# M22N Series Data Sheet

SESTO VALVES
A Brand of Max-Air Technology.

Max-Air TECHNOLOGY®

## 2-Pc 2000 WOG

### Firesafe Direct Mount Ball Valve

### Features:

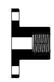
- Class 800 (2000 WOG) Size Range ¼" thru 2" Full Bore
- ISO 5211 Direct Mount Pad
- Body Wall Thickness ASME B16.34
- End Connections: NPT, SW, Fugitive Emissions ISO 15848
- Firesafe Tested API 607
- Anti-Static Device and Live-Loaded Packing
- Bubble Tight Shut Off
- Blowout Proof, Low Torque Guided Stem Design
- Manual, Electric, Pneumatic Operators
- Globally Certified and Approved

PED Ex CE NACE SIL3 API 607 ABS

### Certifications & Compliance

**Fire Testing:** API 607 Certified
**Testing:** API 598, API 6D, ISO 15848, ISO 5208
**Design:** ASME B16.34, ASME B16.5, ASME B16.10, NACE MR0175
**Markings:** MSS-SP-25, PED, NACE
**Certifications:** API 607, SIL, NACE, PED, ABS

### End Connections



*Threaded (NPT)*

### Torques (in-lbs)*

| Size | TFM 4215 |
|---|---|
| in | in /lb |
| 1/4" | 84 |
| 3/8" | 84 |
| 1/2" | 84 |
| 3/4" | 104 |
| 1" | 137 |
| 1 1/4" | 309 |
| 1 1/2" | 388 |
| 2" | 663 |
| 2 1/2" | 1158 |
| 3" | 1579 |

### Torques (Nm)*

| Size | TFM 4215 |
|---|---|
| mm | Nm |
| DN08 | 9 |
| DN10 | 9 |
| DN15 | 9 |
| DN20 | 12 |
| DN25 | 15 |
| DN32 | 35 |
| DN40 | 44 |
| DN50 | 75 |
| DN65 | 131 |
| DN80 | 178 |

### Advantages of TFM 4215

Sesto Valves has selected TFM 4215 as the standard seat material for our M22 Series ball valve because of its excellent combination of properties. The material builds upon TFM 1600 by alloying it with 25% electro-graphitized carbon which further enhances the properties of the material. The enhancements include the following:

- Increased dimensional stability across a wide range of temperatures
- Increased hardness
- Stability under load
- Good chemical stability
- Low friction
- Exceptional temperature resistance

As a result of these enhancements, valves equipped with TFM 4215 seats can chemically withstand the same applications as TFM 1600 but over a broader temperature range and at higher pressures and is therefore suitable for use in the following and other industries and applications:

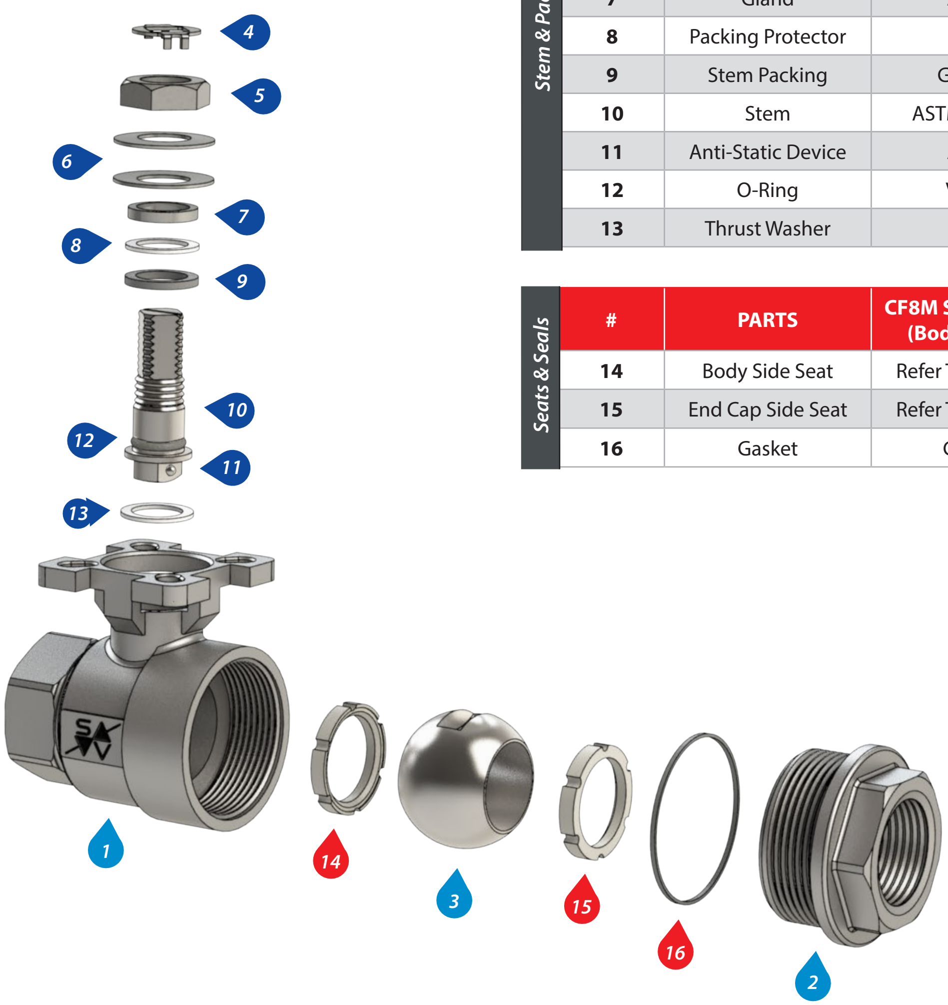
- Petrochemical
- Oil and Gas
- Power generation
- Industrial
- HVAC

*Raw torques shown. Minimum 30% safety factor should be added for actuator sizing.

# M22N Series Data Sheet



## Exploded View & Bill of Materials




| Body & Ball # | PARTS | CF8M Stainless Steel (Body Code "S") | WCB Carbon Steel (Body Code "C") |
|---|---|---|---|
| 1 | Body | ASTM A351-CF8M | ASTM A216-WCB |
| 2 | End Cap | ASTM A351-CF8M | ASTM A216-WCB |
| 3 | Ball | ASTM A351-CF8M/316 | ASTM A351-CF8M/316 |

| Stem & Packing # | PARTS | CF8M Stainless Steel (Body Code "S") | WCB Carbon Steel (Body Code "C") |
|---|---|---|---|
| 4 | Nut Lock | AISI 304 | AISI 304 |
| 5 | Nut | AISI 304 | AISI 304 |
| 6 | Belleville Washers | AISI 301 | AISI 301 |
| 7 | Gland | AISI 304 | AISI 304 |
| 8 | Packing Protector | CTFE | CTFE |
| 9 | Stem Packing | GRAPHITE | GRAPHITE |
| 10 | Stem | ASTM A276-316 | ASTM A276-316 |
| 11 | Anti-Static Device | AISI 316 | AISI 316 |
| 12 | O-Ring | VITON** | VITON** |
| 13 | Thrust Washer | PTFE | PTFE |

| Seats & Seals # | PARTS | CF8M Stainless Steel (Body Code "S") | WCB Carbon Steel (Body Code "C") |
|---|---|---|---|
| 14 | Body Side Seat | Refer To Seat Guide | Refer To Seat Guide |
| 15 | End Cap Side Seat | Refer To Seat Guide | Refer To Seat Guide |
| 16 | Gasket | Graphite | Graphite |

**Blue Light** = Body & Ball

**Blue** = Stem & Packing

**Red** = Seats & Seals

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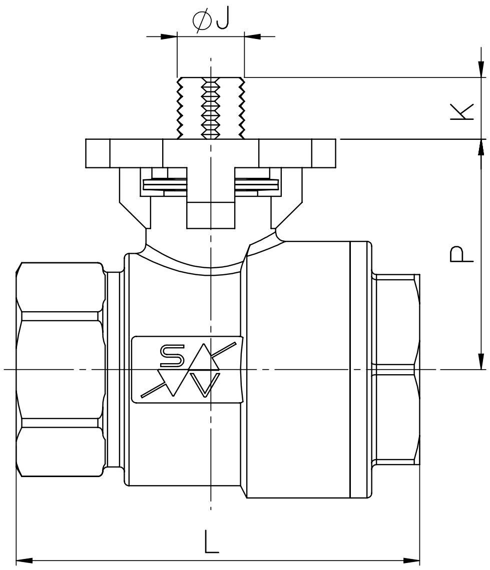
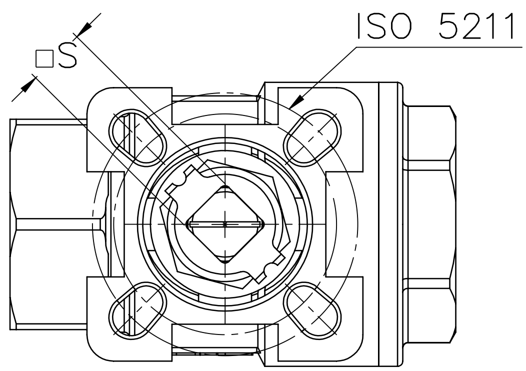
## Dimensional Data




## Standard Dimensions (in)

| Size | BORE | □S | Ø J | K | L | P | T | ISO 5211 | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|
| in | in | in | in | in | in | in | in | | lbs |
| 1/4" | 0.41 | 0.354 | 0.47 | 0.35 | 2.52 | 1.50 | 0.16 | F03-F04 | 1.1 |
| 3/8" | 0.49 | 0.354 | 0.47 | 0.35 | 2.52 | 1.50 | 0.16 | F03-F04 | 1.1 |
| 1/2" | 0.59 | 0.354 | 0.47 | 0.41 | 2.64 | 1.46 | 0.16 | F03-F04 | 1.1 |
| 3/4" | 0.79 | 0.354 | 0.47 | 0.39 | 2.83 | 1.59 | 0.20 | F03-F04 | 1.4 |
| 1" | 1.00 | 0.433 | 0.55 | 0.57 | 3.31 | 1.91 | 0.24 | F04-F05 | 2.4 |
| 1 1/4" | 1.26 | 0.433 | 0.55 | 0.57 | 3.74 | 2.05 | 0.26 | F04-F05 | 3.4 |
| 1 1/2" | 1.50 | 0.551 | 0.75 | 0.75 | 4.41 | 2.69 | 0.30 | F05-F07 | 5.5 |
| 2" | 1.97 | 0.551 | 0.75 | 0.75 | 5.18 | 3.05 | 0.30 | F05-F07 | 9.1 |
| 2 1/2" | 2.50 | 0.669 | 0.94 | 0.87 | 6.54 | 4.35 | 0.41 | F07-F10 | 18.8 |
| 3" | 2.99 | 0.669 | 0.94 | 0.87 | 7.44 | 4.74 | 0.41 | F07-F10 | 26.8 |

## Metric Dimensions (mm)

| Size | BORE | □S | Ø J | K | L | P | T | ISO 5211 | WEIGHT |
|---|---|---|---|---|---|---|---|---|---|
| mm | mm | mm | mm | mm | mm | mm | mm | | kg |
| DN08 | 10.5 | 9 | 12 | 9 | 64 | 38 | 4 | F03-F04 | 0.5 |
| DN10 | 12.5 | 9 | 12 | 9 | 64 | 38 | 4 | F03-F04 | 0.5 |
| DN15 | 15 | 9 | 12 | 10.5 | 67 | 37 | 4 | F03-F04 | 0.5 |
| DN20 | 20 | 9 | 12 | 10 | 72 | 40.5 | 5 | F03-F04 | 0.6 |
| DN25 | 25.4 | 11 | 14 | 14.5 | 84 | 48.5 | 6 | F04-F05 | 1.1 |
| DN32 | 32 | 11 | 14 | 14.5 | 95 | 52 | 6.5 | F04-F05 | 1.5 |
| DN40 | 38 | 14 | 19 | 19 | 112 | 68.2 | 7.5 | F05-F07 | 2.5 |
| DN50 | 50 | 14 | 19 | 19 | 131.5 | 77.5 | 7.5 | F05-F07 | 4.1 |
| DN65 | 63.5 | 17 | 24 | 22 | 166 | 110.5 | 10.5 | F07-F10 | 8.5 |
| DN80 | 76 | 17 | 24 | 22 | 189 | 120.5 | 10.5 | F07-F10 | 12.2 |

# M22N Series Data Sheet

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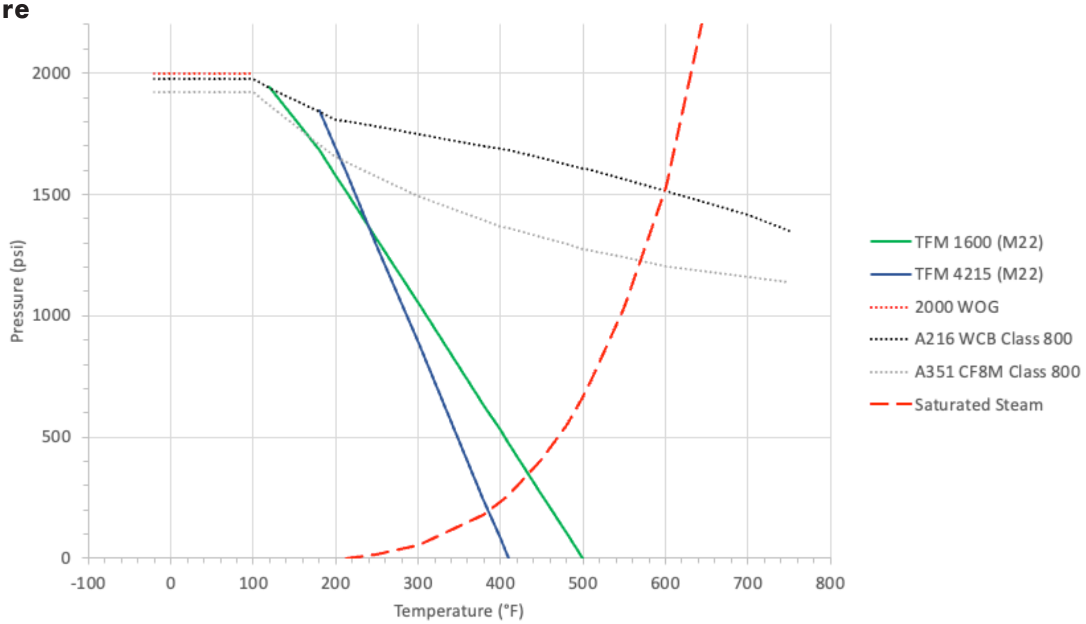
## M22N Series Seat Guide

| TFM 4215 |
|---|
| **RECOMMENDED** |
| Higher Steam than standard TFM 1600.<br>Moderate abrasives |
| **Not Recommended** |
| Fluorinated Chemicals |
| **TEMPERATURE** |
| -45°C to +232°C<br>(-50°F to + 450°F) |
| **COLOR** |
|  Dark<br>Grey |

## Pressure Temperature Chart



# M22N Series Data Sheet

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## Cv Values

### V-Port

| Size | V-Port | Percent Open (Angle of Rotation) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0% (0°) | 10% (9°) | 20% (18°) | 30% (27°) | 40% (36°) | 50% (45°) | 60% (54°) | 70% (63°) | 80% (72°) | 90% (81°) | 100% (90°) |
| 1/2" | 15° | 0.00 | 0.04 | 0.18 | 0.44 | 0.69 | 0.99 | 1.64 | 2.12 | 2.85 | 3.64 | 4.30 |
| | 30° | 0.00 | 0.04 | 0.23 | 0.47 | 0.77 | 1.19 | 1.83 | 2.47 | 3.43 | 4.65 | 5.58 |
| | 60° | 0.00 | 0.05 | 0.28 | 0.73 | 1.11 | 1.83 | 2.92 | 4.29 | 7.00 | 9.43 | 12.78 |
| | 90° | 0.00 | 0.06 | 0.47 | 0.85 | 1.28 | 2.05 | 3.24 | 4.74 | 8.26 | 11.61 | 14.72 |
| 3/4" | 15° | 0.00 | 0.05 | 0.24 | 0.56 | 0.90 | 1.34 | 2.15 | 2.75 | 3.76 | 4.75 | 5.56 |
| | 30° | 0.00 | 0.07 | 0.30 | 0.61 | 0.99 | 1.57 | 2.42 | 3.25 | 4.52 | 6.12 | 7.34 |
| | 60° | 0.00 | 0.08 | 0.35 | 0.93 | 1.46 | 2.42 | 3.85 | 5.64 | 9.21 | 12.41 | 16.28 |
| | 90° | 0.00 | 0.09 | 0.59 | 1.11 | 1.69 | 2.69 | 4.27 | 6.24 | 10.85 | 15.28 | 19.39 |
| 1" | 15° | 0.00 | 0.06 | 0.32 | 0.95 | 1.50 | 2.35 | 3.80 | 4.70 | 6.50 | 8.50 | 9.85 |
| | 30° | 0.00 | 0.08 | 0.45 | 1.25 | 2.06 | 3.54 | 5.30 | 7.70 | 10.49 | 12.84 | 15.48 |
| | 60° | 0.00 | 0.09 | 0.68 | 1.74 | 2.78 | 5.13 | 8.00 | 11.88 | 18.71 | 23.22 | 32.84 |
| | 90° | 0.00 | 0.12 | 0.93 | 2.78 | 5.09 | 7.74 | 12.20 | 17.33 | 24.48 | 26.79 | 43.89 |
| 1 1/4" | 15° | 0.00 | 0.03 | 0.27 | 0.83 | 1.65 | 2.79 | 4.09 | 5.88 | 7.99 | 10.84 | 12.85 |
| | 30° | 0.00 | 0.06 | 0.48 | 1.37 | 2.47 | 4.12 | 6.08 | 8.82 | 11.76 | 14.87 | 17.39 |
| | 60° | 0.00 | 0.07 | 0.67 | 2.04 | 3.41 | 6.47 | 10.80 | 15.39 | 22.35 | 33.37 | 44.20 |
| | 90° | 0.00 | 0.09 | 0.78 | 2.92 | 5.41 | 10.23 | 17.28 | 19.48 | 34.93 | 51.76 | 66.00 |
| 1 1/2" | 15° | 0.00 | 0.06 | 0.38 | 1.17 | 2.28 | 3.85 | 5.59 | 8.10 | 10.99 | 14.86 | 17.85 |
| | 30° | 0.00 | 0.08 | 0.65 | 1.88 | 3.39 | 5.66 | 8.36 | 12.12 | 16.17 | 20.44 | 23.90 |
| | 60° | 0.00 | 0.09 | 0.92 | 2.81 | 4.69 | 8.89 | 14.85 | 21.16 | 30.73 | 45.88 | 59.74 |
| | 90° | 0.00 | 0.11 | 1.07 | 4.01 | 7.44 | 14.06 | 23.76 | 26.78 | 48.03 | 71.17 | 90.50 |
| 2" | 15° | 0.00 | 0.06 | 0.69 | 2.26 | 4.45 | 7.30 | 10.68 | 15.40 | 21.39 | 28.75 | 35.05 |
| | 30° | 0.00 | 0.09 | 1.18 | 3.79 | 7.53 | 12.26 | 17.83 | 26.44 | 36.45 | 48.09 | 55.92 |
| | 60° | 0.00 | 0.11 | 1.51 | 5.80 | 10.39 | 20.60 | 33.98 | 48.75 | 69.04 | 104.2 | 136.5 |
| | 90° | 0.00 | 0.17 | 1.89 | 7.28 | 13.58 | 25.38 | 42.30 | 55.56 | 87.04 | 129.8 | 167.3 |
| 2 1/2" | 15° | 0.00 | 0.08 | 0.77 | 2.44 | 5.25 | 8.08 | 11.75 | 16.44 | 22.36 | 27.24 | 32.10 |
| | 30° | 0.00 | 0.10 | 1.15 | 4.42 | 7.91 | 13.39 | 20.05 | 30.43 | 41.92 | 69.75 | 77.20 |
| | 60° | 0.00 | 0.14 | 1.46 | 5.91 | 11.90 | 23.24 | 37.92 | 59.31 | 83.29 | 113.7 | 162.5 |
| | 90° | 0.00 | 0.18 | 1.83 | 7.29 | 16.45 | 31.16 | 53.53 | 77.89 | 118.3 | 177.3 | 240.1 |
| 3" | 15° | 0.00 | 0.08 | 0.92 | 2.98 | 6.65 | 9.60 | 13.50 | 19.62 | 26.69 | 31.80 | 38.40 |
| | 30° | 0.00 | 0.13 | 1.20 | 4.15 | 9.49 | 15.96 | 26.78 | 38.91 | 53.31 | 69.77 | 85.91 |
| | 60° | 0.00 | 0.16 | 2.89 | 6.70 | 15.82 | 29.36 | 46.32 | 73.60 | 106.7 | 149.9 | 193.2 |
| | 90° | 0.00 | 0.21 | 4.12 | 8.65 | 21.09 | 41.09 | 69.27 | 105.9 | 161.0 | 237.2 | 359.2 |
| 4" | 15° | 0.00 | 0.12 | 1.40 | 3.76 | 8.88 | 16.79 | 27.92 | 41.85 | 59.27 | 75.55 | 97.05 |
| | 30° | 0.00 | 0.18 | 1.75 | 7.84 | 18.59 | 35.21 | 58.60 | 87.89 | 124.4 | 158.5 | 197.1 |
| | 60° | 0.00 | 0.27 | 2.20 | 12.44 | 33.67 | 62.98 | 106.3 | 160.5 | 234.0 | 329.5 | 437.3 |
| | 90° | 0.00 | 0.36 | 4.37 | 19.68 | 50.29 | 91.83 | 157.4 | 240.5 | 365.2 | 546.6 | 830.9 |
| 6" | 15° | 0.00 | 0.21 | 2.50 | 6.66 | 15.79 | 29.88 | 49.74 | 74.56 | 105.6 | 134.5 | 172.1 |
| | 30° | 0.00 | 0.30 | 3.12 | 13.97 | 33.15 | 62.70 | 104.4 | 156.5 | 221.6 | 282.3 | 349.7 |
| | 60° | 0.00 | 0.47 | 5.41 | 22.15 | 59.97 | 112.2 | 189.2 | 285.8 | 416.7 | 586.8 | 800.8 |
| | 90° | 0.00 | 0.68 | 7.79 | 35.05 | 89.56 | 163.6 | 280.4 | 428.3 | 650.3 | 973.5 | 1480 |

### Full Port

| Size | Cv |
|---|---|
| 1/4" | 7 |
| 3/8" | 10 |
| 1/2" | 15 |
| 3/4" | 35 |
| 1" | 68 |
| 1-1/4" | 110 |
| 1-1/2" | 155 |
| 2" | 300 |
| 2-1/2" | 500 |
| 3" | 600 |
| 4" | 1015 |

## Torque

**Torques (in-lbs)***

| TFM 4215 | |
|---|---|
| in /lb | |
| 1/4" | 84 |
| 3/8" | 84 |
| 1/2" | 84 |
| 3/4" | 104 |
| 1" | 137 |
| 1-1/4" | 309 |
| 1-1/2" | 388 |
| 2" | 663 |
| 2-1/2" | 1158 |
| 3" | 1579 |

# M22N Series Data Sheet

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## M22N Series Part # Builder

| A - Figure | B- Size | C - Body | D - Trim | E - Type | F - Seat | G - Operator | H - Special |
|---|---|---|---|---|---|---|---|
| M22N | 02 | C | 6 | 0 | G | N | - |

*Note: 1) Not all combinations available, and special solutions not shown are possible. Please call factory for details. 2) Max-Air Technology reserves the right to change or modify products without prior notice & without incurring any obligation to make such changes on products previously or subsequently sold.

## Example Part # M22N-02-C60G-N

***EXAMPLE DESCRIPTION:*** 2 " FLOATING 2-PC CLASS 800 FULL PORT BALL VALVE, SESTO M22 SERIES, NPT THREADED ENDS, ASTM A216 GR WCB BODY, ASTM A351 CF8M BALL, ASTM A276-316 STEM, STANDARD BALL TYPE, TFM 4215 SEATS, VITON O-RING, GRAPHITE FIRE SAFE PACKING, API 607, NACE, BARE STEM

| A - FIGURE | B - SIZE | | C - BODY |
|---|---|---|---|
| **M22N -** *FLOATING 2-PC SEAL WELD CLASS 800 (2000 WOG) THREADED BALL VALVE, FULL BORE* | *0Q -1/4"*<br>*0R - 3/8"*<br>*0M -1/2"*<br>*0T - 3/4"* | *01 - 1"*<br>*1Q - 1 1/4"*<br>*1M - 1 1/2"*<br>*02 - 2"* | *C - ASTM A216 GR WCB*<br>*S - ASTM A351 CF8M*<br>*9 - SPECIAL* |

| A - TRIM | B - TYPE | C - SEATS | D - OPERATOR | E - SPECIAL |
|---|---|---|---|---|
| *6 - 316 SS BALL / 316 SS STEM*<br>*8 - 304 SS BALL / 304 SS STEM*<br>*9 - SPECIAL* | *0 - FULL PORT*<br>*V - V-PORT BALL*<br>*S - SLOTTED BALL*<br>*R - RELIEF VENTED BALL*<br>*9 - SPECIAL* | *G - TFM 4215*<br>*9 - SPECIAL* | *N - BARE STEM*<br>*L - LOCKING LEVER*<br>*9 - SPECIAL*<br>*D - OVAL HANDLE* | *CONSULT FACTORY* |