

## Ball valve flanged ISO 5211 Direct Mount Seat TFM 1600 comparable to type 7289 & 7249

### DESIGN FEATURES

- Built-in ISO 5211 Direct Mounting Pad Easy Automation
- Fire Safe Design Approved
- Anti-static Devices for Ball-Stem-Body
- Blow-out Proof Stem
- Pressure Balance Hole in Ball Slot
- TA-Luft/ ISO 15848-1 Design Approved
- NACE standard MR0175 & MR0103 (Optional)
- Casting Approved by TÜV AD 2000-Merkblatt W0
- Options : 1.Actuator 2.Limit Switch 3.Positioner

### APPLICABLE STANDARDS

- Design Standard : EN 12516-1
- Frie Design : API 607 5<sup>th</sup> 2005, ISO10497
- Face To Face : L-EN 558 Series27  
(DIN 3202 F4 DN15~DN100, DIN3202 F5 DN125~DN200)  
\*L-EN 558 Series1 (DIN 3202 F1)
- Flanged End : EN 1092-1 PN10-40
- Inspection & Testing : EN12266-1



### CV / KV VALUE / WEIGHT

| DN  | CV   | KV   | Weight (kg) |      |      |      |         |      |      |      |
|-----|------|------|-------------|------|------|------|---------|------|------|------|
|     |      |      | F4 / F5     |      |      |      | F1 / F7 |      |      |      |
|     |      |      | PN10        | PN16 | PN25 | PN40 | PN10    | PN16 | PN25 | PN40 |
| 15  | 30   | 26   | 2.37        |      |      |      | 2.42    |      |      |      |
| 20  | 55   | 48   | 3.15        |      |      |      | 3.23    |      |      |      |
| 25  | 96   | 83   | 4.09        |      |      |      | 4.37    |      |      |      |
| 32  | 170  | 147  | 5.56        |      |      |      | 5.95    |      |      |      |
| 40  | 270  | 234  | 6.98        |      |      |      | 7.81    |      |      |      |
| 50  | 470  | 407  | 9.67        |      |      |      | 10.4    |      |      |      |
| 65  | 780  | 675  | 13.9        |      | 14.6 |      | 15.5    |      | 17.5 |      |
| 80  | 1150 | 995  | 18.1        |      | 20.4 |      | 20.1    |      | 23.5 |      |
| 100 | 2100 | 1817 | 25.3        |      | 29.5 |      | 28.7    |      | 35.9 |      |
| 125 | 3500 | 3028 | 51.0        |      | 59.5 |      | —       |      | —    |      |
| 150 | 5000 | 4325 | 72.5        |      | 84.5 |      | —       |      | —    |      |
| 200 | 9500 | 8218 | —           | 124  | —    | 156  | —       | —    | —    | —    |

## TORQUE VALUES

 Close to Open Torque at Various Differential Pressure ( $\Delta P$ ), Standard Seats (TFM1600&PTFE)

unit : in-lb / N-m

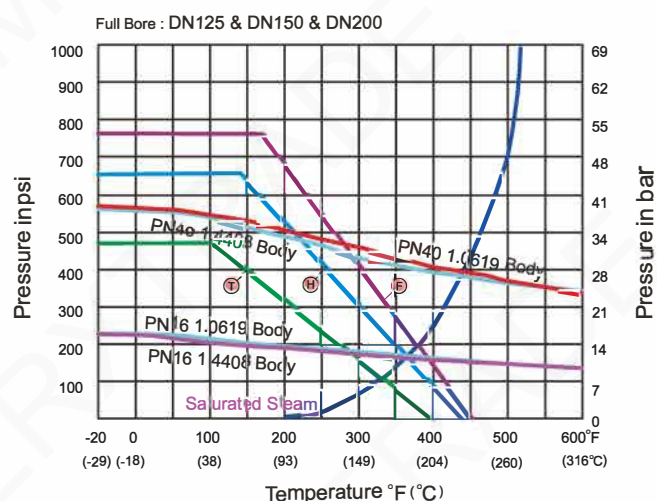
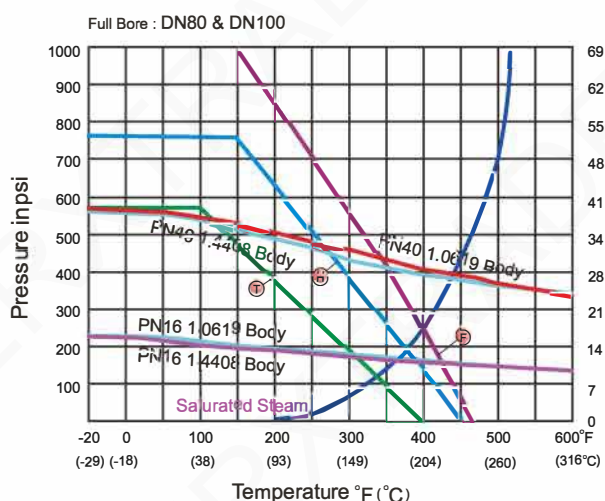
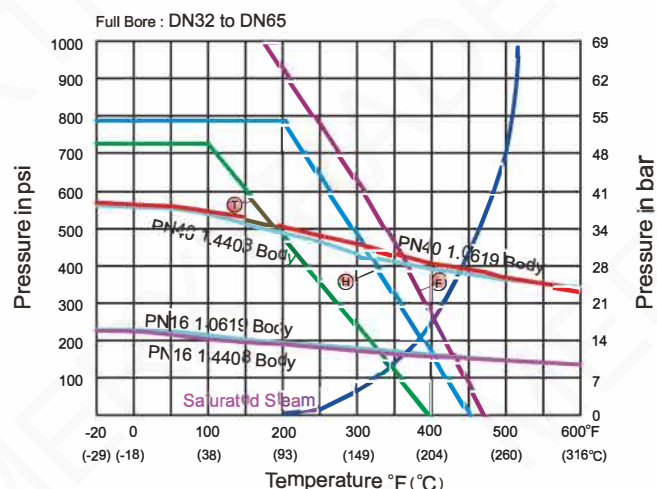
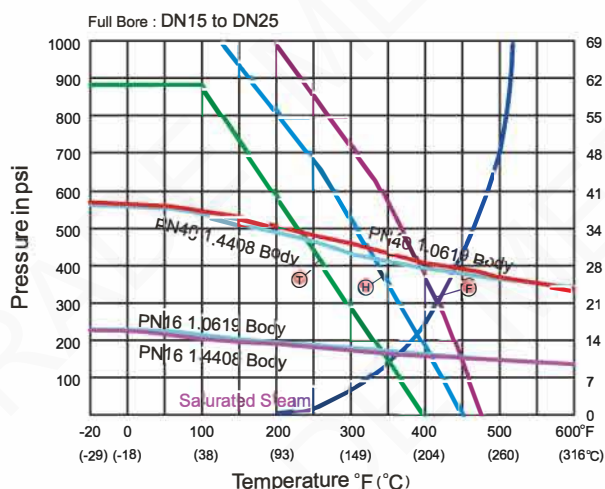
| Size/ $\Delta P$ | 75 psig |       | 150 psig |       | 240 psig / 300 psig |       | 600 psig |       |
|------------------|---------|-------|----------|-------|---------------------|-------|----------|-------|
|                  | 5 bar   |       | 10 bar   |       | 16 bar/20 bar       |       | 40bar    |       |
| DN               | N-m     | In-lb | N-m      | In-lb | N-m                 | In-lb | N-m      | In-lb |
| 15               | 5       | 44    | 5        | 44    | 5                   | 44    | 5        | 44    |
| 20               | 6       | 53    | 6        | 53    | 6                   | 53    | 6        | 53    |
| 25               | 10      | 88    | 10       | 88    | 11                  | 97    | 11       | 97    |
| 32               | 13      | 115   | 13       | 115   | 15                  | 133   | 17       | 150   |
| 40               | 19      | 168   | 19       | 168   | 22                  | 195   | 24       | 212   |
| 50               | 25      | 221   | 29       | 257   | 32                  | 283   | 34       | 301   |
| 65               | 40      | 354   | 45       | 398   | 49                  | 434   | 52       | 460   |
| 80               | 65      | 575   | 72       | 637   | 81                  | 717   | 88       | 779   |
| 100              | 100     | 885   | 110      | 973   | 122                 | 1080  | 132      | 1168  |
| 125              | 190     | 1681  | 210      | 1858  | 245                 | 2168  | 280      | 2478  |
| 150              | 280     | 2478  | 306      | 2708  | 340                 | 3009  | 510      | 4514  |
| 200              | 370     | 3274  | 430      | 3805  | 487                 | 4310  | 730      | 6461  |

Remark : 1.Torques will increase about 30% if seat materials are Reinforced Fiber-Glass PTFE, Carbon-filled. PTFE or EK+PTFE or EK+PTFE or TFM4215.  
 2.The torque figures at 5 bar pressure are maximum values to be tested after the valves are placed for 24 hours.  
 3.For actuator sizing, a safety factor of minimum 30% is recommended.

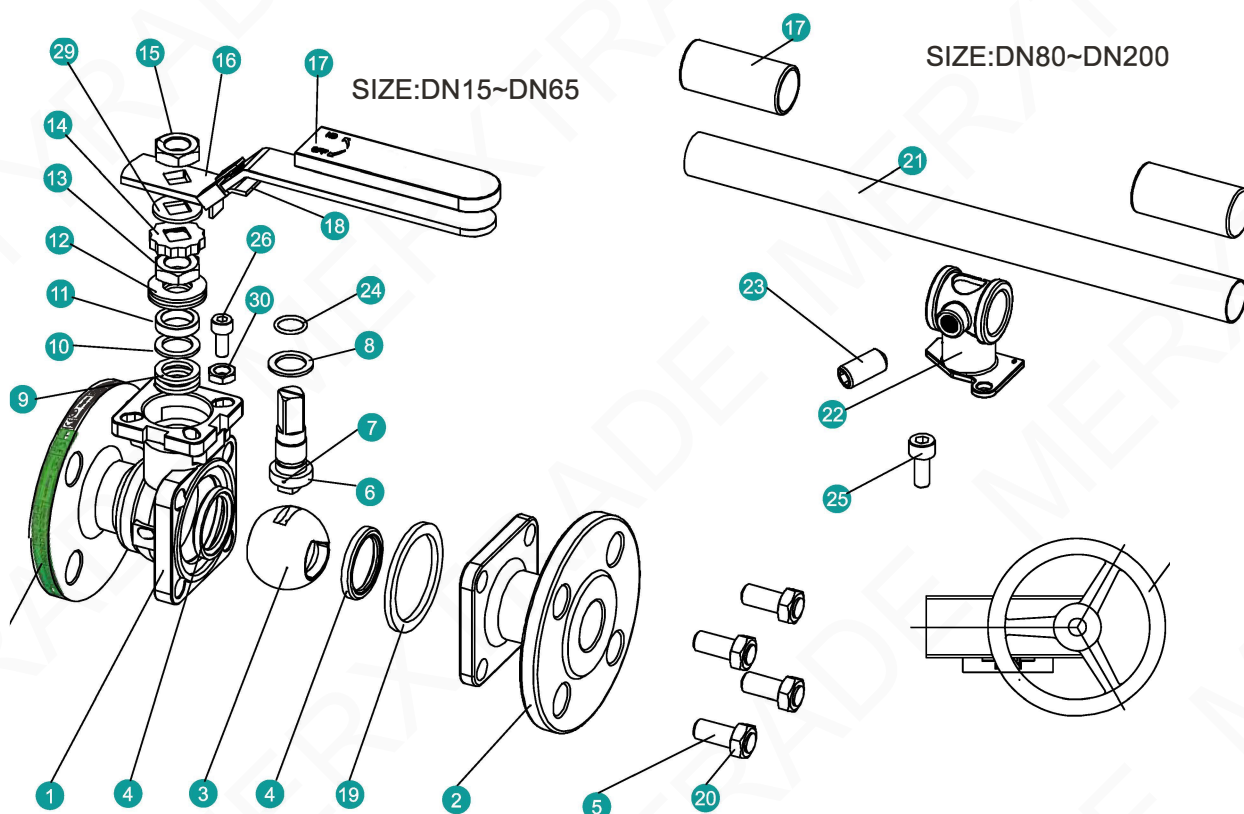
## TECHNICAL INFORMATION

### PRESSURE - TEMPERATURE DATA

The pressure-temperature data of ball valves is determined not only by valve shell materials but also by sealing materials used for ball seats, gland packings and flange gaskets.



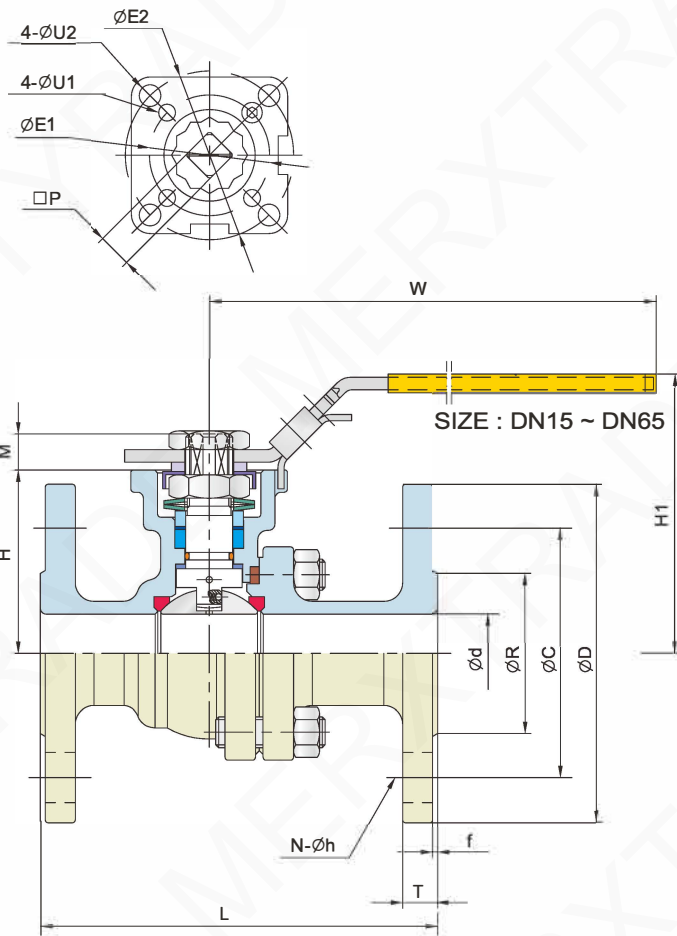
Seat Materials : T PTFE H TFM1600 E TFM4215



## MATERIAL OF CONSTRUCTION

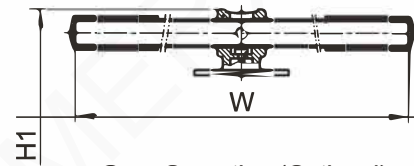
| NO. | PART NAME                     | MATERIALS |                                   |        |
|-----|-------------------------------|-----------|-----------------------------------|--------|
|     |                               | ANSI      | ANSI                              | ANSI   |
| 1   | End Cap                       | 1.4408    | 1.4308                            | 1.0619 |
| 2   | Body                          | 1.4408    | 1.4308                            | 1.0619 |
| 3   | Ball                          | 316       | 304                               |        |
| 4   | Ball Seat                     |           | TFM1600 / PTFE / TFM4215          |        |
| 5   | Bolting                       |           | A2-70                             | 8.8    |
| 6   | Stem(DN 15~DN125, DN200)      | 316       | 304                               |        |
| 7   | Stem(DN 150)                  | S32205    | S32205                            |        |
| 8   | Anti-Static                   | 316       | 304                               |        |
| 9   | Thrust Washer                 |           | PTFE/TFM1600                      |        |
| 10  | Stem Packing                  |           | PTFE / GRAPHITE*                  |        |
| 11  | Bushing                       |           | 50%SS+50%PTFE / 304*              |        |
| 12  | Gland                         |           | 316                               |        |
| 13  | Belleville Washer             |           | 301                               |        |
| 14  | Stem Nut                      |           | A194-8                            |        |
| 15  | Stop-lock-Cap                 |           | 304                               |        |
| 16  | Handle Nut (DN15 ~ DN65)      |           | A194-8                            |        |
| 17  | Lever (DN15 ~ DN65)           |           | 304                               |        |
| 18  | Handle Sleeve                 |           | PVC                               |        |
| 19  | Lock Device (DN15 ~ DN65)     |           | 304                               |        |
| 20  | Body Gasket                   |           | PTFE / 316 Spiral Wound+GRAPHITE* |        |
| 21  | Bolt Nut                      |           | A2-70                             | 8      |
| 22  | Pipe Handle (DN80 ~ DN200)    |           | A53+PLATED Zn                     |        |
| 23  | Handle Adapter (DN80 ~ DN200) |           | A351-CF8                          |        |
| 24  | Set Screw (DN80 ~ DN200)      |           | A2-70                             |        |
| 25  | O-Ring                        |           | FKM (VITON)                       |        |
| 26  | Bolting (DN80 ~ DN200)        |           | A2-70                             |        |
| 27  | Stop Bolt                     |           | A2-70                             |        |
| 28  | Nameplate                     |           | 304                               |        |
| 29  | Worm Gear (Optional)          |           | Package                           |        |
| 30  | Support Washer                |           | 304                               |        |
| 31  | Stop Nut                      |           | A2-70                             |        |

Direct Mount Pad (ISO 5211)



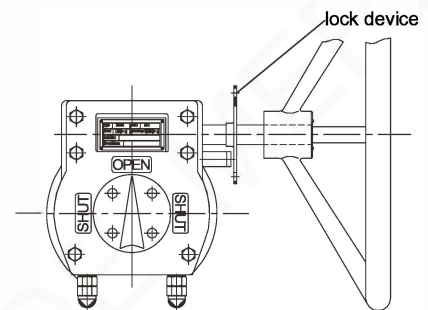
Pipe Handle Operation

SIZE : DN80 ~ DN200



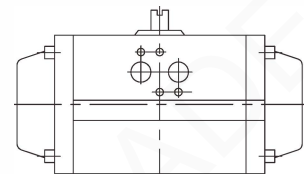
Gear Operation (Optional)

SIZE : DN65 ~ DN200



Automation (Optional)

SIZE : DN15 ~ DN200

**DIMENSION TABLE****EN PN10/16/25/40 (F4 / F5, F1)**

Unit : mm

| DN  | PN    | d     | L     | *L  | R   | D   | C   | f | T  | N    | h  | H   | H1  | W   | M  | P  | U1 | U2 | E1  | E2  | ISO 5211 |
|-----|-------|-------|-------|-----|-----|-----|-----|---|----|------|----|-----|-----|-----|----|----|----|----|-----|-----|----------|
| 15  | 10    | 15.0  | 115   | 130 | 45  | 95  | 65  | 2 | 16 | 4    | 14 | 48  | 78  | 147 | 9  | 9  | 6  | 6  | 36  | 42  | F03-F04  |
| 20  |       | 20.0  | 120   | 150 | 58  | 105 | 75  | 2 | 18 | 4    | 14 | 53  | 84  | 147 | 9  | 9  | 6  | 6  | 36  | 42  | F03-F04  |
| 25  | 16    | 25.0  | 125   | 160 | 68  | 115 | 85  | 2 | 18 | 4    | 14 | 59  | 90  | 177 | 11 | 11 | 6  | 7  | 42  | 50  | F04-F05  |
| 32  | 25    | 32.0  | 130   | 180 | 78  | 140 | 100 | 2 | 18 | 4    | 18 | 71  | 102 | 177 | 11 | 11 | 6  | 7  | 42  | 50  | F04-F05  |
| 40  | 40    | 38.0  | 140   | 200 | 88  | 150 | 110 | 3 | 18 | 4    | 18 | 76  | 110 | 197 | 14 | 14 | 7  | 9  | 50  | 70  | F05-F07  |
| 50  |       | 50.0  | 150   | 230 | 102 | 165 | 125 | 3 | 20 | 4(a) | 18 | 85  | 118 | 197 | 14 | 14 | 7  | 9  | 50  | 70  | F05-F07  |
| 65  | 10/16 | 63.5  | 170   | —   | 122 | 185 | 145 | 3 | 18 | 4    | 18 | 102 | 150 | 267 | 17 | 17 | 9  | 11 | 70  | 102 | F07-F10  |
|     |       |       | —     | 290 |     |     |     |   |    |      |    | 107 | 155 |     |    |    |    |    |     |     |          |
|     |       |       | 25/40 | 170 |     |     |     |   |    |      |    | 290 | 107 |     |    |    |    |    |     |     |          |
| 80  | 10/16 | 76.0  | 180   | 310 | 138 | 200 | 160 | 3 | 20 | 8    | 18 | 112 | 176 | 300 | 17 | 17 | 9  | 11 | 70  | 102 | F07-F10  |
|     | 25/40 |       |       |     |     |     |     |   | 24 |      |    | 117 | 181 |     |    |    |    |    |     |     |          |
| 100 | 10/16 | 100.0 | 190   | 350 | 158 | 220 | 180 | 3 | 20 | 8    | 18 | 140 | 210 | 400 | 22 | 22 | —  | 11 | —   | 102 | F10      |
|     | 25/40 |       |       |     | 162 | 235 | 190 |   | 24 |      | 22 |     |     |     |    |    |    |    |     |     |          |
| 125 | 10/16 | 125.0 | 325   | 400 | 188 | 250 | 210 | 3 | 22 | 8    | 18 | 183 | 263 | 600 | 27 | 27 | 14 | —  | 125 | —   | F12      |
|     | 25/40 |       |       |     | 270 | 220 | 26  |   | 26 |      |    |     |     |     |    |    |    |    |     |     |          |
| 150 | 10/16 | 150.0 | 350   | 480 | 212 | 285 | 240 | 3 | 22 | 8    | 22 | 204 | 284 | 800 | 27 | 27 | 14 | —  | 125 | —   | F12      |
|     | 25/40 |       |       |     | 218 | 300 | 250 |   | 28 |      | 26 |     |     |     |    |    |    |    |     |     |          |
| 200 | 10    | 200.0 | 400   | 600 | 268 | 340 | 295 | 3 | 24 | 8    | 22 | 253 | 352 | 800 | 36 | 36 | —  | 18 | —   | 140 | F14      |
|     | 16    |       |       |     | 30  | 26  |     |   |    |      |    |     |     |     |    |    |    |    |     |     |          |
|     | 25    |       |       |     | 278 | 360 | 310 |   | 12 | 26   |    |     |     |     |    |    |    |    |     |     |          |
|     | 40    |       |       |     | 285 | 375 | 320 |   |    | 34   | 30 |     |     |     |    |    |    |    |     |     |          |

(a): 4 is factory standard for DN65 PN16 valve and 8 is optional.

L : for Series F4/F5 \*L : for Series F1