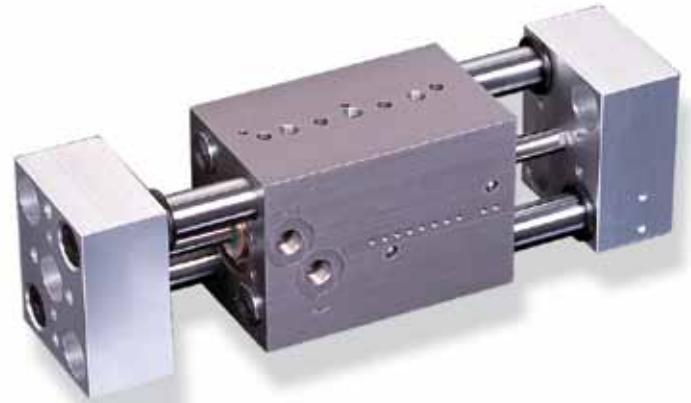
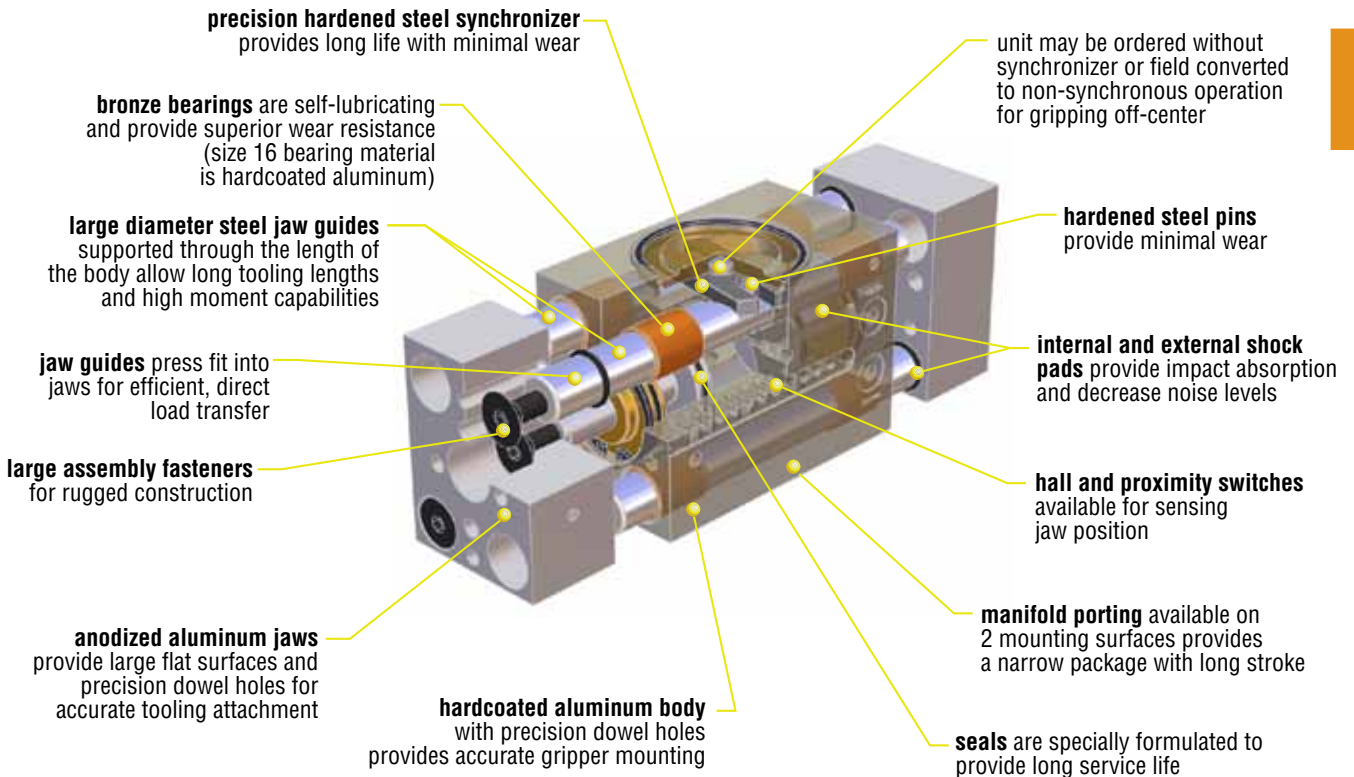


# GRW

**LOW PROFILE WITH  
MINIMAL JAW PLAY**



**U.S. PATENT #6598918  
INTERNATIONAL PATENT PENDING**



GRW

## Major Benefits

- Units can be ordered without synchronous jaw motion or converted in the field
- Large diameter jaw guides provide superior jaw stability and high moment capacities
- Manifold porting options
- Two standard mounting surfaces
- Five sizes available in both imperial and metric versions
- 1-2 day shipping
- 6 million cycles minimum rated life

## Industry Uses

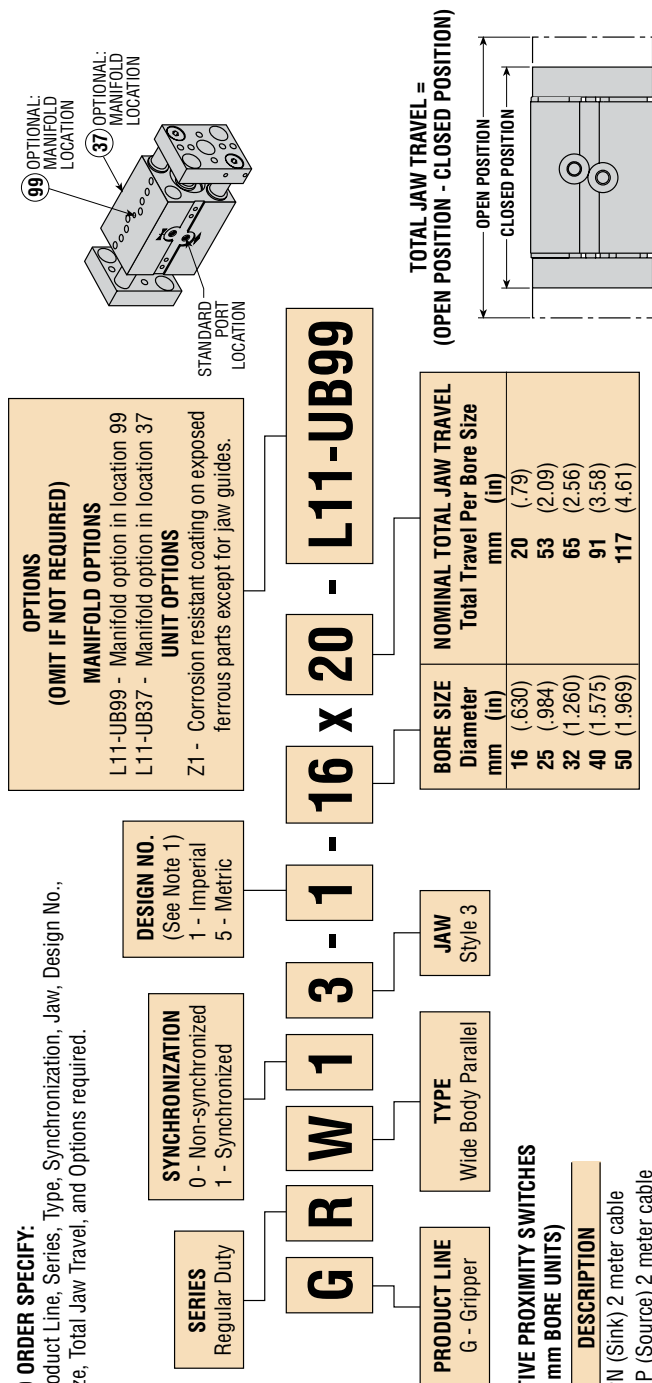
- Assembly machine builders
- Powdered metal
- Bearing manufacturing
- Automotive
- Light bulb manufacturing
- Robotics
- Vehicle lighting equipment
- Material handling

# ORDERING DATA: SERIES GRW GRIPPERS

GRW

## TO ORDER SPECIFY:

Product Line, Series, Type, Synchronization, Jaw, Design No., Size, Total Jaw Travel, and Options required.



## 4 mm ROUND INDUCTIVE PROXIMITY SWITCHES (16, 25 & 32 mm BORE UNITS)

PART NUMBER	DESCRIPTION
18430-001-02	NPN (Sink) 2 meter cable
18430-002-02	PNP (Source) 2 meter cable

PART NUMBER	DESCRIPTION
51422-005-02	NPN (Sink) 2 meter cable
51422-006-02	PNP (Source) 2 meter cable

## 6 mm SQUARE HALL EFFECT SWITCHES

PART NUMBER	COLOR	DESCRIPTION
55803-1-02	Yellow	NPN (Sink) 4.5-24 VDC, 2 meter cable
55804-1-02	Red	PNP (Source) 4.5-24 VDC, 2 meter cable
55823-1	Yellow	NPN (Sink) 4.5-24 VDC, Quick Connect
55824-1	Red	PNP (Source) 4.5-24 VDC, Quick Connect

## NOTE:

1) Design number indicates imperial or metric mounting holes, dowel pin holes, and ports.

## PROXIMITY SWITCH MOUNTING KITS

SIZE	STANDARD PLATING	-Z1 PLATING	KIT NUMBER
16	65710-16-20	68465-16-20	
25	65710-25-53	68465-25-53	
32	65710-32-65	68465-32-65	
40	68457-40-91	68466-40-91	
50	68457-50-117	68466-50-117	

## HALL EFFECT SWITCH MOUNTING KITS

SIZE	STANDARD PLATING	-Z1 PLATING	KIT NUMBER
16	68446-16-20	68467-16-20	
25	68446-25-53	68467-25-53	
32	68446-32-65	68467-32-65	
40	68446-40-91	68467-40-91	
50	68446-50-117	68467-50-117	



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

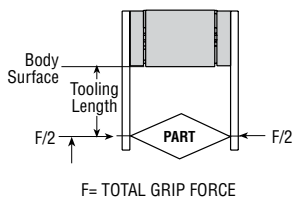
# ENGINEERING DATA: SERIES GRW GRIPPERS

SPECIFICATIONS	SERIES GRW
OPERATING PRESSURE	
STANDARD UNIT	30 psi min to 100 psi max [2 bar min to 7 bar max] air
OPERATING TEMPERATURE	-20° to +180°F [-28° to +82°C]
RATED LIFE	6 million cycles minimum
GRIP REPEATABILITY	Within ±0.002 in [±0.05 mm] of original centered position
CYCLE TIME	See table below
LUBRICATION	Factory lubricated for rated life
MAINTENANCE	Field repairable

SIZE	NOMINAL TOTAL JAW TRAVEL		TOTAL CLOSE GRIP FORCE AT 87 psi [6 bar]		GRIPPER WEIGHT		CLOSE OR OPEN TIME 87 psi [6 bar] sec	DISPLACEMENT		GRIP FORCE FACTOR G <sub>F</sub>			
	in	mm	lb	N	lb	kg		in <sup>3</sup>	cm <sup>3</sup>	EXTERNAL GRIP		INTERNAL GRIP	
										IMPERIAL	METRIC	IMPERIAL	METRIC
16	0.79	20	36	160	0.69	0.3	0.09	0.25	4.0	0.41	26	0.49	31
25	2.09	53	90	400	2.5	1.1	0.14	1.59	26	1.03	66	1.21	78
32	2.56	65	170	756	5.3	2.4	0.24	3.19	52	1.96	126	2.17	140
40	3.58	91	207	921	11.2	5.1	0.30	7.0	114	2.38	154	2.61	168
50	4.61	117	429	1908	22.1	10.0	0.60	14.0	229	4.93	318	5.49	354

## TOOLING LENGTH FACTOR

Jaw tooling should be designed so that the grip point is as close to the body 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<sub>F</sub>) values given in the table above are for zero tooling length (body surface). The graphs show how grip force decreases as the grip point is moved from the body surface.



## GRIP FORCE CALCULATION EQUATIONS:

### IMPERIAL:

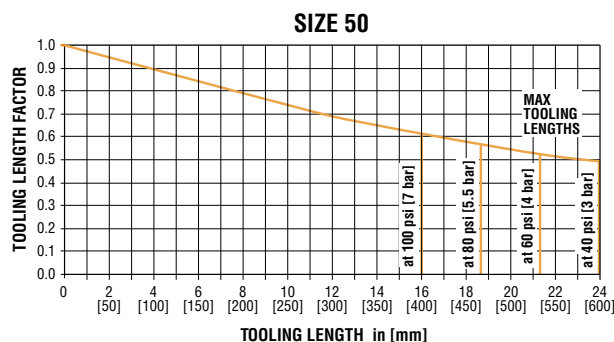
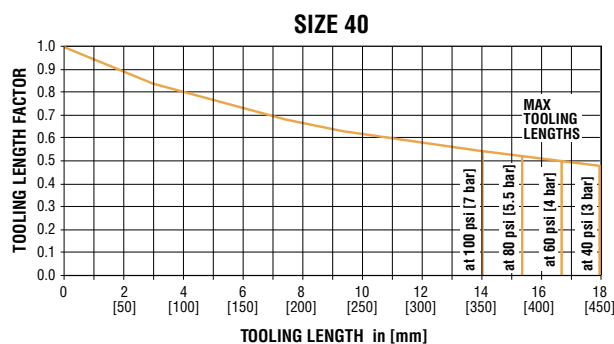
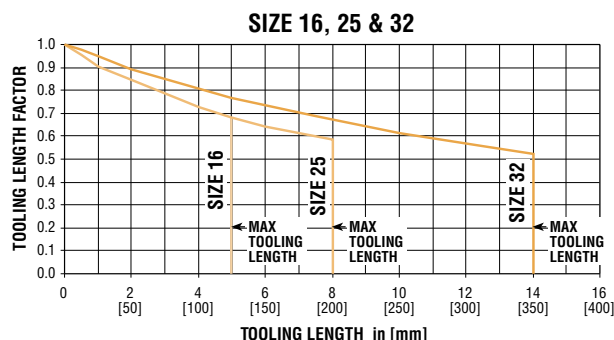
$$\text{TOTAL GRIP FORCE [lb]} = (\text{Pressure [psi]} \times G_F) \times \text{Tooling Length Factor}$$

### METRIC:

$$\text{TOTAL GRIP FORCE [N]} = (\text{Pressure [bar]} \times G_F) \times \text{Tooling Length Factor}$$

### SIZING AND APPLICATION ASSISTANCE

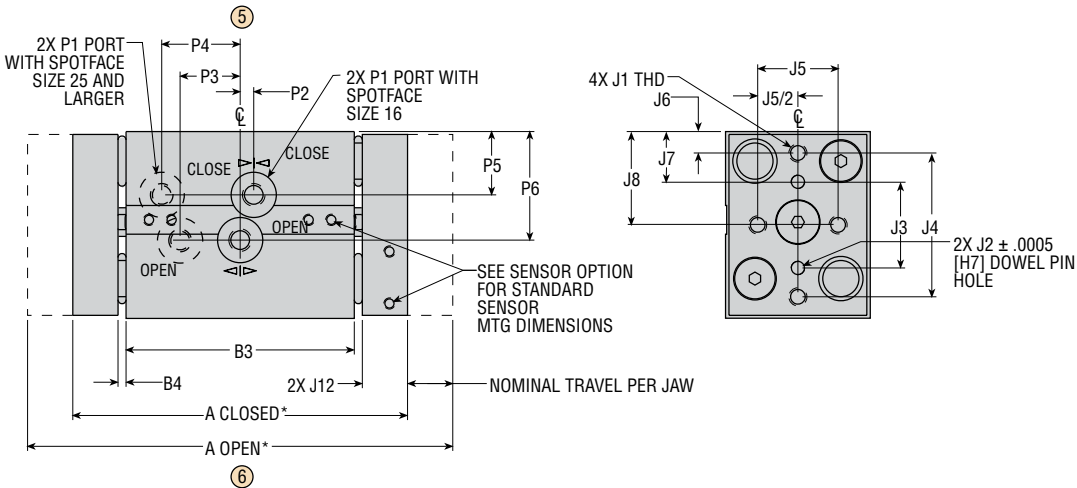
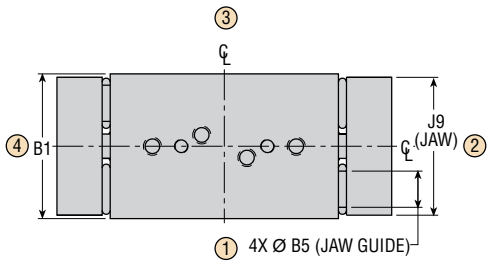
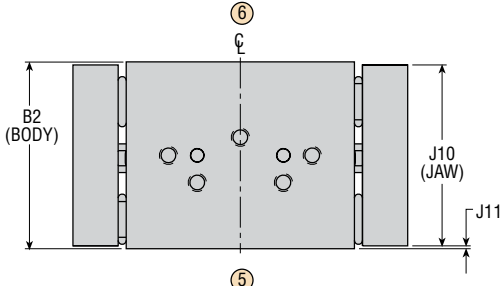
See PHD Product Sizing Catalog for specific and complete sizing information. Online sizing assistance is available at: [www.phdinc.com/apps/sizing](http://www.phdinc.com/apps/sizing)



GRW

# DIMENSIONS: SERIES GRW GRIPPERS

DIMENSIONS SHOWN APPLY TO ALL SIZES UNLESS NOTED OTHERWISE, SEE OTHER VIEWS FOR SIZE DEPENDENT FEATURES

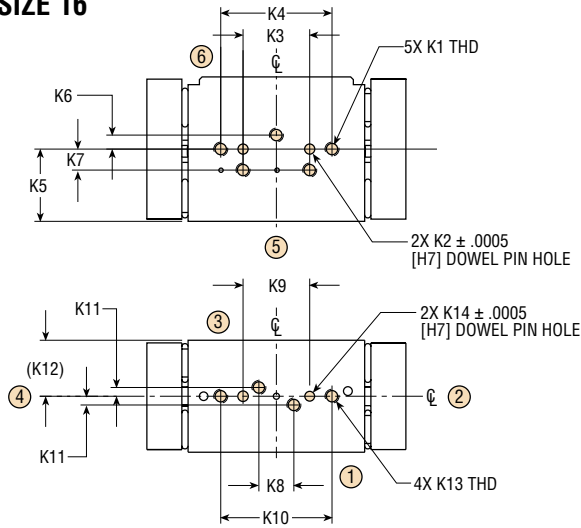


- NOTES:**
- 1) DESIGNATED  $\phi$  IS CENTERLINE OF UNIT
  - 2) METRIC INFORMATION SHOWN IN [ ]
  - 3) UNMARKED HOLES ARE USED FOR PHD MANUFACTURING, CONTACT PHD IF DIMENSIONAL INFORMATION IS REQUIRED
  - 4) CIRCLED NUMBERS INDICATE POSITIONS
  - 5) \*A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION  
A OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION

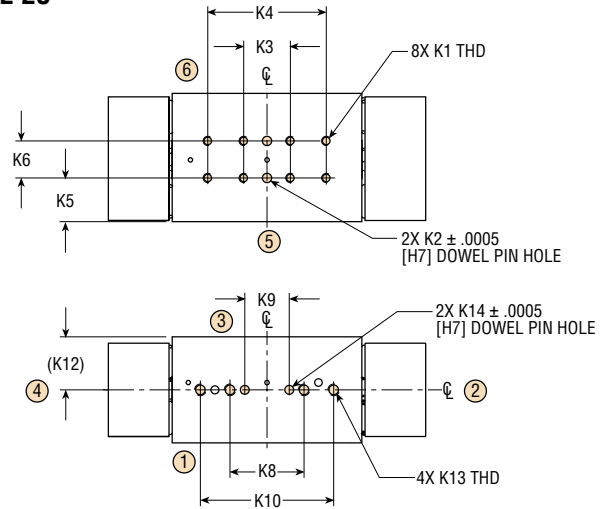
LETTER DIM	SIZE									
	16		25		32		40		50	
	in	mm	in	mm	in	mm	in	mm	in	mm
NOM TRAVEL										
PER JAW	.394	10.0	1.043	26.5	1.280	32.5	1.791	45.5	2.303	58.5
A CLOSED*	2.900	73.7	5.380	136.7	6.730	170.9	9.125	231.8	11.645	295.8
A OPEN*	3.660	93.0	7.380	187.5	9.230	234.4	12.625	320.7	16.157	410.4
B1	1.260	32.0	1.790	45.5	2.362	60.0	2.913	74.0	3.543	90.0
B2	1.625	41.3	2.244	57.0	2.874	73.0	3.504	89.0	4.528	115.0
B3	1.987	50.5	3.201	81.3	3.929	99.8	5.390	136.9	6.932	176.1
B4	.063	1.6	.063	1.6	.125	3.2	.125	3.2	.238	6.0
B5	.315	8.0	.472	12.0	.630	16.0	.787	20.0	.984	25.0
J1	8-32 thru	M4 x 0.7 thru	10-32 x	M5 x 0.8	1/4-20	M6 x 1.0	5/16-18	M8 x 1.25	3/8-16 x	M10 x 1.5
			.500 DP	x 13.0 DP	x .750 DP	x 19.0 DP	x 1.000 DP	x 25.0 DP	1.000 DP	x 25.0 DP
J2	.1283 thru	3.0 thru	.1908	5.0	.1908	5.0	.1908	5.0	.3158	8.0
			x .500 DP	x 13.0 DP	x .500 DP	x 13.0 DP	x .500 DP	x 12.5 DP	x .512 DP	x 13.0 DP
J3	.750	19.05	1.000	25.40	1.250	31.75	1.312	33.32	2.375	60.33
J4	1.250	31.8	1.625	41.3	2.125	54.0	2.250	57.2	3.375	85.7
J5	.700	17.8	.875	22.2	1.188	30.2	1.625	41.3	1.660	42.2
J6	.187	4.7	.188	4.8	.250	6.35	.500	12.7	.282	7.2
J7	.438	11.1	.500	12.7	.687	17.45	.968	24.6	.782	19.9
J8	.813	20.7	1.000	25.4	1.312	33.3	1.625	41.3	1.969	50.0
J9	1.200	30.5	1.654	42.0	2.240	56.9	2.835	72.0	3.425	87.0
J10	1.575	40.0	2.158	54.8	2.795	71.0	3.400	86.4	4.429	112.5
J11	.025	.6	.033	.8	.040	1.0	.040	1.0	.040	1.0
J12	.394	10.0	1.028	26.1	1.275	32.4	1.735	44.1	2.105	53.5
K1	8-32 x	M4 x 0.7 x	10-32 x	M5 x 0.8	1/4-20	M6 x 1.0 x	5/16-18 x	M8 x 1.25	3/8-16 x	M10 x 1.5
	.200 DP	5.0 DP	.250 DP	x 6.3 DP	x .354 DP	9.0 DP	.472 DP	12.0 DP	.551 DP	x 14.0 DP
K2	.1283 x	3.0 x	.1283 x	4.0	.1908	5.0	.1908 x	5.0 x	.3158 x	8.0 x
	.188 DP	5.0 DP	.250 DP	x 6.0 DP	x .440 DP	x 11.0 DP	.440 DP	11.0 DP	.500 DP	12.5 DP
K3	.750	19.1	.787	20.0	.750	19.05	N/A	N/A	3.000	76.2
K4	1.250	31.8	2.000	50.8	2.000	50.8	2.500	63.5	5.500	139.7
K5	.813	20.7	.738	18.75	1.042	26.5	1.150	29.2	1.594	40.5
K6	.157	4.0	.625	15.88	.750	19.05	1.125	28.6	1.340	34.0
K7	.236	6.0	N/A	N/A	N/A	N/A	.563	14.3	.670	17.0
K8	.394	10.0	1.250	31.75	N/A	N/A	N/A	N/A	2.500	63.5
K9	.750	19.1	.750	19.05	1.000	25.40	1.250	31.8	4.000	101.6
K10	1.252	31.8	2.250	57.15	2.000	50.8	2.500	63.5	5.118	130.0
K11	.098	2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
K12	.630	16.0	.895	22.7	1.181	30.0	1.457	37.0	1.772	45.0
K13	8-32 x	M4 x 0.7 x	10-32 x	M5 x 0.8	1/4-20 x	M6 x 1.0	5/16-18 x	M8 x 1.25	3/8-16 x	M10 x 1.5
	.280 DP	7.0 DP	.375 DP	x 9.0 DP	.492 DP	x 12.5 DP	.561 DP	x 14.0 DP	.709 DP	x 18.0 DP
K14	.1283 x	3.0 x	.1283 x	4.0	.1908	5.0	.1908 x	5.0 x	.3158 x	8.0 x
	.188 DP	6.0 DP	.250 DP	x 6.0 DP	x .440 DP	x 11.0 DP	.440 DP	11.0 DP	.500 DP	12.5 DP
K15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.024	26.0
P1	10-32	M5 x 0.8	10-32	M5 x 0.8	1/8 NPT	1/8 BSP	1/8 NPT	1/8 BSPP	1/8 NPT	1/8 BSPP
P2	.118	3.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P3	N/A	N/A	1.260	32.0	1.000	25.4	1.868	47.4	2.639	67.0
P4	N/A	N/A	1.260	32.0	1.592	40.4	2.245	57.0	2.931	74.4
P5	.551	14.0	.768	19.5	1.161	29.5	1.301	33.0	1.713	43.5
P6	.945	24.0	1.398	35.5	1.673	42.5	2.069	52.6	2.697	68.5

# MOUNTING DIMENSIONS: SERIES GRW GRIPPERS

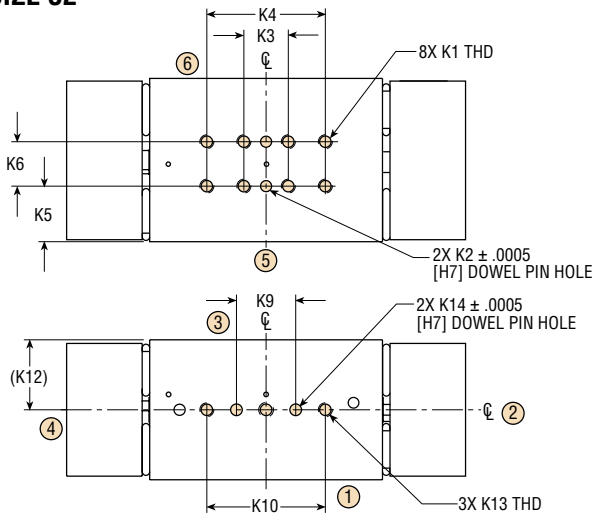
## SIZE 16



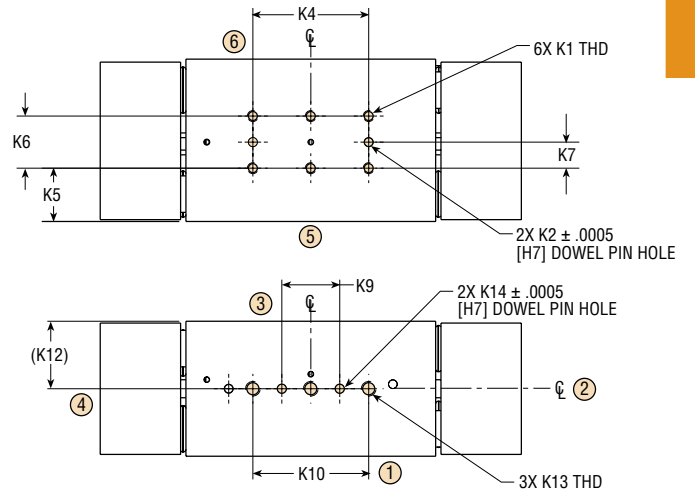
## SIZE 25



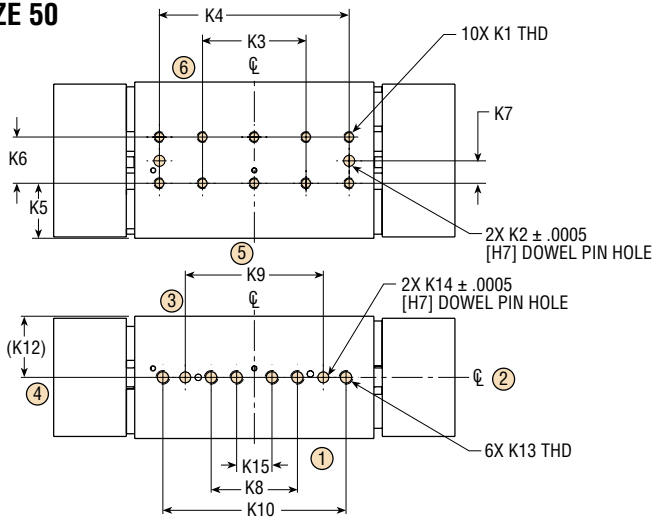
## SIZE 32



## SIZE 40



## SIZE 50



GRW

All dimensions are reference only unless specifically tolerated.

# OPTIONS: SERIES GRW GRIPPERS

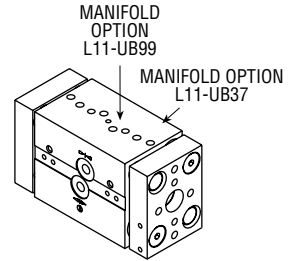
## L11-UB99

## L11-UB37

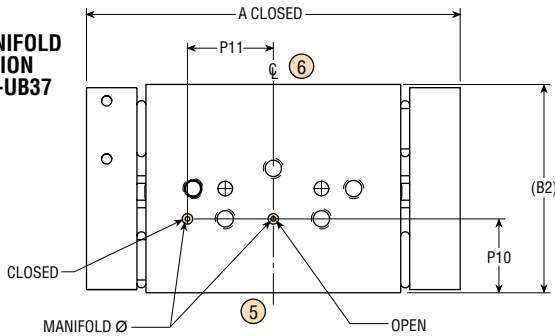
With this option the gripper is configured for manifold mounting on one of the two standard mounting surfaces, according to the selected option code. The standard ports are plugged. O-ring seals are provided for mounting between the gripper and the manifold.

TYPE	MANIFOLD REPLACEMENT KIT NUMBER				
	SIZE 16	SIZE 25	SIZE 32	SIZE 40	SIZE 50
IMPERIAL	65709-16-1-1	65709-25-1-1	65709-32-1-1	65709-40-1-1	65709-50-1-1
METRIC	65709-16-5-1	65709-25-5-1	65709-32-5-1	65709-40-5-1	65709-50-5-1

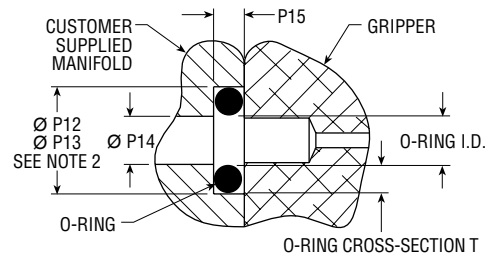
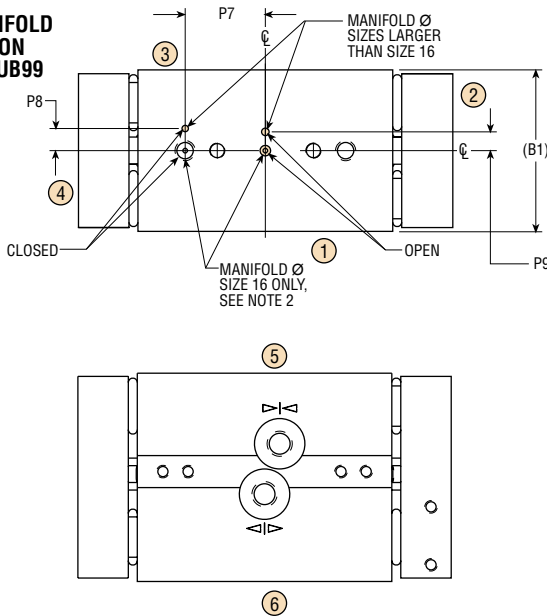
Manifold kit includes port plugs and o-rings.



**MANIFOLD OPTION L11-UB37**



**MANIFOLD OPTION L11-UB99**



### MANIFOLD PORTING DIMENSIONS

FOR CUSTOMER USE  
(DIMENSIONS REQUIRED  
ON CUSTOMER MOUNTING SURFACE)

LETTER DIM	SIZE									
	16		25		32		40		50	
P7	.625	15.9	1.266	32.2	1.590	40.4	2.245	57.0	2.931	74.4
P8	—	—	.138	3.5	.177	4.5	.197	5.0	.236	6.0
P9	—	—	.138	3.5	.236	6.0	.335	8.5	.236	6.0
P10	.577	14.7	1.050	26.7	1.417	36.0	1.713	43.5	1.969	50.0
P11	.670	17.0	1.266	32.2	1.590	40.4	2.245	57.0	2.931	74.4
P12	.236	6.0	.197	5.0	.197	5.0	.276	7.0	.276	7.0
P12 O-RING (I.D. x T)	3 mm x 1.5 mm		2 mm x 1.5 mm		2 mm x 1.5 mm		4 mm x 1.5 mm		4 mm x 1.5 mm	
P13	.276	7.0	See Note 2		See Note 2		See Note 2		See Note 2	
P13 O-RING (I.D. x T)	4 mm x 1.5 mm		See Note 2		See Note 2		See Note 2		See Note 2	
P14	.098	2.5	.080	2.0	.098	2.5	.125	3.2	.125	3.2
P15	.048	1.2	.048	1.2	.048	1.2	.048	1.2	.048	1.2
(B1)	1.260	32.0	1.790	45.5	2.362	60.0	2.913	74.0	3.543	90.0
(B2)	1.625	41.3	2.244	57.0	2.874	73.0	3.504	89.0	4.528	115.0
A CLOSED	2.900	73.7	5.380	136.7	6.729	170.9	9.125	231.8	11.645	295.8

**NOTES:**

- 1) DESIGNATED  $\phi$  IS CENTERLINE OF UNIT
- 2) USE P12 FOR ALL UNITS EXCEPT SIZE 16 WITH MANIFOLD OPTION IN LOCATION 99. FOR THIS UNIT ONLY, ONE MANIFOLD ORIFICE IS LOCATED IN A MOUNTING THREAD (SEE OPTION ILLUSTRATION) AND REQUIRES THE P13 DIAMETER.
- 3) CIRCLED NUMBERS INDICATE POSITION.

## Z1 CORROSION RESISTANT

This option provides appropriate corrosion resistant coating on all ferrous parts except jaw guides.

# ACCESSORIES: SERIES GRW GRIPPERS

## PROXIMITY SWITCH KIT

This kit equips the gripper with brackets to provide for the mounting of up to two 4 mm round proximity switches. Proximity switches must be ordered separately. See Switches and Sensors section for complete switch specifications.

### 4 mm ROUND INDUCTIVE PROXIMITY

PART NUMBER	DESCRIPTION
18430-001-02	NPN (Sink) 2 meter cable
18430-002-02	PNP (Source) 2 meter cable

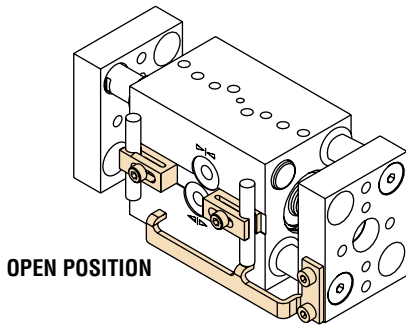
### 8 mm THREADED INDUCTIVE PROXIMITY SWITCHES (40 & 50 mm BORE UNITS)

PART NUMBER	DESCRIPTION
51422-005-02	NPN (Sink) 2 meter cable
51422-006-02	PNP (Source) 2 meter cable

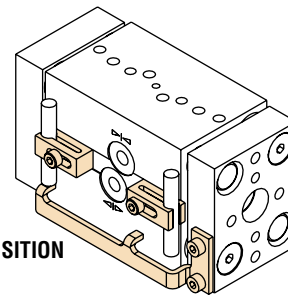
### PROXIMITY SWITCH MOUNTING KITS

SIZE	KIT NUMBER	
	STANDARD PLATING	-Z1 PLATING
16	65710-16-20	68465-16-20
25	65710-25-53	68465-25-53
32	65710-32-65	68465-32-65
40	68457-40-91	68466-40-91
50	68457-50-117	68466-50-117

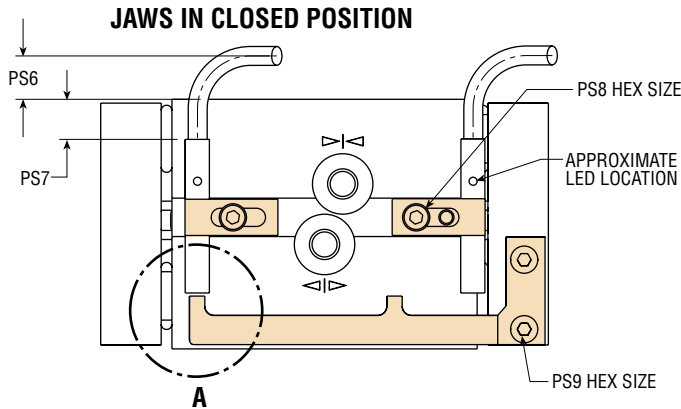
Each kit includes 1 target bracket, 2 switch mounting brackets, and socket head cap screws for mounting.



OPEN POSITION

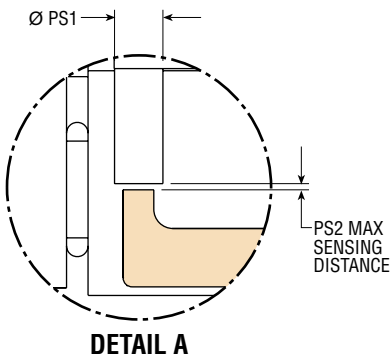
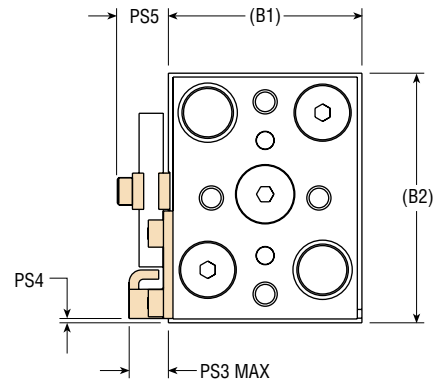


CLOSED POSITION



JAWS IN CLOSED POSITION

A



DETAIL A

LETTER DIM	SIZE									
	16		25		32		40		50	
	in	mm	in	mm	in	mm	in	mm	in	mm
PS1	4 mm ROUND		4 mm ROUND		4 mm ROUND		8 mm THREADED		8 mm THREADED	
PS2	.020	.5	.020	.5	.020	.5	.030	.8	.030	.8
PS3	.265	6.73	.150	3.81	.250	6.35	.571	14.50	.551	14.00
PS4	.028	.71	.100	2.54	.067	1.70	.140	3.56	.154	3.91
PS5	.347	8.81	.347	8.81	.347	8.81	.571	14.50	.571	14.50
PS6	.67	17.0	.29	7.4	N/A	N/A	N/A	N/A	N/A	N/A
PS7	.26	6.6	.64	16.3	1.08	27.4	1.797	45.7	2.746	69.8
PS8	.08	2.0	.08	2.0	.08	2.0	.079	2.0	.079	2.0
PS9	.08	2.0	.10	2.5	.10	2.5	.118	3.0	.157	4.0
(B1)	1.260	32.0	1.790	45.5	2.362	60.0	2.913	74.0	3.543	90.0
(B2)	1.625	41.3	2.244	57.0	2.874	73.0	3.504	89.0	4.528	115.0

All dimensions are reference only unless specifically toleranced.

[www.phdinc.com/grw](http://www.phdinc.com/grw) • (800) 624-8511



# ACCESSORIES: SERIES GRW GRIPPERS

## HALL EFFECT SWITCH KIT

This kit equips the gripper with brackets to provide for the mounting of up to two 6 mm square Hall Effect switches. Hall Effect switches must be ordered separately.

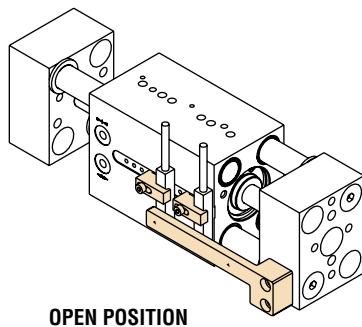
### 6 mm SQUARE HALL EFFECT SWITCHES

PART NUMBER	COLOR	DESCRIPTION
55803-1-02	Yellow	NPN (Sink) 4.5-24 VDC, 2 meter cable
55804-1-02	Red	PNP (Source) 4.5-24 VDC, 2 meter cable
55823-1	Yellow	NPN (Sink) 4.5-24 VDC, Quick Connect
55824-1	Red	PNP (Source) 4.5-24 VDC, Quick Connect

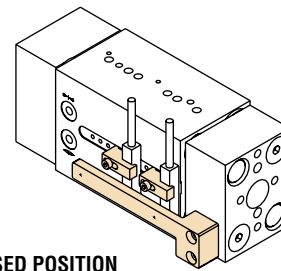
### HALL EFFECT SWITCH MOUNTING KITS

SIZE	KIT NUMBER	
	STANDARD PLATING	-Z1 PLATING
16	68446-16-20	68467-16-20
25	68446-25-53	68467-25-53
32	68446-32-65	68467-32-65
40	68446-40-91	68467-40-91
50	68446-50-117	68467-50-117

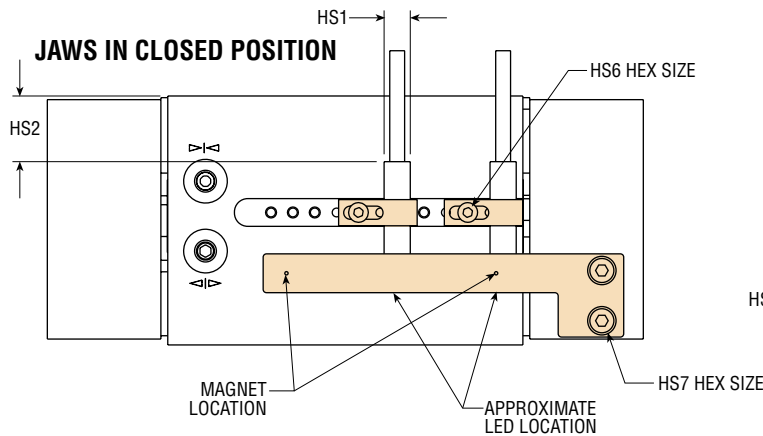
Each kit includes 1 target bracket, 2 switch mounting brackets, and socket head cap screws for mounting.



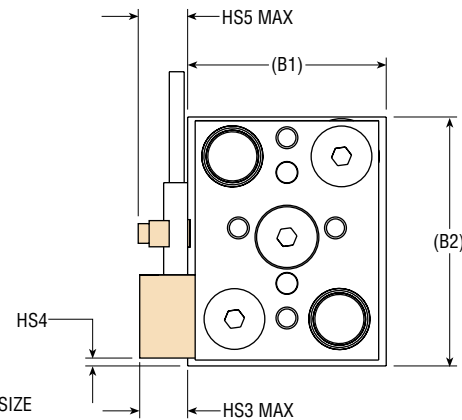
OPEN POSITION



CLOSED POSITION



JAWS IN CLOSED POSITION



LETTER DIM	SIZE									
	16		25		32		40		50	
	in	mm	in	mm	in	mm	in	mm	in	mm
HS1	6 mm SQUARE		6 mm SQUARE		6 mm SQUARE		6 mm SQUARE		6 mm SQUARE	
HS2	.365	9.3	.592	15.0	.950	24.1	2.020	51.3	2.640	67.06
HS3	.581	14.8	.543	13.8	.550	14.0	.571	14.50	.551	14.00
HS4	.030	.8	.070	1.8	.096	2.4	.184	4.7	.154	3.9
HS5	.465	11.8	.465	11.8	.465	11.8	.465	11.8	.465	11.8
HS6	.079	2.0	.079	2.0	.079	2.0	.079	2.0	.079	2.0
HS7	.079	2.0	.098	2.5	.098	2.5	.118	3.0	.157	4.0
(B1)	1.260	32.0	1.790	45.5	2.362	60.0	2.913	74.0	3.543	90.0
(B2)	1.625	41.3	2.244	57.0	2.874	73.0	3.504	89.0	4.528	115.0