

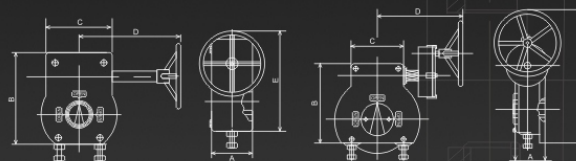
Hand Lever Operated :

| SIZE in | SIZE mm | ASME CLASS | HANDLE | L | W | ØD | WEIGHT |
|---------|---------|------------|--------|-----|----|-----|----------|
| 1.1/2" | 40 | 150/300 | SH-9 | 210 | 27 | 75 | 0.500 KG |
| 2" | 50 | 150/300 | SH-9 | 210 | 27 | 75 | 0.500 KG |
| 2.1/2" | 65 | 150/300 | MH-11 | 245 | 28 | 75 | 0.550 KG |
| 3" | 80 | 150/300 | MH-11 | 245 | 28 | 75 | 0.550 KG |
| 4" | 100 | 150/300 | MH-11 | 245 | 28 | 75 | 0.550 KG |
| 5" | 125 | 150/300 | BH-14 | 290 | 27 | 100 | 0.650 KG |
| 6" | 150 | 150/300 | BH-14 | 290 | 27 | 100 | 0.650 KG |

Handle should only be used up to the following differential pressures

| | | |
|-----------------------|------------------------|------------------------|
| 40 mm valves to 30 kg | 80 mm valves to 25 kg. | 150mm valves to 20 kg. |
| 50 mm valves to 30 kg | 100mm valves to 20 kg. | |
| 65 mm valves to 30 kg | 125mm valves to 20 kg. | |

Hand lever operated valves, size 40mm through 150mm, Can be Converted in the field to worm Gear operation. No modification is required to accommodate the addition of the worm gear Unit, Just add the Bracket between valve flange and gear box unit.



WORM GEAR ACTUATOR OPERATED :

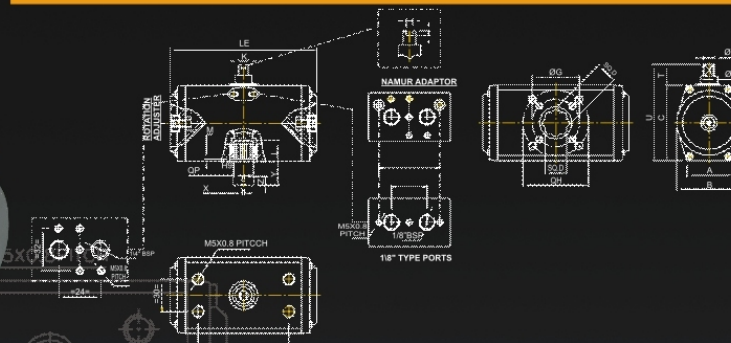
Worm Gear Actuators are available as optional equipment, for "aira" Spherical Disc Valves Sizes 40mm through 150 mm. All larger size valves require Worm Gear Actuators or powerActuation.

| MODEL NO. | TORQUE | RATIO | VALVE SIZE | Max Stem Height A | B | C | D | E | Wheel Dia | Weight |
|-----------|-----------|-------|--------------|-------------------|-----|-----|-----|-----|-----------|---------|
| NGB-20 | 250 Nm | 33:1 | 1.1/2" to 8" | 48 | 110 | 78 | 180 | 181 | 200 | 4 kg. |
| NGB-25 | 500 Nm | 40:1 | 10" to 12" | 62 | 136 | 98 | 240 | 233 | 250 | 5 kg. |
| NGB-30 | 700 Nm | 40:1 | 14" to 16" | 68 | 180 | 119 | 285 | 318 | 350 | 7 kg. |
| NGB-50 | 1500 Nm | 48:1 | 18" | 75 | 202 | 140 | 305 | 409 | 500 | 11 kg. |
| NGB-60 | 2200 Nm | 60:1 | 20" | 84 | 214 | 180 | 320 | 425 | 500 | 14 kg. |
| NGB-70 | 3500 Nm | 73:1 | 24" & 26" | 115 | 294 | 240 | 370 | 478 | 600 | 23 kg. |
| NGB-80 | 5000 Nm | 264:1 | 28" & 30" | 123 | 294 | 240 | 395 | 568 | 500 | 30 kg. |
| NGB-90 | 7000 Nm | 292:1 | 32" & 36" | 112 | 331 | 208 | 381 | 647 | 600 | 48 kg. |
| NGB-100 | 10000 Nm | 300:1 | 40" | 151 | 413 | 266 | 410 | 716 | 600 | 68 kg. |
| NGB-250 | 22,500 Nm | 456:1 | 48" | 155 | 498 | 337 | 479 | 847 | 600 | 110 kg. |

All Dimensions are in (mm)

Pneumatic Actuator Operated :-

ISO 5211 Standard
Pneumatic Actuator for all your 90° & 180° Degree valves & Dampers Automation Requirements.



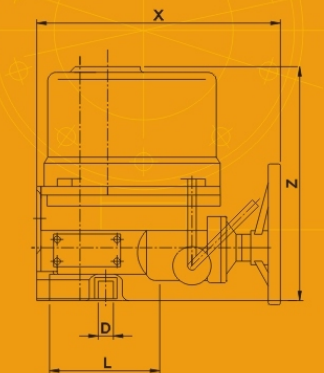
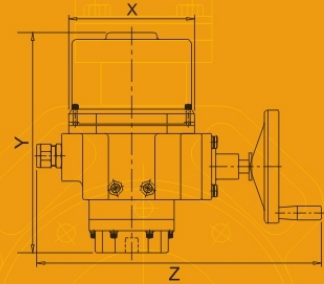
| MODEL | Torque on 5 bar double acting | Air consumption -ltrs double acting | Valve Size | Weight in Kg. |
|----------|-------------------------------|-------------------------------------|-----------------|---------------|
| A10-D/A | 8 | 0.1 | ***** | 0.55 |
| A11-D/A | 19 | 0.24 | 40 & 50mm | 1.2 |
| A12-D/A | 48 | 0.63 | 65 / 80 / 100mm | 2 |
| A13-D/A | 98 | 1.08 | 125 & 150mm | 3.3 |
| A14-D/A | 210 | 2.5 | 200 & 250mm | 6.55 |
| A15-D/A | 358 | 3.84 | 300 & 350mm | 10.4 |
| A80-D/A | 450 | On Request | ***** | 13.3 |
| A81-D/A | 542 | 6.8 | ***** | 16.25 |
| A16-D/A | 685 | On Request | 400mm | 20.35 |
| A17-D/A | 1185 | 14.28 | 450 & 500mm | 29.5 |
| A18-D/A | 1778 | On Request | ***** | 58.3 |
| A318-D/A | 3909 | On Request | 600 & 650mm | 151 |

| MODEL | Torque on 5 bar single acting | Air consumption -ltrs single acting | Valve Size | Weight in Kg. |
|----------|-------------------------------|-------------------------------------|-----------------|---------------|
| A10-S/A | 2.9 | 0.07 | ***** | 0.65 |
| A11-S/A | 11 | 0.12 | 40 & 50mm | 1.45 |
| A12-S/A | 27.6 | 0.26 | 65 / 80 / 100mm | 3 |
| A13-S/A | 38.2 | 0.45 | 125 & 150mm | 5 |
| A14-S/A | 98 | 1.1 | 200mm | 9.75 |
| A15-S/A | 133 | 1.54 | 250 & 300mm | 14.5 |
| A80-S/A | 323 | On Request | 350mm | 20.85 |
| A81-S/A | 275 | On Request | ***** | 29.4 |
| A16-S/A | 528 | 2.9 | 400mm | 31.35 |
| A17-S/A | 700 | 5.9 | 450mm | 44.5 |
| A18-S/A | 1028 | On Request | 500mm | 79.85 |
| A318-S/A | 2540 | On Request | 600 & 650mm | 237.5 |

Dimensions :

| MODEL | K | M | ØP | L | LE | ØNE | ØFT | T | A | B | C | U | ØG | ØH | S.Q.D | N | X | Y | Z |
|------------|-------|------|--------|----|-----|-------|-------|-------|-----|------|-----|------|-----|-----|-------|-----|------|-------|----|
| A10 - 5510 | 10 | 1 | 22.80 | 12 | 111 | 11.85 | 15 | 20 | 34 | 47.5 | 54 | 74.5 | - | 36 | 9 | 50 | 5.50 | 20 | 10 |
| A11 - 5511 | 10 | 1.7 | 23.90 | 26 | 127 | 11.85 | 12 | 19.70 | 50 | 59 | 74 | 94 | 36 | 50 | 14 | 80 | 7.40 | 19 | 18 |
| A12 - 5512 | 10 | 0.40 | 29.35 | 14 | 162 | 14 | 17.70 | 19.40 | 65 | 83 | 100 | 120 | 50 | 70 | 17 | 80 | 8 | 23.20 | 21 |
| A13 - 5513 | 14 | 2.20 | 37.3 | 19 | 211 | 19.5 | 24.70 | 21 | 70 | 102 | 117 | 137 | 50 | 70 | 17 | 80 | 7.40 | 22.70 | 18 |
| A14 - 5514 | 14 | 3.60 | 40.35 | 24 | 264 | 27.5 | 39.90 | 19.50 | 90 | 120 | 140 | 180 | 70 | 102 | 22 | 80 | 10 | 32.50 | 30 |
| A15 - 5515 | 21.75 | 1.20 | 53.35 | 29 | 325 | 28 | 40 | 26 | 103 | 139 | 160 | 190 | 102 | 125 | 27 | 80 | 10 | 43.50 | 30 |
| A80 - 5580 | 22 | 2 | - | 32 | 357 | 28 | 40 | 23 | 107 | 151 | 171 | 194 | 103 | 125 | 27 | 130 | - | - | - |
| A81 - 5581 | 28 | 3.50 | 66.35 | 29 | 375 | 36 | 44.80 | 30 | 110 | 172 | 198 | 228 | 102 | 125 | 36 | 130 | 15 | 47.00 | 40 |
| A16 - 5516 | 28 | 3 | 89 | 38 | 435 | 36 | 44.80 | 30 | 110 | 172 | 198 | 228 | - | 125 | 36 | 130 | 16 | 57.00 | 50 |
| A17 - 5517 | 32 | 4 | 79.35 | 40 | 460 | 40 | 59.70 | 30 | 135 | 225 | 255 | 285 | - | 140 | 36 | 130 | 15 | 56.00 | 50 |
| A18 - 5518 | 32 | 3 | 101.85 | 50 | 625 | 40 | 59.70 | 30 | 135 | 225 | 255 | 285 | - | 140 | 46 | 130 | 36 | 62.00 | 50 |

All Dimensions are in (mm)



Electrical Actuator Operated

Single Phase / Three Phase

Electrical Actuator

- Details :**
- Characteristic : On-Off Type/Modulating Type
 - Travel : 90° - Quarter Turn
 - Indicator : Continuous Position Indicator
 - Phase : Single Phase / Three Phase
 - Power Supply : 230VAC / 380VAC / 415VAC
 - Body Material : Aluminum Alloy
 - Ambient Temperature : 20° C - 80° C
 - Moisture : 10% to 95% (25°)C
 - Motor Insulation : Class F
 - Protection Class : IP67 - Weather Proof
 - Limit Switch : 1 No + 1 NC out put
 - Position on power failurer : Stay Put
 - Manual Override : Provided

Dimensions

| MODEL NO. | Y | X | Z |
|-----------|-----|-----|-----|
| MOD-S | 48 | 107 | --- |
| MOD-1 | 152 | 106 | --- |
| MOD-2 | 160 | 170 | --- |
| MOD-2-1 | 195 | 106 | 170 |
| MOD-2-2 | 195 | 106 | 170 |
| MOD-3-1 | 264 | 179 | 364 |
| MOD-4 | 336 | 220 | 399 |
| MOD-5 | 336 | 220 | 399 |
| MOD-6 | 336 | 220 | 399 |
| MOD-8 | 299 | 255 | 395 |
| MOD-10 | 299 | 255 | 395 |
| MOD-11 | 342 | --- | 490 |
| MOD-12 | 541 | --- | 506 |
| MOD-13 | 541 | --- | 506 |

All Dimensions are in (mm)

Technical Specification Table

| MODEL NO. | POWER (WATT) | TORQUE (NM) | Rotation Time (Sec/ 90°) |
|-----------|--------------|-------------|--------------------------|
| MOD-S | 3 / 4 | 15 | 23 |
| MOD-1 | 10 | 36 | 10 / 11 |
| MOD-2 | 10 / 15 | 49 | 20 / 15 |
| MOD-2-1 | 10 / 15 | 49 | 20 / 15 |
| MOD-2-2 | 15 | 10 | 22 |
| MOD-3-1 | 25 / 40 | 153 / 180 | 8 / 29 |
| MOD-4 | 90 / 25 | 400 / 325 | 36 / 30 |
| MOD-5 | 40 / 90 | 478 | 30 / 37 |
| MOD-6 | 60 / 90 | 596 | 30 |
| MOD-8 | 100 | 911 | 37 |
| MOD-10 | 220 / 100 | 1500/1323 | 45 / 52 |
| MOD-11 | 300 | 2000 | 45 |
| MOD-12 | 220 | 3000 | 95 |
| MOD-13 | 300 | 4000 | 95 |

Dimensions

| MODEL NO. | D | L | X | Z |
|------------|----|-----|-----|-----|
| ATQ - 5 | 14 | 102 | 241 | 256 |
| ATQ - 10 | 22 | 102 | 241 | 265 |
| ATQ - 20 | 22 | 125 | 272 | 263 |
| ATQ - 60 | 42 | 175 | 331 | 342 |
| ATQ - 100 | 42 | 175 | 331 | 342 |
| ATQ - 150 | 50 | 210 | 257 | 505 |
| ATQ - 200 | 50 | 210 | 375 | 505 |
| ATQ - 250 | 50 | 210 | 357 | 505 |
| ATQ - 400 | | | | |
| ATQ - 600 | | | | |
| ATQ - 800 | | | | |
| ATQ - 1200 | | | | |

All Dimensions are in (mm)

Technical Specification Table

| MODEL NO. | POWER (WATT) | TORQUE (NM) | Rotation Time (Sec/ 90°) |
|------------|--------------|-------------|--------------------------|
| ATQ - 5 | 10 | 50 | 14 / 17 |
| ATQ - 10 | 25 | 100 | 14 / 17 |
| ATQ - 20 | 40 | 200 | 17 / 20 |
| ATQ - 60 | 120 | 600 | 24 / 29 |
| ATQ - 100 | 200 | 1000 | 24 / 29 |
| ATQ - 150 | 180 | 1500 | 75 / 90 |
| ATQ - 200 | 200 | 2000 | 75 / 90 |
| ATQ - 250 | 200 | 2500 | 75 / 90 |
| ATQ - 400 | 370 | 4000 | 60 |
| ATQ - 600 | 550 | 6000 | 60 |
| ATQ - 800 | 1010 | 8000 | 60 |
| ATQ - 1200 | 2200 | 12000 | 60 |

Flow of Coefficients (CV Values)

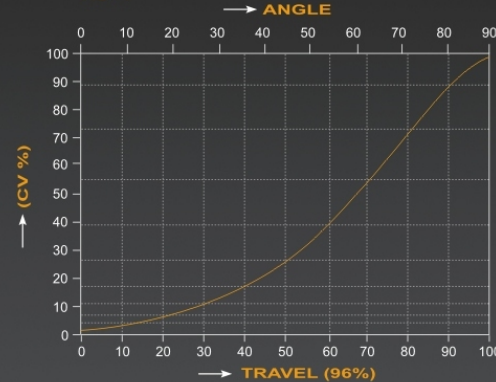
Flow coefficient is an index to measure the flow capacity of valve. The more the flow coefficient is, the less the pressure loss upon fluid flowing through the valve. The values of flow coefficient differ from the sizes, types and structures of valves. Valves of different types and specifications should be separately tested to make certain of its value of flow coefficient. For valves of the same structure, the value of flow coefficient differs according to the directions of fluid through the valves. This difference is usually caused by the difference in pressure recovery.

The table is the flow coefficient of double eccentric butterfly valve, used for reference to choose valve flow coefficient. Cv means the American gallons of + 60° F(+16°C) water flowing through the valve per minute under 1 pound/inch²(0.006894757 Mpa) pressure drop.

Flow Characteristics (CV)

CV values equal the flow of water in U.S. gallons per minute per 1 psi pressure drop.

FIG - 1



5150 / 5150L Class 150

| VALVE SIZE IN | | DISC ANGLE, DEGREES OPEN | | | | | | | |
|---------------|-----|--------------------------|------|------|------|-------|-------|-------|-------|
| INCH. | MM | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° |
| 1.1/2" | 40 | 5 | 11 | 19 | 29 | 42 | 50 | 62 | 70 |
| 2" | 50 | 7 | 13 | 21 | 31 | 46 | 64 | 84 | 92 |
| 2.1/2" | 65 | 12 | 21 | 35 | 51 | 75 | 105 | 137 | 150 |
| 3" | 80 | 20 | 36 | 60 | 88 | 132 | 182 | 238 | 260 |
| 4" | 100 | 36 | 64 | 106 | 162 | 235 | 326 | 414 | 460 |
| 5" | 125 | 60 | 105 | 175 | 260 | 390 | 540 | 670 | 760 |
| 6" | 150 | 100 | 165 | 265 | 400 | 600 | 805 | 1025 | 1350 |
| 8" | 200 | 170 | 290 | 485 | 735 | 1080 | 1490 | 1850 | 2200 |
| 10" | 250 | 260 | 445 | 735 | 1120 | 1680 | 2270 | 2850 | 3200 |
| 12" | 300 | 385 | 660 | 1080 | 1645 | 2520 | 3385 | 4185 | 4700 |
| 14" | 350 | 470 | 810 | 1335 | 1950 | 2850 | 4060 | 5105 | 5800 |
| 16" | 400 | 650 | 1110 | 1820 | 2720 | 3900 | 5670 | 7100 | 8000 |
| 18" | 450 | 850 | 1460 | 2265 | 3520 | 5300 | 7400 | 9280 | 10500 |
| 20" | 500 | 1100 | 1940 | 3200 | 4800 | 7000 | 9900 | 12390 | 14000 |
| 24" | 600 | 1700 | 2940 | 4830 | 7300 | 10700 | 14900 | 18500 | 21000 |

6150 / 6150L Class 150

| VALVE SIZE IN | | DISC ANGLE, DEGREES OPEN | | | | | | | |
|---------------|------|--------------------------|--------|-------|-------|-------|-------|-------|-------|
| INCH. | MM | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° |
| 26" | 650 | 1900 | 3250 | 5060 | 7512 | 11100 | 15400 | 19900 | 23400 |
| 28" | 700 | 2300 | 3520 | 5370 | 7832 | 14500 | 20300 | 24200 | 27000 |
| 30" | 750 | 2752 | 5848 | 10320 | 15480 | 22016 | 27520 | 32336 | 33300 |
| 32" | 800 | 3540 | 6580 | 17000 | 23200 | 28500 | 32200 | 38200 | 40200 |
| 36" | 900 | 3963 | 8421 | 14861 | 22291 | 31703 | 39629 | 46564 | 56500 |
| 40" | 1000 | 5300 | 9850 | 19200 | 32500 | 43200 | 53700 | 62400 | 70000 |
| 48" | 1200 | 7300 | 11,300 | 25000 | 37200 | 52000 | 68500 | 74400 | 90000 |

5300 / 5300L Class 300

| VALVE SIZE IN | | DISC ANGLE, DEGREES OPEN | | | | | | | |
|---------------|-----|--------------------------|------|------|------|------|-------|-------|-------|
| INCH. | MM | 20° | 30° | 40° | 50° | 60° | 70° | 80° | 90° |
| 1.1/2" | 40 | 5 | 11 | 19 | 29 | 42 | 50 | 62 | 70 |
| 2" | 50 | 7 | 13 | 21 | 31 | 46 | 64 | 84 | 92 |
| 2.1/2" | 65 | 12 | 21 | 35 | 51 | 75 | 105 | 137 | 150 |
| 3" | 80 | 20 | 36 | 60 | 88 | 132 | 182 | 238 | 260 |
| 4" | 100 | 36 | 64 | 106 | 162 | 235 | 326 | 414 | 460 |
| 5" | 125 | 60 | 105 | 175 | 260 | 390 | 540 | 670 | 760 |
| 6" | 150 | 76 | 125 | 200 | 305 | 460 | 615 | 785 | 880 |
| 8" | 200 | 155 | 265 | 440 | 665 | 980 | 1350 | 1675 | 1900 |
| 10" | 250 | 230 | 390 | 645 | 980 | 1470 | 1985 | 2495 | 2800 |
| 12" | 300 | 335 | 575 | 945 | 1435 | 2200 | 2955 | 3650 | 4100 |
| 14" | 350 | 445 | 770 | 1265 | 1850 | 2705 | 3850 | 4840 | 5500 |
| 16" | 400 | 615 | 1055 | 1730 | 2585 | 3705 | 5385 | 6745 | 7600 |
| 18" | 450 | 800 | 1375 | 2170 | 3320 | 5000 | 6980 | 8750 | 9900 |
| 20" | 500 | 1020 | 1800 | 2970 | 4460 | 6500 | 9190 | 11500 | 13000 |
| 24" | 600 | 1580 | 2730 | 4485 | 6780 | 9940 | 13840 | 17180 | 19500 |