 135  | 63.5        | 360           | F07 | 14                  | 18.3                | -       | 25.5 | 28.5  | -    | -    |
| Inch              | 2.1/2" | 7.24                 | 9.5                 | -       | 9.5   | 10.12 | 13    | 13.12 | -     | -     | -   | 2.75 | 5.35 | 2.5         | 14            |     | 30.8                | 40.3                | -       | 56.1 | 62.7  | -    | -    |
| mm                | 80     | 222                  | 282.5               | -       | 282.5 | 298.2 | 355.6 | 358.6 | -     | -     | -   | 88   | 150  | 76          | 500           | F07 | 23                  | 29.3                | -       | 43.5 | 49.5  | -    | -    |
| Inch              | 3"     | 8.74                 | 11.12               | -       | 11.12 | 11.74 | 14    | 14.12 | -     | -     | -   | 3.5  | 4.85 | 3           | 20            |     | 50.6                | 64.5                | -       | 95.7 | 108.9 | -    | -    |

| REDUCED BORE      |        |                      |                     |         |       |       |       |       |       |       |       |       |      |      |      |     |                 |               |                     |                     |         |      |      |      |  |  |
|-------------------|--------|----------------------|---------------------|---------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|------|-----|-----------------|---------------|---------------------|---------------------|---------|------|------|------|--|--|
| VALVE<br><br>SIZE |        | DIMENSIONS mm / Inch |                     |         |       |       |       |       |       |       |       |       |      |      |      |     | ISO<br><br>5211 | WEIGHT KG/LBS |                     |                     |         |      |      |      |  |  |
|                   |        | NPT<br>BSPP<br>BSPT  | B.W<br>P.E.<br>S.W. | A       |       |       |       |       |       |       |       |       |      | B    | C    | D   |                 | E             | NPT<br>BSPP<br>BSPT | B.W<br>P.E.<br>S.W. | FLANGED |      |      |      |  |  |
|                   |        |                      |                     | FLANGED |       |       |       |       |       |       |       |       |      |      |      |     |                 |               |                     |                     |         |      |      |      |  |  |
|                   |        |                      |                     | 150     |       | 300   |       | 600   |       | 900   |       | 1500  |      |      |      |     |                 |               |                     |                     |         |      |      |      |  |  |
|                   |        |                      |                     | RF      | RF    | RJ    | RF    | RJ    | RF    | RJ    | RF    | RJ    | RF   |      |      |     |                 |               |                     |                     | RJ      |      |      |      |  |  |
| mm                | 15     | 85                   | 127                 | 108     | 139.7 | 151   | 165   | 163.5 | 216   | 216   | 216   | 216   | 24   | 67.5 | 11.1 | 152 | F03             | 0.9           | 1.3                 | 2.6                 | 3.1     | 3.8  | 5.4  | 5.4  |  |  |
| Inch              | 1/2"   | 3.34                 | 5                   | 4.25    | 5.5   | 5.94  | 6.5   | 6.44  | 8.5   | 8.5   | 8.5   | 8.5   | 0.95 | 2.65 | 0.44 | 6   |                 | 2             | 2.86                | 5.7                 | 6.8     | 8.4  | 12.1 | 12.1 |  |  |
| mm                | 20     | 98.5                 | 140                 | 117.5   | 152.5 | 165   | 190.5 | 190.5 | 229   | 229   | 229   | 229   | 27   | 70   | 14.2 | 152 | F03             | 1.1           | 1.5                 | 3.1                 | 4       | 4.8  | 7.6  | 7.6  |  |  |
| Inch              | 3/4"   | 3.87                 | 5.51                | 4.62    | 6     | 6.5   | 7.5   | 7.5   | 9     | 9     | 9     | 9     | 1.06 | 2.75 | 0.56 | 6   |                 | 2.4           | 3.3                 | 6.8                 | 8.8     | 10.6 | 16.7 | 16.7 |  |  |
| mm                | 25     | 108                  | 152.5               | 127     | 165   | 178   | 216   | 216   | 254   | 254   | 254   | 254   | 33.5 | 80   | 21   | 193 | F04             | 1.9           | 2.3                 | 4.2                 | 5.8     | 6.6  | 10.2 | 10.2 |  |  |
| Inch              | 1"     | 4.25                 | 6                   | 5       | 6.5   | 7     | 8.5   | 8.5   | 10    | 10    | 10    | 10    | 1.3  | 3.15 | 0.83 | 7.5 |                 | 4.2           | 5.1                 | 9.2                 | 12.8    | 14.5 | 22.4 | 22.4 |  |  |
| mm                | 32     | 118                  | 165                 | 139.7   | 178   | 190   | 190.5 | 228.5 | 279.5 | 279.5 | 279.5 | 279.5 | 38   | 92   | 25.4 | 193 | F04             | 2.6           | 3.6                 | 5.4                 | 8.4     | 9.2  | 11   | 11   |  |  |
| Inch              | 1.1/4" | 4.64                 | 6.5                 | 5.5     | 7     | 7.5   | 9     | 9     | 11    | 11    | 11    | 11    | 1.5  | 3.65 | 1    | 7.5 |                 | 5.7           | 7.9                 | 11.9                | 18.5    | 20.2 | 24.2 | 24.2 |  |  |
| mm                | 40     | 137                  | 178                 | 165     | 190.5 | 203   | 241   | 241   | 305   | 305   | -     | -     | 43.5 | 100  | 31.7 | 225 | F05             | 3.7           | 4.7                 | 7.4                 | 11      | 13   | 17.5 | -    |  |  |
| Inch              | 1.1/2" | 5.39                 | 7                   | 6.5     | 7.5   | 8     | 9.5   | 9.5   | 12    | 12    | -     | -     | 1.7  | 3.95 | 1.25 | 9   |                 | 8.1           | 10.3                | 16.3                | 24.2    | 28.6 | 38.5 | -    |  |  |
| mm                | 50     | 150                  | 190.5               | 178     | 216   | 231.5 | 292   | 295   | 368.5 | 371.5 | -     | -     | 47.5 | 113  | 38   | 225 | F05             | 5             | 6.2                 | 10.7                | 14.3    | 16.3 | 27.8 | -    |  |  |
| Inch              | 2"     | 5.9                  | 7.5                 | 7       | 8.5   | 9.12  | 11.5  | 11.5  | 14.5  | 14.62 | -     | -     | 1.9  | 4.45 | 1.5  | 9   |                 | 11            | 13.6                | 23.5                | 31.5    | 35.9 | 61.2 | -    |  |  |
| mm                | 65     | 158.8                | 216                 | 190.5   | 241   | 257   | 330   | 333   | 419   | 422   | -     | -     | 58.5 | 118  | 49   | 225 | F05             | 7.5           | 10                  | 14.7                | 20      | 23   | 40   | -    |  |  |
| Inch              | 2.1/2" | 6.25                 | 8.5                 | 7.5     | 9.5   | 10.12 | 13    | 13.12 | 16.5  | 16.62 | -     | -     | 2.3  | 4.65 | 1.93 | 9   |                 | 16.5          | 22                  | 32.3                | 44      | 50.6 | 88   | -    |  |  |
| mm                | 80     | 184                  | 241                 | 203     | 282.5 | 298.2 | 355.6 | 358.6 | -     | -     | -     | -     | 70   | 135  | 63.5 | 360 | F07             | 12.7          | 17                  | 21.6                | 34      | 41   | -    | -    |  |  |
| Inch              | 3"     | 7.24                 | 9.5                 | 8       | 11.12 | 11.74 | 14    | 14.12 | -     | -     | -     | -     | 2.75 | 5.35 | 2.5  | 14  |                 | 27.9          | 37.4                | 47.5                | 74.8    | 90.2 | -    | -    |  |  |
| mm                | 100    | 222                  | 282.5               | 228.5   | 305   | 320.5 | 432   | 435   | -     | -     | -     | -     | 88   | 150  | 76   | 500 | F07             | 21.5          | 27.5                | 35                  | 44      | 60   | -    | -    |  |  |
| Inch              | 4"     | 8.74                 | 11.12               | 9       | 12    | 12.62 | 17    | 17.12 | -     | -     | -     | -     | 3.5  | 4.85 | 3    | 20  |                 | 47.3          | 60.5                | 77                  | 96.8    | 132  | -    | -    |  |  |



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### STARLINE S.p.A.

Via F. Baracca, 30 - 24060 S. PAOLO D'ARGON (Bergamo) ITALY

Phone: 0039 035/958041/958102 - Fax: 0039 035/958413

http: [www.starline.it](http://www.starline.it) - e-mail: [starline@starline.it](mailto:starline@starline.it)

**STARLINE BALL VALVES LTD**  
Telford Way Stephenson Ind. Est.  
Coalville Leicestershire LE 67 3HE  
Great Britain  
Phone: 0044 (0)1530815818  
Fax: 0044 (0)1530815819  
http: [www.acvalvealliance.com](http://www.acvalvealliance.com)  
e-mail: [Starline@acvalvealliance.com](mailto:Starline@acvalvealliance.com)

**STARLINE FRANCE**  
7, Parc d'Activités  
de la Verdrière 1  
13880 VELAUX - France  
Phone: 0033 (0)442878400  
Fax: 0033 (0)442878404  
http: [www.star-line.fr](http://www.star-line.fr)  
e-mail: [infos@star-line.fr](mailto:infos@star-line.fr)

**STARLINE IBERICA S.A.**  
Poligono Industrial El Circuit  
C/Rec Del Molinar F-3  
08160 Montmelò Barcelona - Spain  
Phone: 0034 (0)935799370  
Fax: 0034 (0)935799244  
http: [www.starline.es](http://www.starline.es)  
e-mail: [starline@starline.es](mailto:starline@starline.es)

**STARLINE VALVES OY**  
Martinkyläntie, 39  
01720 Vantaa - Finland  
Phone: 0035 (0)898787711  
Fax: 0035 (0)898787221  
http: [www.starline.fi](http://www.starline.fi)  
e-mail: [starline@starline.fi](mailto:starline@starline.fi)

**STARLINE Armaturen GmbH**  
Industriestrasse, 25  
64569 Nauheim - Germany  
Phone: 0049 (0)6152987655  
Fax: 0049 (0)6152987656  
e-mail: [starline.gmbh@t-online.de](mailto:starline.gmbh@t-online.de)

**Your Representative:**