

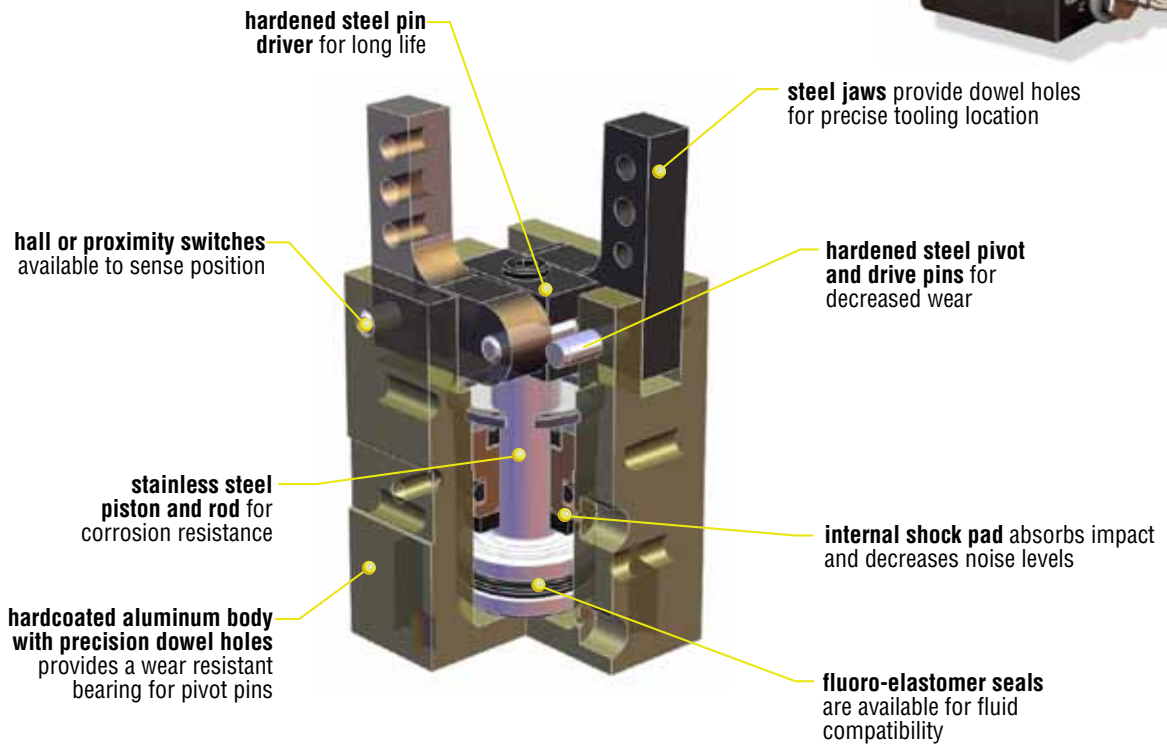
8400 angular

**COMPACT SIZE WITH
ONE DAY DELIVERY**



*gripper shown with
finger blank kit*

8400 ang



Major Benefits

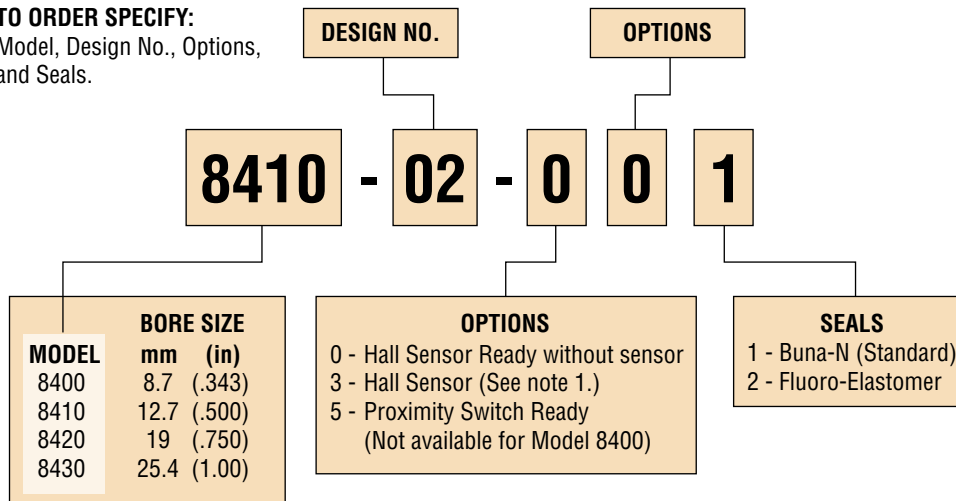
- Compact size
- Rugged body and jaw design
- Four sizes available
- Hardened steel pivot mechanism
- Close tolerance jaw mechanism minimizes jaw play
- Three mounting surfaces as standard
- Blank fingers available for customizing jaw tooling
- 1 day shipping
- 5 million cycles minimum rated life with standard seals

Industry Uses

- Assembly machine builders
- Light bulb manufacturing
- Batteries
- Medical
- Bearing manufacturing
- Semiconductor

ORDERING DATA: SERIES 8400 ANGULAR GRIPPERS

TO ORDER SPECIFY:
Model, Design No., Options,
and Seals.



PROXIMITY SWITCHES	
PART NO.	DESCRIPTION
18430-001-02	4 mm Round Current Sinking (NPN)
18430-002-02	4 mm Round Current Sourcing (PNP)

PROXIMITY SWITCH KIT	
TO FIT:	KIT NO.
8410	19813
8420	19814
8430	19631

FINGER BLANK KITS		
TO FIT:	ALUMINUM	DELRIN AF
8400	8573	8574
8410	8575	8576
8420	8577	8578
8430	18613	18614

HALL SENSOR KITS	
GRIPPER	SENSOR KIT NUMBER
8400	10906-12
8410	10907-12
8420	10908-12
8430	18686-04

NOTES:

- 1) Sensor must be used with a PHD Set Point Module which is ordered separately. See Switches and Sensors section for information and ordering data.
- 2) Proximity Switches, Bracket Kits, and Finger Blanks must be ordered separately. See option pages.

SET POINT MODULES	
PART NO.	DESCRIPTION
9800-01-0300	4.5-24 VDC, Sink Type Output
9800-01-0400	4.5-24 VDC, Source Type Output

See Switches and Sensors section for information.



UNIQUE GRIPPERS ARE AVAILABLE.
SEE PAGES 4-179 TO 4-204.

ENGINEERING DATA: SERIES 8400 ANGULAR GRIPPERS

SPECIFICATIONS	SERIES 8400 ANGULAR
OPERATING PRESSURE STANDARD UNIT	40 psi min to 150 psi max [2.8 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 1° per jaw
LUBRICATION	Factory lubricated for rated life
MAINTENANCE	Field repairable

GRIPPER NO.	DISPLACEMENT in ³	GRIPPER WEIGHT lb	GRIP FORCE FACTOR G _F	
			EXTERNAL GRIP	INTERNAL GRIP
8400	.007	.06	.027	.032
8410	.018	.16	.068	.092
8420	.055	.43	.25	.306
8430	.150	1.17	.576	.774

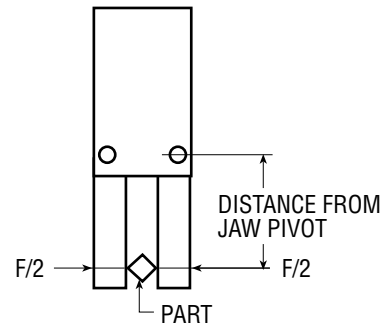
8400 ang

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 finger pads, etc. PHD recommends that the fingers or jaws be tooled or machined to conform to the shape of the part being gripped.

GRIP FORCE CALCULATION EQUATION:

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

NOTE: Gripping force is defined as the maximum value at which the jaws will not move from their gripping position. The above figures are based on calculations and will vary slightly due to friction. Gripping force is proportional to input pressure.

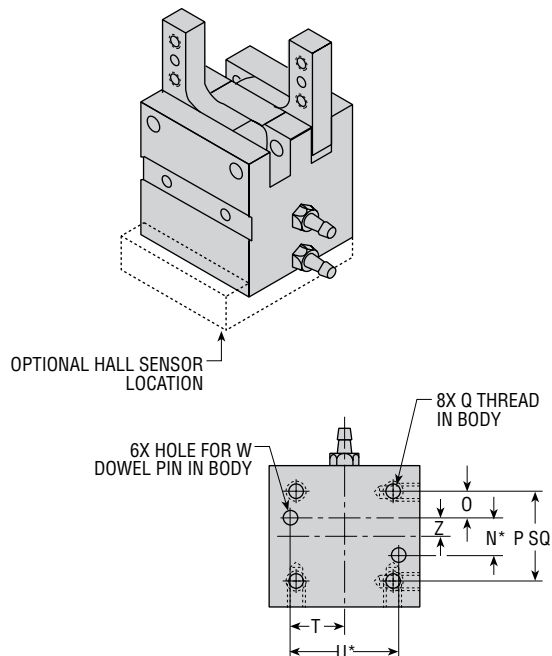


F = TOTAL GRIP FORCE

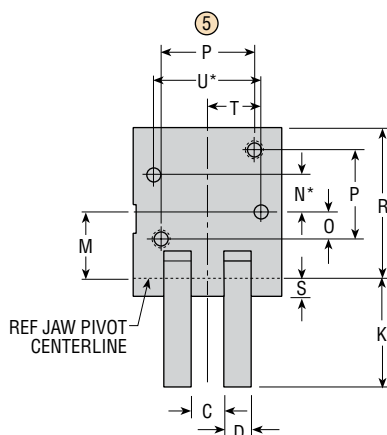
SIZING AND APPLICATION ASSISTANCE

See PHD Product Sizing Catalog for specific and complete sizing information. Online sizing assistance is available at: www.phdinc.com/apps/sizing

DIMENSIONS: SERIES 8400 ANGULAR GRIPPERS

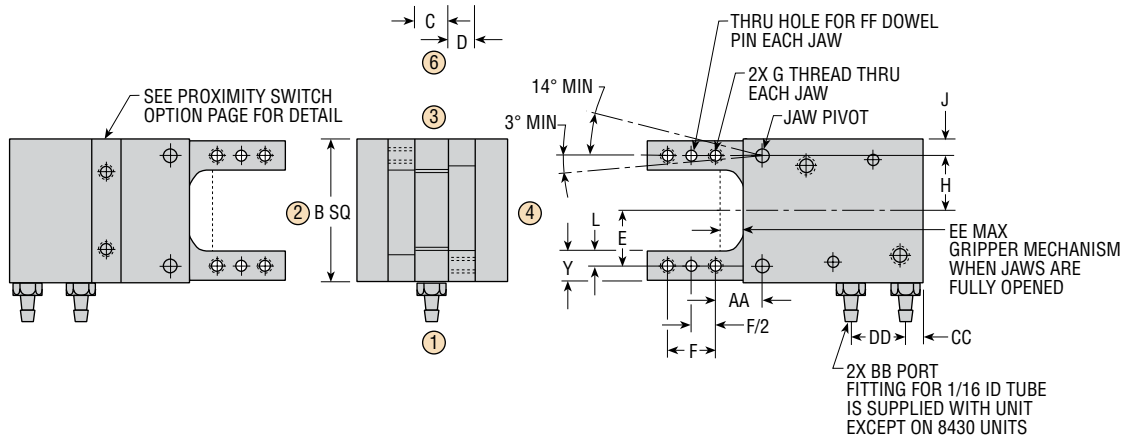


LETTER DIM	MODEL NUMBER			
	8400	8410	8420	8430
B	.700	.900	1.400	1.938
C	.196	.255	.316	.490
D	.125	.187	.250	.315
E	.250	.340	.540	.750
F	.230	.312	.440	.625
G	3-48	4-40	6-32	8-32
H	.270	.340	.540	.750
J	.080	.110	.160	.219
K	.570	.735	1.070	1.415
L	.098	.110	.150	.217
M	.400	.480	.650	.869
N*	.1870	.2500	.3750	.7000
O	.156	.175	.250	.275
P	.500	.600	.875	1.250
Q	4-40 x .156 DP	6-32x .187 DP	8-32 x .281 DP	10-24 x .375 DP
R	.966	1.219	1.480	2.054
S	.094	.156	.180	.256
T	.250	.343	.500	.688
U*	.5000	.6875	1.0000	1.3750
W	1/16	3/32	1/8	5/32
Y	.196	.220	.300	.433
Z	.093	.125	.187	.350
AA	.220	.290	.440	.562
BB	3-56	10-32	10-32	1/8 NPT
CC	.120	.145	.160	.364
DD	.300	.410	.500	.720
EE	.100	.140	.220	.360
FF	1/16	3/32	1/8	1/8



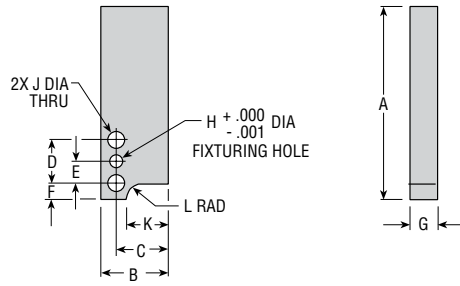
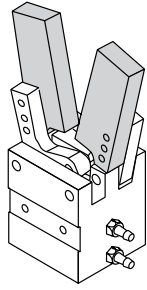
NOTES:

- 1) *TOLERANCE IS ± 0.0008
- 2) GRIPPER JAWS: SHOWN AT PARALLEL POSITION
- 3) JAW MOVEMENT SHOWS MINIMUM AMOUNT OF JAW ROTATION. JAWS MAY OPEN 3° OR CLOSE 5° BEYOND STATED MINIMUM ROTATION.
- 4) CIRCLED NUMBERS INDICATE POSITION



OPTIONS & ACCESSORIES: SERIES 8400 ANGULAR GRIPPERS

FINGER BLANK KITS



FINGER BLANK KITS: CONTAIN 2 FINGER BLANKS, 4 MTG SCREWS, & 2 DOWEL PINS
FINGERS MAY ALSO BE MOUNTED FACING OUTWARD

LETTER DIM	MODEL NUMBER			
	8400	8410	8420	8430
A	1.000	1.500	2.000	2.500
B	.340	.440	.690	.939
C	.240	.330	.530	.739
D	.230	.312	.440	.625
E	.115	.156	.220	.313
F	.095	.110	.170	.200
G	.187	.250	.312	.500
H	.0620	.0937	.1245	.1240
J	.109	.129	.162	.180
K	.180	.250	.420	.520
L	.094	.094	.156	.234

FINGER MATERIAL	FINGER BLANK KIT NO			
ALUMINUM	8573	8575	8577	18613
DELRIN AF	8574	8576	8578	18614

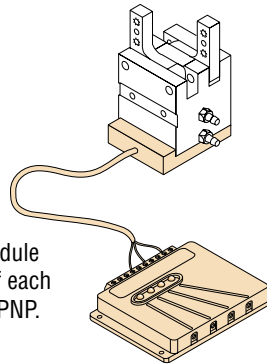
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HALL SENSOR READY (without sensor)

3

HALL SENSOR/TRANSDUCER (supplied)

PHD offers a solid-state sensor transducer option -3 for use with a Set Point Module for sensing four or more positions throughout the jaw travel. The Set Point Module is ordered separately and allows independent adjustment of each sensing position and is available for 4.5 to 24 VDC NPN or PNP.



SET POINT MODULES

SET POINT MODULE

PART NO.	DESCRIPTION
9800-01-0300	4.5-24 VDC, Sink Type Output
9800-01-0400	4.5-24 VDC, Source Type Output

See Switches and Sensors section for information.

HALL SENSOR KITS

MODEL NO.	SENSOR PART NO.
8400	10906-12
8410	10907-12
8420	10908-12
8430	18686-04

- 1) THE SENSOR MAY BE ROTATED TO ALLOW THE CABLE TO EXTEND FROM ANY SIDE OF UNIT EXCEPT THE PORT SIDE.
- 2) SENSOR MOUNTS TO UNIT USING BOTTOM MOUNTING HOLES. GRIPPERS MAY BE MOUNTED USING THESE HOLES. BUT THE SENSOR MUST BE SANDWICHED BETWEEN PLATE AND GRIPPER USING LONGER CUSTOMER SUPPLIED SCREWS.

5

PROXIMITY SWITCH READY

Provides unit ready for installation of kits for proximity switch mounting.

PROXIMITY SWITCHES

PART NO.	DESCRIPTION
18430-001-02	4 mm ROUND CURRENT SINKING (NPN)
18430-002-02	4 mm ROUND CURRENT SOURCING (PNP)

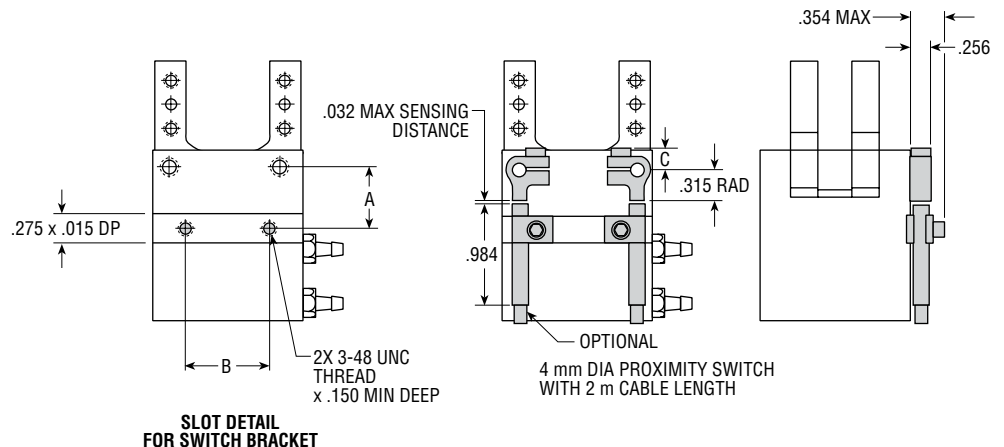
SEE SWITCHES AND SENSORS SECTION FOR DETAILS.

GRIPPER	KIT	LETTER DIMENSION		
		A	B	C
8410	19813	.594	.374	.223
8420	19814	.594	.770	.223
8430	19631	.594	1.190	.286

EACH PROXIMITY SWITCH KIT CONTAINS THE FOLLOWING ITEMS:

- 1 TARGET WITH SCREW
- 1 SWITCH BRACKET WITH SCREW

PROXIMITY SWITCHES ARE ORDERED SEPARATELY.



All dimensions are reference only unless specifically tolerated.

