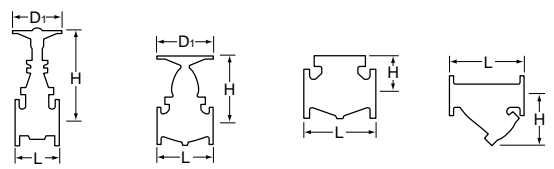


Cast Iron Valves

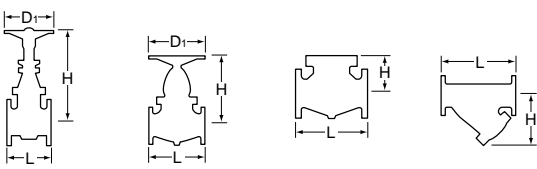


| Design | TOYO Standard | | | | | | | | | | | | |
|--------------------|--|-----------|----------------|------|-----------|----------------|-------------|-----------|----------------|-------------------|-----------|-----|--|
| Type | Gate Valves | | | | | | Globe Valve | | | Swing Check Valve | | | |
| Class | 10K | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| Fig. | 410E | | | 420E | | | 405E | | | 430E | | | |
| Size | L | H | D ₁ | L | H | D ₁ | L | H | D ₁ | L | H | | |
| 50 (mm) | 2" | 178 | 319 | 180 | 178 | 357 | 180 | 203 | 318 | 200 | 203 | 153 | |
| 65 | 2 1/2" | 190 | 350 | 180 | 190 | 412 | 180 | 216 | 333 | 200 | 216 | 162 | |
| 80 | 3" | 203 | 401 | 200 | 203 | 482 | 200 | 241 | 361 | 200 | 241 | 176 | |
| 100 | 4" | 229 | 457 | 250 | 229 | 569 | 250 | 292 | 390 | 250 | 292 | 220 | |
| 125 | 5" | 254 | 523 | 280 | 254 | 672 | 280 | 330 | 439 | 300 | 330 | 226 | |
| 150 | 6" | 267 | 602 | 300 | 267 | 783 | 300 | 356 | 477 | 300 | 356 | 307 | |
| 200 | 8" | 292 | 711 | 360 | 292 | 985 | 355 | 495 | 542 | 360 | 495 | 325 | |
| 250 | 10" | 330 | 842 | 400 | 330 | 1196 | 400 | 622 | 624 | 450 | 622 | 384 | |
| 300 | 12" | 356 | 941 | 450 | 356 | 1390 | 450 | 698 | 735 | 500 | 698 | 426 | |
| 350 | 14" | | | | | | | | | | | | |
| 400 | 16" | | | | | | | | | | | | |
| Material | Body | Cast Iron | | | Cast Iron | | | Cast Iron | | | Cast Iron | | |
| | Stem/Pin | Brass | | | Brass | | | Brass | | | Brass | | |
| | Disc | Cast Iron | | | Cast Iron | | | Cast Iron | | | Cast Iron | | |
| | Seat | Bronze | | | Bronze | | | Bronze | | | Bronze | | |
| Service conditions | 120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.20MPa | | | | | | | | | | | | |
| Remarks | Body Marking: MSS standard indicating "125S 200WOG", Connection JIS B2239 10K-FF | | | | | | | | | | | | |

| Design | TOYO Standard | |
|--------------------|--|-------------------------------------|
| Type | Strainer | |
| Class | 10K | |
| | | |
| Fig. | 450E | |
| Size | L | H |
| 40 (mm) | 1 1/2" | |
| 50 | 2" | 225 |
| 65 | 2 1/2" | 273 |
| 80 | 3" | 292 |
| 100 | 4" | 352 |
| 125 | 5" | 391 |
| 150 | 6" | 470 |
| 200 | 8" | 543 |
| 250 | 10" | 660 |
| 300 | 12" | 762 |
| 350 | 14" | |
| 400 | 16" | |
| Material | Body | Cast Iron |
| | Screen | SUS304 (SUS316 Screen available) |
| | | |
| Service conditions | 120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.69MPa | |
| Remarks | Body Marking: MSS standard | |

Trim Combination (JIS Standard)

| Fig. | Stem/Pin | Disc | Seat |
|-------|----------|----------------------------|--------|
| 425J | Brass | C.I./Same material as Seat | Bronze |
| 425JS | 13%Cr | | 13%Cr |
| 425JU | SUS304 | | SUS304 |
| 405J | Brass | | Bronze |
| 405JS | 13%Cr | | 13%Cr |
| 405JU | SUS304 | | SUS304 |
| 435J | Brass | | Bronze |
| 435JS | 13%Cr | | 13%Cr |
| 435JU | SUS304 | | SUS304 |

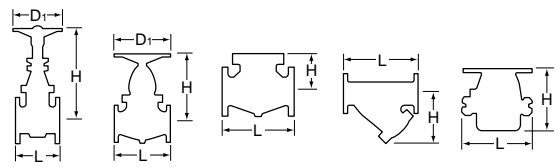


JIS Cast Iron Valves

| Design | | JIS Standard | | | | | | | | | | | |
|--------------------|--|------------------------------------|-----|--|------------------------------------|------|--|------------------------------------|------|--|------------------------------------|-----|----------------|
| Type | | Gate Valves | | | | | | | | | Globe Valve | | |
| Class | | 10K | | | 5K | | | 10K | | | | | |
| | | | | | | | | | | | | | |
| | | JIS B2031/Non-rising | | | JIS B2031/Rising | | | JIS B2031/Rising | | | JIS B2031 | | |
| Fig. | | 415J | | | 424J | | | 425J/JS/JU | | | 405J/JS/JU | | |
| Size | | L | H | D ₁ | L | H | D ₁ | L | H | D ₁ | L | H | D ₁ |
| 40(mm) | 1 1/2" | *165 | 285 | 160 | | | | *165 | 306 | 160 | 190 | 260 | 160 |
| 50 | 2" | 180 | 313 | 180 | 160 | 328 | 160 | 180 | 343 | 180 | 200 | 277 | 180 |
| 65 | 2 1/2" | 190 | 344 | 180 | 170 | 382 | 180 | 190 | 389 | 180 | 220 | 307 | 180 |
| 80 | 3" | 200 | 401 | 200 | 180 | 436 | 180 | 200 | 462 | 200 | 240 | 353 | 230 |
| 100 | 4" | 230 | 444 | 250 | 200 | 532 | 200 | 230 | 547 | 250 | 290 | 404 | 280 |
| 125 | 5" | 250 | 517 | 280 | 220 | 627 | 230 | 250 | 648 | 280 | 360 | 454 | 300 |
| 150 | 6" | 270 | 577 | 300 | 240 | 726 | 250 | 270 | 759 | 300 | 410 | 533 | 360 |
| 200 | 8" | 290 | 693 | 360 | 260 | 919 | 280 | 290 | 956 | 360 | 500 | 642 | 450 |
| 250 | 10" | 330 | 814 | 400 | 300 | 1134 | 360 | 330 | 1168 | 400 | *620 | 665 | 450 |
| 300 | 12" | 350 | 925 | 450 | | | | 350 | 1363 | 450 | *700 | 883 | 500 |
| 350 | 14" | | | | | | | *381 | 1560 | 500 | | | |
| Material | Body | Cast Iron | | | Cast Iron | | | Cast Iron | | | Cast Iron | | |
| | Stem | Brass | | | Brass | | | Brass/SUS403/SUS304 | | | Brass/SUS403/SUS304 | | |
| | Disc | Cast Iron or same material as seat | | | Cast Iron or same material as seat | | | Cast Iron or same material as seat | | | Cast Iron or same material as seat | | |
| | Seat | Bronze | | | Bronze | | | Bronze/SUS403/SUS304 | | | Bronze/SUS403/SUS304 | | |
| Service conditions | 120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.20MPa | | | 120 water, non-shock 0.69MPa 120 oil, water, air 0.49MPa Saturated steam 0.20MPa | | | 120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.69MPa | | | 120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.69MPa | | | |
| Remarks | *TOYO Standard | | | | | | *TOYO Standard | | | *TOYO Standard | | | |

| Design | | JIS Standard | | | | TOYO Standard | | | |
|--------------------|--|------------------------------------|--|------------------------------------|---|---------------|-----|--------|--|
| Type | | Swing Check Valves | | | | Strainer | | | |
| Class | | 10K | | | | | | | |
| | | | | | | | | | |
| | | JIS B2031 | | 437J | | 450 | | | |
| Fig. | | 435J/JS/JU | | 437J | | 450 | | | |
| Size | | L | H | L | H | L | H | | |
| 40(mm) | 1 1/2" | *190 | 106 | | | | | | |
| 50 | 2" | 200 | 111 | 200 | 111 | 250 | 167 | | |
| 65 | 2 1/2" | 220 | 121 | 220 | 121 | 285 | 193 | | |
| 80 | 3" | 240 | 145 | 240 | 145 | 315 | 210 | | |
| 100 | 4" | 290 | 165 | 290 | 165 | 370 | 256 | | |
| 125 | 5" | 360 | 207 | 360 | 207 | 450 | 318 | | |
| 150 | 6" | 410 | 225 | 410 | 225 | 410 | 364 | | |
| 200 | 8" | 500 | 268 | 500 | 268 | 600 | 507 | | |
| 250 | 10" | *620 | 315 | | | 740 | 600 | | |
| 300 | 12" | | | | | 850 | 673 | | |
| 350 | 14" | | | | | 950 | 757 | | |
| 400 | 16" | | | | | 1050 | 845 | | |
| Material | Body | Cast Iron | | Cast Iron | | Cast Iron | | | |
| | Pin | Brass/SUS403/SUS304 | | SUS304 | | Screen | | SUS304 | |
| | Disc | Cast Iron or same material as seat | | Cast Iron or same material as seat | | | | | |
| | Seat | Bronze/SUS403/SUS304 | | SUS304 | | | | | |
| Service conditions | 120 water, non-shock 1.37MPa 120 oil, water, air 0.98MPa Saturated steam 0.69MPa | | 120 water, non-shock 1.4MPa 120 oil, water, air 1.0MPa Saturated steam 0.69MPa | | 120 water, oil, air below size 200 1.1MPa above size 250 0.7MPa Saturated steam below size 200 0.7MPa above size 250 0.20MPa | | | | |
| Remarks | *TOYO Standard | | c/w counter weight | | Perforated screen equivalent to 12-16 meshes | | | | |

- Rusty Water-Proof Series - JIS Nylon Lined Cast Iron Valves



| Design | | JIS Standard | | | | | | | | | | |
|--------------------|--------|--------------------------|------|----------------|-----------------------------|------|----------------|-----------------------|-----|----------------|-----------------------|-----|
| Type | | Gate Valves | | | | | | Globe Valve | | | Check Valve | |
| Class | | 5K | | | 10K | | | 10K | | | | |
| | | | | | | | | | | | | |
| | | JIS B2031 | | | JIS B2031 | | | JIS B2031 | | | JIS B2031 | |
| Fig. | | 419 | | | 429 | | | 409 | | | 439 | |
| Size | | L | H | D ₁ | L | H | D ₁ | L | H | D ₁ | L | H |
| 50 (mm) | 2" | | | | 180 | 343 | 180 | | | | | |
| 65 | 2 1/2" | 170 | 382 | 180 | 190 | 389 | 180 | 220 | 307 | 180 | 220 | 121 |
| 80 | 3" | 180 | 436 | 180 | 200 | 462 | 200 | 240 | 353 | 230 | 240 | 145 |
| 100 | 4" | 200 | 532 | 200 | 230 | 547 | 250 | 290 | 404 | 280 | 290 | 165 |
| 125 | 5" | 220 | 627 | 230 | 250 | 648 | 280 | 360 | 454 | 300 | 360 | 207 |
| 150 | 6" | 240 | 726 | 250 | 270 | 759 | 300 | 410 | 533 | 360 | 410 | 225 |
| 200 | 8" | 260 | 919 | 280 | 290 | 956 | 360 | 500 | 642 | 450 | 500 | 268 |
| 250 | 10" | 300 | 1134 | 360 | 330 | 1168 | 400 | | | | | |
| 300 | 12" | | | | 350 | 1363 | 450 | | | | | |
| Material | Body | Cast Iron/Nylon Lined | | | Cast Iron/Nylon Lined | | | Cast Iron/Nylon Lined | | | Cast Iron/Nylon Lined | |
| | Stem | Brass | | | Brass | | | Brass | | | Brass | |
| | Disc | Bronze | | | Bronze | | | Bronze | | | Bronze | |
| | Seat | Bronze | | | Bronze | | | Bronze | | | Bronze | |
| Service conditions | 60 | water, non-shock 0.69MPa | | | 60 water, non-shock 1.37MPa | | | | | | | |
| | 60 | oil, water, air 0.49MPa | | | 60 oil, water, air 0.98MPa | | | | | | | |
| Remarks | | | | | | | | | | | | |

| Design | | TOYO Standard | | | |
|--------------------|--------|-----------------------|-----|-----------------------|---------------|
| Type | | Strainer | | Foot Valve | |
| Class | | 10K | | | |
| | | | | | |
| Fig. | | 459 | | 469 | |
| Size | | L | H | L | H |
| 65 (mm) | 2 1/2" | 285 | 193 | 173 | 161 |
| 80 | 3" | 315 | 210 | 193 | 188 |
| 100 | 4" | 370 | 256 | 236 | 229 |
| 125 | 5" | 450 | 318 | 271 | 289 |
| 150 | 6" | 510 | 364 | 305 | 335 |
| 200 | 8" | 600 | 507 | 388 | 449 |
| 250 | 10" | 740 | 600 | | |
| 300 | 12" | 850 | 673 | | |
| Material | Body | Cast Iron/Nylon Lined | | Cast Iron/Nylon Lined | |
| | Screen | SUS304 | | Seat | EPDM |
| | | | | Ball | Polycarbonate |
| Service conditions | 60 | water 0.7MPa | | 60 water 0.2MPa | |
| | | | | | |
| Remarks | | | | | |

Features

Toyo Nylon Lined Cast Iron Valves conform to JIS B2031.(Gate, Globe & Check Valves)

There is no RUSTY-WATER accrual from valves since all surface of cast iron in direct contact with water is lined by Nylon 11.

Nylon 11 can be used for a wide range of fluid with having its corrosion resistance, sea water-proof nature & chemical resistance. (Please consult Toyo sales staff for details.

Nylon 11 can be used in food industries.

Electrolytic corrosion does not occur, as Nylon 11 is an insulator.

Specifications

Lining material

Nylon 11 Special Grade Resin (Heat-resistance)

Color : White Film thickness : Above 300 μ m

Service temperature

Addicted service temperature : 0 ~ 60

Trim material

Standard trim material for gate, globe & swing check valves

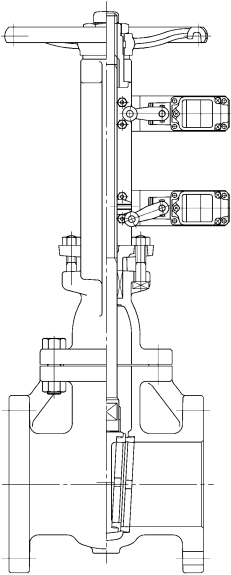
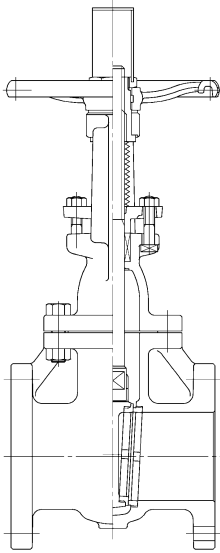
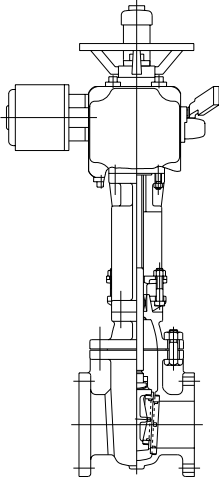
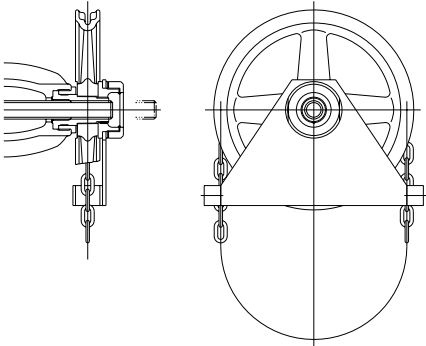
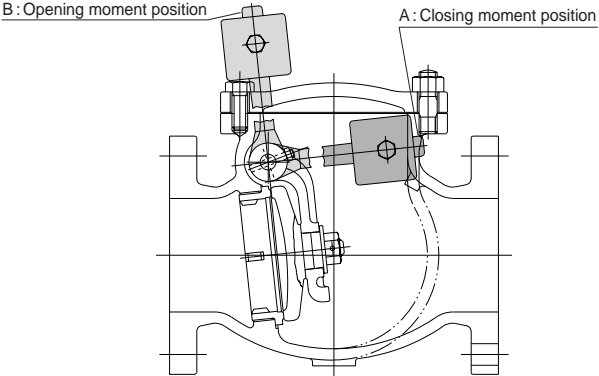
| | |
|--------------------|--------------|
| Seat : CAC406(BC6) | Stem : Brass |
|--------------------|--------------|

*Screen material of a strainer is SUS304.

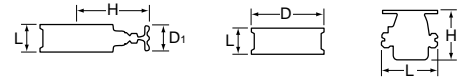
Special Valves



Valves with special functions



Toyo Valve has much experience in not only standard products but also products with special functions. Please consult Toyo sales staff or our local agent for details.

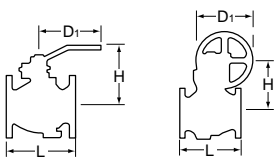
| Limit switches | Stem cap & cover | Moterized valve |
|---|--|--|
| <p data-bbox="140 412 580 506">It is attached at open, closed or both open and closed positions for remote surveillance.</p>  | <p data-bbox="603 412 1043 506">Protection of stem from dust, foreign objects, etc. in order to avoid a poor operation.</p>  | <p data-bbox="1066 412 1506 568">Toyo has much and long experience to supply motorized valves with high quality. On request, valves can be provided with each maker's actuator like LIMITORQUE, ROTORK, SEIBU, etc.</p>  |
| Chain handle | Counter-weight check valve | |
| <p data-bbox="140 1202 667 1234">Easy operation for a valve on elevated piping line.</p>  | <p data-bbox="836 1202 1506 1391">By adjusting the counter-weight to the closed moment, water-hammer is restrained by quicker closing and excellent seat sealing capability is acquired. Balance of disc is maintained by adjusting the counter-weight to the open moment, the flow with low pressure is facilitated and opening and closing disc is made smooth.</p>  | |

Dual Plate Check / Ball Foot

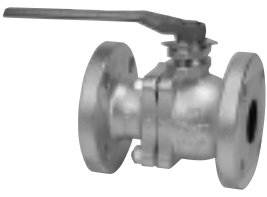



| Design | TOYO Standard | | | | | | | | | |
|--------------------|---|--------|----------------|-----|-----------|----------------|---------------------------|--|-----|--|
| Type | Dual Plate Check Valves | | | | | | | | | |
| Class | 10K | | | | | | | 150 | | |
| |  | | | | | | |  | | |
| Fig. | 365 | | | 440 | | | | 442F | | |
| Size | L | H | D ₁ | L | H | D ₁ | L | D | | |
| 40 (mm) | 1 1/2" | 54 | 132 | 63 | 54 | 128 | 55 | | | |
| 50 | 2" | 56 | 140 | 70 | 56 | 143 | 70 | 54 | 105 | |
| 65 | 2 1/2" | 56 | 150 | 70 | 56 | 150 | 70 | 54 | 124 | |
| 80 | 3" | 59 | 156 | 70 | 59 | 156 | 70 | 57 | 137 | |
| 100 | 4" | 66 | 169 | 70 | 66 | 169 | 70 | 64 | 175 | |
| 125 | 5" | 72 | 183 | 70 | 72 | 183 | 70 | 70 | 197 | |
| 150 | 6" | 78 | 212 | 80 | 78 | 216 | 80 | 76 | 222 | |
| 200 | 8" | 96 | 240 | 80 | 96 | 243 | 80 | 95 | 279 | |
| 250 | 10" | 109 | 289 | 90 | 109 | 290 | 90 | 108 | 340 | |
| 300 | 12" | 145 | 316 | 90 | 145 | 315 | 90 | 143 | 410 | |
| 350 | 14" | | | | 184 | 330 | 90 | 184 | 451 | |
| 400 | 16" | | | | 191 | 355 | 90 | 191 | 514 | |
| 450 | 18" | | | | 204 | 388 | 90 | 203 | 549 | |
| Material | Body | Bronze | | | Cast Iron | | | Cast Iron | | |
| | Plate | Bronze | | | Bronze | | | Bronze | | |
| | Seat | NBR | | | NBR | | | NBR | | |
| Service conditions | 80 water, non-shock 1.4MPa | | | | | | 1.03MPa (150psi) 80 water | | | |
| | 80 water, oil, air 1.0MPa | | | | | | | | | |
| Remarks | FPM or EPDM seat available | | | | | | | | | |
| | By-pass valve mounted | | | | | | | | | |

| Design | TOYO Standard | | | | |
|--------------------|---|---------------|---|---------------|-----|
| Type | Ball Foot Valves | | | | |
| Class | 10K | | | | |
| |  | |  | | |
| Fig. | 097 | | 461 | | |
| Size | L | H | L | H | |
| 40 (mm) | 1 1/2" | 133 | 121 | | |
| 50 | 2" | 148 | 147 | | |
| 65 | 2 1/2" | | | 173 | 161 |
| 80 | 3" | | | 193 | 188 |
| 100 | 4" | | | 236 | 229 |
| 125 | 5" | | | 271 | 289 |
| 150 | 6" | | | 305 | 335 |
| 200 | 8" | | | 388 | 449 |
| Material | Body | Bronze | | Cast Iron | |
| | Seat | EPDM | | EPDM | |
| | Ball | Polycarbonate | | Polycarbonate | |
| Service conditions | 70 water 0.20MPa (29psi) | | | | |
| Remarks | | | | | |



Cast Iron Ball Valves

| | | | | | | | |
|--------------------|--|------------------|-----|--|------------------|-----|----------------|
| Design | TOYO Standard | | | | | | |
| Type | Ball Valves | | | | | | |
| Class | 10K | | | | | | |
| |  Full bore | | |  Full bore | | | |
| Fig. | 470L | | | 470G | | | |
| Size | | L | H | D ₁ | L | H | D ₁ |
| 15 ^(mm) | 1/2" | 110 | 102 | 130 | | | |
| 20 | 3/4" | 120 | 105 | 130 | | | |
| 25 | 1" | 130 | 124 | 160 | | | |
| 32 | 1 1/4" | 140 | 130 | 160 | | | |
| 40 | 1 1/2" | 165 | 115 | 230 | | | |
| 50 | 2" | 180 | 120 | 230 | | | |
| 65 | 2 1/2" | 190 | 155 | 400 | | | |
| 80 | 3" | 200 | 165 | 400 | | | |
| 100 | 4" | 230 | 200 | 460 | | | |
| 125 | 5" | 300 | 220 | 460 | 300 | 312 | 310 |
| 150 | 6" | 340 | 295 | 1000 | 340 | 337 | 310 |
| 200 | 8" | 450 | 355 | 1500 | 450 | 414 | 360 |
| Material | Body | Cast Iron | | | Cast Iron | | |
| | Stem | SUS403 | | | SUS403 | | |
| | Disc | SUS304 or SCS13A | | | SUS304 or SCS13A | | |
| | Seat | PTFE | | | PTFE | | |
| Service conditions | See P-T rating at page 26 | | | | | | |
| Remarks | ASME Class 125 flanged ends available upon request | | | | | | |

Toyo Dual Plate Check Valve

A water hammer is prevented (Silent Check Type)

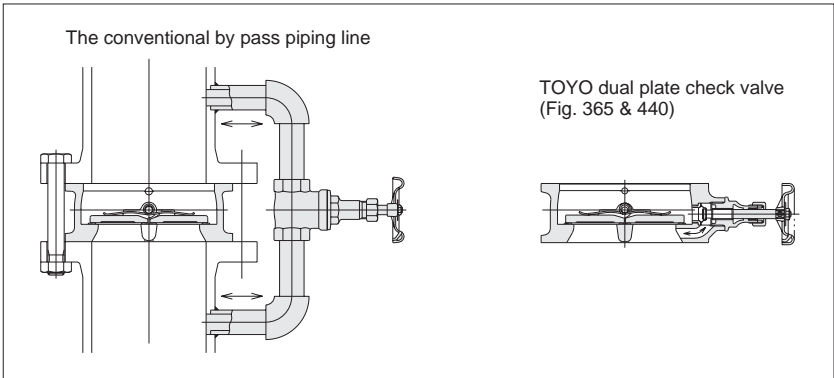
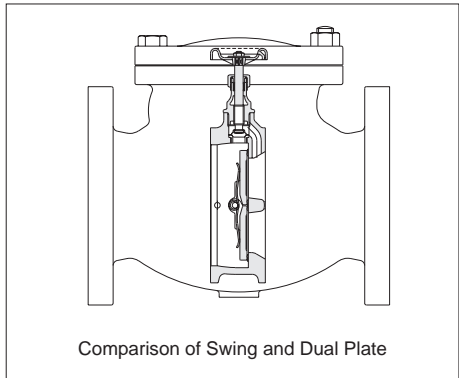
By action of the coil spring built in a valve, plates are gently opened at the time of starting a pump or it closes quickly when a pump stops. For this reason, a water hammer is prevented and generating a shock pressure is controlled.

It is compact.

A small and lightweight wafer body. As compared with a swing check, the face-to-face dimension is about 1/4 and the weight is about 1/5. Piping work is easy, and attachment space for installation is also small.

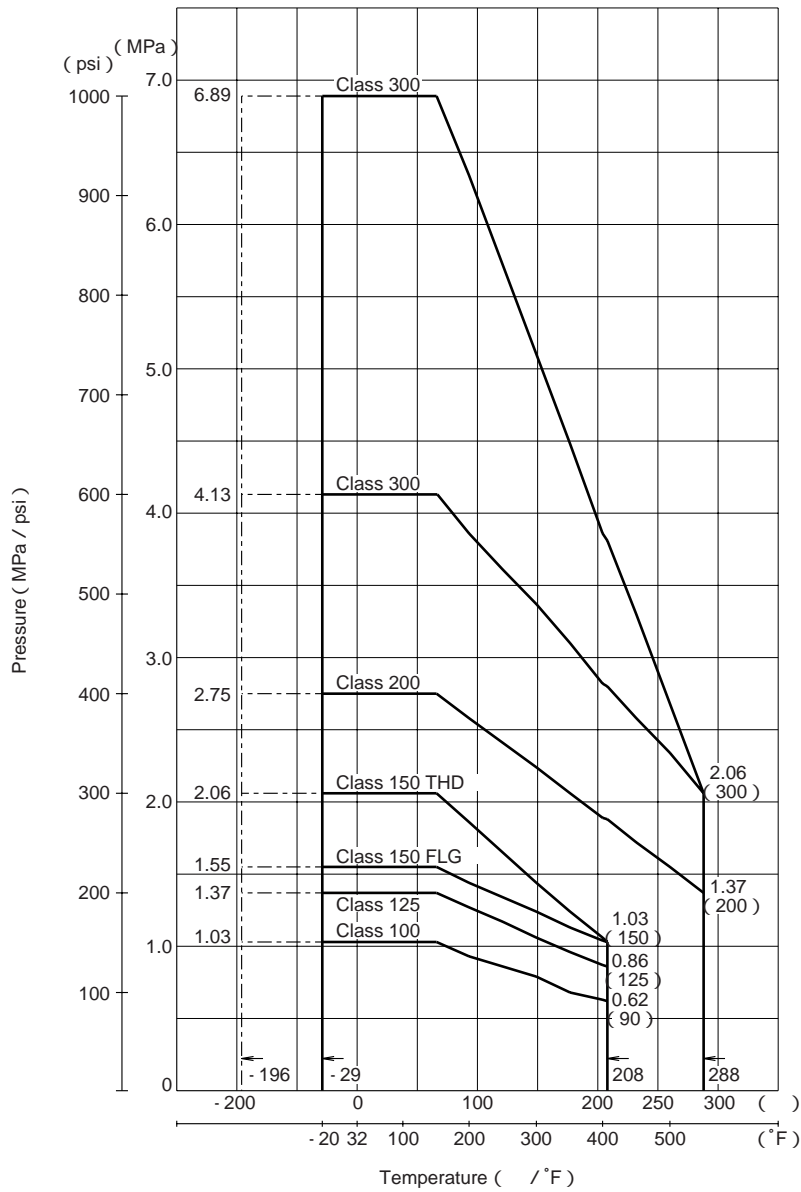
By-pass piping is unnecessary. (Fig. 365 and 440)

Since the by-pass valve is built in, the by-pass piping for discharge of the fluid in a pipe or priming when starting a pump are unnecessary. It is a big merit on design and construction.



Pressure-Temperature Ratings

Bronze and Brass Valves (Extracted from MSS SP-80)



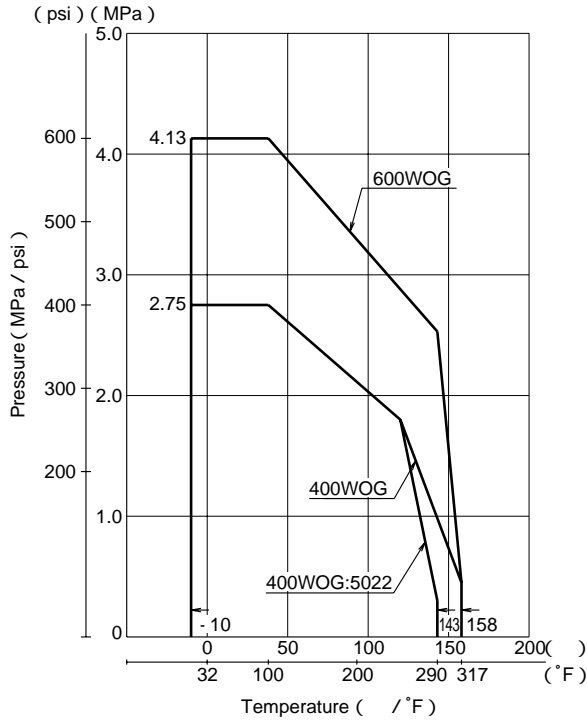
Pressure-Temperature Ratings

| Service temperature | | | 100 | | 125 | | 150 | | | | 200 | | 300 | | | |
|---------------------|-----------|------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|-------|------|--|
| | | | THD | | THD | | FLG | | FLG | | THD | | THD | | | |
| | °F | MPa | psi | MPa | psi | MPa | psi | MPa | psi | MPa | psi | MPa | psi | MPa | psi | |
| -29 - 66 | -20 - 150 | 1.03 | 150 | 1.37 | 200 | 2.06 | 300 | 1.55 | 225 | 2.75 | 400 | 4.13 | 600 | 6.89 | 1000 | |
| 93 | 200 | 0.93 | 136 | 1.27 | 185 | 1.86 | 270 | 1.44 | 210 | 2.58 | 375 | 3.86 | 560 | 6.34 | 920 | |
| 121 | 250 | 0.86 | 126 | 1.17 | 170 | 1.65 | 240 | 1.34 | 195 | 2.41 | 350 | 3.61 | 525 | 5.72 | 830 | |
| 149 | 300 | 0.79 | 116 | 1.06 | 155 | 1.44 | 210 | 1.24 | 180 | 2.24 | 325 | 3.37 | 490 | 5.10 | 740 | |
| 177 | 350 | 0.68 | 100 | 0.96 | 140 | 1.24 | 180 | 1.13 | 165 | 2.06 | 300 | 3.10 | 450 | 4.48 | 650 | |
| 204 | 400 | 0.63 | 92 | - | - | - | - | - | - | 1.89 | 275 | 2.82 | 410 | 3.86 | 560 | |
| 208 | 406 | 0.62 | 90 | 0.86 | 125 | 1.03 | 150 | 1.03 | 150 | - | - | - | - | - | - | |
| 232 | 450 | - | - | - | - | - | - | - | - | 1.72 | 250 | 2.58 | 375 | 3.30 | 480 | |
| 260 | 500 | - | - | - | - | - | - | - | - | 1.55 | 225 | 2.34 | 340 | 2.68 | 390 | |
| 288 | 550 | - | - | - | - | - | - | - | - | 1.37 | 200 | 2.06 | 300 | 2.06 | 300 | |
| Saturated steam | | 0.68 | 100 | 0.86 | 125 | 1.03 | 150 | 1.03 | 150 | 1.37 | 200 | 2.06 | 300 | 2.06 | 300 | |
| Test pressure | shell | 1.55 | 225 | 2.06 | 300 | 3.10 | 450 | 2.41 | 350 | 4.13 | 600 | 6.20 | 900 | 10.34 | 1500 | |
| | seat | 0.55 | 80 | 0.55 | 80 | 0.55 | 80 | 0.55 | 80 | 0.55 | 80 | 0.55 | 80 | 0.55 | 80 | |

NOTE: Class 100 outside of MSS SP-80

Pressure-Temperature Ratings

Ball Valves

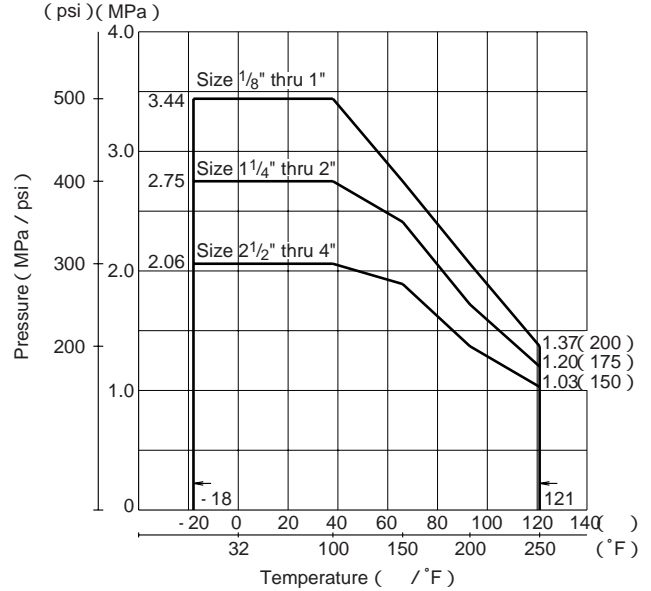


Pressure-Temperature Ratings

| Class | WOG 38 | | Test pressure | | | |
|---------|--------|-----|---------------|-----|------------|-----|
| | (3°F) | | shell (water) | | seat (air) | |
| | MPa | psi | MPa | psi | MPa | psi |
| 400 WOG | 2.75 | 400 | 4.13 | 600 | 0.55 | 80 |
| 600 WOG | 4.13 | 600 | 6.20 | 900 | 0.55 | 80 |

Do not use products in flammable or toxic gas.

Solder



Pressure-Temperature Ratings

| Joint material | Working temperature | | Maximum working gage pressure | | | | Test pressure | | | |
|--|---------------------|-----|-------------------------------|-----|--------------|-----|----------------|-----|----------------|---------------|
| | °F | °C | 1/8" thru 1" | | 1/4" thru 2" | | 2 1/2" thru 4" | | | |
| | | | MPa | psi | MPa | psi | MPa | psi | | |
| ASTM B32 Alloy Grade 50A [Notes (1), (2)] | 38 | 100 | 1.37 | 200 | 1.20 | 175 | 1.03 | 150 | 300psi 2.06 | 80psi 0.55 |
| | 66 | 150 | 1.03 | 150 | 0.86 | 125 | 0.68 | 100 | | |
| | 93 | 200 | 0.68 | 100 | 0.62 | 90 | 0.51 | 75 | | |
| ASTM B32 Alloy Grade 95TA [Note (2)] | 38 | 100 | 3.44 | 500 | 2.75 | 400 | 2.06 | 300 | 300psi 2.06 | 80psi 0.55 |
| | 66 | 150 | 2.75 | 400 | 2.41 | 350 | 1.89 | 275 | | |
| | 93 | 200 | 2.06 | 300 | 1.72 | 250 | 1.37 | 200 | | |
| | 121 | 250 | 1.37 | 200 | 1.20 | 175 | 1.03 | 150 | | |

Notes: (1) The Safe Drinking Water Act Amendment of 1986 prohibits the use in potable water systems of any solder having a lead content in excess of 0.2%.

(2) The safe working pressure-rating for a solder end valve is restricted to the lower pressure-rating.

JIS Standard Valves

Bronze Gate, Globe and Check Valves (JIS B2011)

| Service temperature | Maximum working pressure (MPa) | |
|---|--------------------------------|-----------------|
| | 5K | 10K |
| Water, Non-shock at less than 120 | 0.7 | 1.4 1.18(*3) |
| Oil, gas(*4), air, water at less than 120 | 0.5 | 1.0 0.85(*3) |
| Saturated steam(*1) | 0.3 0.2(*2) | 1.0 0.7(*2) |
| Test pressure | shell | water |
| | seat | air |
| | 1.1 | 2.1 |
| | 0.6 | 0.6 |

(*1) Not applied to solder ends

(*2) Applicable to gate valves

(*3) Applicable to solder ends in size 32mm (1.1/4") and larger

(*4) Do not use products in flammable or toxic gas

Gray Cast Iron Gate, Globe and Check Valves (JIS B2031)

| Service temperature | Maximum working pressure (MPa) | |
|--|--------------------------------|------------------|
| | 5K | 10K |
| Water, Non-shock at less than 120 (*1) | 0.69 | 1.37 |
| Oil, gas(*3), air, water at less than 120 (*1) | 0.49 | 0.98 |
| Saturated steam | 0.20 | 0.69 0.20(*2) |
| Test pressure | shell | water |
| | seat | air |
| | 1.1 | 2.1 |
| | 0.6 | 0.6 |

(*1) The max. working temperature for nylon lined valves is restricted to 60

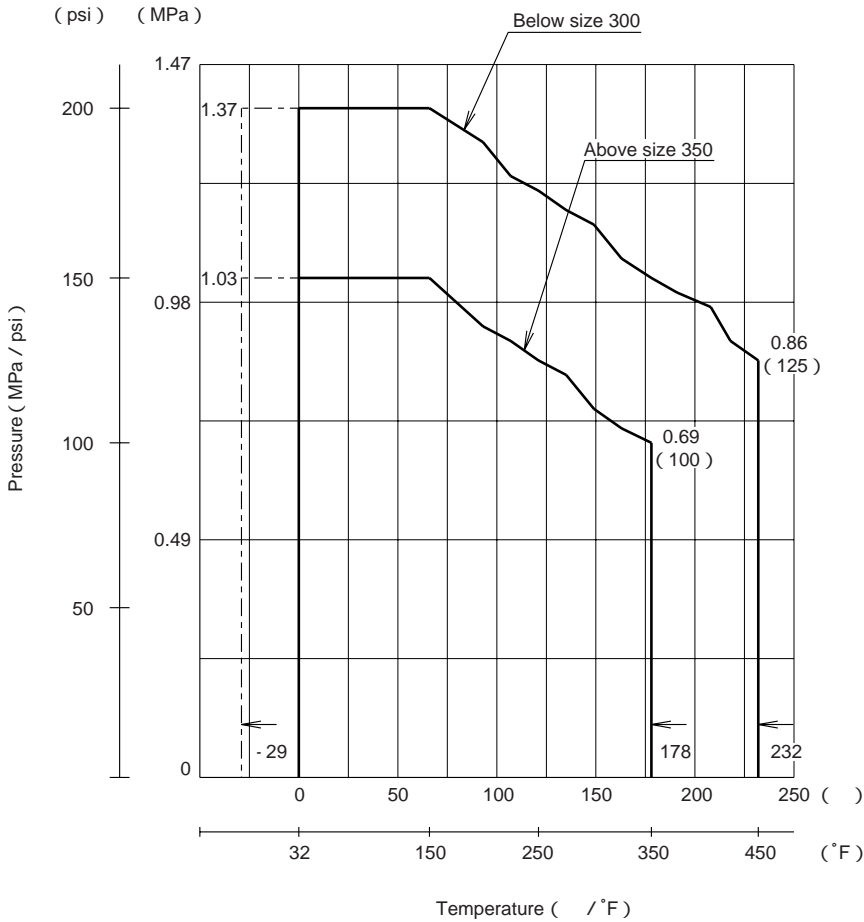
(*2) Inside screw gate valves and pressed seat rings only

(*3) Do not use products in flammable or toxic gas

Pressure-Temperature Ratings

Cast Iron Valves (Extracted from MSS SP-70, 71 & 85)

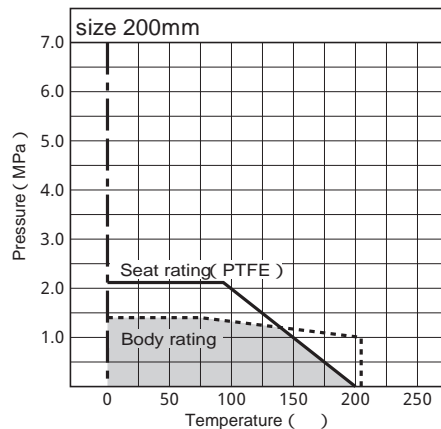
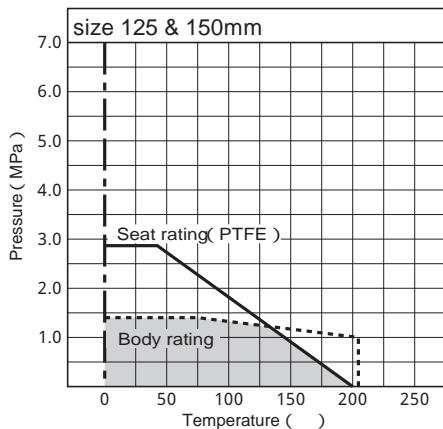
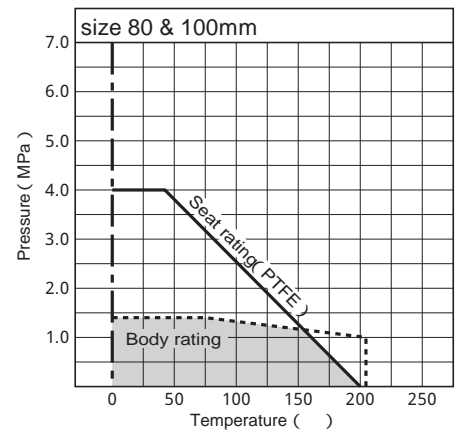
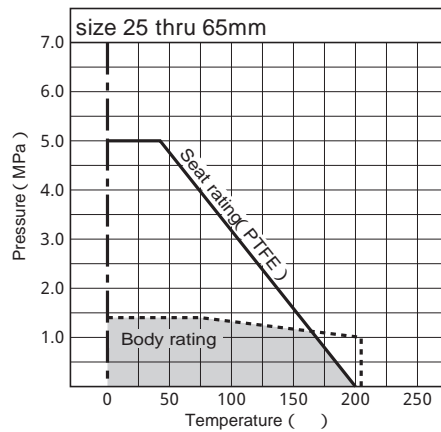
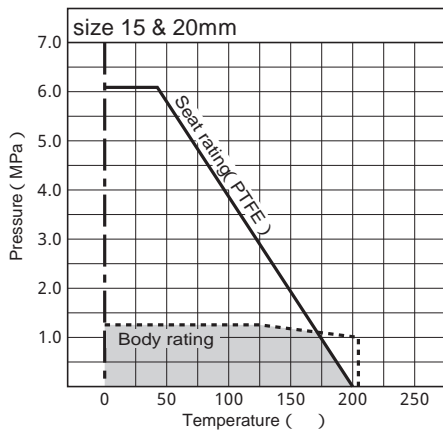
Class 125 Gate, Globe and Check Valves



Pressure-Temperature Ratings

| Temperature | Size 50 thru 300 | | Above size 350 | | | |
|-----------------|------------------|-------|----------------|------|------|-----|
| | ° F | MPa | psi | MPa | psi | |
| -29 - 66 | -20 - 150 | 1.37 | 200 | 1.03 | 150 | |
| 93 | 200 | 1.31 | 190 | 0.93 | 135 | |
| 107 | 225 | 1.24 | 180 | 0.90 | 130 | |
| 121 | 250 | 1.21 | 175 | 0.86 | 125 | |
| 135 | 275 | 1.17 | 170 | 0.83 | 120 | |
| 149 | 300 | 1.14 | 165 | 0.76 | 110 | |
| 163 | 325 | 1.07 | 155 | 0.72 | 105 | |
| 178 | 350 | 1.03 | 150 | 0.69 | 100 | |
| 191 | 375 | 1.00 | 145 | | | |
| 208 | 400 | 0.97 | 140 | | | |
| 218 | 425 | 0.90 | 130 | | | |
| 232 | 450 | 0.86 | 125 | | | |
| Saturated steam | | 0.86 | 125 | 0.68 | 100 | |
| Test pressure | shell | water | 2.41 | 350 | 1.83 | 265 |
| | seat | air | 0.55 | 80 | 0.55 | 80 |

10K Cast Iron Ball Valves



Cv Value

The Cv value – which is used by TOYO VALVE to indicate the capacity of a valve – is a flow rate represented in terms of U.S. gallons per minute when clear water at 60°F flows through a valve, in which the differential pressure between its outlet and inlet is kept at 1 psi – 6.89kPa.

The Cv value can be determined by experiment, and the relation between the Cv value and the flow rate or pressure drop, when the fluid is water.

In case of water, the pressure drop or the flow rate can be obtained by the following formulas.

$$P = 0.134 \frac{Q^2 G_L}{C_v^2}$$

P = pressure drop (MPa)

Q = flow rate

$$Q = 2.735 C_v \sqrt{\frac{P}{G_L}}$$

G_L = specific gravity of fluid when setting water to 1

C_v = Cv value

Cast Bronze Valves

| Valve type | | GATE | GLOBE | | ANGLE | CHECK | | BALL | STRAINER |
|--------------|-------|------|-------|-----------|-------|-------|-------|-----------|----------|
| Nominal size | | | | | | LIFT | SWING | FULL BORE | |
| mm | Inch | 206A | 210A | 211A/213A | 260A | 230A | 236A | 5090 | 380A |
| 8 | 1/4 | 2.8 | | | | | 1.5 | | |
| 10 | 3/8 | 5.7 | 2 | 2 | 2.5 | 2 | 2.8 | | |
| 15 | 1/2 | 15 | 3 | 3.5 | 4 | 3.5 | 5 | 26 | 4.5 |
| 20 | 3/4 | 18 | 4.5 | 6.5 | 7.5 | 6.5 | 9 | 46 | 7.5 |
| 25 | 1 | 29 | 8.5 | 12 | 13 | 11 | 20 | 80 | 14 |
| 32 | 1 1/4 | 59 | 16 | 21 | 23 | 19 | 36 | 105 | 19 |
| 40 | 1 1/2 | 120 | 23 | 30 | 34 | 28 | 51 | 141 | 30 |
| 50 | 2 | 190 | 38 | 49 | 55 | 46 | 92 | 215 | 47 |
| 65 | 2 1/2 | 335 | 64 | 87 | 97 | 81 | 162 | | |
| 80 | 3 | 486 | 93 | | 166 | 123 | 247 | | |
| 100 | 4 | 772 | | | | 163 | | | |

Cast Iron Valves

| Valve type | | GATE | GLOBE | CHECK | | BALL | STRAINER | BALL FOOT |
|--------------|-------|-----------|-------|-------|------------|-----------|----------|-----------|
| Nominal size | | | | SWING | DUAL PLATE | FULL BORE | | |
| mm | Inch | 410E/420E | 405E | 430E | 440 | 470 | 450E | 461 |
| 15 | 1/2 | | | | | 26 | | |
| 20 | 3/4 | | | | | 53 | | |
| 25 | 1 | | | | | 95 | | |
| 32 | 1 1/4 | | | | | 165 | | |
| 40 | 1 1/2 | 129 | 33 | 54 | 40 | 235 | | 17 |
| 50 | 2 | 216 | 55 | 110 | 56 | 485 | 51 | 28 |
| 65 | 2 1/2 | 345 | 88 | 143 | 93 | 730 | 80 | 44 |
| 80 | 3 | 495 | 126 | 206 | 157 | 1240 | 116 | 75 |
| 100 | 4 | 875 | 224 | 440 | 325 | 2250 | 205 | 125 |
| 125 | 5 | 1370 | 350 | 575 | 540 | 3550 | 325 | 190 |
| 150 | 6 | 1920 | 485 | 830 | 815 | 5200 | 465 | 330 |
| 200 | 8 | 3600 | 920 | 1500 | 1450 | 9900 | 845 | 380 |
| 250 | 10 | 5680 | 1450 | 2370 | 2350 | | 1350 | |
| 300 | 12 | 8290 | 2120 | 3470 | 3640 | | 2080 | |
| 350 | 14 | | | | 5480 | | | |
| 400 | 16 | | | | 7930 | | | |