

5300



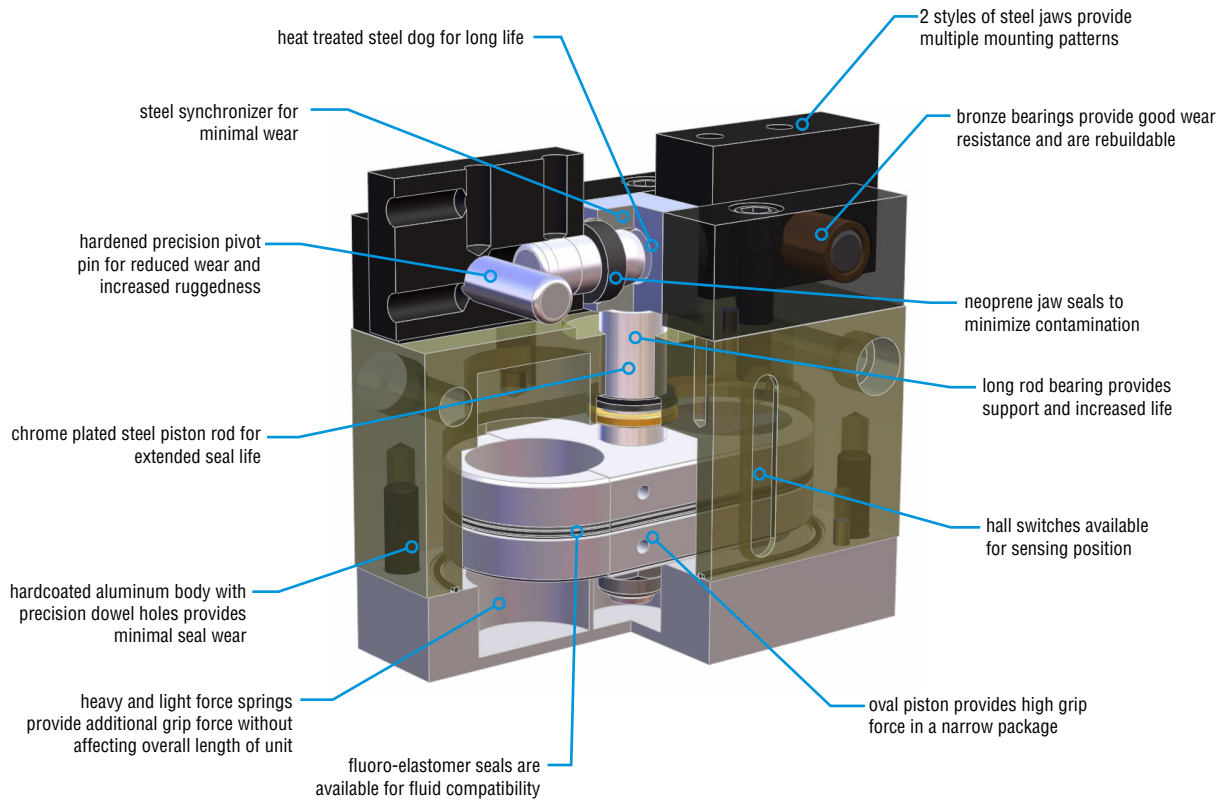
HEAVY DUTY ANGULAR PNEUMATIC GRIPPER

Major Benefits

- Spring assist on open or close available in different forces
- High grip force to weight ratio
- Hardened steel pivot mechanism
- Close tolerance jaw mechanism minimizes jaw play
- Four sizes available in both imperial and metric versions
- 5 million cycles minimum rated life with standard seals (includes spring assist units)



5300 ang



ORDERING DATA: SERIES 5300 ANGULAR GRIPPERS

TO ORDER SPECIFY:

Model, Design No., Switches, Options, and Seals.

OPTIONS

0 - None
LIGHT SPRING FORCE
 3 - Spring Close
 4 - Spring Open
HEAVY SPRING FORCE
 5 - Spring Close
 6 - Spring Open

SENSORS & SWITCHES

0 - None
 7 - Hall Effect Magnet on piston and "T" slot on body for Series 5360 Hall Switches

15321 - 1 - 3 0 0 2

| MODEL | EQUIVALENT BORE DIAMETER | |
|-------------|--------------------------|--------|
| JAW STYLE 1 | mm | (in) |
| 1532x | 45.5 | (1.79) |
| 1533x | 65 | (2.56) |
| 1534x | 87.4 | (3.44) |
| 1535x | 123 | (4.85) |
| JAW STYLE 2 | mm | (in) |
| 1532x | 45.5 | (1.79) |
| 1533x | 65 | (2.56) |
| 1534x | 87.4 | (3.44) |
| 1535x | 123 | (4.85) |

| IMPERIAL MODEL | JAW STYLE 1 |
|----------------|-------------|
| 15320 | - Size 2 |
| 15330 | - Size 3 |
| 15340 | - Size 4 |
| 15350 | - Size 5 |
| JAW STYLE 2 | |
| 15321 | - Size 2 |
| 15331 | - Size 3 |
| 15341 | - Size 4 |
| 15351 | - Size 5 |

| METRIC MODEL | JAW STYLE 1 |
|--------------|-------------|
| 15322 | - Size 2 |
| 15332 | - Size 3 |
| 15342 | - Size 4 |
| 15352 | - Size 5 |
| JAW STYLE 2 | |
| 15323 | - Size 2 |
| 15333 | - Size 3 |
| 15343 | - Size 4 |
| 15353 | - Size 5 |

DESIGN NO.

OPTIONS

SEALS

| |
|-----------------------|
| 1 - Buna-N (Standard) |
| 2 - Fluoro-Elastomer |

SERIES 5360 MINIATURE HALL EFFECT SWITCHES

| PART NO. | DESCRIPTION |
|------------|--|
| 53603-1-02 | NPN (Sink) 4.5-24 VDC, 2 meter Cable |
| 53604-1-02 | PNP (Source) 4.5-24 VDC, 2 meter Cable |
| 53623-1 | NPN (Sink) 4.5-24 VDC, Quick Connect |
| 53624-1 | PNP (Source) 4.5-24 VDC, Quick Connect |

See Switches and Sensors section for switch information.

NOTE:

1) Proximity Switches must be ordered separately.



Options may affect unit length. See dimensional pages and option information details.



Refer to this product's online catalog in the product section for complete information including related dimensions and additional specifications. See link at bottom of this page.



CAD & Sizing Assistance

Use PHD's free online Product Sizing and CAD Configurator at www.phdinc.com/myphd

ENGINEERING DATA: SERIES 5300 ANGULAR OVAL GRIPPERS

| SPECIFICATIONS | SERIES 5300 ANGULAR |
|--------------------------|---|
| OPERATING PRESSURE | |
| STANDARD UNIT | 25 psi min to 150 psi max [1.7 bar min to 10 bar max] air |
| LIGHT SPRING ASSIST UNIT | 35 psi min to 150 psi max [2.4 bar min to 10 bar max] air |
| HEAVY SPRING ASSIST UNIT | 65 psi min to 150 psi max [4.5 bar min to 10 bar max] air |
| OPERATING TEMPERATURE | -20° to +180°F [-28° to +82°C] |
| RATED LIFE | 5 million cycles minimum with standard seals |
| GRIP BACKLASH | Within .2° per jaw |
| GRIP REPEATABILITY | Within 0.002 in [±0.05 mm] of original centered position |
| LUBRICATION | Factory lubricated for rated life |
| MAINTENANCE | Field repairable |

| GRIPPER NO. | DISPLACEMENT | | GRIP FORCE FACTOR G_F | | | | SPRING GRIP FORCE S_F | | | |
|-------------|--------------|-------|-------------------------|---------|---------------|---------|-------------------------|---------|--------------|----------|
| | | | EXTERNAL GRIP | | INTERNAL GRIP | | LIGHT SPRING | | HEAVY SPRING | |
| | | | IMPERIAL | METRIC | IMPERIAL | METRIC | lb | N | lb | N |
| 1532x | .59 | 9.6 | 1.87 | 3058.0 | 2.03 | 3323.0 | 34.50 | 3908.0 | 49.50 | 5582.0 |
| 1533x | 1.78 | 29.2 | 5.56 | 9085.0 | 6.08 | 9938.0 | 93.00 | 10518.0 | 157.50 | 17751.0 |
| 1534x | 4.29 | 70.3 | 14.14 | 23109.0 | 14.85 | 24255.0 | 221.00 | 24968.0 | 366.50 | 41318.0 |
| 1535x | 12.66 | 207.5 | 41.85 | 68355.0 | 43.70 | 71382.0 | 590.00 | 66492.0 | 1275.00 | 143796.0 |

5300 ang

NOTE: Maximum load that grippers can handle will vary based on size of part being picked up, shape of part, texture of part, speed at which part is transferred, working pressure, shape of fingers, etc. PHD recommends that the fingers of jaws be tooled or machined to conform to the shape of the part being gripped.

| GRIPPER NO. | GRIPPER WEIGHT | | | | | |
|-------------|----------------|-------|---------------|-------|-------|-------|
| | STANDARD | | SPRING ASSIST | | | |
| | | | LIGHT | | HEAVY | |
| lb | kg | lb | kg | lb | kg | |
| 1532x | 2.40 | 1.08 | 2.5 | 1.11 | 2.5 | 1.12 |
| 1533x | 4.87 | 2.2 | 5.0 | 2.28 | 5.1 | 2.32 |
| 1534x | 9.58 | 4.35 | 10.0 | 4.53 | 10.2 | 4.63 |
| 1535x | 27.73 | 12.57 | 29.5 | 13.37 | 29.8 | 13.53 |

GRIP FORCE CALCULATION EQUATIONS:

IMPERIAL:

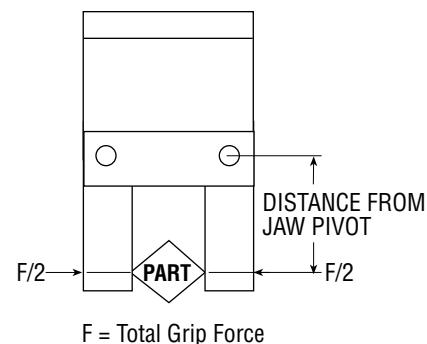
$$\text{TOTAL GRIP FORCE [lb]} = (\text{Pressure [psi]} \times G_F) \times \frac{\text{Distance from jaw pivot (in)}}{\text{Distance from jaw pivot (in)}}$$

$$\text{TOTAL GRIP FORCE WITH SPRINGS [lb]} = ((\text{Pressure [psi]} \times G_F) \pm S_F [\text{lb}]) \times \frac{\text{Distance from jaw pivot (in)}}{\text{Distance from jaw pivot (in)}}$$

METRIC:

$$\text{TOTAL GRIP FORCE [N]} = (\text{Pressure [bar]} \times G_F) \times \frac{\text{Distance from jaw pivot (mm)}}{\text{Distance from jaw pivot (mm)}}$$

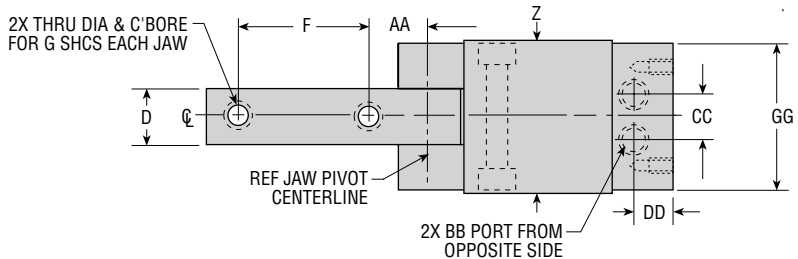
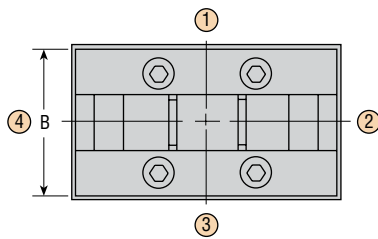
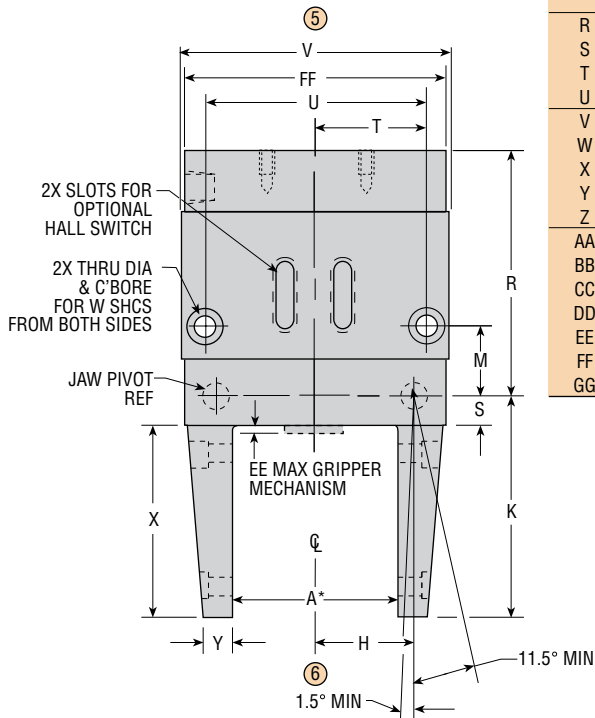
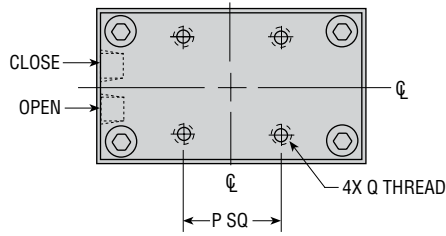
$$\text{TOTAL GRIP FORCE WITH SPRINGS [N]} = ((\text{Pressure [bar]} \times G_F) \pm S_F [\text{N}]) \times \frac{\text{Distance from jaw pivot (mm)}}{\text{Distance from jaw pivot (mm)}}$$



Sizing & Application Assistance

Use PHD's free online Product Sizing Application or view the Product Sizing Catalog at: www.phdinc.com/apps/sizing

DIMENSIONS: SERIES 5300 ANGULAR OVAL GRIPPER - JAW STYLE 1



| LETTER DIM | MODEL NUMBER | | | | | | | |
|------------|----------------|-------------------|-----------------|-----------------|------------------|---------------------|-----------------|---------------------|
| | 15320 in | 15322 mm | 15330 in | 15332 mm | 15340 in | 15342 mm | 15350 in | 15352 mm |
| A* | 1.812 | 46.0 | 2.500 | 63.5 | 3.500 | 88.9 | 5.125 | 130.2 |
| B | 1.750 | 44.5 | 2.250 | 57.2 | 2.750 | 69.9 | 4.000 | 101.6 |
| D | .750 | 19.1 | .875 | 22.2 | 1.000 | 25.4 | 1.500 | 38.1 |
| F | 1.500 | 38.1 | 2.000 | 50.8 | 2.750 | 69.9 | 3.500 | 88.9 |
| G | #10 | 5 | 1/4 | M6 | 5/16 | M8 | 3/8 | M10 |
| H | 1.062 | 27.0 | 1.500 | 38.1 | 2.000 | 50.8 | 2.875 | 73.0 |
| K | 2.438 | 61.9 | 3.390 | 86.1 | 4.587 | 116.5 | 5.734 | 145.6 |
| M | .875 | 22.2 | 1.062 | 27.0 | 1.187 | 30.1 | 1.625 | 41.3 |
| P | 1.250 | 31.8 | 1.500 | 38.1 | 1.750 | 44.5 | 2.750 | 69.9 |
| Q | 10-24 x .38 DP | M5 x 0.8 x 9.7 DP | 1/4-20 x .38 DP | M6 x 1 x 9.7 DP | 5/16-18 x .44 DP | M8 x 1.25 x 11.2 DP | 3/8-16 x .56 DP | M10 x 1.5 x 14.2 DP |
| R | 3.063 | 77.8 | 3.749 | 95.2 | 4.312 | 109.5 | 5.875 | 149.2 |
| S | .312 | 7.9 | .438 | 11.1 | .562 | 14.3 | .845 | 21.5 |
| T | 1.156 | 29.4 | 1.687 | 42.8 | 2.375 | 60.3 | 3.250 | 82.6 |
| U | 2.312 | 58.7 | 3.375 | 85.7 | 4.750 | 120.7 | 6.500 | 165.1 |
| V | 2.843 | 72.2 | 4.031 | 102.4 | 5.531 | 140.5 | 7.531 | 191.3 |
| W | 1/4 | M6 | 5/16 | M8 | 3/8 | M10 | 1/2 | M12 |
| X | 2.126 | 54.0 | 2.952 | 75.0 | 4.025 | 102.2 | 4.859 | 123.4 |
| Y | .285 | 7.2 | .450 | 11.4 | .598 | 15.2 | .688 | 17.5 |
| Z | 1.781 | 45.2 | 2.281 | 57.9 | 2.781 | 70.6 | 4.031 | 102.4 |
| AA | .688 | 17.5 | .900 | 22.9 | 1.312 | 33.3 | 1.750 | 44.5 |
| BB | 10-32 | M5 x 0.8 | 1/8 NPT | 1/8 BSP | 1/8 NPT | 1/8 BSP | 1/4 NPT | 1/4 BSP |
| CC | .562 | 14.3 | .750 | 19.1 | .937 | 23.8 | 1.625 | 41.3 |
| DD | .440 | 11.2 | .500 | 12.7 | .590 | 15.1 | .760 | 19.3 |
| EE | .125 | 3.2 | .160 | 4.1 | .200 | 5.1 | .250 | 6.4 |
| FF | 2.810 | 71.4 | 4.000 | 101.6 | 5.500 | 139.7 | 7.500 | 190.5 |
| GG | 1.75 | 44.5 | 2.25 | 57.2 | 2.75 | 69.9 | 3.96 | 100.5 |

*GRIPPER JAWS: SHOWN AT PARALLEL POSITION

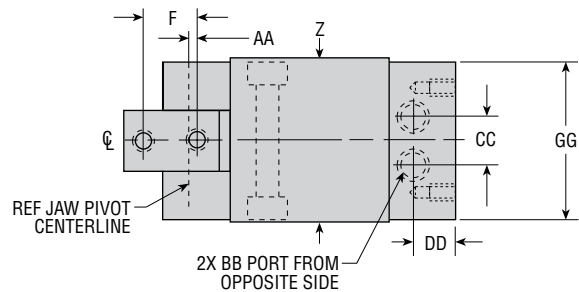
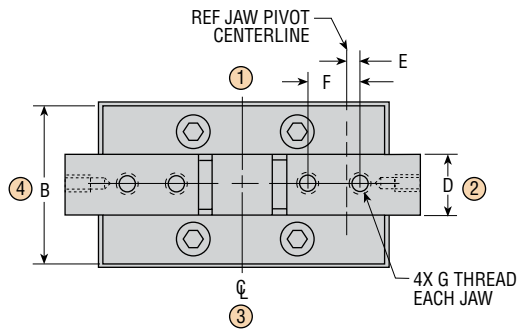
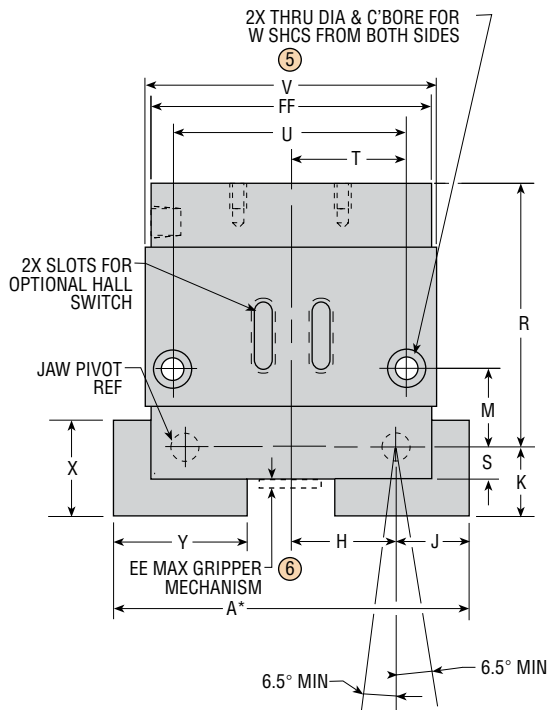
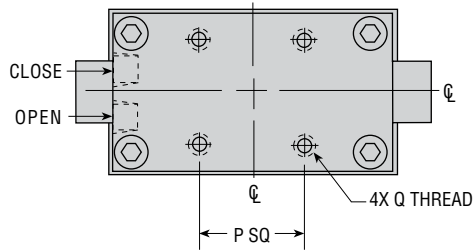
JAW MOVEMENT SHOWS MINIMUM AMOUNT OF JAW ROTATION. JAWS MAY OPEN 3° OR CLOSE 3° BEYOND STATED MINIMUM ROTATION.



CAD & Sizing Assistance

Use PHD's free online Product Sizing and CAD Configurator at www.phdinc.com/myphd

DIMENSIONS: SERIES 5300 ANGULAR OVAL GRIPPER - JAW STYLE 2



| LETTER DIM | MODEL NUMBER | | | | | | | |
|------------|-----------------|-------------------|------------------|---------------------|------------------|---------------------|-----------------|----------------------|
| | 15321 in | 15323 mm | 15331 in | 15333 mm | 15341 in | 15343 mm | 15351 in | 15353 mm |
| A* | 3.937 | 100.0 | 5.000 | 127.0 | 6.236 | 158.4 | 8.610 | 218.7 |
| B | 1.750 | 44.5 | 2.250 | 57.2 | 2.750 | 69.9 | 4.000 | 101.6 |
| D | .750 | 19.1 | .875 | 22.2 | 1.000 | 25.4 | 1.500 | 38.1 |
| E | .231 | 5.9 | .187 | 4.7 | .063 | 1.6 | 0.00 | 0.0 |
| F | .625 | 15.9 | .750 | 19.1 | 1.000 | 25.4 | 1.500 | 38.1 |
| G | 1/4-20 x .38 DP | M6 x 1 x 9.7 DP | 5/16-18 x .44 DP | M8 x 1.25 x 11.2 DP | 3/8-16 x .56 DP | M10 x 1.5 x 14.2 DP | 1/2-13 x .75 DP | M12 x 1.75 x 19.0 DP |
| H | 1.062 | 27.0 | 1.500 | 38.1 | 2.000 | 50.8 | 2.875 | 73.0 |
| J | .906 | 23.0 | 1.000 | 25.4 | 1.118 | 28.4 | 1.430 | 36.3 |
| K | .813 | 20.7 | .968 | 24.6 | 1.200 | 30.5 | 1.680 | 42.7 |
| M | .875 | 22.2 | 1.062 | 27.0 | 1.187 | 30.1 | 1.625 | 41.3 |
| P | 1.250 | 31.8 | 1.500 | 38.1 | 1.750 | 44.5 | 2.750 | 69.9 |
| Q | 10-24 x .38 DP | M5 x 0.8 x 9.7 DP | 1/4-20 x .38 DP | M6 x 1 x 9.7 DP | 5/16-18 x .44 DP | M8 x 1.25 x 11.2 DP | 3/8-16 x .56 DP | M10 x 1.5 x 14.2 DP |
| R | 3.063 | 77.8 | 3.749 | 95.2 | 4.312 | 109.5 | 5.875 | 149.2 |
| S | .312 | 7.9 | .438 | 11.1 | .562 | 14.3 | .845 | 21.5 |
| T | 1.156 | 29.4 | 1.687 | 42.8 | 2.375 | 60.3 | 3.250 | 82.6 |
| U | 2.312 | 58.7 | 3.375 | 85.7 | 4.750 | 120.7 | 6.500 | 165.1 |
| V | 2.843 | 72.2 | 4.031 | 102.4 | 5.531 | 140.5 | 7.531 | 191.3 |
| W | 1/4 | M6 | 5/16 | M8 | 3/8 | M10 | 1/2 | M12 |
| X | 1.125 | 28.6 | 1.375 | 34.9 | 1.700 | 43.2 | 2.430 | 61.7 |
| Y | 1.500 | 38.1 | 1.875 | 47.6 | 2.430 | 61.7 | 3.430 | 87.1 |
| Z | 1.781 | 45.2 | 2.281 | 57.9 | 2.781 | 70.6 | 4.031 | 102.4 |
| AA | .062 | 1.6 | .095 | 2.4 | .150 | 3.8 | .300 | 7.6 |
| BB | 10-32 | M5 x 0.8 | 1/8 NPT | 1/8 BSP | 1/8 NPT | 1/8 BSP | 1/4 NPT | 1/4 BSP |
| CC | .562 | 14.3 | .750 | 19.1 | .937 | 23.8 | 1.625 | 41.3 |
| DD | .440 | 11.2 | .500 | 12.7 | .590 | 15.1 | .760 | 19.3 |
| EE | .125 | 3.2 | .160 | 4.1 | .200 | 5.1 | .250 | 6.4 |
| FF | 2.810 | 71.4 | 4.00 | 101.6 | 5.500 | 139.7 | 7.500 | 190.5 |
| GG | 1.75 | 44.5 | 2.25 | 57.2 | 2.75 | 69.9 | 3.96 | 100.5 |

5300 ang

*GRIPPER JAWS: SHOWN AT PARALLEL POSITION

JAW MOVEMENT SHOWS MINIMUM AMOUNT OF JAW ROTATION. JAWS MAY OPEN 3° OR CLOSE 3° BEYOND STATED MINIMUM ROTATION.



CAD & Sizing Assistance

Use PHD's free online Product Sizing and CAD Configurator at www.phdinc.com/myphd

All dimensions are reference only unless specifically toleranced.

www.phdinc.com/5300a • (800) 624-8511



HALL EFFECT MAGNET

Equips piston with magnet and “T” slot on body for Series 5360 Switches.

SERIES 5360 MINIATURE HALL EFFECT SWITCHES

| PART NO. | DESCRIPTION |
|------------|--|
| 53603-1-02 | NPN (Sink) 4.5-24 VDC, 2 meter Cable |
| 53604-1-02 | PNP (Source) 4.5-24 VDC, 2 meter Cable |
| 53623-1 | NPN (Sink) 4.5-24 VDC, Quick Connect |
| 53624-1 | PNP (Source) 4.5-24 VDC, Quick Connect |

NOTES:

- 1) See Switches and Sensors section for switch information.
- 2) Switches must be ordered separately.