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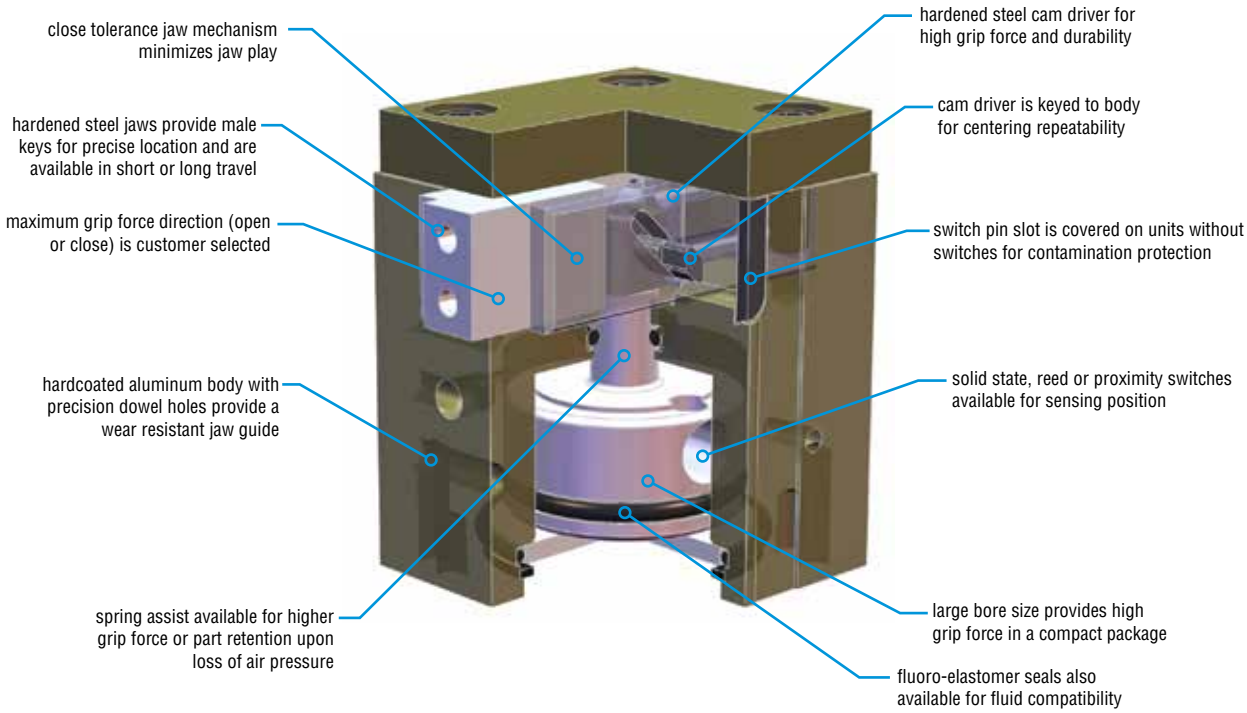
GRD

PARALLEL PNEUMATIC MINIATURE GRIPPER



Major Benefits

- High grip force to weight ratio
- Compact size
- Two body styles with a total of four sizes available in both imperial and metric versions
- Spring assist on open or close available in two different forces
- One day shipping
- 10 million cycles minimum rated life with standard seals (includes spring assist units)



ORDERING DATA: SERIES GRD PARALLEL GRIPPERS

TO ORDER SPECIFY:
Product Type, Series, Type, Style, Size,
Jaw Style, Design No., and Options.

PRODUCT TYPE
G - Gripper

SERIES

TYPE
D - Parallel
High Grip Force

BORE SIZE
3 - 20 mm Bore
4 - 25 mm Bore
5 - 32 mm Bore
6 - 40 mm Bore

DESIGN NO.

MAXIMUM FORCE REVERSED JAW MOVEMENT
0 - Maximum Force on Open
5 - Maximum Force on Close
(See Note 2.)

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

G	R	D	1	4	1	-	1	-	0	5	5	1

STYLE

IMPERIAL	METRIC
1 - Full Mounting	5 - Full Mounting
2 - Full Mounting Corrosion Resistant	6 - Full Mounting Corrosion Resistant
3 - Bottom Mount	7 - Bottom Mount
4 - Bottom Mount Corrosion Resistant	8 - Bottom Mount Corrosion Resistant

JAW STYLE
1 - Short Travel
2 - Long Travel
(See Note 1.)

SENSOR OPTION
0 - None
1 - Reed Switch Ready (For Series 5580 Kit)
2 - Solid State Switch Ready (For Series 5580 Kit)
6 - 4 mm External Proximity Switch Ready
7 - 8 mm External Proximity Switch Ready
8 - 12 mm External Proximity Switch Ready (See Note 1.)

SPRING OPTION
0 - None
MEDIUM FORCE
3 - Spring Assist Close
4 - Spring Assist Open
HEAVY FORCE
5 - Spring Assist Close
6 - Spring Assist Open
(See Notes 2 & 3.)

NOTES:
1) Long jaw travel and 12 mm external proximity switch ready options are not available on size 3 or size 4 units.
2) Spring assist available in same direction as maximum force movement only. (-x04x, -x06x, -x53x, -x55x) See option pages.
3) Spring assist options (-xx3x, -xx4x, -xx5x & -xx6x) are available with full mounting style units only and see page 4-20 for dimensional changes (GRD1xx, GRD2xx, GRD5xx & GRD6xx).
4) All switches and kits 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.

4 mm ROUND INDUCTIVE PROXIMITY SWITCHES

PART NO.	DESCRIPTION
18430-001-02	NPN (Sink) 2 meter cable
18430-002-02	PNP (Source) 2 meter cable

8 mm THREADED PROXIMITY SWITCHES

PART NO.	DESCRIPTION
51422-005-02	NPN (Sink) 2 meter cable
51422-006-02	PNP (Source) 2 meter cable

PART NO.	DESCRIPTION
61494	Switch Mounting Kit

Each mounting kit contains 1 proximity switch bracket and 1 mounting screw.

5580 SWITCH REPLACEMENT CHART

SWITCH KIT NUMBER	REPLACEMENT KIT INCLUDES	JC1 SWITCH DESCRIPTION
55802-1-02	JC1RDU-5 switch with adaptor	PNP or NPN DC Reed, 5 meter cable
55822-1	JC1RDU-K switch with adaptor	PNP or NPN DC Reed, Quick Connect
55803-1-02	JC1HDN-5 switch with adaptor	NPN (Sink), Radial Sensing, 5 meter cable
55823-1	JC1HDN-K switch with adaptor	NPN (Sink), Radial Sensing, Quick Connect
55804-1-02	JC1HDP-5 switch with adaptor	PNP (Source), Radial Sensing, 5 meter cable
55824-1	JC1HDP-K switch with adaptor	PNP (Source), Radial Sensing, Quick Connect

See 5580 catalog page for additional information.

CORDSETS

PART NO.	DESCRIPTION
63549-02	M8, 3 pin, Straight Female Connector, 2 meter cable
63549-05	M8, 3 pin, Straight Female Connector, 5 meter cable

Cordsets are ordered separately.

Designer's Resource myphd

CAD & Sizing Assistance

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

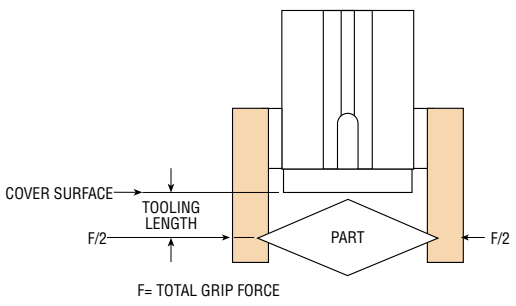
SPECIFICATIONS	SERIES GRD
OPERATING PRESSURE	
STANDARD UNIT	30 psi min to 100 psi max [2 bar min to 7 bar max] air
MEDIUM SPRING ASSIST UNIT	60 psi min to 100 psi max [4 bar min to 7 bar max] air
HEAVY SPRING ASSIST UNIT	72 psi min to 100 psi max [5 bar min to 7 bar max] air
OPERATING TEMPERATURE	-20°F to +180°F [-28°C to +82°C]
RATED LIFE	10 million cycles minimum with standard seals (including spring assist units)
GRIP REPEATABILITY	Within ±0.002 in [±0.05 mm] of original position
CYCLE TIME	See tables below
LUBRICATION	Factory lubricated for rated life
MAINTENANCE	Field repairable

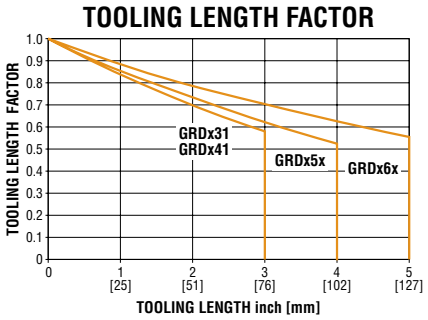
MODEL NO.	MIN. TOTAL JAW TRAVEL		TOTAL GRIP FORCE AT 87 psi [6 bar]		GRIPPER WEIGHT		CLOSE OR OPEN TIME 87 psi [6 bar]	MINIMUM OPERATING PRESSURE		DISPLACEMENT		GRIP FORCE FACTOR G_F MAXIMUM DIRECTION		GRIP FORCE FACTOR G_F MINIMUM DIRECTION	
	in	mm	lb	N	lb	kg	sec	psi	bar	in^3	cm^3	IMPERIAL	METRIC	IMPERIAL	METRIC
GRDx31	.147	3.75	33	147	0.25	0.11	.02	30	2	.07	1	.38	24.5	.33	21.3
GRDx41	.294	7.5	40	178	0.38	0.17	.02	30	2	.12	2	.46	29.7	.42	27.1
GRDx51	.275	7.0	87	387	0.66	0.30	.04	30	2	.25	4	1.00	64.5	.90	58.1
GRDx52	.462	11.75	54	240	0.72	0.33	.04	30	2	.25	4	.62	40.0	.55	35.5
GRDx61	.383	9.75	136	604	1.41	0.64	.06	30	2	.54	9	1.56	100.6	1.42	91.6
GRDx62	.659	16.75	91	406	1.56	0.71	.06	30	2	.54	9	1.05	67.7	.95	61.3

MODEL NO.	HEAVY SPRING S_F SPRING GRIP FORCE		HEAVY SPRING GRIPPER WEIGHT		HEAVY SPRING CLOSE OR OPEN TIME 87 psi [6 bar] in sec			MEDIUM SPRING S_F SPRING GRIP FORCE		MEDIUM SPRING GRIPPER WEIGHT		MEDIUM SPRING CLOSE OR OPEN TIME 87 psi [6 bar] in sec		
	lb	N	lb	kg	AGAINST SPRING	WITH SPRING	SPRING ONLY	lb	N	lb	kg	AGAINST SPRING	WITH SPRING	SPRING ONLY
GRDx31	15	67	0.34	0.16	.03	.02	.03	12	55	0.33	0.15	.03	.02	.04
GRDx41	20	87	0.54	0.25	.03	.02	.03	16	71	0.53	0.24	.03	.02	.04
GRDx51	42	187	0.97	0.44	.06	.03	.05	35	155	0.94	0.43	.05	.04	.07
GRDx52	26	117	1.03	0.47	.06	.03	.05	22	96	1.00	0.45	.05	.04	.07
GRDx61	66	294	2.03	0.92	.10	.05	.08	55	242	1.98	0.90	.08	.06	.10
GRDx62	44	196	2.19	0.99	.10	.05	.08	37	163	2.14	0.97	.08	.06	.10

TOOLING LENGTH FACTOR

Tooling should be designed so that the grip point is as close to the cover surface as possible. As the grip point is moved away from the body surface, the applied moment causes jaw friction to increase, resulting in reduced effective grip force. The Grip Force Factor (G_F) values given above are for zero tooling length (body surface).





GRIP FORCE CALCULATION EQUATIONS:

IMPERIAL:

TOTAL GRIP FORCE [lb] = (Pressure [psi] x G_F) x Tooling Length Factor
TOTAL GRIP FORCE WITH SPRINGS [lb] = ((Pressure [psi] x G_F) ± S_F [lb]) x Tooling Length Factor

METRIC:

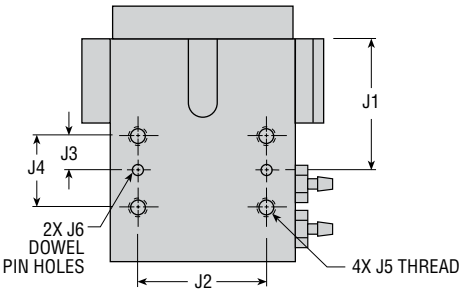
TOTAL GRIP FORCE [N] = (Pressure [bar] x G_F) x Tooling Length Factor
TOTAL GRIP FORCE WITH SPRINGS [N] = ((Pressure [bar] x G_F) ± S_F [N]) x Tooling Length Factor

UNIT SIZING ONLINE

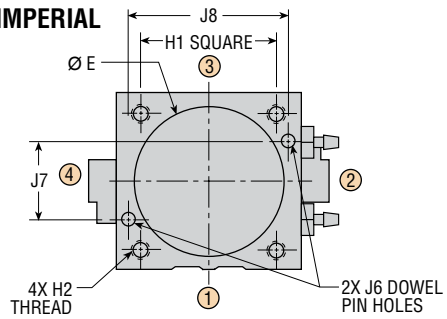
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Use PHD's free online Product Sizing Application or view the Product Sizing Catalog at: www.phdinc.com/apps/sizing

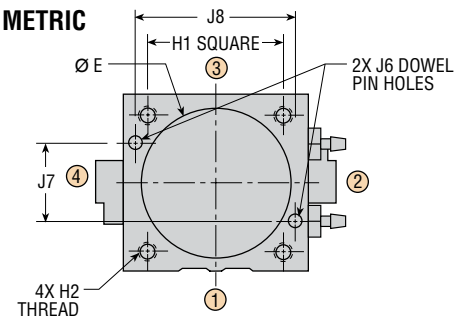
DIMENSIONS: SERIES GRD GRIPPERS, FULL MOUNTING

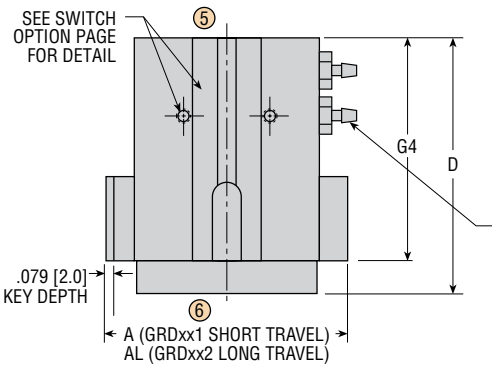


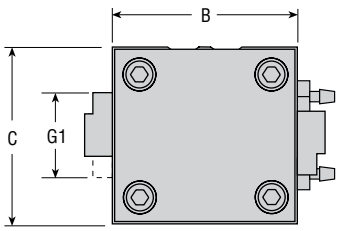
IMPERIAL

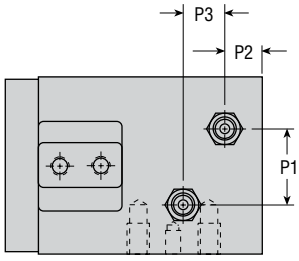


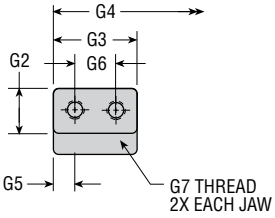
METRIC









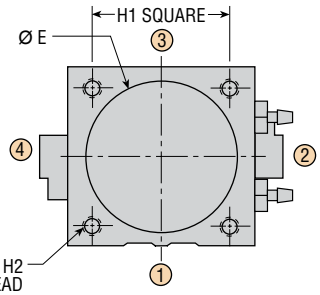


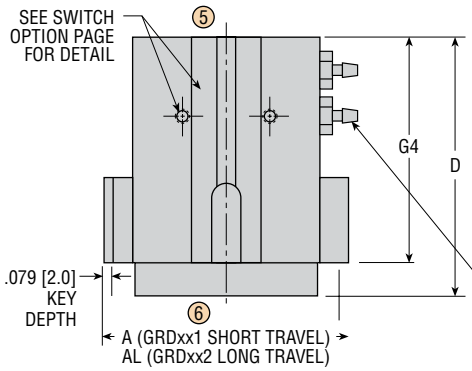
LETTER DIM.	MODEL NO. GRDx31 in	GRDx31 mm	GRDx41 in	GRDx41 mm	GRDx5x in	GRDx5x mm	GRDx6x in	GRDx6x mm
NOMINAL JAW TRAVEL								
SHORT	.187	4.75	.335	8.5	.315	8	.423	10.75
LONG	—	—	—	—	.502	12.75	.699	17.75
A CLOSED **	1.368	34.75	1.851	47.0	1.870	47.5	2.392	60.75
A OPEN **	1.515	38.5	2.145	54.5	2.145	54.5	2.775	70.5
AL CLOSED **	—	—	—	—	2.412	61.25	2.933	74.5
AL OPEN **	—	—	—	—	2.874	73.0	3.592	91.25
B	1.141	29.0	1.457	37.0	1.654	42.0	2.126	54.0
C	1.063	27.0	1.378	35.0	1.575	40.0	1.969	50.0
D	1.922	48.75	1.909	48.5	2.303	58.5	2.972	75.5
E*	.866 x .079 DP	22.0 x 2.0 DP	1.104 x .079 DP	28.0 x 2.0 DP	1.341 x .082 DP	34.0 x 2.0 DP	1.656 x .087 DP	42.0 x 2.25 DP
G1	.551	14.0	.551	14.0	.787	20.0	1.024	26.0
G2*	.2756	7.0	.2756	7.0	.3940	10.0	.5118	13.0
G3*	.4921	12.5	.4921	12.5	.748	19.0	.9842	25.0
G4	1.664	42.25	1.651	42.0	2.006	51.0	2.616	66.5
G5	.121	3.0	.121	3.0	.186	4.5	.180	6.5
G6	.250	6.5	.250	6.5	.375	10.0	.625	12.0
G7	6-32 x .280 DP	M3 x 0.5 x 6.0 DP	6-32 x .280 DP	M3 x 0.5 x 6.0 DP	8-32 x .320 DP	M4 x 0.7 x 8.0 DP	10-24 x .380 DP	M5 x 0.8 x 10.0 DP
H1	.846	21.5	1.102	28.0	1.220	31.0	1.535	39.0
H2	4-40 x .220 DP	M3 x 0.5 x 6.0 DP	8-32 x .330 DP	M4 x 0.7 x 8.0 DP	10-24 x .375 DP	M5 x 0.8 x 10.0 DP	1/4-20 x .500 DP	M6 x 1.0 x 12.0 DP
J1	.886	22.5	.906	23.0	1.201	30.5	1.614	41.0
J2*	.8465	21.50	1.1024	28.00	1.2205	31.00	1.5354	39.0
J3	.276	7.0	.296	7.5	.315	8.0	.394	10.0
J4	.551	14.0	.591	15.0	.630	16.0	.787	20.0
J5	4-40 x .220 DP	M3 x 0.5 x 6.0 DP	8-32 x .330 DP	M4 x 0.7 x 8.0 DP	10-24 x .281 DP	M5 x 0.8 x 7.5 DP	1/4-20 x .375 DP	M6 x 1.0 x 9.0 DP
J6*	.0634	2.0	.1259	3.0	.1259	3.0	.1884	4.0
J7*	.5118	13.00	.7480	19.00	.8661	22.00	1.0630	27.00
J8*	.9843	25.00	1.2205	31.00	1.4173	36.00	1.8504	47.0
P1	.492	12.5	.492	12.5	.669	17.0	.669	17.0
P2	.326	8.25	.332	8.5	.333	8.5	.392	10.0
P3	.492	12.5	.472	12.0	.531	13.5	.669	17.0
P4	10-32	M5 x 0.8	10-32	M5 x 0.8	10-32	M5 x 0.8	10-32	M5 x 0.8
P5	1/16	3.0	1/16	3.0	1/16	3.0	1/16	3.0

NOTES:

1) NUMBERS IN [ ] ARE mm
2) *TOLERANCE FOR DIMENSIONS: E = ± .005 [± 0.13]
   G2 = ± .0006 [± 0.015] SIZE 3x, 4x G2 = ± .0007 [± 0.018] SIZE 5x G2 = ± .0008 [± 0.020] SIZE 6x
   G3 = ± .0003 [± 0.007]
   J2 (BETWEEN DOWEL PIN HOLES) = ± .0008 [± 0.02] J6 = ± .0005 [H7] J7 AND J8 = ± .0008 [± 0.02]
3) CIRCLED NUMBERS INDICATE SURFACE POSITIONS
4) ** A OR AL CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION.
   A OR AL OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION.
5) SEE ONLINE PAGE 4-22-4 FOR DIMENSIONAL CHANGES FOR SPRING OPTIONS -xx3x, -xx4x, -xx5x, -xx6x.

All dimensions are reference only unless specifically toleranced.

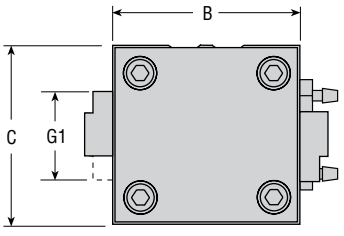


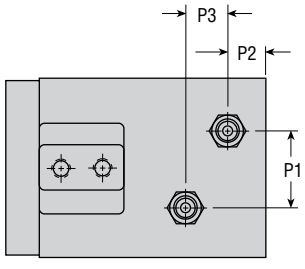


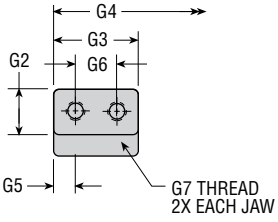
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A CLOSED**	1.368	34.75	1.851	47.0	1.870	47.5	2.392	60.75
A OPEN**	1.515	38.5	2.145	54.5	2.145	54.5	2.775	70.5
AL CLOSED**	—	—	—	—	2.412	61.25	2.933	74.5
AL OPEN**	—	—	—	—	2.874	73.0	3.592	91.25
B	1.141	29.0	1.457	37.0	1.654	42.0	2.126	54.0
C	1.063	27.0	1.378	35.0	1.575	40.0	1.969	50.0
D	1.922	48.75	1.909	48.5	2.303	58.5	2.972	75.5
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G1	.551	14.0	.551	14.0	.787	20.0	1.024	26.0
G2*	.2756	7.0	.2756	7.0	.3940	10.0	.5118	13.0
G3*	.4921	12.5	.4921	12.5	.7480	19.0	.9842	25.0
G4	1.664	42.25	1.651	42.0	2.006	51.0	2.616	66.5
G5	.121	3.0	.121	3.0	.186	4.5	.180	6.5
G6	.250	6.5	.250	6.5	.375	10.0	.625	12.0
G7	6-32 x .280 DP	M3 x 0.5 x 6.0 DP	6-32 x .280 DP	M3 x 0.5 x 6.0 DP	8-32 x .320 DP	M4 x 0.7 x 8.0 DP	10-24 x .380 DP	M5 x 0.8 x 10.0 DP
H1	.846	21.5	1.102	28.0	1.220	31.0	1.535	39.0
H2	4-40 x .220 DP	M3 x 0.5 x 6.0 DP	8-32 x .330 DP	M4 x 0.7 x 8.0 DP	10-24 x .375 DP	M5 x 0.8 x 10.0 DP	1/4-20 x .500 DP	M6 x 1.0 x 12.0 DP
P1	.492	12.5	.492	12.5	.669	17.0	.669	17.0
P2	.326	8.25	.332	8.5	.333	8.5	.392	10.0
P3	.492	12.5	.472	12.0	.531	13.5	.669	17.0
P4	10-32	M5 x 0.8	10-32	M5 x 0.8	10-32	M5 x 0.8	10-32	M5 x 0.8
P5	1/16	3.0	1/16	3.0	1/16	3.0	1/16	3.0

NOTES:

1) NUMBERS IN [ ] ARE mm
2) *TOLERANCE FOR DIMENSIONS: E = ± .005 [± 0.13]
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Designer's Resource myphd

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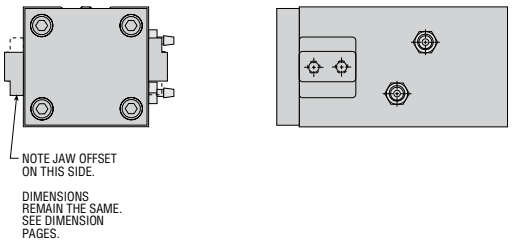
1 REED SWITCH READY

2 SOLID STATE SWITCH READY

Options -1 and -2 equip the gripper with magnets for use with PHD Series 5580 Switch Kits. See Switches and Sensors section for complete switch specifications. Switches and mounting kits must be ordered separately.

5 MAXIMUM FORCE IN CLOSE DIRECTION (-x5xx)

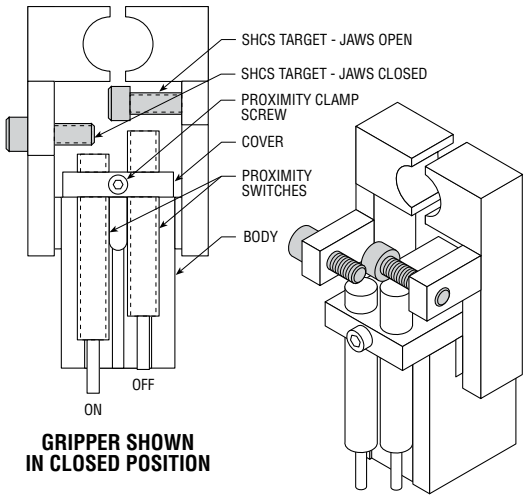
This option changes the maximum force of the jaws from the open direction to the closed direction. This switches or changes the jaw offset 180° from standard.



6 4 mm EXTERNAL PROXIMITY SWITCH READY (-6xxx)

This option equips the gripper with a cover and hardware to provide for the mounting of 4 mm round metal sensing proximity switches. The user is required to design and mount targets for the switch to sense.

EXAMPLE OF TARGET CREATED BY CUSTOMER FOR EXTERNAL PROXIMITY SWITCHES



GRIPPER SHOWN IN CLOSED POSITION

7 8 mm EXTERNAL PROXIMITY SWITCH READY (-7xxx)

This option equips the gripper with a cover and hardware to provide for the mounting of 8 mm threaded metal sensing proximity switches. The user is required to design and mount targets for the switch to sense.

8 12 mm EXTERNAL PROXIMITY SWITCH READY (-8xxx)

This option equips the gripper with a cover and hardware to provide for the mounting of 12 mm threaded metal sensing proximity switches. The user is required to design and mount targets for the switch to sense.

3&4 MEDIUM FORCE SPRING ASSIST (-xx3x) or (-xx4x)

5&6 HEAVY FORCE SPRING ASSIST (-xx5x) or (-xx6x)

(Full mounting style only) Springs can maintain spring grip force if air pressure is lost or increase grip force in one specific direction when used with air pressure. They can open or close the gripper without air pressure. Spring life in excess of 10 million cycles can be expected. For minimum operating pressures and spring forces, see table on page 4-19.

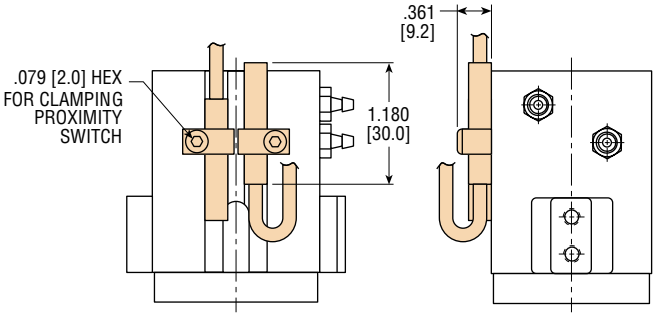
NOTE: Spring assist option may affect dimensions.

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.

1 REED SWITCH READY

2 SOLID STATE SWITCH READY



Options -1 and -2 equip the gripper with magnets for use with PHD Series 5580 Switch Kits. See Switches and Sensors section for complete switch specifications. Switches and mounting kits must be ordered separately.

5580 SWITCH REPLACEMENT CHART

SWITCH KIT NUMBER	REPLACEMENT KIT INCLUDES	JC1 SWITCH DESCRIPTION
55802-1-02	JC1RDU-5 switch with adaptor	PNP or NPN DC Reed, 5 meter cable
55822-1	JC1RDU-K switch with adaptor	PNP or NPN DC Reed, Quick Connect
55803-1-02	JC1HDN-5 switch with adaptor	NPN (Sink), Radial Sensing, 5 meter cable
55823-1	JC1HDN-K switch with adaptor	NPN (Sink), Radial Sensing, Quick Connect
55804-1-02	JC1HDP-5 switch with adaptor	PNP (Source), Radial Sensing, 5 meter cable
55824-1	JC1HDP-K switch with adaptor	PNP (Source), Radial Sensing, Quick Connect

See 5580 catalog page for additional information.

PART NO.	DESCRIPTION
61494	Switch Mounting Kit

Each mounting kit contains 1 proximity switch bracket and 1 mounting screw.

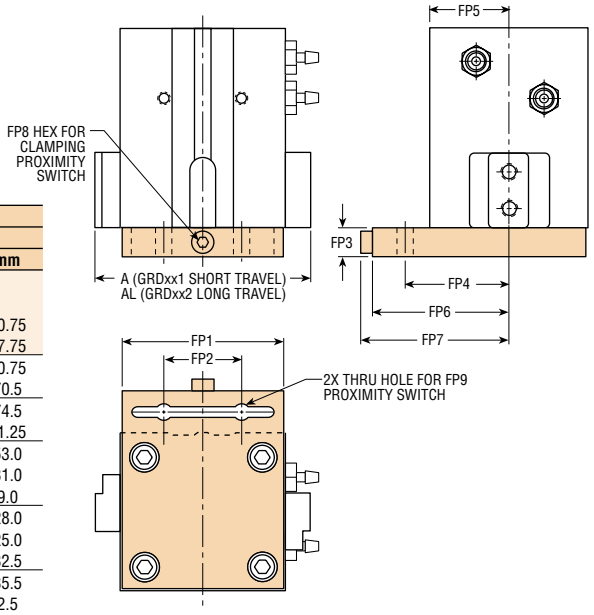
CORDSETS

PART NO.	DESCRIPTION
63549-02	M8, 3 pin, Straight Female Connector, 2 meter cable
63549-05	M8, 3 pin, Straight Female Connector, 5 meter cable

Cordsets are ordered separately.

6 4 mm EXTERNAL PROXIMITY SWITCH READY (-6xxx)

This option equips the gripper with a cover and hardware to provide for the mounting of 4 mm round metal sensing proximity switches. The user is required to design and mount targets for the switch to sense. See Switches and Sensors section for complete switch specifications.



LETTER DIM.	MODEL NO. GRDx31 in	GRDx31 mm	GRDx41 in	GRDx41 mm	GRDx5x in	GRDx5x mm	GRDx6x in	GRDx6x mm
NOMINAL JAW TRAVEL								
SHORT	.187	4.75	.335	8.5	.315	8.0	.423	10.75
LONG	—	—	—	—	.502	12.75	.699	17.75
A CLOSED*	1.368	34.75	1.851	47.0	1.870	47.5	2.392	60.75
A OPEN*	1.515	38.5	2.145	54.5	2.145	54.5	2.775	70.5
AL CLOSED*	—	—	—	—	2.412	61.25	2.933	74.5
AL OPEN*	—	—	—	—	2.874	73.0	3.592	91.25
FP1	1.122	28.5	1.417	36.0	1.614	41.0	2.087	53.0
FP2	.551	14.0	.630	16.0	.748	19.0	1.220	31.0
FP3	.256	6.5	.256	6.5	.295	7.5	.354	9.0
FP4	.650	16.5	.807	20.5	.906	23.0	1.102	28.0
FP5	.532	13.5	.689	17.5	.788	20.0	.984	25.0
FP6	.846	21.5	.984	25.0	1.083	27.5	1.280	32.5
FP7	.964	24.5	1.102	28.0	1.201	30.5	1.398	35.5
FP8	.098	2.5	.098	2.5	.098	2.5	.098	2.5
FP9	4 mm	4 mm	4 mm	4 mm	4 mm	4 mm	4 mm	4 mm

NOTES:

1) PROXIMITY SWITCHES MUST BE ORDERED SEPARATELY
2) HAND TIGHTEN CLAMP SHCS UNTIL PROXIMITY SWITCHES NO LONGER MOVE
3) * A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION. A OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION.

4 mm ROUND INDUCTIVE PROXIMITY SWITCHES

PART NO.	DESCRIPTION
18430-001-02	NPN (Sink) 2 meter cable
18430-002-02	PNP (Source) 2 meter cable

All dimensions are reference only unless specifically toleranced.

7 8 mm EXTERNAL PROXIMITY SWITCH READY (-7xxx)

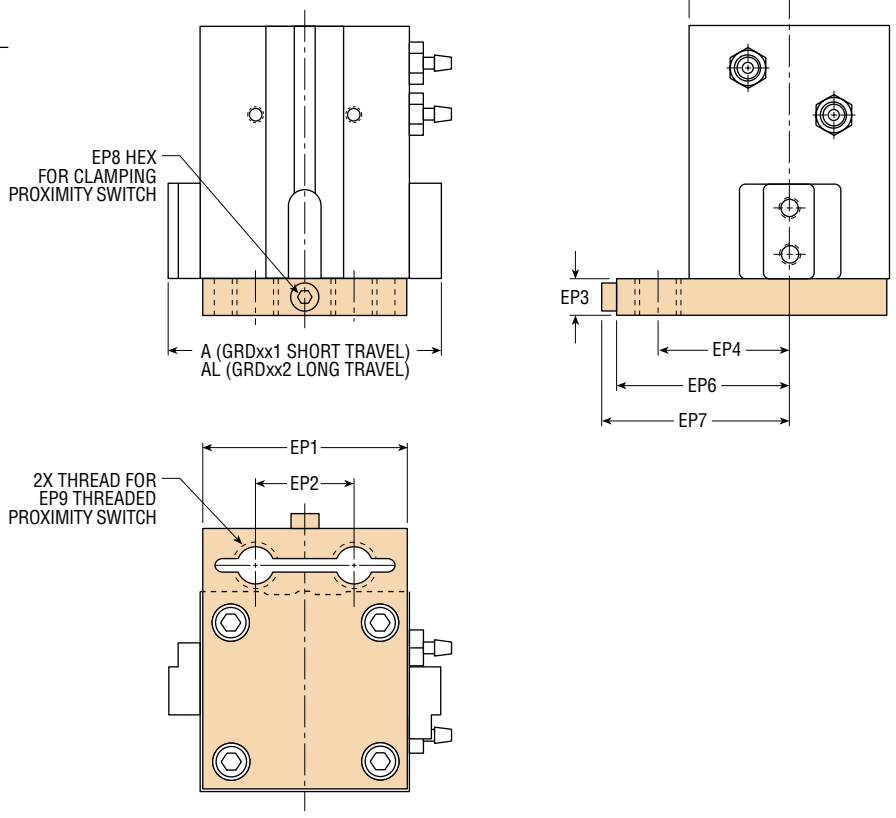
This option equips the gripper with a cover and hardware to provide for the mounting of 8 mm threaded metal sensing proximity switches. The user is required to design and mount targets for the switch to sense. See Switches and Sensors section for complete switch specifications.

LETTER DIM.	MODEL NO. GRDx31 in	GRDx31 mm	GRDx41 in	GRDx41 mm	GRDx5x in	GRDx5x mm	GRDx6x in	GRDx6x mm
NOMINAL JAW TRAVEL								
SHORT	.187	4.75	.335	8.5	.315	8.0	.423	10.75
LONG	—	—	—	—	.502	12.75	.699	17.75
A CLOSED*	1.368	34.75	1.851	47.0	1.870	47.5	2.392	60.75
A OPEN*	1.515	38.5	2.145	54.5	2.145	54.5	2.775	70.5
AL CLOSED*	—	—	—	—	2.412	61.25	2.933	74.5
AL OPEN*	—	—	—	—	2.874	73.0	3.592	91.25
EP1	1.122	28.5	1.417	36.0	1.614	41.0	2.087	53.0
EP2	.551	14.0	.630	16.0	.748	19.0	1.220	31.0
EP3	.256	6.5	.256	6.5	.295	7.5	.354	9.0
EP4	.718	18.25	.866	22.0	.984	25.0	1.180	30.0
EP5	.532	13.5	.689	17.5	.788	20.0	.984	25.0
EP6	.935	23.75	1.063	27.0	1.279	32.5	1.418	36.0
EP7	1.053	26.75	1.181	30.0	1.397	35.5	1.535	39.0
EP8	.098	2.5	.098	2.5	.098	2.5	.098	2.5
EP9	M8 x 1.0	M8 x 1.0	M8 x 1.0	M8 x 1.0	M8 x 1.0	M8 x 1.0	M8 x 1.0	M8 x 1.0

NOTES:
1) PROXIMITY SWITCHES MUST BE ORDERED SEPARATELY
2) HAND TIGHTEN CLAMP SHCS UNTIL PROXIMITY SWITCHES NO LONGER MOVE
3)* A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION. A OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION.

8 mm THREADED PROXIMITY SWITCHES

PART NO.	DESCRIPTION
51422-005-02	NPN (Sink) 2 meter cable
51422-006-02	PNP (Source) 2 meter cable



All dimensions are reference only unless specifically toleranced.

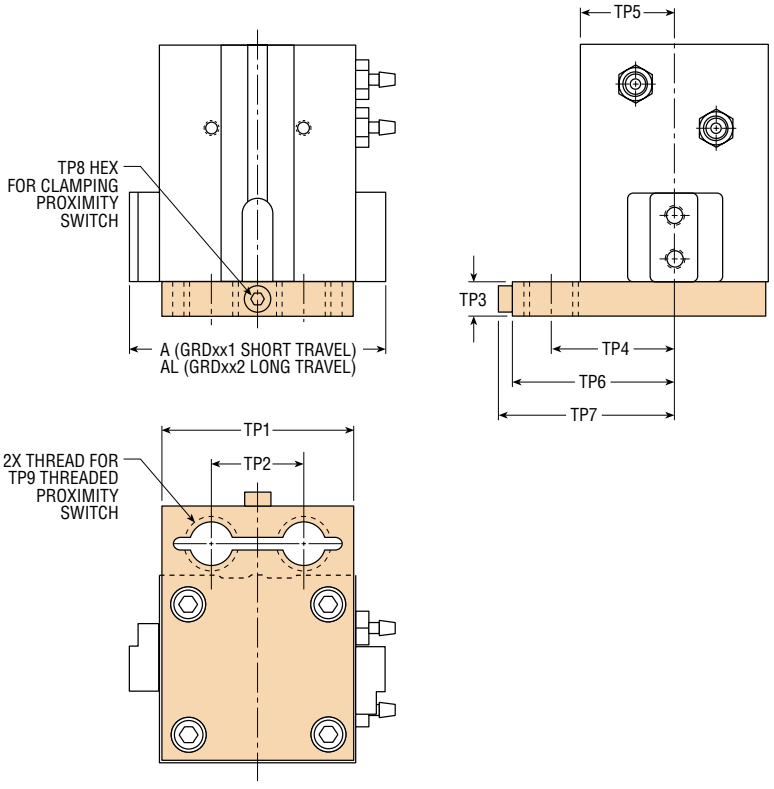
8 12 mm EXTERNAL PROXIMITY SWITCH READY (-8xxx)

This option equips the gripper with a cover and hardware to provide for the mounting of 12 mm threaded metal sensing proximity switches. The user is required to design and mount targets for the switch to sense. See the example below. See Switches and Sensors section for complete switch specifications.

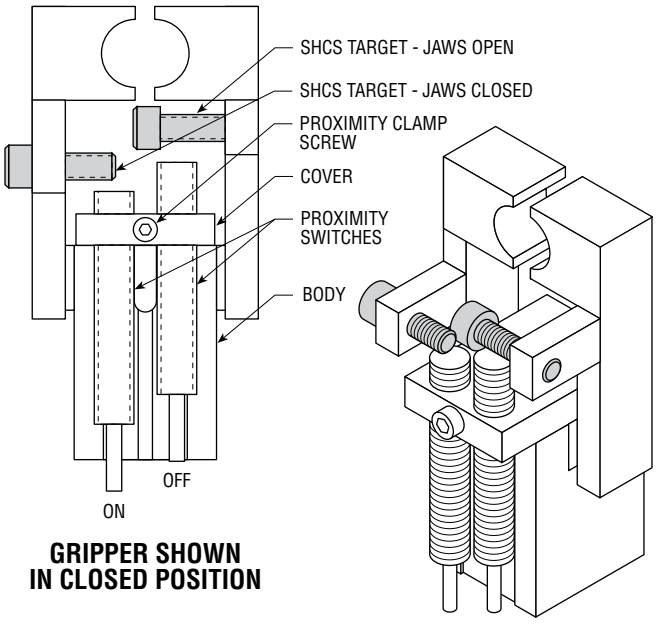
LETTER DIM.	MODEL NO. GRDx5x		GRDx6x	
		mm		mm
NOMINAL JAW TRAVEL				
SHORT	.315	8.0	.423	10.75
LONG	.502	12.75	.699	17.75
A CLOSED*	1.870	47.5	2.392	60.75
A OPEN*	2.145	54.5	2.775	70.5
AL CLOSED*	2.412	61.25	2.933	74.5
AL OPEN*	2.874	73.0	3.592	91.25
TP1	1.614	41.0	2.087	53.0
TP2	.748	19.0	1.220	31.0
TP3	.295	7.5	.354	9.0
TP4	1.063	27.0	1.260	32.0
TP5	.788	20.0	.984	25.0
TP6	1.378	35.0	1.574	40.0
TP7	1.496	38.0	1.692	43.0
TP8	.098	2.5	.098	2.5
TP9	M12 x 1.0	M12 x 1.0	M12 x 1.0	M12 x 1.0

NOTES:

1) PROXIMITY SWITCHES MUST BE ORDERED SEPARATELY
2) HAND TIGHTEN CLAMP SHCS UNTIL PROXIMITY SWITCHES NO LONGER MOVE
3) * A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION. A OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION.



EXAMPLE OF TARGET CREATED BY CUSTOMER FOR EXTERNAL PROXIMITY SWITCHES



GRIPPER SHOWN IN CLOSED POSITION

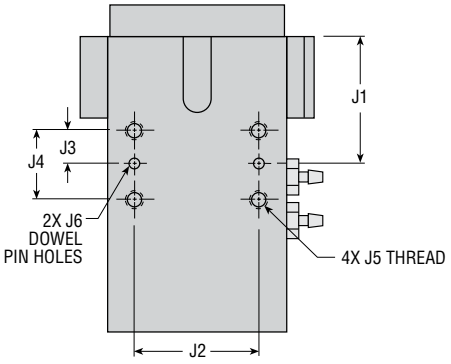
All dimensions are reference only unless specifically toleranced.

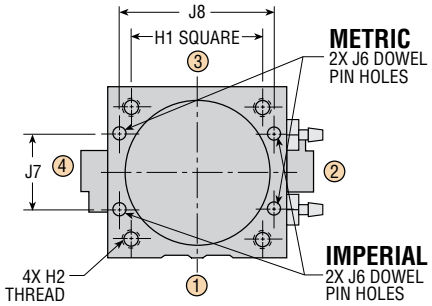
3 & 4 **MEDIUM FORCE SPRING ASSIST (-xx3x) or (-xx4x)**

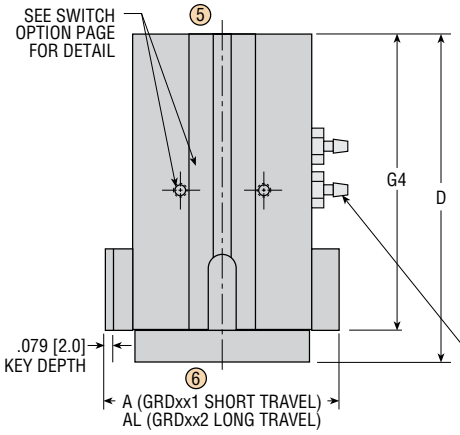
5 & 6 **HEAVY FORCE SPRING ASSIST (-xx5x) or (-xx6x)**

(Full mounting style only) Springs can maintain spring grip force if air pressure is lost or increase grip force in one specific direction when used with air pressure. They can open or close the gripper without air pressure. Spring life in excess of 10 million cycles can be expected. For minimum operating pressures and spring forces, see table on page 4-35.

NOTE: Spring assist option may affect dimensions.

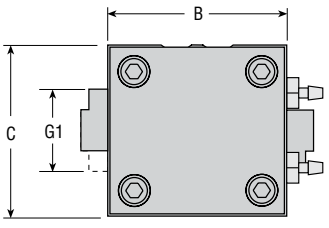


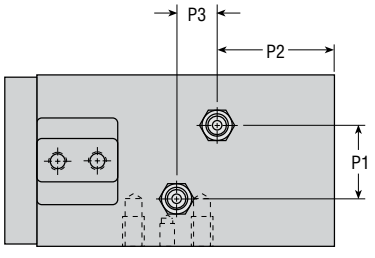


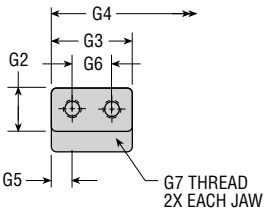


LETTER DIM.	MODEL NO. GRDx3x in	GRDx3x mm	GRDx4x in	GRDx4x mm	GRDx5x in	GRDx5x mm	GRDx6x in	GRDx6x mm
NOMINAL JAW TRAVEL								
SHORT	.187	4.75	.335	8.5	.315	8	.423	10.75
LONG	—	—	—	—	.502	12.75	.699	17.75
A CLOSED **	1.368	34.75	1.851	47.0	1.870	47.5	2.392	60.75
A OPEN **	1.515	38.5	2.145	54.5	2.145	54.5	2.775	70.5
AL CLOSED **	—	—	—	—	2.412	61.25	2.933	74.5
AL OPEN **	—	—	—	—	2.874	73.0	3.592	91.25
B	1.141	29.0	1.457	37.0	1.654	42.0	2.126	54.0
C	1.063	27.0	1.378	35.0	1.575	40.0	1.969	50.0
D	2.500	63.5	2.599	66.0	3.149	80.0	4.094	104.0
G1	.551	14.0	.551	14.0	.787	20.0	1.024	26.0
G2*	.2756	7.0	.2756	7.0	.3940	10.0	.5118	13.0
G3*	.4921	12.5	.4921	12.5	.748	19.0	.9842	25.0
G4	2.242	57.0	2.341	59.5	2.852	72.5	3.738	95.0
G5	.121	3.0	.121	3.0	.186	4.5	.180	6.5
G6	.250	6.5	.250	6.5	.375	10.0	.625	12.0
G7	6-32 x .280 DP	M3 x 0.5 x 6.0 DP	6-32 x .280 DP	M3 x 0.5 x 6.0 DP	8-32 x .328 DP	M4 x 0.7 x 8.0 DP	10-24 x .380 DP	M5 x 0.8 x 10.0 DP
H1	.846	21.5	1.102	28.0	1.220	31.0	1.535	39.0
H2	4-40 x .220 DP	M3 x 0.5 x 6.0 DP	8-32 x .330 DP	M4 x 0.7 x 8.0 DP	10-24 x .375 DP	M5 x 0.8 x 10.0 DP	1/4-20 x .500 DP	M6 x 1.0 x 12.0 DP
J1	.886	22.5	.906	23.0	1.201	30.50	1.614	41.0
J2*	.8465	21.50	1.1024	28.00	1.2205	31.00	1.5354	39.0
J3	.276	7.0	.296	7.5	.315	8.0	.394	10.0
J4	.551	14.0	.591	15.0	.630	16.0	.787	20.0
J5	4-40 x .220 DP	M3 x 0.5 x 6.0 DP	8-32 x .330 DP	M4 x 0.7 x 8.0 DP	10-24 x .281 DP	M5 x 0.8 x 7.5 DP	1/4-20 x .375 DP	M6 x 1.0 x 9.0 DP
J6*	.0634	2.0	.1259	3.0	.1259	3.0	.1884	4.0
J7*	.5118	13.00	.7480	19.00	.8661	22.00	1.0630	27.00
J8*	.9843	25.00	1.2205	31.00	1.4173	36.00	1.8504	47.0
P1	.492	12.5	.492	12.5	.669	17.0	.669	17.0
P2	.904	23.0	1.022	26.0	1.179	26.0	1.514	38.5
P3	.492	12.5	.472	12.0	.531	13.5	.669	17.0
P4	10-32	M5 x 0.8	10-32	M5 x 0.8	10-32	M5 x 0.8	10-32	M5 x 0.8
P5	1/16	3.0	1/16	3.0	1/16	3.0	1/16	3.0

NOTES:
1) NUMBERS IN [ ] ARE mm
2) *TOLERANCE FOR DIMENSIONS:
   G2 = ± .0006 [± 0.015] SIZE 3x, 4x G2 = ± .0007 [± 0.018] SIZE 5x G2 = ± .0008 [± 0.020] SIZE 6x
   G3 = ± .0003 [± 0.007] J2 (BETWEEN DOWEL PIN HOLES) = ± .0008 [± 0.02]
   J6 = ± .0005 [H7] J7 AND J8 = ± .0008 [± 0.02]
3) CIRCLED NUMBERS INDICATE SURFACE POSITIONS
4) **A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION.
   A OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION.



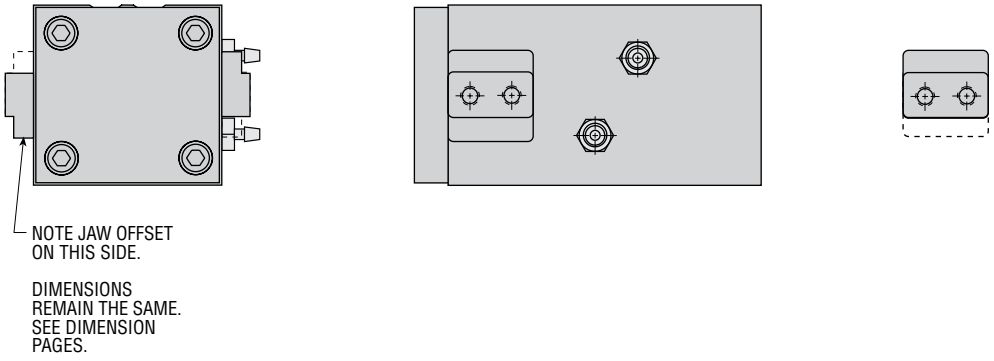




All dimensions are reference only unless specifically toleranced.

5 MAXIMUM FORCE IN CLOSE DIRECTION (-x5xx)

This option changes the maximum force of the jaws from the open direction to the closed direction. This switches or changes the jaw offset 180° from standard.



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