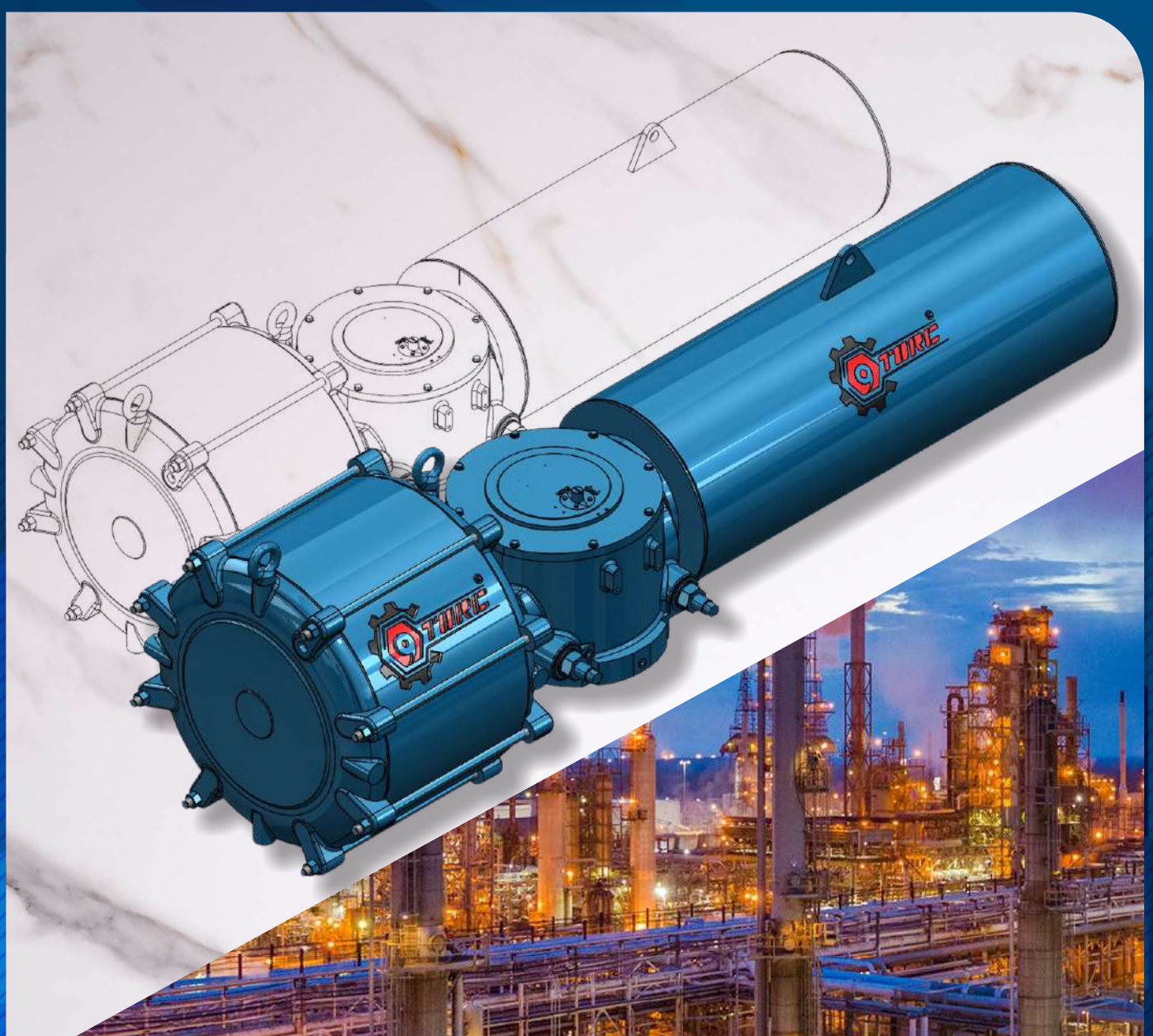
HEAVY DUTY

# SCOTCH YOKE ACTUATOR



**Oil & Gas | Mining | Power Plants | Water Treatment**
**Food & Beverage Industry | OEM**


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# 9TORK Scotch Yoke Actuators Features

## Single-Acting (Spring Return) or Double-Acting

Single-Acting (Spring Return): Scotch Yoke Actuators Utilizes air pressure for actuation with a spring return, ensuring fail-safe operation in the event of an air supply failure, providing reliability and security.
Double-Acting: Uses air pressure for both opening and closing, offering enhanced control and precision, making it ideal for applications that require more flexible and adjustable actuation.

## High Torque Output

Scotch Yoke Actuators delivers high torque at both the beginning and end of the stroke, providing consistent and powerful performance across the entire range of motion.

## Adjustable Travel Stops

Built-in adjustable travel stops allow precise tuning of the actuator's open and closed positions, ensuring accurate valve operation and minimizing the risk of over-travel or misalignment.

## Modular Construction

Modular design allows for easy maintenance, repair, and replacement of components without dismantling the whole actuator.

## Compact and Robust Design

The actuator has a compact footprint while delivering high torque, making it suitable for space-constrained installations.

## Corrosion and Weather Protection

Available with coatings like epoxy, anodizing, or nickel plating to withstand harsh environments, including offshore and chemical industries.

## Wide Operating Temperature Range

Can operate in extreme temperatures with special seals, making them suitable for cryogenic or high-temperature applications.

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Maharashtra , India - 421201.

# GENERAL SPECIFICATIONS

**GENERAL SPECIFICATIONS**

| GENERAL SPECIFICATIONS | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **RANGE** | | | | | | | | | | |
| Model | ISO Mounting Base | Rated Torque | | Spring End Torque Nm | | Spring End Torque Lb-in | | Maximum Stem Acceptance Diameters | | Maximum Stem Height |
| | | Nm | Lb-in | Min. | Max | Min. | Max | mm | in | mm |
| 9TSYA-040 | F10/F12 | 1250 | 11062 | 290 | 625 | 2566.5 | 5531.25 | 36 | 1.4 | 30 |
| 9TSYA-050 | F10/F14 | 1800 | 15930 | 530 | 875 | 4690.5 | 7743.75 | 50 | 1.4 | 65 |
| 9TSYA-065 | F12/16 | 5600 | 49560 | 1010 | 2382 | 8938.5 | 21080.7 | 58 | 1.8 | 75 |
| 9TSYA-075 | F12/F16 | 8400 | 74340 | 2164 | 3459 | 19151.4 | 30612.15 | 65 | 1.8 | 75 |
| 9TSYA-100 | F16/F25 | 17000 | 150450 | 3488 | 7094 | 30868.8 | 62781.9 | 90 | 2.2 | 125 |
| 9TSYA-125 | F25/F30 | 23500 | 207998 | 6500 | 11000 | 57531.5 | 97361 | 130 | 4.5 | 128 |
| 9TSYA-150 | F30/F35 | 45000 | 398284 | 11000 | 18000 | 97361 | 159313 | 160 | 6.1 | 165 |

| CONFIGURATIONS | |
|---|---|
| DA | Double Acting - Spring Cylinder |
| DD | Double Acting - Double Cylinder |
| SR-CW | Spring Return - Fail CW |
| SR-CCW | Spring Return - Fail CCW |

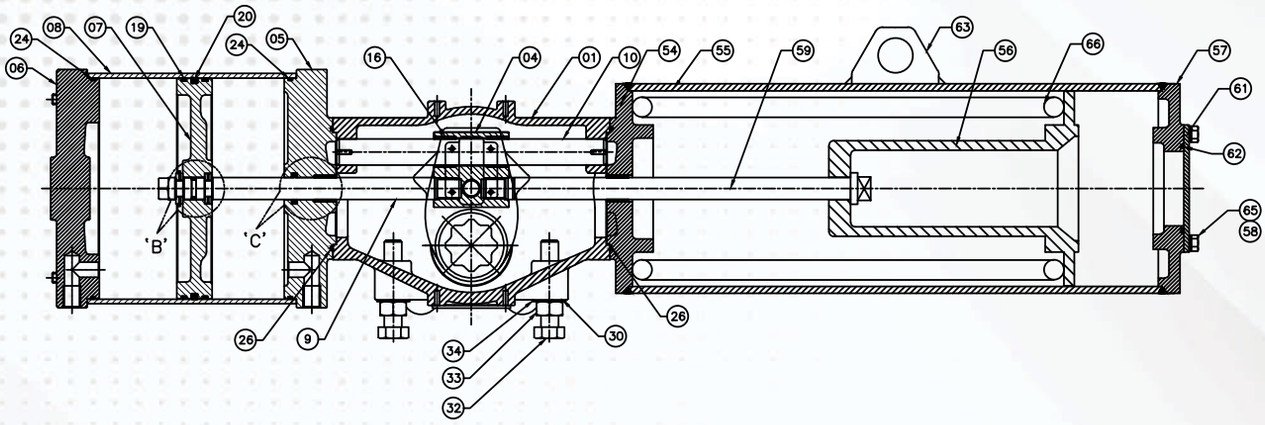
| OPERATION CONDITION | |
|---|---|
| Pressure Range | 40-150 PSI (2.75 Bar- 10 Bar.) |
| Media | Dry Compressed Air |
| Temperature Range Standard Option | Standard :- -20 °F to 200°F (-29°C to 90°C) |
| | High Temp. :-Up to 300°F (149°C) |
| | Low Temp. :-Down to -50°F (-46°C) |

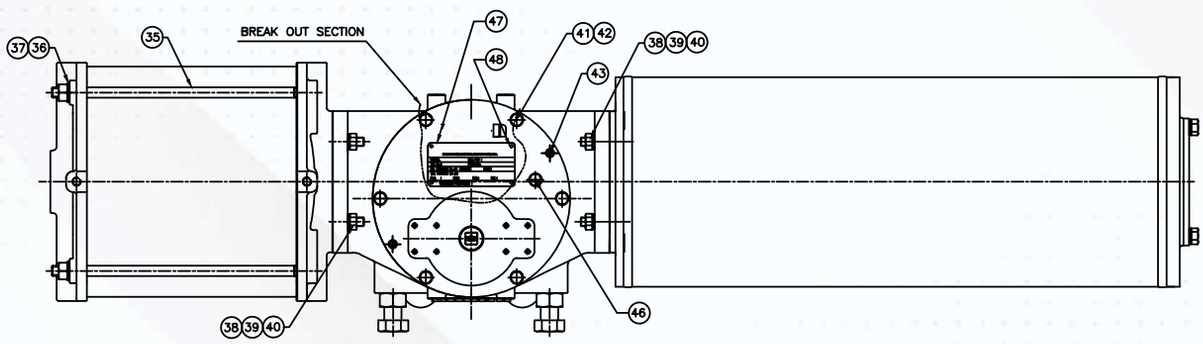
| COMPLIANCE | |
|---|---|
| Torque Base | Valve mounting dimension as per ISO 5211 |
| Accessories | Accessories mounting as per NAMUR -VDI/VDE |
| Testing | In accordance with EN 15714-3 |

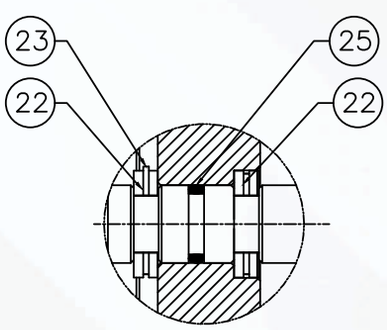
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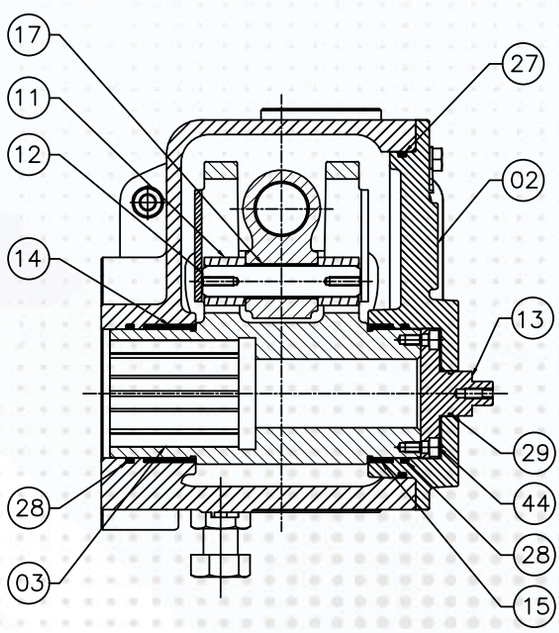
# MATERIAL OF CONSTRUCTION- STANDARD ACTUATOR

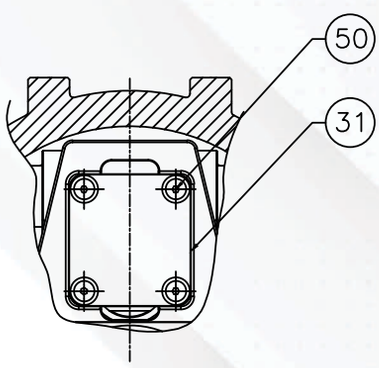


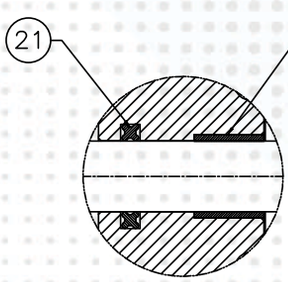



DETAILS 'B'





BREAK OUT SECTION



DETAILS 'C'

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# MATERIAL OF CONSTRUCTION STANDARD 9TSYA ACTUATOR

| ITEM | DESCRIPTION | MATERIAL | |
|---|---|---|---|
| 1 | HOUSING | DUCTILE IRON / CS / SS | |
| 2 | TOP COVER | DUCTILE IRON / CS / SS | |
| 3 | YOKE | DUCTILE IRON / CS / SS | |
| 4 | GUIDE BLOCK | DUCTILE IRON / CS / SS | |
| 5 | RIGHT END PLATE | DUCTILE IRON / CS / SS | |
| 6 | LEFT END PLATE | DUCTILE IRON / CS / SS | |
| 7 | PISTON | DUCTILE IRON / CS / SS | |
| 8 | CYLINDER | ASTA A106 Gr.B | |
| 9 | PISTON ROD | En24 | |
| 10 | GUIDE ROD | En24 | |
| 11 | SLIDER BLOCK | NICKEL BRONZE | ## |
| 12 | YOKE PIN | En24 | |
| 13 | INDICATOR PLATE | En24 | |
| 14 | DU BEARING FOR BHG | MS + PTFE | ## |
| 15 | DU BEARING FOR TC | MS + PTFE | ## |
| 16 | DU BEARING FOR GB | MS + PTFE | ## |
| 17 | DU BEARING FOR YP | MS + PTFE | ## |
| 18 | DU BEARING FOR RH | MS + PTFE | ## |
| 19 | PISTON BEARING | MOS2+NYLON6 | # |
| 20 | QUAD SEAL | NITRILE / VITON / SILICON | # |
| 21 | QUAD SEAL FOR RH | NITRILE / VITON / SILICON | # |
| 22 | SPLIT COLLAR | STAINLESS STEEL | |
| 23 | EXTERNAL CIRCLE | STAINLESS STEEL | |
| 24 | 'O'-RING FOR LH & RHP | NITRILE / VITON / SILICON | # |
| 25 | 'O'-RING FOR PR | NITRILE / VITON / SILICON | # |
| 26 | 'O'-RING FOR HG | NITRILE / VITON / SILICON | # |
| 27 | 'O'-RING FOR TOP COVER | NITRILE / VITON / SILICON | # |
| 28 | 'O'-RING FOR YOKE | NITRILE / VITON / SILICON | # |
| 29 | 'O'-RING FOR IP | NITRILE / VITON / SILICON | # |
| 30 | 'O'-RING FOR SB | NITRILE / VITON / SILICON | # |
| 31 | PLASTIC COVER FOR YP | PLASTIC | |
| 32 | STROKE BOLT | ASTM A 193 Gr.B7 | |
| 33 | STROKE NUT | ASTM A 194 Gr.2H | |

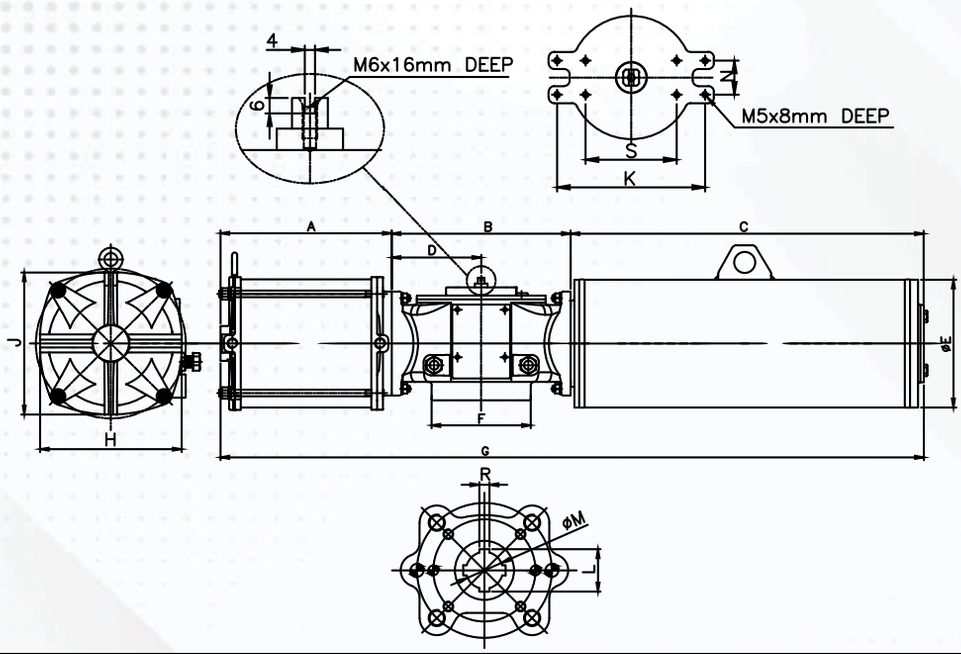
| ITEM | DESCRIPTION | MATERIAL | |
|---|---|---|---|
| 34 | M/C WASHER | STAINLESS STEEL | |
| 35 | TIE ROD | ASTM A 193 Gr.B7 | ## |
| 36 | NUT FOR TIE ROD | ASTM A 194 Gr.2H | |
| 37 | SPRING WASHER | STAINLESS STEEL | |
| 38 | STUD FOR HG | ASTM A 193 Gr.B7 | |
| 39 | NUT FOR HG | ASTM A 194 Gr.2H | |
| 40 | SPRING WASHER HG | STAINLESS STEEL | |
| 41 | HEX. BOLT FOR TOP COVER | ASTM A 193 Gr.B7 | |
| 42 | SPRING WASHER | STAINLESS STEEL | |
| 43 | DOWEL PIN | CARBON STEEL | |
| 44 | ALLEN BOLT | ASTM A 193 Gr.B7 | |
| 45 | GREASE PLUG | STAINLESS STEEL | |
| 46 | COUNTER SUNK SCREW | STAINLESS STEEL | |
| 47 | NAME PLATE | STAINLESS STEEL | |
| 48 | RIVET | MS | |
| 49 | AVCON LABLE | PVC | |
| 50 | INLET LABLE | PVC | |
| 51 | OUTLET LABLE | PVC | |
| 52 | CAUTION LABLE | PVC | |
| 53 | PRESSURE CAUTION LABLE | PVC | |
| 54 | LEFT END PLATE | DUCTILE IRON / CS / SS | |
| 55 | CYLINDER FOR SC | MS / CS / SS | |
| 56 | SPRING CAP | DUCTILE IRON / CS / SS | |
| 57 | RIGHT END PLATE | DUCTILE IRON / CS / SS | |
| 58 | WASHER | STAINLESS STEEL | |
| 59 | SPRING ROD | En24 / SS | ## |
| 60 | SPRING CAP BEARING | PLASTIC | |
| 61 | BLIND END PLATE | MS | |
| 62 | 'O'-RING FOR BE | NITRILE | # |
| 63 | LIFTING LUG | MS | |
| 64 | "C" TYPE EXTERENT CIRCLIP | SS | |
| 65 | BLIND END PLATE BOLT | ASTM A 193 Gr.B7 | |
| 66 | "A" SPRING | En47 -50cRv4 | |

| | |
|---|---|
| # | Parts in Seal Kits |
| ## | Parts in Repair Kits |

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# OVER ALL MAXIMUM DIMENSIONS OF ACTUATOR




SERIES SYA MAX DIMENSIONS, mm

| Model | A | B | C | D | ØE | F | G | H | J | L | ØM | R | S | K | N | ISO MOUNTING DETAILS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | PCD | HOLES THRED | NO. OF HOLES |
| 9TSYA-040 | 259 | 248 | 491 | 124 | 180 | 148 | 998 | 153 | 153 | 43 | 36 | 10 | 80 | 130 | 30 | F10/F12 | M10/M12 | 4 |
| 9TSYA-050 | 308 | 272 | 676 | 136 | 241 | 131 | 1256 | 275 | 275 | 49 | 42 | 12 | 80 | 130 | 30 | F10/F14 | M10/M14 | 4 |
| 9TSYA-065 | 325 | 318 | 693 | 159 | 247 | 205 | 1336 | 315 | 315 | 58 | 50 | 14 | 80 | 130 | 30 | F12/16 | M12/M20 | 4 |
| 9TSYA-075 | 354 | 370 | 730 | 185 | 265 | 205 | 1454 | 325 | 325 | 58 | 50 | 14 | 80 | 130 | 30 | F12/F16 | M12/M20 | 4 |
| 9TSYA-100 | 547 | 593 | 1047 | 296 | 379 | 300 | 2187 | 365 | 365 | 82 | 72 | 20 | 80 | 130 | 30 | F16/F25 | M20/M16 | 4 & 8 |
| 9TSYA-125 | 634 | 643 | 1190 | 321 | 407 | 352 | 2467 | 630 | 630 | 129 | 114 | 32 | - | 130 | 30 | F25/F30 | M16/M20 | 8 |
| 9TSYA-150 | 665 | 740 | 1518 | 370 | 480 | 420 | 2962 | 732 | 732 | 174 | 155 | 40 | - | 130 | 30 | F30/F35 | M20/M30 | 8 |

SERIES SYA MAX DIMENSIONS, Inch

| Model | A | B | C | D | ØE | F | G | H | J | L | ØM | R | S | K | N | ISO MOUNTING DETAILS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | PCD | HOLES THRED | NO. OF HOLES |
| 9TSYA-040 | 10.20 | 9.76 | 19.33 | 4.88 | 7.08 | 5.83 | 39.29 | 6.02 | 6.02 | 1.69 | 1.42 | 0.39 | 3.15 | 5.12 | 1.18 | F10/F12 | M10/M12 | 4 |
| 9TSYA-050 | 12.13 | 10.71 | 26.61 | 5.35 | 9.46 | 5.16 | 49.45 | 10.83 | 10.83 | 1.93 | 1.65 | 0.47 | 3.15 | 5.12 | 1.18 | F10/F14 | M10/M14 | 4 |
| 9TSYA-065 | 12.80 | 12.52 | 27.28 | 6.26 | 9.69 | 8.07 | 52.60 | 12.40 | 12.40 | 2.28 | 1.97 | 0.55 | 3.15 | 5.12 | 1.18 | F12/16 | M12/M20 | 4 |
| 9TSYA-075 | 13.94 | 14.57 | 28.74 | 7.28 | 10.40 | 8.07 | 57.24 | 12.80 | 12.80 | 2.28 | 1.97 | 0.55 | 3.15 | 5.12 | 1.18 | F12/F16 | M12/M20 | 4 |
| 9TSYA-100 | 21.54 | 23.35 | 41.22 | 11.65 | 14.88 | 11.81 | 86.10 | 14.37 | 14.37 | 3.23 | 2.83 | 0.79 | 3.15 | 5.12 | 1.18 | F16/F25 | M20/M16 | 4 & 8 |
| 9TSYA-125 | 24.96 | 25.31 | 46.85 | 12.64 | 15.98 | 13.86 | 97.13 | 24.80 | 24.80 | 5.08 | 4.49 | 1.26 | - | 5.12 | 1.18 | F25/F30 | M16/M20 | 8 |
| 9TSYA-150 | 26.18 | 29.13 | 59.76 | 14.57 | 18.84 | 16.54 | 116.61 | 28.82 | 28.82 | 6.85 | 6.10 | 1.57 | - | 5.12 | 1.18 | F30/F35 | M20/M30 | 8 |

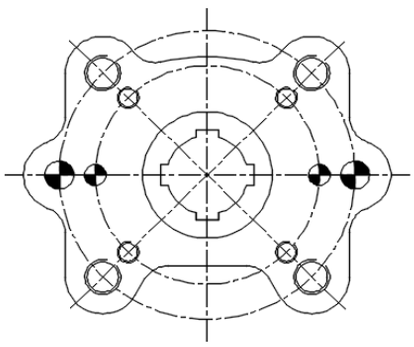
**CYLINDER PORT SIZE**

| Cylinder Size | UP TO 5" | 6" - 9" | 10" | 12 - 16" | 18" - 24" | 28" - 36" |
|---|---|---|---|---|---|---|
| Ports, NPT | 1/4" | 3/8" | 1/2" | 3/4" | 1" | 1.5" |

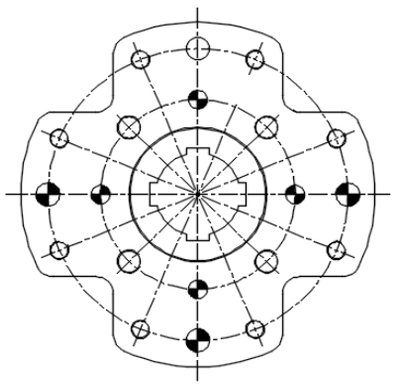

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# MOUNTING DETAILS - DIMENSIONS



SYA–040, SYA–050, SYA–065 & SYA–075



SYA–100, SYA–125 & SYA–150

| MODEL | MAX STEM HEIGHT | OUTER BOLTING PATTERN | | | | | | INTERNAL BOLTING PATTERN | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ISO BASE | THREAD SIZE | BOLT CIRCLE | NO OF BOLT HOLES | DOWEL HOLE SIZE | NO OF DOWEL HOLES | ISO BASE | TAPPED HOLE | BOLT CIRCLE | NO OF TAPPED HOLES | DOWEL | NO OF DOWEL HOLES |
| 9TSYA-040 | 30 | F12 | M12 X 18mm | 125 | 4 | 15.+0.08-0.0 X 15mm | 2 | F10 | M10 X 15mm | 102 | 4 | 10 +0.018/0 X 10mm | 2 |
| 9TSYA-050 | 65 | F14 | M12 X 18mm | 140 | 4 | 15.+0.08-0.0 X 15mm | 2 | F10 | M10 X 15mm | 102 | 4 | 10 +0.018/0 X 10mm | 2 |
| 9TSYA-065 | 75 | F16 | M20 X 30mm | 165 | 4 | 16.1 +0.05/0 X 15mm | 2 | F12 | M12 X 18mm | 125 | 4 | 12.1 +0.05/0 X 13mm | 2 |
| 9TSYA-075 | 75 | F16 | M20 X 30mm | 165 | 4 | 16.1 +0.05/0 X 15mm | 2 | F12 | M12 X 18mm | 125 | 4 | 12.1 +0.05/0 X 13mm | 2 |
| 9TSYA-100 | 125 | F25 | M16 X 24mm | 254 | 8 | 20.1 +0.05/0 X 17.5mm | 4 | F16 | M20 X 30mm | 165 | 4 | 16.1 +0.05/0 X 15mm | 4 |
| 9TSYA-125 | 128 | F30 | M20 X 30mm | 298 | 8 | 20+0.018/0 X 30mm | 4 | F25 | M16 X 24mm | 254 | 8 | 16 +0.018/0 X 24mm | 4 |
| 9TSYA-150 | 165 | F35 | M30 X 45mm | 356 | 8 | 30+0.021/0 X 450mm | 4 | F30 | M20 X 30mm | 298 | 8 | 20+0.018/0 X 30mm | 4 |

## Dimensions Bore

| MODEL | Ket & Bore Dimention | | | |
|---|---|---|---|---|
| | DRIVE | Bore Dia. (max) | Bore Dia. TOL | Key Size |
| 9TSYA-040 | KEY & BORE | 36 | +0.10/+0.20 | 10 x 8 |
| 9TSYA-050 | KEY & BORE | 50 | +0.10/+0.20 | 14 x 9 |
| 9TSYA-065 | KEY & BORE | 58 | +0.10/+0.20 | 16 x 10 |
| 9TSYA-075 | KEY & BORE | 65 | +0.10/+0.20 | 18 x 11 |
| 9TSYA-100 | KEY & BORE | 90 | +0.10/+0.20 | 25 x 14 |
| 9TSYA-125 | KEY & BORE | 130 | +0.10/+0.20 | 36 x 20 |
| 9TSYA-150 | KEY & BORE | 160 | +0.10/+0.20 | 40 x 22 |

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# 9TSYA Series - Double Acting Torque

| ACTUATOR | | Position | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 7 | 8 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SINGLE CYLINDER | DOUBLE CYLINDER | | | | | | | | | | | | |
| 9TSYA040-05 | | START | 202 | 242 | 265 | 303 | 340 | 378 | 416 | 454 | 530 | 605 | 757 |
| 9TSYA040-05 | | RUN | 126 | 151 | 177 | 202 | 227 | 252 | 277 | 303 | 353 | 404 | 378 |
| 9TSYA040-05 | | END | 252 | 303 | 353 | 404 | 454 | 504 | 555 | 605 | 706 | 807 | 1009 |
| 9TSYA040-06 | | START | 279 | 335 | 367 | 419 | 472 | 524 | 576 | 629 | 734 | 838 | |
| 9TSYA040-06 | | RUN | 175 | 210 | 245 | 279 | 314 | 349 | 384 | 419 | 489 | 559 | |
| 9TSYA040-06 | | END | 349 | 419 | 489 | 559 | 629 | 699 | 769 | 838 | 978 | 1118 | |
| 9TSYA040-07 | | START | 378 | 454 | 496 | 567 | 638 | 709 | 780 | 851 | 993 | | |
| 9TSYA040-07 | | RUN | 236 | 284 | 331 | 378 | 426 | 473 | 520 | 567 | 662 | | |
| 9TSYA040-07 | | END | 473 | 567 | 662 | 756 | 851 | 946 | 1040 | 1135 | 1324 | | |
| 9TSYA040-08 | | START | 492 | 590 | 646 | 738 | 830 | 922 | 1015 | 1107 | | | |
| 9TSYA040-08 | | RUN | 307 | 369 | 430 | 492 | 553 | 615 | 676 | 738 | | | |
| 9TSYA040-08 | | END | 615 | 738 | 861 | 984 | 1107 | 1230 | 1353 | 1476 | | | |
| 9TSYA040-09 | | START | 626 | 751 | 822 | 939 | 1056 | | | | | | |
| 9TSYA040-09 | | RUN | 391 | 470 | 548 | 626 | 704 | | | | | | |
| 9TSYA040-09 | | END | 783 | 939 | 1096 | 1252 | 1409 | | | | | | |
| | 9TSYA040-05 | START | 404 | 484 | 530 | 605 | 681 | 757 | 832 | 908 | 1059 | | |
| | 9TSYA040-05 | RUN | 252 | 303 | 353 | 404 | 454 | 504 | 555 | 605 | 706 | | |
| | 9TSYA040-05 | END | 504 | 605 | 706 | 807 | 908 | 1008 | 1110 | 1211 | 1412 | | |
| | 9TSYA040-06 | START | 559 | 671 | 734 | 838 | 943 | 1048 | 1153 | | | | |
| | 9TSYA040-06 | RUN | 349 | 419 | 489 | 559 | 629 | 699 | 769 | | | | |
| | 9TSYA040-06 | END | 699 | 838 | 978 | 1118 | 1258 | 1397 | 1537 | | | | |
| | 9TSYA040-07 | START | 756 | 908 | 993 | 1135 | 1277 | | | | | | |
| | 9TSYA040-07 | RUN | 473 | 567 | 662 | 756 | 851 | | | | | | |
| | 9TSYA040-07 | END | 946 | 1135 | 1324 | 1513 | 1702 | | | | | | |
| | 9TSYA040-08 | START | 984 | 1181 | 1291 | 1476 | | | | | | | |
| | 9TSYA040-08 | RUN | 615 | 738 | 861 | 984 | | | | | | | |
| | 9TSYA040-08 | END | 1230 | 1476 | 1722 | 1968 | | | | | | | |
| 9TSYA040-06 | | START | 356 | 428 | 468 | 534 | 601 | 668 | 735 | 802 | 935 | 1069 | 1336 |
| 9TSYA040-06 | | RUN | 223 | 267 | 312 | 356 | 401 | 445 | 490 | 534 | 624 | 713 | 668 |
| 9TSYA040-06 | | END | 445 | 534 | 624 | 713 | 802 | 891 | 980 | 1069 | 1247 | 1425 | 1782 |
| 9TSYA040-07 | | START | 482 | 579 | 633 | 723 | 814 | 904 | 995 | 1085 | 1266 | 1447 | |
| 9TSYA040-07 | | RUN | 301 | 362 | 422 | 482 | 543 | 603 | 663 | 723 | 844 | 965 | |
| 9TSYA040-07 | | END | 603 | 723 | 844 | 965 | 1085 | 1206 | 1326 | 1447 | 1688 | 1929 | |
| 9TSYA040-08 | | START | 627 | 753 | 823 | 941 | 1058 | 1176 | 1294 | 1411 | 1647 | | |
| 9TSYA040-08 | | RUN | 392 | 470 | 549 | 627 | 706 | 784 | 862 | 941 | 1098 | | |
| 9TSYA040-08 | | END | 784 | 941 | 1098 | 1254 | 1411 | 1568 | 1725 | 1882 | 2195 | | |
| 9TSYA040-09 | | START | 798 | 958 | 1048 | 1197 | 1347 | 1497 | 1646 | | | | |
| 9TSYA040-09 | | RUN | 499 | 599 | 698 | 798 | 898 | 998 | 1098 | | | | |
| 9TSYA040-09 | | END | 998 | 1197 | 1397 | 1596 | 1796 | 1996 | 2195 | | | | |
| 9TSYA040-10 | | START | 982 | 1178 | 1289 | 1473 | 1657 | | | | | | |
| 9TSYA040-10 | | RUN | 614 | 736 | 859 | 982 | 1105 | | | | | | |
| 9TSYA040-10 | | END | 1227 | 1473 | 1718 | 1964 | 2209 | | | | | | |
| | 9TSYA040-06 | START | 713 | 855 | 935 | 1069 | 1203 | 1336 | 1470 | 1603 | | | |
| | 9TSYA040-06 | RUN | 445 | 534 | 624 | 713 | 802 | 891 | 980 | 1069 | | | |
| | 9TSYA040-06 | END | 891 | 1069 | 1247 | 1425 | 1603 | 1782 | 1960 | 2138 | | | |
| | 9TSYA040-07 | START | 965 | 1157 | 1266 | 1447 | 1628 | | | | | | |
| | 9TSYA040-07 | RUN | 603 | 723 | 844 | 965 | 1085 | | | | | | |
| | 9TSYA040-07 | END | 1206 | 1447 | 1688 | 1929 | 2170 | | | | | | |
| | 9TSYA040-08 | START | 1254 | 1505 | | | | | | | | | |
| | 9TSYA040-08 | RUN | 784 | 941 | | | | | | | | | |
| | 9TSYA040-08 | END | 1568 | 1882 | | | | | | | | | |

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# 9TSYA Series - Double Acting Torque

| ACTUATOR | | Position | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 7 | 8 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SINGLE CYLINDER | DOUBLE CYLINDER | | | | | | | | | | | | |
| 9TSYA065-08 | | START | 799 | 959 | 1049 | 1199 | 1349 | 1499 | 1649 | 1799 | 2098 | 2398 | 2998 |
| 9TSYA065-08 | | RUN | 500 | 600 | 699 | 799 | 899 | 999 | 1099 | 1199 | 1399 | 1599 | 1499 |
| 9TSYA065-08 | | END | 999 | 1199 | 1399 | 1599 | 1799 | 1999 | 2198 | 2398 | 2798 | 3198 | 3997 |
| 9TSYA065-09 | | START | 1017 | 1221 | 1335 | 1526 | 1717 | 1907 | 2098 | 2289 | 2670 | 3052 | 3815 |
| 9TSYA065-09 | | RUN | 636 | 763 | 890 | 1017 | 1144 | 1272 | 1399 | 1526 | 1780 | 2035 | 1907 |
| 9TSYA065-09 | | END | 1272 | 1526 | 1780 | 2035 | 2289 | 2543 | 2798 | 3052 | 3561 | 4069 | 5087 |
| 9TSYA065-10 | | START | 1252 | 1502 | 1643 | 1877 | 2112 | 2347 | 2581 | 2816 | 3285 | 3755 | |
| 9TSYA065-10 | | RUN | 782 | 939 | 1095 | 1252 | 1408 | 1564 | 1721 | 1877 | 2190 | 2503 | |
| 9TSYA065-10 | | END | 1564 | 1877 | 2190 | 2503 | 2816 | 3129 | 3442 | 3755 | 4380 | 5006 | |
| 9TSYA065-12 | | START | 1805 | 2166 | 2369 | 2707 | 3045 | 3384 | 3722 | | | | |
| 9TSYA065-12 | | RUN | 1128 | 1353 | 1579 | 1805 | 2030 | 2256 | 2481 | | | | |
| 9TSYA065-12 | | END | 2256 | 2707 | 3158 | 3609 | 4060 | 4512 | 4963 | | | | |
| 9TSYA065-14 | | START | 2445 | 2934 | 3209 | 3667 | 4126 | | | | | | |
| 9TSYA065-14 | | RUN | 1528 | 1834 | 2139 | 2445 | 2750 | | | | | | |
| 9TSYA065-14 | | END | 3056 | 3667 | 4278 | 4890 | 5501 | | | | | | |
| | 9TSYA065-08 | START | 1599 | 1919 | 2098 | 2398 | 2698 | 2998 | 3298 | 3597 | | | |
| | 9TSYA065-08 | RUN | 999 | 1199 | 1399 | 1599 | 1799 | 1999 | 2198 | 2398 | | | |
| | 9TSYA065-08 | END | 1999 | 2398 | 2798 | 3198 | 3597 | 3997 | 4397 | 4797 | | | |
| | 9TSYA065-09 | START | 2035 | 2442 | 2670 | 3052 | 3433 | 3815 | 4196 | | | | |
| | 9TSYA065-09 | RUN | 1272 | 1526 | 1780 | 2035 | 2289 | 2543 | 2798 | | | | |
| | 9TSYA065-09 | END | 2543 | 3052 | 3561 | 4069 | 4578 | 5087 | 5595 | | | | |
| | 9TSYA065-10 | START | 2503 | 3004 | 3285 | 3755 | 4224 | | | | | | |
| | 9TSYA065-10 | RUN | 1564 | 1877 | 2190 | 2503 | 2816 | | | | | | |
| | 9TSYA065-10 | END | 3129 | 3755 | 4380 | 5006 | 5632 | | | | | | |
| 9TSYA065-10 | | START | 1463 | 1756 | 1921 | 2195 | 2469 | 2744 | 3018 | 3293 | 3841 | 4390 | 5488 |
| 9TSYA065-10 | | RUN | 915 | 1098 | 1280 | 1463 | 1646 | 1829 | 2012 | 2195 | 2561 | 2927 | 2744 |
| 9TSYA065-10 | | END | 1829 | 2195 | 2561 | 2927 | 3293 | 3658 | 4024 | 4390 | 5122 | 5853 | 7317 |
| 9TSYA065-12 | | START | 2110 | 2532 | 2769 | 3165 | 3561 | 3956 | 4352 | 4748 | 5539 | | |
| 9TSYA065-12 | | RUN | 1319 | 1583 | 1846 | 2110 | 2374 | 2638 | 2901 | 3165 | 3693 | | |
| 9TSYA065-12 | | END | 2638 | 3165 | 3693 | 4220 | 4748 | 5275 | 5803 | 6330 | 7385 | | |
| 9TSYA065-14 | | START | 2859 | 3430 | 3752 | 4288 | 4824 | 5360 | 5896 | | | | |
| 9TSYA065-14 | | RUN | 1787 | 2144 | 2501 | 2859 | 3216 | 3573 | 3930 | | | | |
| 9TSYA065-14 | | END | 3573 | 4288 | 5002 | 5717 | 6432 | 7146 | 7861 | | | | |
| 9TSYA065-16 | | START | 3739 | 4487 | 4907 | 5608 | 6309 | | | | | | |
| 9TSYA065-16 | | RUN | 2337 | 2804 | 3272 | 3739 | 4206 | | | | | | |
| 9TSYA065-16 | | END | 4674 | 5608 | 6543 | 7478 | 8412 | | | | | | |
| | 9TSYA065-10 | START | 2927 | 3512 | 3841 | 4390 | 4939 | 5488 | 6036 | | | | |
| | 9TSYA065-10 | RUN | 1829 | 2195 | 2561 | 2927 | 3293 | 3658 | 4024 | | | | |
| | 9TSYA065-10 | END | 3658 | 4390 | 5122 | 5853 | 6585 | 7317 | 8049 | | | | |
| | 9TSYA065-12 | START | 4220 | 5064 | 5539 | 6330 | | | | | | | |
| | 9TSYA065-12 | RUN | 2638 | 3165 | 3693 | 4220 | | | | | | | |
| | 9TSYA065-12 | END | 5275 | 6330 | 7385 | 8440 | | | | | | | |

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# SYA Series - Double Acting Torque

| Output Torque - Nm (Newton Meters) SYMMETRIC YOKE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACTUATOR | | Position | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 7 | 8 | 10 |
| SINGLE CYLINDER | DOUBLE CYLINDER | | | | | | | | | | | | |
| 9TSYA100-12 | | START | 2832 | 3398 | 3717 | 4248 | 4779 | 5310 | 5841 | 6372 | 7434 | 8496 | 10620 |
| 9TSYA100-12 | | RUN | 1770 | 2124 | 2478 | 2832 | 3186 | 3540 | 3894 | 4248 | 4956 | 5664 | 5310 |
| 9TSYA100-12 | | END | 3540 | 4248 | 4956 | 5664 | 6372 | 7080 | 7788 | 8496 | 9912 | 11327 | 14159 |
| 9TSYA100-14 | | START | 3836 | 4604 | 5035 | 5755 | 6474 | 7193 | 7913 | 8632 | 10071 | 11509 | |
| 9TSYA100-14 | | RUN | 2398 | 2877 | 3357 | 3836 | 4316 | 4796 | 5275 | 5755 | 6714 | 7673 | |
| 9TSYA100-14 | | END | 4796 | 5755 | 6714 | 7673 | 8632 | 9591 | 10550 | 11509 | 13428 | 15346 | |
| 9TSYA100-16 | | START | 5018 | 6022 | 6586 | 7527 | 8468 | 9409 | 10350 | 11290 | | | |
| 9TSYA100-16 | | RUN | 3136 | 3763 | 4391 | 5018 | 5645 | 6272 | 6900 | 7527 | | | |
| 9TSYA100-16 | | END | 6272 | 7527 | 8781 | 10036 | 11290 | 12545 | 13799 | 15054 | | | |
| 9TSYA100-18 | | START | 6302 | 7563 | 8272 | 9453 | 10635 | 11817 | 12998 | | | | |
| 9TSYA100-18 | | RUN | 3939 | 4727 | 5514 | 6302 | 7090 | 7878 | 8666 | | | | |
| 9TSYA100-18 | | END | 7878 | 9453 | 11029 | 12605 | 14180 | 15756 | 17331 | | | | |
| 9TSYA100-18 | | START | 7856 | 9427 | 10311 | 11784 | 13257 | 14730 | | | | | |
| 9TSYA100-18 | | RUN | 4910 | 5892 | 6874 | 7856 | 8838 | 9820 | | | | | |
| 9TSYA100-18 | | END | 9820 | 11784 | 13748 | 15712 | 17676 | 19640 | | | | | |
| | 9TSYA100-12 | START | 5664 | 6796 | 7434 | 8496 | 9558 | 10620 | 11681 | 12743 | | | |
| | 9TSYA100-12 | RUN | 3540 | 4248 | 4956 | 5664 | 6372 | 7080 | 7788 | 8496 | | | |
| | 9TSYA100-12 | END | 7080 | 8496 | 9912 | 11327 | 12743 | 14159 | 15575 | 16991 | | | |
| | 9TSYA100-14 | START | 7673 | 9207 | 10071 | 11509 | 12948 | 14387 | | | | | |
| | 9TSYA100-14 | RUN | 4796 | 5755 | 6714 | 7673 | 8632 | 9591 | | | | | |
| | 9TSYA100-14 | END | 9591 | 11509 | 13428 | 15346 | 17264 | 19182 | | | | | |
| | 9TSYA100-16 | START | 10036 | 12043 | 13172 | | | | | | | | |
| | 9TSYA100-16 | RUN | 6272 | 7527 | 8781 | | | | | | | | |
| | 9TSYA100-16 | END | 12545 | 15054 | 17563 | | | | | | | | |

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# SYA Series - Double Acting Torque

| Output Torque - Nm (Newton Meters) SYMMETRIC YOKE | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACTUATOR SINGLE CYLINDER | Position | 2.5 | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 7 | 8 | 10 |
| 9TSYA125-14 | START | | | | | | | | | | 15829 | 19786 |
| | RUN | | | | | | | | | | 7914 | 9893 |
| | END | | | | | | | | | | 15829 | 19786 |
| 9TSYA125-16 | START | | | | | | | | 15750 | 18375 | 21000 | |
| | RUN | | | | | | | | 7875 | 9187 | 10500 | |
| | END | | | | | | | | 15750 | 18375 | 21000 | |
| 9TSYA125-18 | START | | | | | | 16806 | 18486 | 20167 | 23528 | | |
| | RUN | | | | | | 8403 | 9243 | 10083 | 11764 | | |
| | END | | | | | | 16806 | 18486 | 20167 | 23528 | | |
| 9TSYA125-20 | START | | | | 16748 | 18842 | 20935 | 23029 | 25122 | | | |
| | RUN | | | | 8374 | 9421 | 10467 | 11514 | 12561 | | | |
| | END | | | | 16748 | 18842 | 20935 | 23029 | 25122 | | | |
| 9TSYA125-22 | START | | 15308 | 17860 | 20411 | 22962 | 25514 | | | | | |
| | RUN | | 7654 | 8930 | 10205 | 11481 | 12756 | | | | | |
| | END | | 15308 | 17860 | 20411 | 22962 | 25514 | | | | | |
| 9TSYA125-24 | START | 15271 | 18325 | 21379 | 24433 | | | | | | | |
| | RUN | 7635 | 9162 | 10689 | 12216 | | | | | | | |
| | END | 15271 | 18325 | 21379 | 24433 | | | | | | | |
| 9TSYA125-18 | START | | | | | | | | | 27975 | 31971 | 39964 |
| | RUN | | | | | | | | | 13987 | 15985 | 19982 |
| | END | | | | | | | | | 27975 | 31971 | 39964 |
| 9TSYA125-20 | START | | | | | | 24924 | 27417 | 29909 | 34894 | 39879 | |
| | RUN | | | | | | 12462 | 13708 | 14954 | 17447 | 19939 | |
| | END | | | | | | 24924 | 27417 | 29909 | 34894 | 39879 | |
| 9TSYA125-22 | START | | | | | 27363 | 30404 | 33444 | 36485 | 42565 | | |
| | RUN | | | | | 13682 | 15202 | 16722 | 18242 | 21283 | | |
| | END | | | | | 27363 | 30404 | 33444 | 36485 | 42565 | | |
| 9TSYA125-24 | START | | | 25494 | 29137 | 32779 | 36421 | 40063 | 43705 | | | |
| | RUN | | | 12747 | 14568 | 16389 | 18210 | 20031 | 21852 | | | |
| | END | | | 25494 | 29137 | 32779 | 36421 | 40063 | 43705 | | | |
| 9TSYA125-26 | START | | 25785 | 30082 | 34380 | 38677 | 42975 | | | | | |
| | RUN | | 12892 | 15041 | 17190 | 19338 | 21487 | | | | | |
| | END | | 25785 | 30082 | 34380 | 38677 | 42975 | | | | | |
| 9TSYA125-28 | START | 25033 | 30040 | 35046 | 40053 | 45059 | | | | | | |
| | RUN | 12516 | 15020 | 17523 | 20026 | 22530 | | | | | | |
| | END | 25033 | 30040 | 35046 | 40053 | 45059 | | | | | | |

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# 9TSYA -SR Series Spring Return Torque

| Output Torque - Nm (Newton Meters) SYMMETRIC YOKE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACTUATOR | | Position | Spring | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 7 | 8 | 10 |
| SINGLE CYLINDER | SPRING | | | | | | | | | | | | |
| 9TSYA040-05 | | START | 485 | | | | | | | | 221 | 300 | 502 |
| 9TSYA040-05 | A | RUN | 198 | | | | | | | | 155 | 188 | 289 |
| 9TSYA040-05 | | END | 307 | | | | | | | | 223 | 271 | 423 |
| 9TSYA040-05 | | START | 643 | | | | | | | | | 163 | 365 |
| 9TSYA040-05 | B | RUN | 271 | | | | | | | | | 133 | 234 |
| 9TSYA040-05 | | END | 412 | | | | | | | | | 193 | 345 |
| 9TSYA040-06 | | START | 485 | | | | | 192 | 261 | 331 | 471 | 611 | 890 |
| 9TSYA040-06 | A | RUN | 198 | | | | | 134 | 169 | 203 | 273 | 343 | 483 |
| 9TSYA040-06 | | END | 307 | | | | | 190 | 242 | 295 | 400 | 504 | 714 |
| 9TSYA040-06 | | START | 643 | | | | | | | 195 | 335 | 475 | 754 |
| 9TSYA040-06 | B | RUN | 271 | | | | | | | 148 | 218 | 288 | 428 |
| 9TSYA040-06 | | END | 412 | | | | | | | 217 | 322 | 426 | 636 |
| 9TSYA040-06 | | START | 916 | | | | | | | | | 202 | 481 |
| 9TSYA040-06 | C | RUN | 378 | | | | | | | | | 181 | 320 |
| 9TSYA040-06 | | END | 558 | | | | | | | | | 281 | 490 |
| 9TSYA040-07 | | START | 485 | | | 249 | 344 | 439 | 533 | 628 | 817 | 1006 | 1384 |
| 9TSYA040-07 | A | RUN | 198 | | | 163 | 210 | 257 | 304 | 352 | 446 | 541 | 730 |
| 9TSYA040-07 | | END | 307 | | | 233 | 304 | 375 | 446 | 517 | 659 | 801 | 1084 |
| 9TSYA040-07 | | START | 643 | | | | | 302 | 397 | 491 | 681 | 870 | 1248 |
| 9TSYA040-07 | B | RUN | 271 | | | | | 202 | 249 | 297 | 391 | 486 | 675 |
| 9TSYA040-07 | | END | 412 | | | | | 297 | 368 | 439 | 581 | 723 | 1006 |
| 9TSYA040-07 | | START | 916 | | | | | | | | 408 | 597 | 975 |
| 9TSYA040-07 | C | RUN | 378 | | | | | | | | 284 | 378 | 567 |
| 9TSYA040-07 | | END | 558 | | | | | | | | 435 | 577 | 861 |
| 9TSYA040-08 | | START | 485 | | 354 | 477 | 600 | 723 | 846 | 969 | 1215 | 1461 | |
| 9TSYA040-08 | A | RUN | 198 | | 215 | 276 | 338 | 399 | 461 | 522 | 645 | 768 | |
| 9TSYA040-08 | | END | 307 | | 312 | 404 | 496 | 588 | 681 | 773 | 957 | 1142 | |
| 9TSYA040-08 | | START | 643 | | | | 463 | 586 | 709 | 832 | 1078 | 1324 | 1816 |
| 9TSYA040-08 | B | RUN | 271 | | | | 283 | 344 | 406 | 467 | 590 | 713 | 959 |
| 9TSYA040-08 | | END | 412 | | | | 418 | 510 | 603 | 695 | 879 | 1064 | 1433 |
| 9TSYA040-08 | | START | 916 | | | | | | | 560 | 806 | 1052 | 1544 |
| 9TSYA040-08 | C | RUN | 378 | | | | | | | 360 | 483 | 606 | 852 |
| 9TSYA040-08 | | END | 558 | | | | | | | 549 | 734 | 918 | 1287 |
| 9TSYA040-09 | | START | 485 | 432 | 588 | 745 | 902 | 1058 | 1215 | 1371 | 1684 | | |
| 9TSYA040-09 | A | RUN | 198 | 254 | 332 | 410 | 489 | 567 | 645 | 723 | 880 | | |
| 9TSYA040-09 | | END | 307 | 370 | 488 | 605 | 722 | 840 | 957 | 1075 | 1309 | | |
| 9TSYA040-09 | | START | 643 | | 452 | 608 | 765 | 921 | 1078 | 1234 | | | |
| 9TSYA040-09 | B | RUN | 271 | | 277 | 355 | 433 | 512 | 590 | 668 | | | |
| 9TSYA040-09 | | END | 412 | | 410 | 527 | 644 | 762 | 879 | 997 | | | |
| 9TSYA040-09 | | START | 916 | | | | 492 | 649 | 805 | 962 | 1275 | 1588 | 2214 |
| 9TSYA040-09 | C | RUN | 378 | | | | 326 | 404 | 483 | 561 | 717 | 874 | 1187 |
| 9TSYA040-09 | | END | 558 | | | | 499 | 616 | 734 | 851 | 1086 | 1321 | 1790 |

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# 9TSYA -SR Series Spring Return Torque

| Output Torque - Nm (Newton Meters) SYMMETRIC YOKE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACTUATOR | | Position | Spring | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 7 | 8 | 10 |
| SINGLE CYLINDER | SPRING | | | | | | | | | | | | |
| 9TSYA050-06 | | START | 883 | | | | | | | | 404 | 805 | 805 |
| 9TSYA050-06 | A | RUN | 363 | | | | | | | | 261 | 350 | 528 |
| 9TSYA050-06 | | END | 531 | | | | | | | | 364 | 543 | 899 |
| 9TSYA050-06 | | START | 1038 | | | | | | | | | 731 | 731 |
| 9TSYA050-06 | B | RUN | 422 | | | | | | | | | 291 | 469 |
| 9TSYA050-06 | | END | 605 | | | | | | | | | 388 | 744 |
| 9TSYA050-06 | | START | 1501 | | | | | | | | | | 461 |
| 9TSYA050-06 | C | RUN | 610 | | | | | | | | | | 281 |
| 9TSYA050-06 | | END | 875 | | | | | | | | | | 280 |
| 9TSYA050-07 | | START | 883 | | | | | 373 | 463 | 554 | 735 | 1277 | 1277 |
| 9TSYA050-07 | A | RUN | 363 | | | | | 240 | 300 | 360 | 481 | 602 | 843 |
| 9TSYA050-07 | | END | 531 | | | | | 323 | 444 | 564 | 805 | 1046 | 1529 |
| 9TSYA050-07 | | START | 1038 | | | | | | | 480 | 661 | 1204 | 1204 |
| 9TSYA050-07 | B | RUN | 422 | | | | | | | 302 | 422 | 543 | 784 |
| 9TSYA050-07 | | END | 605 | | | | | | | 409 | 650 | 891 | 1374 |
| 9TSYA050-07 | | START | 1501 | | | | | | | | | 572 | 933 |
| 9TSYA050-07 | C | RUN | 610 | | | | | | | | | 354 | 595 |
| 9TSYA050-07 | | END | 875 | | | | | | | | | 428 | 910 |
| 9TSYA050-08 | | START | 883 | | | 410 | 527 | 645 | 762 | 880 | 1115 | 1821 | |
| 9TSYA050-08 | A | RUN | 363 | | | 264 | 343 | 421 | 500 | 578 | 735 | 892 | |
| 9TSYA050-08 | | END | 531 | | | 372 | 529 | 685 | 842 | 999 | 1313 | 1626 | |
| 9TSYA050-08 | | START | 1038 | | | | | 571 | 689 | 806 | 1042 | 1747 | |
| 9TSYA050-08 | B | RUN | 422 | | | | | 362 | 441 | 519 | 676 | 833 | |
| 9TSYA050-08 | | END | 605 | | | | | 530 | 687 | 844 | 1158 | 1471 | |
| 9TSYA050-08 | | START | 1501 | | | | | | | 536 | 771 | 1477 | |
| 9TSYA050-08 | C | RUN | 610 | | | | | | | 331 | 487 | 644 | |
| 9TSYA050-08 | | END | 875 | | | | | | | 380 | 694 | 1008 | |
| 9TSYA050-09 | | START | 883 | | 516 | 666 | 816 | 965 | 1115 | 1265 | 1564 | 2462 | |
| 9TSYA050-09 | A | RUN | 363 | | 335 | 435 | 535 | 635 | 735 | 834 | 1034 | 1233 | |
| 9TSYA050-09 | | END | 531 | | 514 | 714 | 913 | 1113 | 1312 | 1512 | 1911 | 2310 | |
| 9TSYA050-09 | | START | 1038 | | | 592 | 742 | 892 | 1041 | 1191 | 1490 | 2388 | |
| 9TSYA050-09 | B | RUN | 422 | | | 376 | 476 | 576 | 676 | 776 | 975 | 1175 | |
| 9TSYA050-09 | | END | 605 | | | 559 | 758 | 958 | 1157 | 1357 | 1756 | 2155 | |
| 9TSYA050-09 | | START | 1501 | | | | | | 771 | 921 | 1220 | 2118 | |
| 9TSYA050-09 | C | RUN | 610 | | | | | | 487 | 587 | 787 | 986 | |
| 9TSYA050-09 | | END | 875 | | | | | | 694 | 893 | 1292 | 1691 | |
| 9TSYA050-10 | | START | 883 | 573 | 758 | 942 | 1126 | 1310 | 1494 | 1678 | 2046 | | |
| 9TSYA050-10 | A | RUN | 363 | 374 | 496 | 619 | 742 | 865 | 987 | 1110 | 1356 | | |
| 9TSYA050-10 | | END | 531 | 590 | 836 | 1081 | 1327 | 1572 | 1818 | 2063 | 2554 | | |
| 9TSYA050-10 | | START | 1038 | | 684 | 868 | 1052 | 1236 | 1421 | 1605 | 1973 | | |
| 9TSYA050-10 | B | RUN | 422 | | 438 | 560 | 683 | 806 | 929 | 1051 | 1297 | | |
| 9TSYA050-10 | | END | 605 | | 681 | 926 | 1172 | 1417 | 1663 | 1908 | 2399 | | |
| 9TSYA050-10 | | START | 1501 | | | | 782 | 966 | 1150 | 1334 | 1703 | | |
| 9TSYA050-10 | C | RUN | 610 | | | | 495 | 617 | 740 | 863 | 1108 | | |
| 9TSYA050-10 | | END | 875 | | | | 708 | 954 | 1199 | 1445 | 1936 | | |

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# 9TSYA -SR Series Spring Return Torque

## Output Torque - Nm (Newton Meters) SYMMETRIC YOKE

| ACTUATOR | | Position | Spring Torque | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 7 | 8 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SINGLE CYLINDER | SPRING | | | | | | | | | | | | |
| 9TSYA065-08 | A | START | 1521 | | | | | | | 788 | 1088 | 1388 | 1987 |
| | | RUN | 649 | | | | | | | 550 | 750 | 950 | 1349 |
| | | END | 1010 | | | | | | | 877 | 1277 | 1677 | 2476 |
| 9TSYA065-08 | B | START | 1973 | | | | | | | | 787 | 1087 | 1687 |
| | | RUN | 842 | | | | | | | | 557 | 757 | 1156 |
| | | END | 1311 | | | | | | | | 825 | 1224 | 2024 |
| 9TSYA065-08 | C | START | 2851 | | | | | | | | | 475 | 1074 |
| | | RUN | 1224 | | | | | | | | | 375 | 774 |
| | | END | 1924 | | | | | | | | | 347 | 1146 |
| 9TSYA065-08 | D | START | 3603 | | | | | | | | | | 616 |
| | | RUN | 1535 | | | | | | | | | | 464 |
| | | END | 2382 | | | | | | | | | | 394 |
| 9TSYA065-09 | A | START | 1521 | | | | | 897 | 1088 | 1279 | 1660 | 2042 | 2805 |
| | | RUN | 649 | | | | | 623 | 750 | 877 | 1131 | 1386 | 1894 |
| | | END | 1010 | | | | | 1022 | 1277 | 1531 | 2040 | 2548 | 3566 |
| 9TSYA065-09 | B | START | 1973 | | | | | | 787 | 978 | 1359 | 1741 | 2504 |
| | | RUN | 842 | | | | | | 557 | 684 | 938 | 1192 | 1701 |
| | | END | 1311 | | | | | | 824 | 1079 | 1587 | 2096 | 3113 |
| 9TSYA065-09 | C | START | 2851 | | | | | | | | 747 | 1128 | 1891 |
| | | RUN | 1224 | | | | | | | | 556 | 810 | 1319 |
| | | END | 1924 | | | | | | | | 710 | 1218 | 2236 |
| 9TSYA065-09 | D | START | 3603 | | | | | | | | | 670 | 1433 |
| | | RUN | 1535 | | | | | | | | | 500 | 1008 |
| | | END | 2382 | | | | | | | | | 466 | 1484 |
| 9TSYA065-10 | A | START | 1521 | | | 867 | 1102 | 1336 | 1571 | 1806 | 2275 | 2744 | 3683 |
| | | RUN | 649 | | | 602 | 759 | 915 | 1072 | 1228 | 1541 | 1854 | 2480 |
| | | END | 1010 | | | 982 | 1295 | 1608 | 1921 | 2234 | 2860 | 3485 | 4737 |
| 9TSYA065-10 | B | START | 1973 | | | | 801 | 1036 | 1270 | 1505 | 1974 | 2444 | 3382 |
| | | RUN | 842 | | | | 566 | 722 | 879 | 1035 | 1348 | 1661 | 2287 |
| | | END | 1311 | | | | 843 | 1156 | 1468 | 1781 | 2407 | 3033 | 4284 |
| 9TSYA065-10 | C | START | 2851 | | | | | | 658 | 892 | 1362 | 1831 | 2770 |
| | | RUN | 1224 | | | | | | 497 | 653 | 966 | 1279 | 1905 |
| | | END | 1924 | | | | | | 591 | 904 | 1529 | 2155 | 3407 |
| 9TSYA065-10 | D | START | 3603 | | | | | | | | 903 | 1373 | 2311 |
| | | RUN | 1535 | | | | | | | | 655 | 968 | 1594 |
| | | END | 2382 | | | | | | | | 778 | 1403 | 2655 |
| 9TSYA065-12 | A | START | 1521 | 1020 | 1358 | 1697 | 2035 | 2373 | 2712 | 3050 | 3727 | | |
| | | RUN | 649 | 704 | 930 | 1156 | 1381 | 1607 | 1832 | 2058 | 2509 | | |
| | | END | 1010 | 1186 | 1637 | 2088 | 2540 | 2991 | 3442 | 3893 | 4795 | | |
| 9TSYA065-12 | B | START | 1973 | | 1058 | 1396 | 1734 | 2073 | 2411 | 2749 | 3426 | | |
| | | RUN | 842 | | 737 | 962 | 1188 | 1414 | 1639 | 1865 | 2316 | | |
| | | END | 1311 | | 1185 | 1636 | 2087 | 2538 | 2989 | 3441 | 4343 | | |
| 9TSYA065-12 | C | START | 2851 | | | | | 1460 | 1799 | 2137 | 2814 | 3490 | 4844 |
| | | RUN | 1224 | | | | | 1032 | 1257 | 1483 | 1934 | 2385 | 3287 |
| | | END | 1924 | | | | | 1660 | 2112 | 2563 | 3465 | 4367 | 6172 |
| 9TSYA065-12 | D | START | 3603 | | | | | | 1340 | 1678 | 2355 | 3032 | 4385 |
| | | RUN | 1535 | | | | | | 946 | 1172 | 1623 | 2074 | 2977 |
| | | END | 2382 | | | | | | 1360 | 1811 | 2713 | 3616 | 5420 |
| 9TSYA065-14 | A | START | 1521 | 1740 | 2198 | 2657 | 3115 | 3574 | | | | | |
| | | RUN | 649 | 1184 | 1490 | 1796 | 2101 | 2407 | | | | | |
| | | END | 1010 | 2146 | 2758 | 3369 | 3980 | 4591 | | | | | |
| 9TSYA065-14 | B | START | 1973 | 1439 | 1898 | 2356 | 2815 | 3273 | | | | | |
| | | RUN | 842 | 991 | 1297 | 1603 | 1908 | 2214 | | | | | |
| | | END | 1311 | 1694 | 2305 | 2916 | 3527 | 4139 | | | | | |
| 9TSYA065-14 | C | START | 2851 | | 1285 | 1744 | 2202 | 2660 | 3119 | 3577 | 4494 | | |
| | | RUN | 1224 | | 915 | 1221 | 1526 | 1832 | 2137 | 2443 | 3054 | | |
| | | END | 1924 | | 1427 | 2039 | 2650 | 3261 | 3872 | 4483 | 5706 | | |
| 9TSYA065-14 | D | START | 3603 | | | | 1743 | 2202 | 2660 | 3119 | 4035 | | |
| | | RUN | 1535 | | | | 1216 | 1521 | 1827 | 2132 | 2744 | | |
| | | END | 2382 | | | | 1898 | 2509 | 3120 | 3731 | 4954 | | |

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# 9TSYA -SR Series Spring Return Torque

## Output Torque - Nm (Newton Meters) SYMMETRIC YOKE

| ACTUATOR | | Position | Spring Torque | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 7 | 8 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SINGLE CYLINDER | SPRING | | | | | | | | | | | | |
| 9TSYA065-08 | A | START | 1521 | | | | | | | 788 | 1088 | 1388 | 1987 |
| | | RUN | 649 | | | | | | | 550 | 750 | 950 | 1349 |
| | | END | 1010 | | | | | | | 877 | 1277 | 1677 | 2476 |
| 9TSYA065-08 | B | START | 1973 | | | | | | | | 787 | 1087 | 1687 |
| | | RUN | 842 | | | | | | | | 557 | 757 | 1156 |
| | | END | 1311 | | | | | | | | 825 | 1224 | 2024 |
| 9TSYA065-08 | C | START | 2851 | | | | | | | | | 475 | 1074 |
| | | RUN | 1224 | | | | | | | | | 375 | 774 |
| | | END | 1924 | | | | | | | | | 347 | 1146 |
| 9TSYA065-08 | D | START | 3603 | | | | | | | | | | 616 |
| | | RUN | 1535 | | | | | | | | | | 464 |
| | | END | 2382 | | | | | | | | | | 394 |
| 9TSYA065-09 | A | START | 1521 | | | | | 897 | 1088 | 1279 | 1660 | 2042 | 2805 |
| | | RUN | 649 | | | | | 623 | 750 | 877 | 1131 | 1386 | 1894 |
| | | END | 1010 | | | | | 1022 | 1277 | 1531 | 2040 | 2548 | 3566 |
| 9TSYA065-09 | B | START | 1973 | | | | | | 787 | 978 | 1359 | 1741 | 2504 |
| | | RUN | 842 | | | | | | 557 | 684 | 938 | 1192 | 1701 |
| | | END | 1311 | | | | | | 824 | 1079 | 1587 | 2096 | 3113 |
| 9TSYA065-09 | C | START | 2851 | | | | | | | | 747 | 1128 | 1891 |
| | | RUN | 1224 | | | | | | | | 556 | 810 | 1319 |
| | | END | 1924 | | | | | | | | 710 | 1218 | 2236 |
| 9TSYA065-09 | D | START | 3603 | | | | | | | | | 670 | 1433 |
| | | RUN | 1535 | | | | | | | | | 500 | 1008 |
| | | END | 2382 | | | | | | | | | 466 | 1484 |
| 9TSYA065-10 | A | START | 1521 | | | 867 | 1102 | 1336 | 1571 | 1806 | 2275 | 2744 | 3683 |
| | | RUN | 649 | | | 602 | 759 | 915 | 1072 | 1228 | 1541 | 1854 | 2480 |
| | | END | 1010 | | | 982 | 1295 | 1608 | 1921 | 2234 | 2860 | 3485 | 4737 |
| 9TSYA065-10 | B | START | 1973 | | | | 801 | 1036 | 1270 | 1505 | 1974 | 2444 | 3382 |
| | | RUN | 842 | | | | 566 | 722 | 879 | 1035 | 1348 | 1661 | 2287 |
| | | END | 1311 | | | | 843 | 1156 | 1468 | 1781 | 2407 | 3033 | 4284 |
| 9TSYA065-10 | C | START | 2851 | | | | | | 658 | 892 | 1362 | 1831 | 2770 |
| | | RUN | 1224 | | | | | | 497 | 653 | 966 | 1279 | 1905 |
| | | END | 1924 | | | | | | 591 | 904 | 1529 | 2155 | 3407 |
| 9TSYA065-10 | D | START | 3603 | | | | | | | | 903 | 1373 | 2311 |
| | | RUN | 1535 | | | | | | | | 655 | 968 | 1594 |
| | | END | 2382 | | | | | | | | 778 | 1403 | 2655 |
| 9TSYA065-12 | A | START | 1521 | 1020 | 1358 | 1697 | 2035 | 2373 | 2712 | 3050 | 3727 | | |
| | | RUN | 649 | 704 | 930 | 1156 | 1381 | 1607 | 1832 | 2058 | 2509 | | |
| | | END | 1010 | 1186 | 1637 | 2088 | 2540 | 2991 | 3442 | 3893 | 4795 | | |
| 9TSYA065-12 | B | START | 1973 | | 1058 | 1396 | 1734 | 2073 | 2411 | 2749 | 3426 | | |
| | | RUN | 842 | | 737 | 962 | 1188 | 1414 | 1639 | 1865 | 2316 | | |
| | | END | 1311 | | 1185 | 1636 | 2087 | 2538 | 2989 | 3441 | 4343 | | |
| 9TSYA065-12 | C | START | 2851 | | | | | 1460 | 1799 | 2137 | 2814 | 3490 | 4844 |
| | | RUN | 1224 | | | | | 1032 | 1257 | 1483 | 1934 | 2385 | 3287 |
| | | END | 1924 | | | | | 1660 | 2112 | 2563 | 3465 | 4367 | 6172 |
| 9TSYA065-12 | D | START | 3603 | | | | | | 1340 | 1678 | 2355 | 3032 | 4385 |
| | | RUN | 1535 | | | | | | 946 | 1172 | 1623 | 2074 | 2977 |
| | | END | 2382 | | | | | | 1360 | 1811 | 2713 | 3616 | 5420 |
| 9TSYA065-14 | A | START | 1521 | 1740 | 2198 | 2657 | 3115 | 3574 | | | | | |
| | | RUN | 649 | 1184 | 1490 | 1796 | 2101 | 2407 | | | | | |
| | | END | 1010 | 2146 | 2758 | 3369 | 3980 | 4591 | | | | | |
| 9TSYA065-14 | B | START | 1973 | 1439 | 1898 | 2356 | 2815 | 3273 | | | | | |
| | | RUN | 842 | 991 | 1297 | 1603 | 1908 | 2214 | | | | | |
| | | END | 1311 | 1694 | 2305 | 2916 | 3527 | 4139 | | | | | |
| 9TSYA065-14 | C | START | 2851 | | 1285 | 1744 | 2202 | 2660 | 3119 | 3577 | 4494 | | |
| | | RUN | 1224 | | 915 | 1221 | 1526 | 1832 | 2137 | 2443 | 3054 | | |
| | | END | 1924 | | 1427 | 2039 | 2650 | 3261 | 3872 | 4483 | 5706 | | |
| 9TSYA065-14 | D | START | 3603 | | | | 1743 | 2202 | 2660 | 3119 | 4035 | | |
| | | RUN | 1535 | | | | 1216 | 1521 | 1827 | 2132 | 2744 | | |
| | | END | 2382 | | | | 1898 | 2509 | 3120 | 3731 | 4954 | | |

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# 9TSYA -SR Series Spring Return Torque

| Output Torque - Nm (Newton Meters) SYMMETRIC YOKE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACTUATOR | | Position | Spring | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 7 | 8 | 10 |
| SINGLE CYLINDER | SPRING | | | | | | | | | | | | |
| 9TSYA100-12 | A | START | 5367 | | | | | | 2352 | 2883 | 3945 | 5007 | 7131 |
| | | RUN | 2271 | | | | | | 1622 | 1976 | 2684 | 3392 | 4808 |
| | | END | 3488 | | | | | | 2421 | 3129 | 4544 | 5960 | 8792 |
| 9TSYA100-12 | B | START | 6077 | | | | | | | 2467 | 3529 | 4590 | 6714 |
| | | RUN | 2561 | | | | | | | 1687 | 2395 | 3103 | 4519 |
| | | END | 3905 | | | | | | | 2418 | 3834 | 5250 | 8082 |
| 9TSYA100-12 | C | START | 7462 | | | | | | | | 2579 | 3641 | 5765 |
| | | RUN | 3159 | | | | | | | | 1797 | 2505 | 3921 |
| | | END | 4854 | | | | | | | | 2449 | 3865 | 6697 |
| 9TSYA100-12 | D | START | 10208 | | | | | | | | | | 3526 |
| | | RUN | 4435 | | | | | | | | | | 2645 |
| | | END | 7094 | | | | | | | | | | 3952 |
| 9TSYA100-14 | A | START | 5367 | | | 2266 | 2986 | 3705 | 4424 | 5144 | 6582 | 8021 | 10898 |
| | | RUN | 2271 | | | 1565 | 2045 | 2524 | 3004 | 3483 | 4442 | 5402 | 7320 |
| | | END | 3488 | | | 2306 | 3265 | 4224 | 5183 | 6142 | 8061 | 9979 | 13815 |
| 9TSYA100-14 | B | START | 6077 | | | | 2569 | 3288 | 4008 | 4727 | 6166 | 7604 | 10482 |
| | | RUN | 2561 | | | | 1755 | 2235 | 2714 | 3194 | 4153 | 5112 | 7030 |
| | | END | 3905 | | | | 2555 | 3514 | 4473 | 5432 | 7350 | 9268 | 13105 |
| 9TSYA100-14 | C | START | 7462 | | | | | 2339 | 3058 | 3778 | 5217 | 6655 | 9533 |
| | | RUN | 3159 | | | | | 1637 | 2116 | 2596 | 3555 | 4514 | 6432 |
| | | END | 4854 | | | | | 2129 | 3088 | 4047 | 5966 | 7884 | 11720 |
| 9TSYA100-14 | D | START | 10208 | | | | | | | 1538 | 2977 | 4416 | 7293 |
| | | RUN | 4435 | | | | | | | 1320 | 2279 | 3238 | 5156 |
| | | END | 7094 | | | | | | | 1302 | 3220 | 5138 | 8975 |
| 9TSYA100-16 | A | START | 5367 | | 3098 | 4038 | 4979 | 5920 | 6861 | 7802 | 9684 | 11565 | |
| | | RUN | 2271 | | 2119 | 2747 | 3374 | 4001 | 4628 | 5256 | 6510 | 7764 | |
| | | END | 3488 | | 3414 | 4669 | 5923 | 7178 | 8432 | 9687 | 12196 | 14705 | |
| 9TSYA100-16 | B | START | 6077 | | 2681 | 3622 | 4563 | 5504 | 6444 | 7385 | 9267 | 11149 | |
| | | RUN | 2561 | | 1830 | 2457 | 3084 | 3712 | 4339 | 4966 | 6221 | 7475 | |
| | | END | 3905 | | 2704 | 3958 | 5213 | 6467 | 7722 | 8976 | 11485 | 13994 | |
| 9TSYA100-16 | C | START | 7462 | | | 2673 | 3614 | 4554 | 5495 | 6436 | 8318 | 10200 | |
| | | RUN | 3159 | | | 1859 | 2486 | 3113 | 3741 | 4368 | 5622 | 6877 | |
| | | END | 4854 | | | 2574 | 3828 | 5083 | 6337 | 7592 | 10101 | 12610 | |
| 9TSYA100-16 | D | START | 10208 | | | | | 2315 | 3256 | 4197 | 6078 | 7960 | 11723 |
| | | RUN | 4435 | | | | | 1838 | 2465 | 3092 | 4347 | 5601 | 8110 |
| | | END | 7094 | | | | | 2337 | 3592 | 4846 | 7355 | 9864 | 14882 |
| 9TSYA100-18 | A | START | 5367 | 3664 | 4856 | 6048 | 7240 | 8432 | 9624 | 10817 | | | |
| | | RUN | 2271 | 2497 | 3292 | 4086 | 4881 | 5676 | 6471 | 7265 | | | |
| | | END | 3488 | 4170 | 5759 | 7348 | 8938 | 10527 | 12117 | 13706 | | | |
| 9TSYA100-18 | B | START | 6077 | 3247 | 4439 | 5632 | 6824 | 8016 | 9208 | 10400 | | | |
| | | RUN | 2561 | 2208 | 3002 | 3797 | 4592 | 5386 | 6181 | 6976 | | | |
| | | END | 3905 | 3459 | 5049 | 6638 | 8228 | 9817 | 11406 | 12996 | | | |
| 9TSYA100-18 | C | START | 7462 | | 3490 | 4682 | 5875 | 7067 | 8259 | 9451 | 11835 | | |
| | | RUN | 3159 | | 2404 | 3199 | 3993 | 4788 | 5583 | 6378 | 7967 | | |
| | | END | 4854 | | 3664 | 5253 | 6843 | 8432 | 10022 | 11611 | 14790 | | |
| 9TSYA100-18 | D | START | 10208 | | | 2443 | 3635 | 4827 | 6019 | 7211 | 9595 | 11980 | |
| | | RUN | 4435 | | | 1923 | 2718 | 3512 | 4307 | 5102 | 6691 | 8281 | |
| | | END | 7094 | | | 2508 | 4097 | 5687 | 7276 | 8866 | 12045 | 15223 | |
| 9TSYA100-20 | A | START | 5367 | 5350 | 6823 | 8296 | 9769 | 11242 | 12715 | 14188 | | | |
| | | RUN | 2271 | 3621 | 4603 | 5585 | 6567 | 7549 | 8531 | 9513 | | | |
| | | END | 3488 | 6417 | 8381 | 10345 | 12309 | 14273 | 16237 | 18201 | | | |
| 9TSYA100-20 | B | START | 6077 | 4933 | 6406 | 7879 | 9352 | 10825 | 12298 | 13771 | | | |
| | | RUN | 2561 | 3331 | 4313 | 5295 | 6277 | 7259 | 8241 | 9223 | | | |
| | | END | 3905 | 5707 | 7671 | 9635 | 11599 | 13563 | 15527 | 17491 | | | |
| 9TSYA100-20 | C | START | 7462 | 3984 | 5457 | 6930 | 8403 | 9876 | 11349 | 12822 | | | |
| | | RUN | 3159 | 2733 | 3715 | 4697 | 5679 | 6661 | 7643 | 8625 | | | |
| | | END | 4854 | 4322 | 6286 | 8250 | 10214 | 12178 | 14142 | 16106 | | | |
| 9TSYA100-20 | D | START | 10208 | | 3217 | 4690 | 6163 | 7636 | 9109 | 10582 | 13528 | | |
| | | RUN | 4435 | | 2439 | 3421 | 4403 | 5385 | 6367 | 7349 | 9313 | | |
| | | END | 7094 | | 3540 | 5504 | 7468 | 9432 | 11396 | 13360 | 17288 | | |

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# 9TSYA -SR Series Spring Return Torque

| Output Torque - Nm (Newton Meters) SYMMETRIC YOKE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACTUATOR | | Position | Spring Torque Nm | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 7 | 8 | 10 |
| SINGLE CYLINDER | SPRING | | | | | | | | | | | | |
| 9TSYA125-14 | A | START | 12416 | | | | | | | | 6690 | 8669 | 12626 |
| | | RUN | 4894 | | | | | | | | 2031 | 3020 | 4999 |
| | | END | 7160 | | | | | | | | 1434 | 3413 | 7370 |
| 9TSYA125-14 | B | START | 13854 | | | | | | | | | 8148 | 12106 |
| | | RUN | 5383 | | | | | | | | | 2531 | 4509 |
| | | END | 7681 | | | | | | | | | 1975 | 5932 |
| 9TSYA125-16 | A | START | 12416 | | | | | 5965 | 7277 | 8590 | 11215 | 13840 | 19090 |
| | | RUN | 4894 | | | | | 1668 | 2325 | 2981 | 4293 | 5606 | 8231 |
| | | END | 7160 | | | | | 709 | 2021 | 3334 | 5959 | 8584 | 13834 |
| 9TSYA125-16 | B | START | 13854 | | | | | | 6757 | 8069 | 10694 | 13319 | 18569 |
| | | RUN | 5383 | | | | | | 1835 | 2491 | 3804 | 5116 | 7741 |
| | | END | 7681 | | | | | | 583 | 1896 | 4521 | 7146 | 12396 |
| 9TSYA125-16 | C | START | 17021 | | | | | | | | 8873 | 11498 | 16748 |
| | | RUN | 6631 | | | | | | | | 2556 | 3869 | 6494 |
| | | END | 9502 | | | | | | | | 1354 | 3979 | 9229 |
| 9TSYA125-18 | A | START | 12416 | | | 6285 | 7965 | 9646 | 11326 | 13007 | 16368 | 19729 | |
| | | RUN | 4894 | | | 1828 | 2668 | 3509 | 4349 | 5189 | 6870 | 8550 | |
| | | END | 7160 | | | 1028 | 2709 | 4389 | 6070 | 7750 | 11112 | 14473 | |
| 9TSYA125-18 | B | START | 13854 | | | | 7445 | 9125 | 10806 | 12486 | 15847 | 19209 | |
| | | RUN | 5383 | | | | 2179 | 3019 | 3859 | 4700 | 6380 | 8061 | |
| | | END | 7681 | | | | 1271 | 2952 | 4632 | 6313 | 9674 | 13035 | |
| 9TSYA125-18 | C | START | 17021 | | | | | | 8984 | 10665 | 14026 | 17387 | 24109 |
| | | RUN | 6631 | | | | | | 2612 | 3452 | 5133 | 6813 | 10174 |
| | | END | 9502 | | | | | | 1465 | 3145 | 6507 | 9868 | 16590 |
| 9TSYA125-18 | D | START | 20577 | | | | | | | | 12454 | 15815 | 22537 |
| | | RUN | 7913 | | | | | | | | 3851 | 5531 | 8892 |
| | | END | 11074 | | | | | | | | 2951 | 6312 | 13034 |
| 9TSYA125-20 | A | START | 12416 | 5401 | 7495 | 9588 | 11682 | 13775 | 15869 | 17962 | 22150 | | |
| | | RUN | 4894 | 1386 | 2433 | 3480 | 4527 | 5573 | 6620 | 7667 | 9760 | | |
| | | END | 7160 | 145 | 2238 | 4332 | 6425 | 8519 | 10612 | 12706 | 16893 | | |
| 9TSYA125-20 | B | START | 13854 | | 6974 | 9068 | 11161 | 13255 | 15348 | 17442 | 21629 | | |
| | | RUN | 5383 | | 1944 | 2990 | 4037 | 5084 | 6131 | 7177 | 9271 | | |
| | | END | 7681 | | 801 | 2894 | 4988 | 7081 | 9175 | 11268 | 15455 | | |
| 9TSYA125-20 | C | START | 17021 | | | | 9339 | 11433 | 13527 | 15620 | 19807 | 23994 | |
| | | RUN | 6631 | | | | 2790 | 3837 | 4883 | 5930 | 8024 | 10117 | |
| | | END | 9502 | | | | 1820 | 3914 | 6007 | 8101 | 12288 | 16475 | |
| 9TSYA125-20 | D | START | 20577 | | | | | 9861 | 11954 | 14048 | 18235 | 22422 | |
| | | RUN | 7913 | | | | | 2555 | 3601 | 4648 | 6742 | 8835 | |
| | | END | 11074 | | | | | 358 | 2451 | 4545 | 8732 | 12919 | |
| 9TSYA125-22 | A | START | 12416 | 8148 | 10700 | 13251 | 15802 | 18354 | 20905 | 23457 | | | |
| | | RUN | 4894 | 2760 | 4036 | 5311 | 6587 | 7863 | 9138 | 10414 | | | |
| | | END | 7160 | 2892 | 5443 | 7995 | 10546 | 13097 | 15649 | 18200 | | | |
| 9TSYA125-22 | B | START | 13854 | 7628 | 10179 | 12731 | 15282 | 17833 | 20385 | 22936 | | | |
| | | RUN | 5383 | 2270 | 3546 | 4822 | 6097 | 7373 | 8649 | 9924 | | | |
| | | END | 7681 | 1454 | 4006 | 6557 | 9108 | 11660 | 14211 | 16763 | | | |
| 9TSYA125-22 | C | START | 17021 | | 8357 | 10909 | 13460 | 16012 | 18563 | 21114 | | | |
| | | RUN | 6631 | | 2299 | 3574 | 4850 | 6126 | 7401 | 8677 | | | |
| | | END | 9502 | | 838 | 3390 | 5941 | 8492 | 11044 | 13595 | | | |
| 9TSYA125-22 | D | START | 20577 | | | | 11888 | 14439 | 16991 | 19542 | 24645 | | |
| | | RUN | 7913 | | | | 3568 | 4844 | 6119 | 7395 | 9946 | | |
| | | END | 11074 | | | | 2385 | 4936 | 7488 | 10039 | 15142 | | |
| 9TSYA125-24 | A | START | 12416 | 11165 | 14219 | 17273 | 20327 | 23381 | | | | | |
| | | RUN | 4894 | 4268 | 5795 | 7322 | 8849 | 10376 | | | | | |
| | | END | 7160 | 5908 | 8962 | 12017 | 15071 | 18125 | | | | | |
| 9TSYA125-24 | B | START | 13854 | 10644 | 13698 | 16752 | 19807 | 22861 | | | | | |
| | | RUN | 5383 | 3779 | 5306 | 6833 | 8360 | 9887 | | | | | |
| | | END | 7681 | 4471 | 7525 | 10579 | 13633 | 16687 | | | | | |
| 9TSYA125-24 | C | START | 17021 | 8822 | 11877 | 14931 | 17985 | 21039 | 24093 | | | | |
| | | RUN | 6631 | 2531 | 4058 | 5585 | 7112 | 8639 | 10166 | | | | |
| | | END | 9502 | 1303 | 4357 | 7411 | 10466 | 13520 | 16574 | | | | |
| 9TSYA125-25 | D | START | 20577 | | 10304 | 13358 | 16413 | 19467 | 22521 | | | | |
| | | RUN | 7913 | | 2776 | 4303 | 5830 | 7357 | 8884 | | | | |
| | | END | 11074 | | 801 | 3855 | 6910 | 9964 | 13018 | | | | |

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# 9TSYA - SR Series Spring Return Torque

| Output Torque - Nm (Newton Meters) SYMMETRIC YOKE | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACTUATOR | | Position | Spring Torque Nm | 3 | 3.5 | 4 | 4.5 | 5 | 5.5 | 6 | 7 | 8 | 10 |
| SINGLE CYLINDER | SPRING | | | | | | | | | | | | |
| SYA150-18 | A | START | 18454 | | | | | | 10409 | 12403 | 16392 | 20381 | 28359 |
| | | RUN | 7496 | | | | | | 3473 | 4470 | 6464 | 8459 | 12448 |
| | | END | 11530 | | | | | | 3482 | 5477 | 9465 | 13454 | 21432 |
| SYA150-18 | B | START | 21692 | | | | | | | 10588 | 14577 | 18566 | 26543 |
| | | RUN | 8759 | | | | | | | 3207 | 5202 | 7196 | 11185 |
| | | END | 13345 | | | | | | | 2241 | 6230 | 10218 | 18196 |
| SYA150-18 | C | START | 25962 | | | | | | | | 11950 | 15939 | 23917 |
| | | RUN | 10483 | | | | | | | | 3477 | 5472 | 9461 |
| | | END | 15972 | | | | | | | | 1960 | 5949 | 13926 |
| SYA150-18 | D | START | 29900 | | | | | | | | | 13893 | 21871 |
| | | RUN | 11979 | | | | | | | | | 3976 | 7965 |
| | | END | 18018 | | | | | | | | | 2011 | 9989 |
| SYA150-20 | A | START | 18454 | | | | 10868 | 13357 | 15846 | 18334 | 23312 | 28289 | 38244 |
| | | RUN | 7496 | | | | 3702 | 4947 | 6191 | 7435 | 9924 | 12413 | 17390 |
| | | END | 11530 | | | | 3942 | 6430 | 8919 | 11407 | 16385 | 21362 | 31317 |
| SYA150-20 | B | START | 21692 | | | | | 11542 | 14030 | 16519 | 21496 | 26474 | 36428 |
| | | RUN | 8759 | | | | | 3684 | 4928 | 6173 | 8661 | 11150 | 16127 |
| | | END | 13345 | | | | | 3194 | 5683 | 8172 | 13149 | 18126 | 28081 |
| SYA150-20 | C | START | 25962 | | | | | | | 13892 | 18870 | 23847 | 33802 |
| | | RUN | 10483 | | | | | | | 4448 | 6937 | 9426 | 14403 |
| | | END | 15972 | | | | | | | 3902 | 8879 | 13856 | 23811 |
| SYA150-20 | D | START | 29900 | | | | | | | | 16823 | 21801 | 31755 |
| | | RUN | 11979 | | | | | | | | 5441 | 7930 | 12907 |
| | | END | 18018 | | | | | | | | 4942 | 9919 | 19874 |
| SYA150-22 | A | START | 18454 | | 9727 | 12763 | 15800 | 18837 | 21873 | 24910 | 30983 | 37056 | |
| | | RUN | 7496 | | 3132 | 4650 | 6168 | 7687 | 9205 | 10723 | 13760 | 16796 | |
| | | END | 11530 | | 2800 | 5837 | 8873 | 11910 | 14946 | 17983 | 24056 | 30129 | |
| SYA150-22 | B | START | 21692 | | | 10948 | 13985 | 17021 | 20058 | 23094 | 29168 | 35241 | |
| | | RUN | 8759 | | | 3387 | 4905 | 6424 | 7942 | 9460 | 12497 | 15534 | |
| | | END | 13345 | | | 2601 | 5637 | 8674 | 11711 | 14747 | 20820 | 26894 | |
| SYA150-22 | C | START | 25962 | | | | | 14395 | 17431 | 20468 | 26541 | 32614 | 44761 |
| | | RUN | 10483 | | | | | 4700 | 6218 | 7736 | 10773 | 13809 | 19883 |
| | | END | 15972 | | | | | 4404 | 7441 | 10477 | 16551 | 22624 | 34770 |
| SYA150-22 | D | START | 29900 | | | | | | 15385 | 18422 | 24495 | 30568 | 42715 |
| | | RUN | 11979 | | | | | | 4722 | 6240 | 9277 | 12314 | 18387 |
| | | END | 18018 | | | | | | 3503 | 6540 | 12613 | 18686 | 30833 |
| SYA150-24 | A | START | 18456 | 10300 | 13938 | 17577 | 21215 | 24853 | 28492 | 32130 | 39407 | | |
| | | RUN | 7496 | 3418 | 5238 | 7057 | 8876 | 10695 | 12514 | 14333 | 17971 | | |
| | | END | 11530 | 3373 | 7012 | 10650 | 14288 | 17927 | 21565 | 25203 | 32480 | | |
| SYA150-24 | B | START | 21692 | | 12123 | 15761 | 19400 | 23038 | 26676 | 30315 | 37591 | 44868 | |
| | | RUN | 8759 | | 3975 | 5794 | 7613 | 9432 | 11251 | 13070 | -18422 | 20347 | |
| | | END | 13345 | | 3776 | 7414 | 11052 | 14691 | 18329 | 21967 | 29244 | 36520 | |
| SYA150-24 | C | START | 25962 | | | 13135 | 16773 | 20411 | 24050 | 27688 | 34965 | 42241 | |
| | | RUN | 10483 | | | 4070 | 5889 | 7708 | 9527 | 11346 | 14985 | 18623 | |
| | | END | 15972 | | | 3144 | 6783 | 10421 | 14059 | 17697 | 24974 | 32251 | |
| SYA150-24 | D | START | 29900 | | | | 14727 | 18365 | 22003 | 25642 | 32918 | 40195 | |
| | | RUN | 11979 | | | | 4393 | 6212 | 8031 | 9850 | 13489 | 17127 | |
| | | END | 18018 | | | | 2845 | 6483 | 10122 | 13760 | 21037 | 28313 | |
| SYA150-28 | A | START | 18456 | 18487 | 23490 | 28493 | 33496 | 38499 | 43502 | | | | |
| | | RUN | 7496 | 7512 | 10013 | 12515 | 15016 | 17518 | 20019 | | | | |
| | | END | 11530 | 11561 | 16563 | 21566 | 26569 | 31572 | 36575 | | | | |
| SYA150-28 | B | START | 21692 | 16672 | 21675 | 26678 | 31681 | 36683 | 41686 | | | | |
| | | RUN | 8759 | 6249 | 8751 | 11252 | 13753 | 16255 | 18756 | | | | |
| | | END | 13345 | 8325 | 13328 | 18330 | 23333 | 28336 | 33339 | | | | |
| SYA150-28 | C | START | 25962 | 14045 | 19048 | 24051 | 29054 | 34057 | 39060 | 44062 | | | |
| | | RUN | 10483 | 4525 | 7026 | 9528 | 12029 | 14531 | 17032 | 19533 | | | |
| | | END | 15972 | 4055 | 9058 | 14061 | 19063 | 24066 | 29069 | 34072 | | | |
| SYA150-28 | D | START | 29900 | | 17002 | 22005 | 27008 | 32010 | 37013 | 42016 | | | |
| | | RUN | 11979 | | 5531 | 8032 | 10533 | 13035 | 15536 | 18038 | | | |
| | | END | 18018 | | 5120 | 10123 | 15126 | 20129 | 25132 | 30134 | | | |

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# 9TSYA -HEAVY DUTY SCOTCH YOKE ACTUATOR

## Ordering Code Logic

### How to Order

| SYA | | | 100 | | | 250 | | | DA | | S | 0 | N | 0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |

| For Example |
|---|
| DA -9TSYA100250DAS0N0 |
| SR -9TSYA100250SRSAN0 |

15 - 0 - IF SPECIAL REQUIRMENTS

14 - SEALS
N - NITRILE
V - VITON
S - SILICON

13 - YOKE TYPE
S - SYMMETRIC

12 - SPRING TYPE
A,B,C,D & IF DA-0

10,11 - ACTING TYPE
DA - DOUBLE ACTING
SR - SINGLE ACTING
DD - DOUBLE CYLINDER

7,8,9 - CYLINDER SIZE
125, 150, 175, 200, 250, 300, 350,400 etc.

4,5,6 - YOKE SIZE
040,050,065,075,100,125,150 etc

1,2,3 - SERIES
9TSYA - SCOTCH YOKE ACTUATOR

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