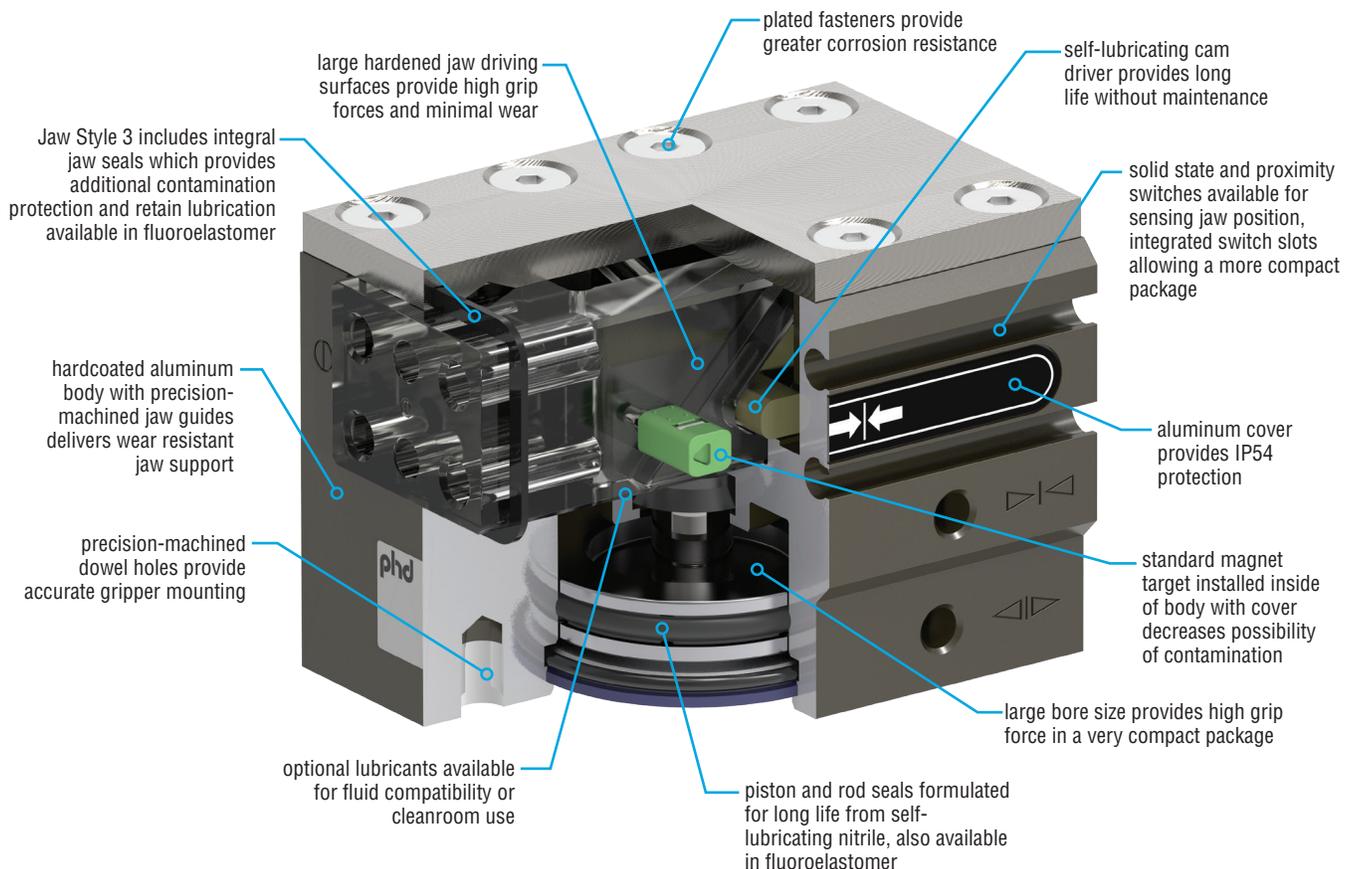


## GRS

### Major Benefits

- Expanded range of sizes and jaw styles, available in imperial and metric
- Switch ready standard for use with Series JC Switches - no brackets required
- Convenient switch bundles - one line ordering
- Optional fluoroelastomer seals and lubricant for fluid compatibility and higher temperature applications
- Optional lubrication for cleanroom use
- Manifold and purge port options for application flexibility
- IP54 ingress protection on jaw style 3
- Jaws available in two travel lengths (sizes 27-63) for increased versatility
- Optional mounting and port positions available for application flexibility
- Spring assist on open or close available for part retention upon loss of air pressure (sizes 25-63)
- Six million cycles minimum rated life



# ORDERING DATA: Series GRS Grippers

## TO ORDER SPECIFY:

Product, Grip, Jaw Style, Design No., Size, Total Jaw Travel, and Options required.

**SWITCH BUNDLE OPTION CODE**  
(see Notes 3-4)

**Sxxxx**

**SWITCH SERIES**

**C** - Series JC1SDx-x, Single Position

**E** - Series JC1STP-x, Teachable (PNP only)

**P** - Inductive Proximity Switch

**QUANTITY**

**1 or 2\*\*** Inductive Proximity Switches or Mounting Brackets

**1 to 9** JC1SDx-x, JC1DTP-x

**CABLE TYPE**

**0** - No Switches

**K** - Quick Connect Only (JC1SDx-K, JC1STP-K)

**2** - 2 Meter Length Cable (Prox, JC1STP-2)

**5** - 5 Meter Length Cable (JC1SDx-5)

**GRIP**  
High Force

**DESIGN NO.\***  
2 - Imperial  
6 - Metric

**GRS 3 3 - 2 - 27 x 4.5 - FSR2 - Sxxxx**

**PRODUCT**  
Compact, highly configurable, parallel gripper with side mounting jaws

**JAW STYLE**  
(See Below)

1 - Top Wide  
3 - Side  
4 - Top Narrow

SIZE	JAW STYLE	BORE SIZE Diameter		MINIMUM TOTAL JAW TRAVEL	
		mm	in	Total Travel mm	Per Bore Size in
19	1	19	0.748	4.5	0.177
25	4	25	0.984	6.5	0.256
25	3	25	0.984	7	0.276
27	3	27	1.063	4.5	0.177
27	3	27	1.063	7	0.276
28	3	27	1.063	6	0.250
28	3	27	1.063	10	0.394
32	3	32	1.260	8	0.315
32	3	32	1.260	13	0.512
40	3	40	1.575	13	0.512
40	3	40	1.575	19	0.748
50	3	50	1.969	19	0.750
50	3	50	1.969	28	1.102
63	3	63	2.480	32	1.260
63	3	63	2.480	44	1.732

**OPTIONS (OMIT IF NOT REQUIRED)**

**MANIFOLD & PORT OPTIONS**

L11-UB99 - Manifold in location 99

L11-UB37 - Manifold in location 37 (includes GR3 option)

LT37 - Purge port in location 37

UB48 - Port in location 48

**SENSOR OPTION**

CP - Inductive Proximity Switch Ready

**MOUNTING OPTION**

GR3 - Mounting in location 37

**SPRING ASSIST (JAW STYLE 3 UNITS ONLY)**

FSR2 - Spring assist close

FSE2 - Spring assist open

**FLUID COMPATIBILITY & LUBRICATION**

V1 - Fluoroelastomer seals and lubricants

Y4 - Cleanroom grade lubricant

V6 - Fluoroelastomer seals and Cleanroom grade lubricant



JAW STYLE 1  
SIZE 19

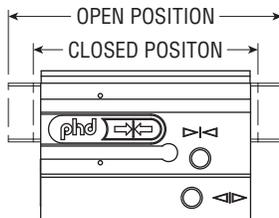


JAW STYLE 3  
SIZES 25-63



JAW STYLE 4  
SIZE 25

TOTAL JAW TRAVEL =  
OPEN POSITION - CLOSED POSITION



## NOTES:

- \* 1) Design number indicates imperial or metric mountings, dowel pin holes, and ports.
- 2) Standard unit includes magnet for Series JC1 Switches
- \*\*3) Inductive Proximity Switch Bundle adds -CP option, target and switch mounting brackets. Quantity of 1 includes 1 bracket, quantity of 2 includes 2 brackets.
- 4) Switch bundles available with gripper only.



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

## SERIES JC1ST CORDSET

PART NO.	DESCRIPTION
81284-1-001	M8, 4 pin, Straight Female Connector, 5 m cable

## SERIES JC1SDx CORDSET

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

SPECIFICATIONS	IMPERIAL	METRIC
OPERATING PRESSURE		
STANDARD UNIT	30 psi min to 100 psi max	2 bar min to 7 bar max
SPRING ASSIST UNIT	50 psi min to 100 psi max	3.5 bar min to 7 bar max
OPERATING TEMPERATURE		
STANDARD UNIT	-20°F min to +180°F max	-28°C min to +82°C max
-V1 OPTION UNIT	-20°F min to +225°F max	-28°C min to +107°C max
	Higher temperature service available. Consult PHD.	
RATED LIFE (with standard nitrile seals)	6 million cycle minimum (including spring assist units)	
GRIP REPEATABILITY	±0.001 inch of original position	±0.025 mm of original position
LUBRICATION	Factory lubricated for rated life	
MAINTENANCE	Field repairable	

## Application & Sizing Assistance

Use PHD's free online Product Sizing and Application at [www.phdinc.com/apps/sizing](http://www.phdinc.com/apps/sizing)

SIZE	MINIMUM TOTAL JAW TRAVEL		TOTAL CLOSE GRIP FORCE AT 87 psi [6 bar]		GRIPPER WEIGHT		CLOSE OR OPEN TIME	DISPLACEMENT		GRIP FORCE FACTOR G <sub>F</sub>			
	in	mm	lb	N	lb	kg	sec	in <sup>3</sup>	cm <sup>3</sup>	EXTERNAL GRIP		INTERNAL GRIP	
										IMPERIAL	METRIC	IMPERIAL	METRIC
19 x 4.5	0.177	4.5	30	135	0.21	0.10	0.08	0.068	1.1	0.35	23	0.38	25
25 x 6.5 (Jaw Style 4)	0.256	6.5	35	156	0.30	0.14	0.11	0.134	2.2	0.40	26	0.43	28
25 x 7 (Jaw Style 3)	0.276	7	42	187	0.29	0.13	0.10	0.126	2.1	0.48	31	0.52	33
27 x 4.5	0.177	4.5	68	302	0.29	0.13	0.11	0.133	2.2	0.78	50	0.83	54
27 x 7	0.276	7	48	213	0.29	0.13	0.11	0.133	2.2	0.55	36	0.59	38
28 x 6	0.250	6.35	77	341	0.54	0.25	0.13	0.182	3.0	0.88	57	0.93	60
28 x 10	0.394	10	48	213	0.54	0.25	0.13	0.182	3.0	0.55	36	0.59	38
32 x 8	0.315	8	109	485	1.06	0.48	0.16	0.335	5.5	1.25	81	1.33	86
32 x 13	0.512	13	70	310	1.06	0.48	0.16	0.335	5.5	0.80	52	0.86	56
40 x 13	0.512	13	170	756	1.69	0.77	0.17	0.791	13.0	1.95	126	2.07	133
40 x 19	0.748	19	109	485	1.68	0.76	0.17	0.791	13.0	1.25	81	1.34	87
50 x 19	0.750	19	235	1045	2.33	1.06	0.18	1.570	26	2.7	174	2.8	181
50 x 28	1.102	28	157	697	2.31	1.05	0.18	1.570	26	1.8	116	1.9	123
63 x 32	1.260	32	398	1770	7.5	3.4	0.22	4.397	72	4.6	297	4.7	303
63 x 44	1.732	44	289	1287	7.5	3.4	0.22	4.397	72	3.3	213	3.5	226

SIZE	SPRING ASSIST GRIP FORCE								SPRING ASSIST GRIPPER WEIGHT		SPRING ASSIST CLOSE OR OPEN TIME 87 psi [6 bar] IN sec		
	S <sub>F</sub> (SPRING ONLY)* SPRING CLOSE GRIP FORCE				S <sub>F</sub> (SPRING ONLY)* SPRING OPEN GRIP FORCE								
	MINIMUM		MAXIMUM		MINIMUM		MAXIMUM				WITH SPRING	AGAINST SPRING	SPRING ONLY
	lb	N	lb	N	lb	N	lb	N	lb	kg			
25 x 7	13	58	19	85	9	40	20	89	0.35	0.16	0.11	0.22	0.15
27 x 4.5	22	96	31	137	17	73	33	146	0.39	0.18	0.12	0.24	0.16
27 x 7	15	68	22	96	12	51	23	103	0.39	0.18	0.12	0.24	0.16
28 x 6	23	102	35	154	16	71	37	164	0.69	0.31	0.13	0.26	0.20
28 x 10	14	63	22	96	10	44	23	103	0.69	0.31	0.13	0.26	0.20
32 x 8	29	130	50	224	22	98	53	234	1.34	0.61	0.16	0.46	0.27
32 x 13	19	83	32	143	14	63	34	150	1.34	0.61	0.16	0.46	0.27
40 x 13	49	218	78	347	30	133	82	365	2.00	0.91	0.17	0.35	0.28
40 x 19	31	138	50	222	21	93	53	236	2.00	0.91	0.17	0.35	0.28
50 x 19	74	327	113	503	35	155	113	504	3.11	1.41	0.17	0.32	0.29
50 x 28	49	218	75	336	23	104	76	336	3.11	1.41	0.17	0.32	0.29
63 x 32	79	353	159	708	36	160	160	710	9.5	4.31	0.22	0.42	0.51
63 x 44	58	257	116	515	26	117	116	516	9.5	4.31	0.22	0.42	0.51

### NOTE:

\*Spring grip force (S<sub>F</sub>) varies with spring compression. The minimum spring grip force values occur with the spring at least compression (jaws fully closed on spring close units and fully open on spring open units). The maximum spring grip force values occur with the spring at most compression (jaws fully open on spring close units and fully closed on spring open units).

## GRIP FORCE CALCULATION EQUATIONS:

### IMPERIAL:

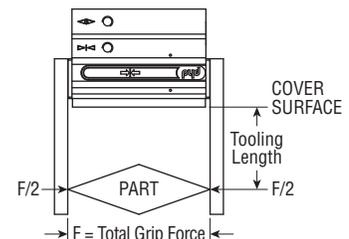
Total Grip Force [lb] = (Pressure [psi] x G<sub>F</sub>) x Tooling Length Factor

Total Grip Force With Springs [lb] = ((Pressure [psi] x G<sub>F</sub>) ± S<sub>F</sub> [lb]) x Tooling Length Factor

### METRIC:

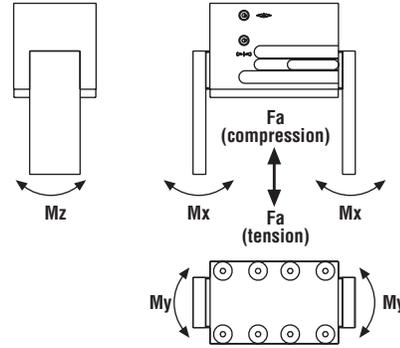
Total Grip Force [N] = (Pressure [bar] x G<sub>F</sub>) x Tooling Length Factor

Total Grip Force With Springs [N] = ((Pressure [bar] x G<sub>F</sub>) ± S<sub>F</sub> [N]) x Tooling Length Factor



## MAX. ALLOWABLE FORCES & MOMENTS ON GRIPPER JAWS

SIZE	Fa		Fa		Mx, My, and Mz			
	(tension)		(compression)		Per Jaw		Both Jaws	
	lb	N	lb	N	in-lb	Nm	in-lb	Nm
19	55	245	80	356	25	2.8	50	5.6
25	110	490	160	712	45	5	90	10
27	110	490	220	980	50	5.6	100	11
28	220	980	420	1870	80	9	160	18
32	425	1890	760	3380	150	17	300	34
40	595	2640	1130	5030	252	28.5	504	57
50	760	3380	1500	6670	380	43	760	86
63	1530	6800	3000	13340	1140	129	2280	258



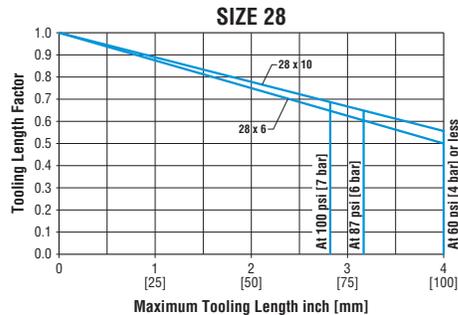
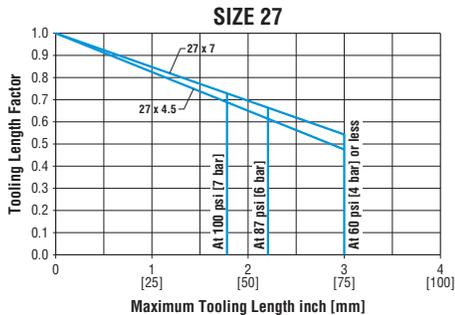
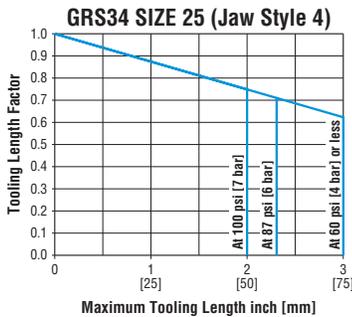
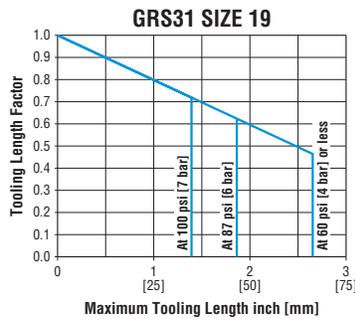
Fa: Total for both jaws  
 Mx, My: Allowable moments. Moments measured from the body surface  
 Mz: Allowable moment. Moment measured from the jaw center

When calculating values for Mx, My and Mz, include the grip force per jaw, tooling weight, part weight, external forces, and acceleration, as applicable. When calculating the value for Fa, include weight of tooling, part weight, acceleration, and external forces.

## TOOLING LENGTH FACTOR

Jaw 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 cover surface, the applied moment causes jaw friction to

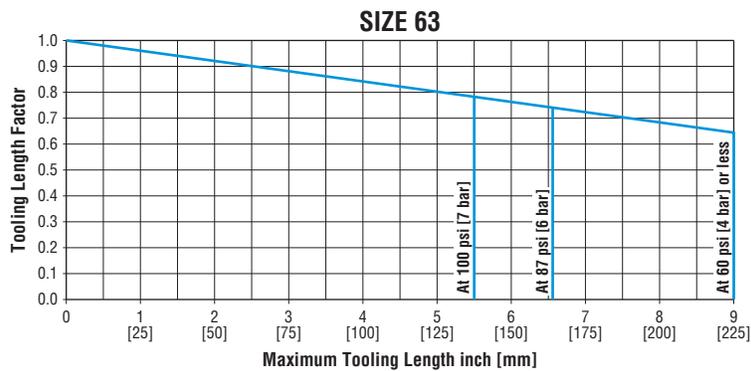
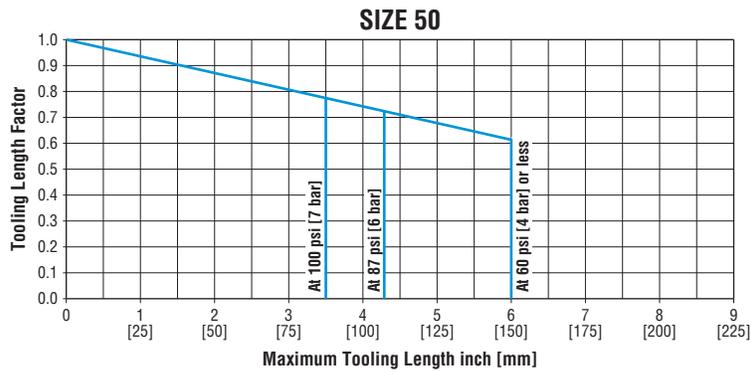
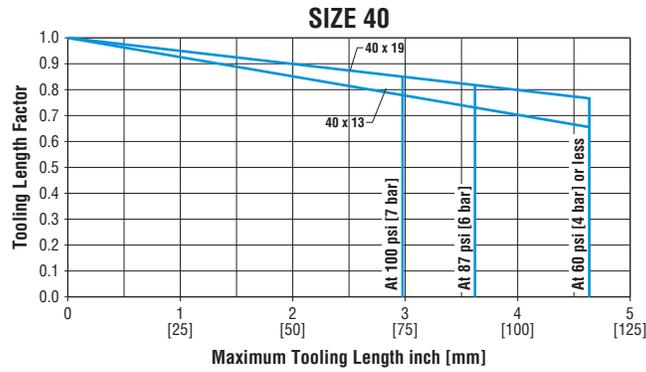
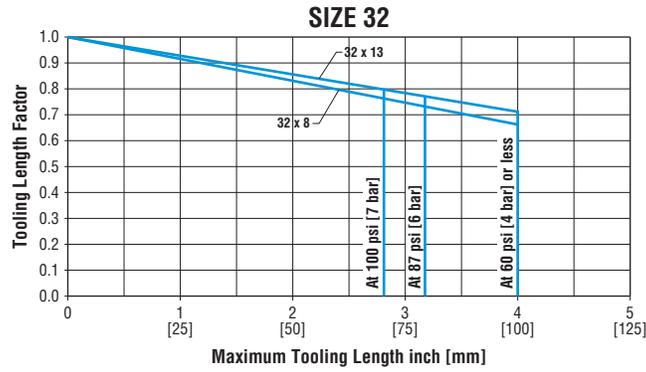
increase, resulting in reduced effective grip force. The Grip Force Factor ( $G_f$ ) values given in the table on the previous page are for zero tooling length (cover surface).



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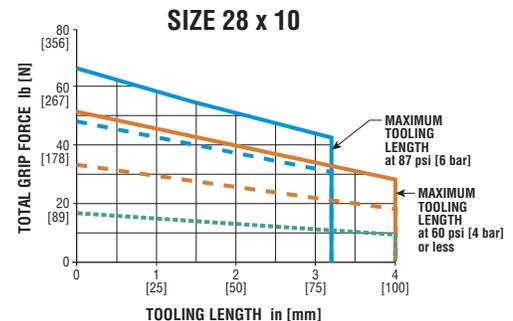
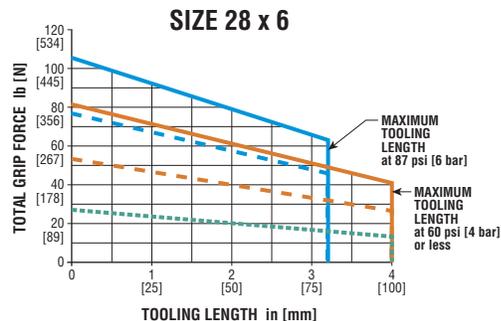
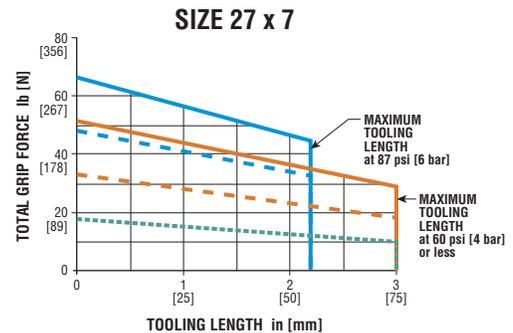
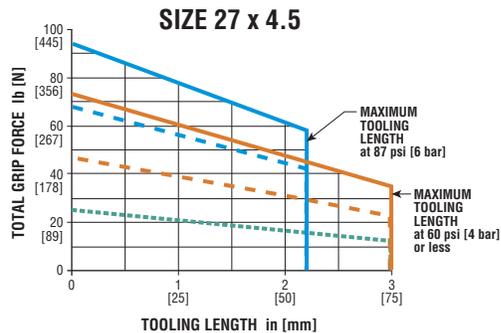
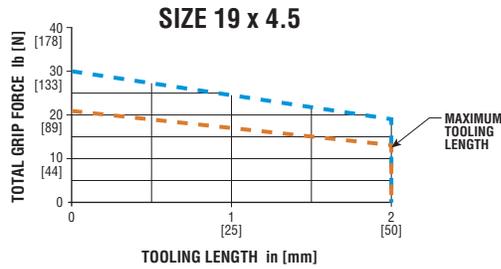
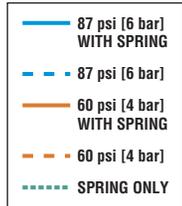
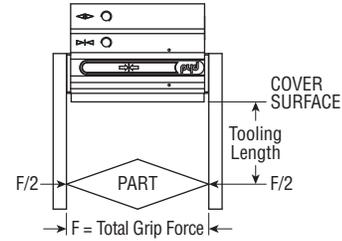
increase, resulting in reduced effective grip force. The Grip Force Factor ( $G_f$ ) values given in the table on page 18 are for zero tooling length (cover surface).



## GRIP FORCE

Total gripping force relative to tooling length is shown below at the stated actuating pressure. Grip force per jaw equals the total grip force divided by two. The graphs also indicate the maximum tooling length for each gripper size. Maximum tooling length varies linearly with pressure.

**NOTE:** Grip force charts shown below have been simplified for clarity. To more precisely predict grip forces, refer to the grip force calculation equations on page 18.

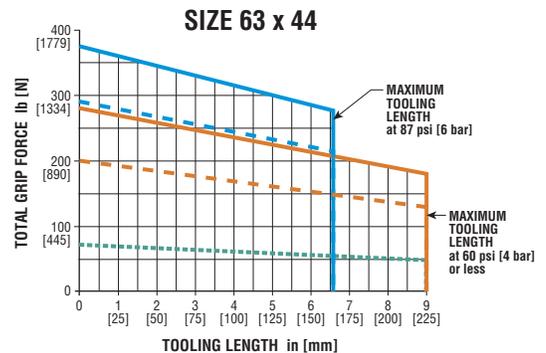
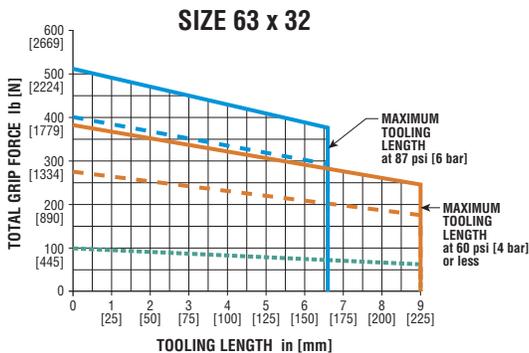
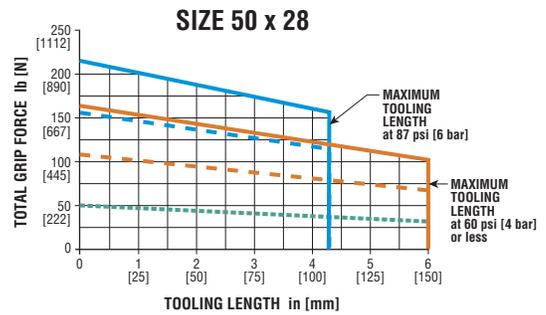
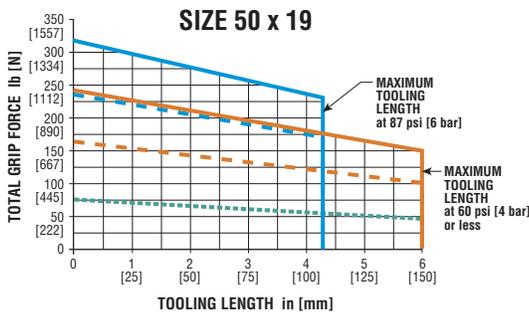
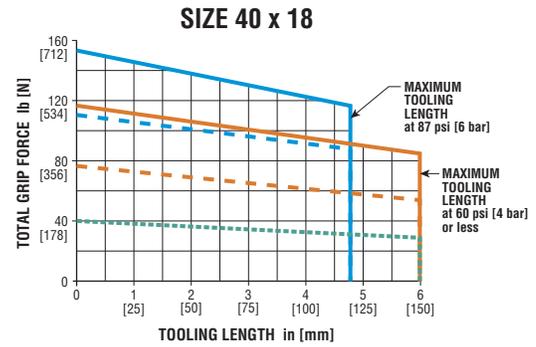
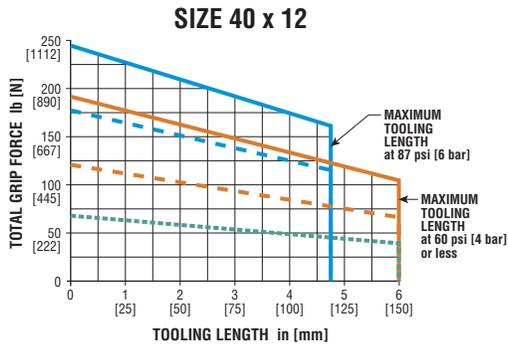
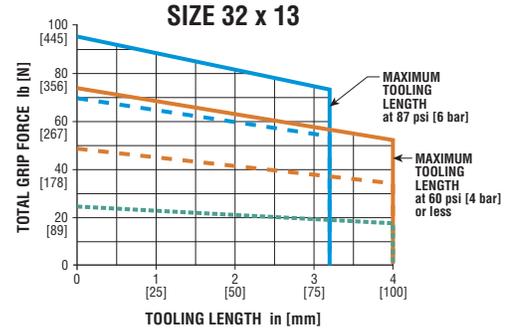
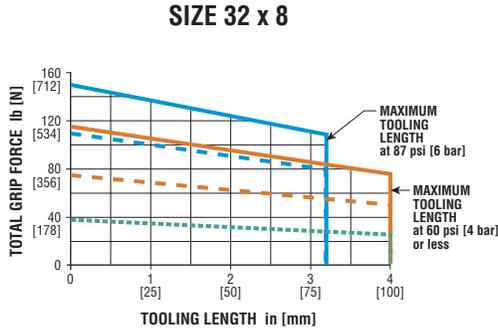
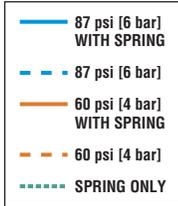
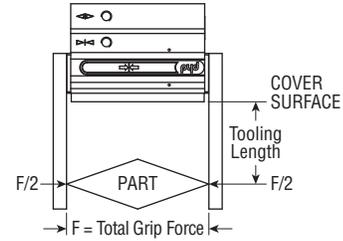


# -sizing: Series GRS Grippers

## GRIP FORCE

Total gripping force relative to tooling length is shown below at the stated actuating pressure. Grip force per jaw equals the total grip force divided by two. The graphs also indicate the maximum tooling length for each gripper size. Maximum tooling length varies linearly with pressure.

**NOTE:** Grip force charts shown below have been simplified for clarity. To more precisely predict grip forces, refer to the grip force calculation equations on page 18.



## GRIP FORCE CALCULATION EQUATIONS:

### IMPERIAL:

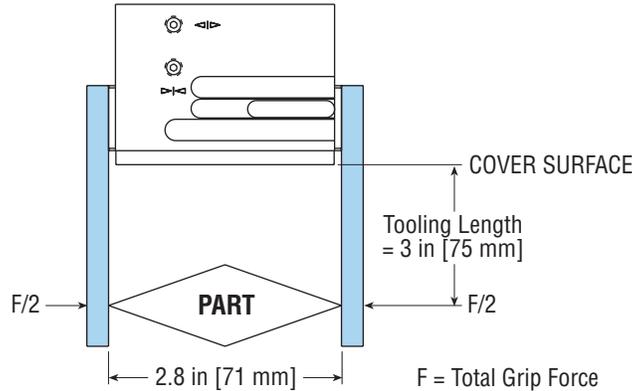
Total Grip Force [lb] = (Pressure [psi] x Gr) x Tooling Length Factor

Total Grip Force With Springs [lb] = ((Pressure [psi] x Gr) ± S<sub>F</sub> [lb]) x Tooling Length Factor

### METRIC:

Total Grip Force [N] = (Pressure [bar] x Gr) x Tooling Length Factor

Total Grip Force With Springs [N] = ((Pressure [bar] x Gr) ± S<sub>F</sub> [N]) x Tooling Length Factor



## GRIP FORCE CALCULATION EXAMPLE:

Gripper: Series GRS Size 32 x 8

Common Parameters:

**Jaw Position at Part Contact:** 2.8 in [71 mm] (40% of total jaw travel from full close)

**Operating Pressure =** 87 psi [6 bar]

**Tooling Length =** 3 in [75 mm]

1. **Determine Grip Force Factor G<sub>F</sub>** = 1.25 [81] (from table on page 18)
2. **Determine Tooling Length Factor** = 0.74 [0.74] (from Tooling Length Factor Graph on page 19 at 3 in [75 mm] tooling length)
3. **Total Grip Force Calculations:**

**For Standard Unit (without spring assist):** GRS33-1-32 x 8 [GRS33-5-32 x 8]

**Total Grip Force =** 87 psi x 1.25 x 0.74 = 80 lb [6 bar x 81 x 0.74 = 360 N]

**For Spring Assist Close Unit:** GRS33-1-32 x 8 -FSR2 [GRS33-5-32 x 8 -FSR2]

Spring grip force depends on jaw position. Jaw position at part contact is 40% from full close (the internal spring is 40% from its minimum force). Spring grip force S<sub>F</sub> can be determined by interpolating between the minimum and maximum spring grip force values in the Spring Grip Force Table on page 18.

**Find Spring Grip Force S<sub>F</sub>**

$$= \text{Min. spring force} + (40\% \times (\text{Max. spring force} - \text{Min. spring force}))$$

$$= 29 \text{ lb} + (0.4 \times (50 \text{ lb} - 29 \text{ lb})) = 37 \text{ lb} [130 \text{ N} + (0.4 \times (224 \text{ N} - 130 \text{ N})) = 168 \text{ N}]$$

**Grip close direction (springs working *with* applied pressure):**

**Grip Close Grip Force Factor =** 1.25 [81] (from table on page 18)

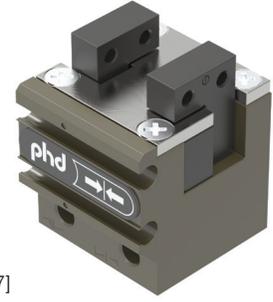
**Total Grip Force =** ((87 psi x 1.25) + 37 lb) x 0.74 = 108 lb [((6 bar x 81 N) + 168 N) x 0.74 = 484 N]

**Grip open direction (springs working *against* applied pressure):**

**Grip Open Grip Force Factor =** 1.33 [86] (from table on page 18)

**Total Grip Force =** ((87 psi x 1.33) - 37 lb) x 0.74 = 58 lb [((6 bar x 86 N) - 168 N) x 0.74 = 258 N]

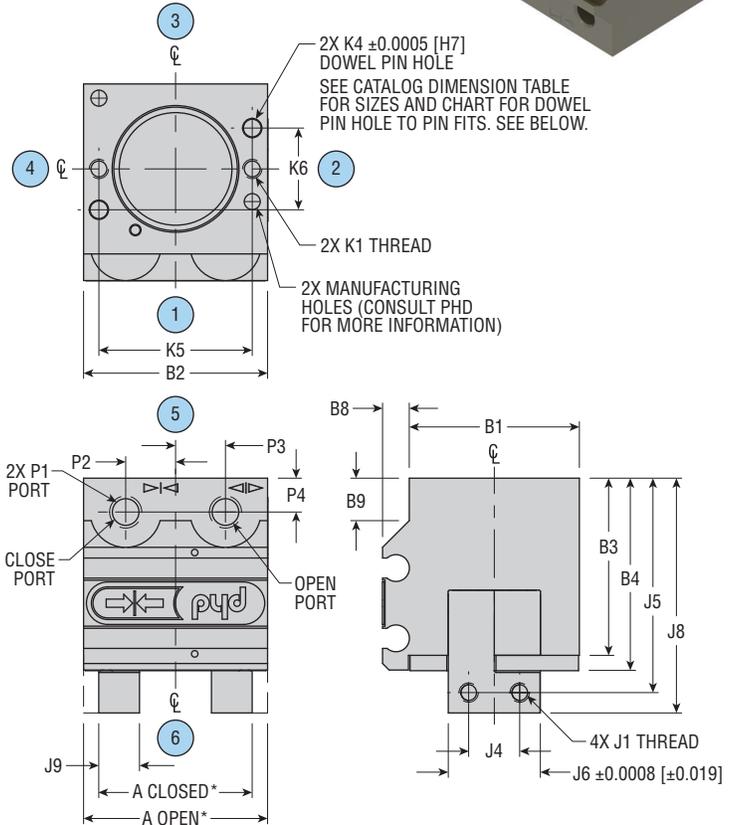
## GRS31-2[6]-19 (Jaw Style 1)



LETTER DIM	GRS31-2[6]-19	
	in	mm
MIN TRAVEL PER JAW	0.088	2.3
A CLOSED*	0.960	24.4
A OPEN*	1.130	28.7
B1	1.042	26.5
B2	1.127	28.6
B3	1.086	27.6
B4	1.180	30.0
B8	0.163	4.1
B9	0.260	6.6
J1	6-32	M3 x 0.5
J4	0.312	7.92
J5	1.314	33.4
J6	0.5610	14.25
J8	1.439	36.5
J9	0.2490	6.32
K1	4-40 x 0.375 DP	M3 x 0.5 x 9.5 DP
K4	0.0947 x 0.250 DP	3.0 x 6.3 DP
K5	0.9375	23.81
K6	0.5000	12.70
P1	10-32	M5 x 0.8
P2	0.305	7.7
P3	0.305	7.7
P4	0.207	5.3

**NOTES:**

- 1) DESIGNATED  $\phi$  IS CENTERLINE OF MOUNTING PATTERN
- 2) \*A OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION  
A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION
- 3) CIRCLED NUMBERS INDICATE POSITION
- 4) METRIC INFORMATION SHOWN IN [ ] OR IN COLUMNS DESIGNATED mm.



### J2 & K4 DOWEL HOLE TO PIN FITS

DESIGN 2 IMPERIAL UNITS ASME B18.8.2 STANDARD TOLERANCE PIN					DESIGN [6] METRIC UNITS ISO 8734 - m6 CLASS UNPLATED PIN				
CAT. DIM.	MIN CLEARANCE		MAX CLEARANCE		CAT. DIM.	MAX PRESS		MAX CLEARANCE	
	in	mm	in	mm		mm	in	mm	in
0.0634, 0.1259, 0.1571, 0.1884, 0.3134, 0.3759	0.0001	0.003	0.0013	0.033	2.0, 3.0	0.0001	0.002	0.0005	0.012
					4.0, 5.0	0.0002	0.004	0.0006	0.016
					8.0, 10.0	0.0002	0.006	0.0008	0.021

## CAD & Sizing Assistance

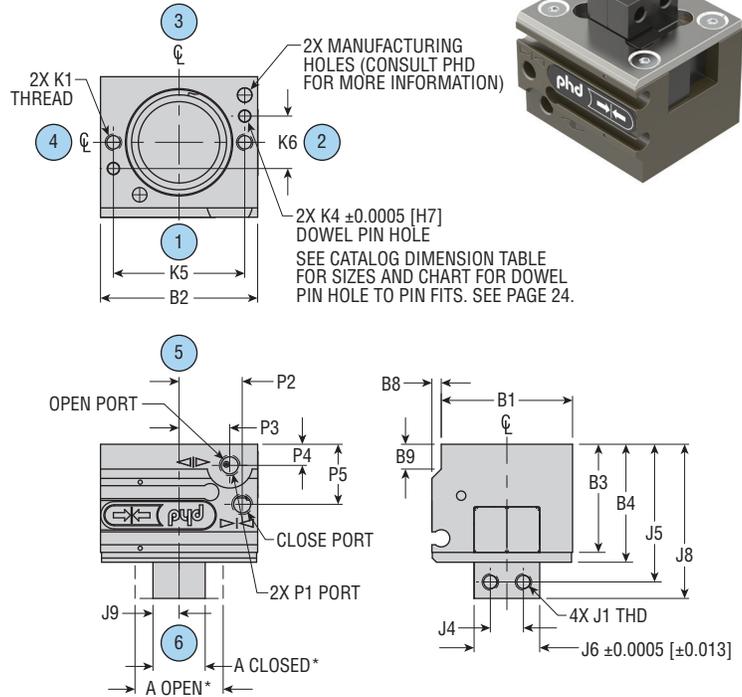
Use PHD's free online Product Sizing and CAD Configurator at [phdinc.com/myphd](http://phdinc.com/myphd)

All dimensions are reference only unless specifically toleranced.

# DIMENSIONS: Series GRS Grippers - Size 25

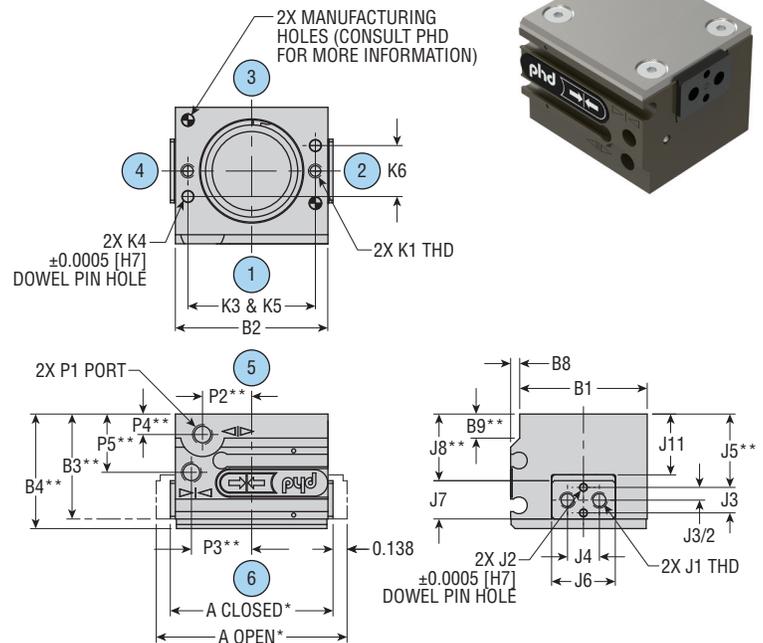
LETTER DIM	GRS34-2[6]-25	
	in	mm
MIN TRAVEL PER JAW	0.128	3.25
A CLOSED*	0.500	12.7
A OPEN LONG*	0.750	19.1
B1	1.252	31.8
B2	1.496	38.0
B3	1.032	26.2
B4	1.126	28.60
B8	0.089	2.3
B9	0.236	6.0
J1	6-32	M4 x 0.7
J4	0.315	8.0
J5	1.314	33.4
J6	0.6245	15.86
J8	1.471	37.36
J9	0.2490	6.32
K1	6-32 x 0.382 DP	M4 x 0.7 x 9.7 DP
K4	0.1259 x 0.250 DP	3.0 x 6.3 DP
K5	1.2500	31.75
K6	0.5000	12.70
P1	10-32	M5 x 0.8
P2	0.601	15.3
P3	0.482	12.2
P4	0.201	5.1
P5	0.572	14.5

## GRS34-2[6]-25 (Jaw Style 4)



LETTER DIM	GRS33-2[6]-25	
	in	mm
MIN TRAVEL PER JAW	0.138	3.5
A CLOSED*	1.614	41.0
A OPEN LONG*	1.890	48.0
B1	1.250	31.8
B2	1.496	38.0
B3**	1.032	26.2
B4**	1.126	28.6
B8	0.089	2.3
B9**	0.236	6.0
J1	6-32 x 0.197 DP	M4 x 0.7 x 6.0 DP
J2	0.0634 x 0.197 DP	2.0 x 5.0 DP
J3	0.2500	6.35
J4	0.313	7.94
J5**	0.7212	18.32
J6	0.6245	15.86
J7	0.3755	9.54
J8**	0.655	16.6
J11	0.598	15.2
J12	0.039	1.0
K1	6-32 x 0.382 DP	M4 x 0.7 x 9.7 DP
K3	1.250	31.75
K4	0.1259 x 0.250 DP	3.0 x 6.3 DP
K5	1.2500	31.75
K6	0.500	12.7
P1	10-32	M5 x 0.8
P2**	0.482	12.2
P3**	0.591	15.0
P4**	0.201	5.1
P5**	0.572	14.5

## GRS33-2[6]-25 (Jaw Style 3)

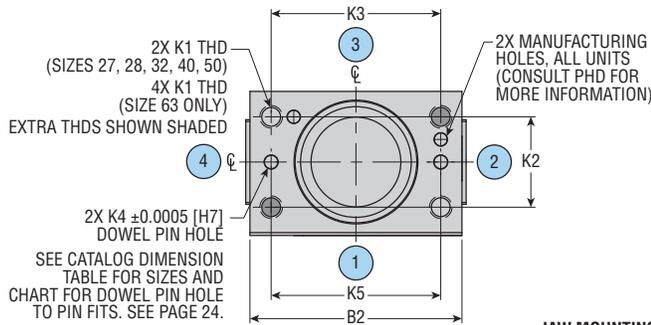


- NOTES:**
- 1) DESIGNATED  $\phi$  IS CENTERLINE OF MOUNTING PATTERN
  - 2) \*A OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION  
A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION
  - 3) \*\*DIMENSIONS FOR THESE FEATURES CHANGE FOR SPRING ASSIST UNITS, SEE SPRING ASSIST DIMENSIONS ON OPTIONS PAGE 27 FOR INFORMATION
  - 4) CIRCLED NUMBERS INDICATE POSITION
  - 5) METRIC INFORMATION SHOWN IN [ ] OR IN COLUMNS DESIGNATED mm.

All dimensions are reference only unless specifically tolerated.

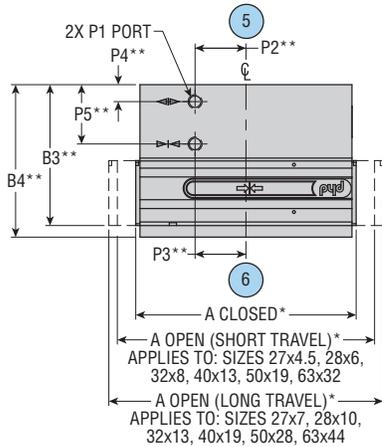
# DIMENSIONS: Series GRS Grippers - Sizes 27, 28, 32, 40, 50, 63

## GRS33-2[6] SIZES 27, 28, 32, 40, 50, 63 (Jaw Style 3)

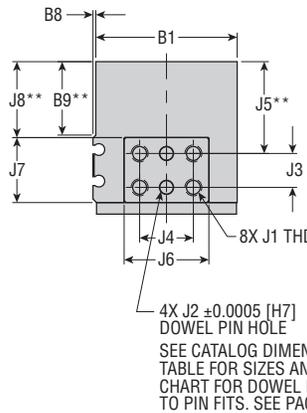


### NOTES:

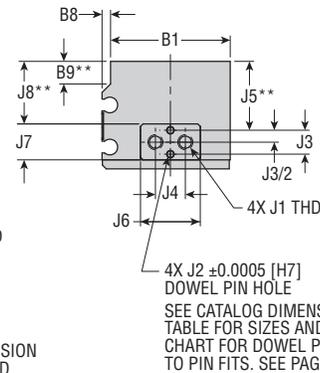
- 1) DESIGNATED  $\bar{C}$  IS CENTERLINE OF MOUNTING PATTERN
- 2) \*A OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION  
A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION
- 3) \*\*DIMENSIONS FOR THESE FEATURES CHANGE FOR SPRING ASSIST UNITS, SEE SPRING ASSIST DIMENSIONS ON OPTIONS PAGE 27 FOR INFORMATION
- 4) CIRCLED NUMBERS INDICATE POSITION
- 5) METRIC INFORMATION SHOWN IN [ ] OR IN COLUMNS DESIGNATED mm.



### JAW MOUNTING PATTERN APPLIES TO: SIZES 32, 40, 50, 63



### JAW MOUNTING PATTERN APPLIES TO: SIZES 27, 28



LETTER DIM	SIZE											
	27		28		32		40		50		63	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
SHORT TRAVEL (MIN TRAVEL PER JAW)	0.084	2.125	0.125	3.0	0.157	4.0	0.256	6.5	0.375	9.5	0.630	16.0
LONG TRAVEL (MIN TRAVEL PER JAW)	0.138	3.5	0.197	5.0	0.256	6.5	0.374	9.5	0.551	14.0	0.875	22.0
A CLOSED*	1.614	41.0	2.125	54.0	2.677	68.0	3.091	78.5	3.500	88.9	5.748	146.0
A OPEN SHORT*	1.791	45.5	2.370	60.2	3.000	76.2	3.602	91.5	4.250	108.0	7.000	177.8
A OPEN LONG*	1.890	48.0	2.500	63.5	3.189	81.0	3.839	97.5	4.606	117.0	7.500	190.5
B1	1.378	35.0	1.496	38.0	1.614	41.0	1.969	50.0	2.283	58.0	2.953	75.0
B2	1.496	38.0	1.969	50.0	2.520	64.0	2.953	75.0	3.386	86.0	5.236	133.0
B3**	1.036	26.3	1.279	32.5	1.687	42.8	1.966	49.9	2.253	57.2	3.408	86.6
B4**	1.130	28.71	1.395	35.44	1.848	46.93	2.127	54.03	2.438	61.93	3.648	92.67
B8	0.039	1.0	0.029	0.7	0.087	2.2	0.039	1.0	—	—	—	—
B9**	0.295	7.5	0.394	10.0	0.472	12.0	1.024	26.0	—	—	—	—
J1	8-32 x 0.236 DP	M4 x 0.7 x 6.0 DP	10-32 x 0.315 DP	M5 x 0.8 x 8.0 DP	10-32 x 0.394 DP	M5 x 0.8 x 10.0 DP	1/4-28 x 0.472 DP	M6 x 1.0 x 12.0 DP	1/4-28 x 0.512 DP	M6 x 1.0 x 13.0 DP	3/8-24 x 0.768 DP	M10 x 1.5 x 19.5 DP
J2	0.0634 x 0.197 DP	2.0 x 5.0 DP	0.1259 x 0.197 DP	3.0 x 5.0 DP	0.1571 x 0.236 DP	4.0 x 6.0 DP	0.1884 x 0.315 DP	5.0 x 8.0 DP	0.1884 x 0.394 DP	5.0 x 10.0 DP	0.3134 x 0.512 DP	8.0 x 13.0 DP
J3	0.2559	6.5	0.3150	8.0	0.3937	10.0	0.4724	12.0	0.5510	14.0	0.866	22.0
J4	0.354	9.0	0.413	10.5	0.630	16.0	0.748	19.0	0.787	20.0	1.063	27.0
J5**	0.6889	17.50	0.8464	21.50	1.1023	28.00	1.2797	32.50	1.4566	37.00	2.1653	55.00
J6	0.6296	16.0	0.7477	19.0	0.9840	25.0	1.1806	30.0	1.2599	32.0	1.7714	45.0
J7	0.4328	11.0	0.5509	14.0	0.7477	19.0	0.9052	23.0	1.0233	26.0	1.6139	41.0
J8**	0.602	15.3	0.727	18.5	0.938	23.8	1.060	26.9	1.229	31.2	1.793	45.5
K1	8-32 x 0.276 DP	M5 x 0.8 x 7.0 DP	1/4-20 x 0.354 DP	M6 x 1.0 x 9.0 DP	5/16-18 x 0.591 DP	M8 x 1.25 x 15 DP	5/16-18 x 0.591 DP	M8 x 1.25 x 15 DP	3/8-16 x 0.768 DP	M10 x 1.5 x 19.5 DP	1/2-13 x 1.024 DP	M12 x 1.75 x 26.0 DP
K2	1.024	26.0	0.984	25.0	0.945	24.0	1.260	32.0	1.457	37.0	1.969	50.0
K3	1.142	29.0	1.457	37.0	1.850	47.0	2.362	60.0	2.559	65.0	4.134	105.0
K4	0.1259 x 0.250 DP	3.0 x 6.3 DP	0.1884 x 0.256 DP	5.0 x 6.5 DP	0.1884 x 0.256 DP	5.0 x 6.5 DP	0.1884 x 0.256 DP	5.0 x 6.5 DP	0.3134 x 0.512 DP	8.0 x 13.0 DP	0.3759 x 0.512 DP	10.0 x 13.0 DP
K5	1.3386	34.0	1.5748	40.0	1.9685	50.0	2.3622	60.0	2.6378	67.0	4.1339	105.0
P1	10-32	M5 x 0.8	10-32	M5 x 0.8	10-32	M5 x 0.8	10-32	M5 x 0.8	1/8 NPT	1/8 BSPP	1/8 NPT	1/8 BSPP
P2**	0.482	12.2	0.433	11.0	0.591	15.0	0.709	18.0	1.016	25.8	1.181	30.0
P3**	0.591	15.0	0.512	13.0	0.591	15.0	0.709	18.0	0.965	24.5	1.181	30.0
P4**	0.201	5.1	0.201	5.1	0.236	6.0	0.236	6.0	0.389	9.9	0.413	10.5
P5**	0.572	14.5	0.572	14.5	0.728	18.5	0.827	21.0	1.151	29.2	1.437	36.5

All dimensions are reference only unless specifically tolerated.

## FSR2 MEDIUM FORCE SPRING ASSIST CLOSE

## FSE2 MEDIUM FORCE SPRING ASSIST OPEN

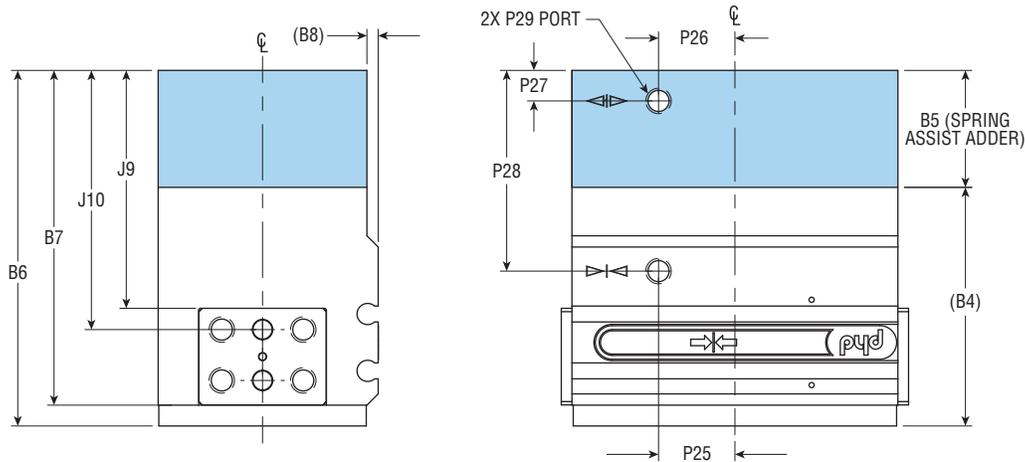
Springs can maintain spring grip force if air pressure is lost or increase grip force in one specific direction when used with air pressure. Spring assist units are engineered and tested for a minimum of six million cycles under normal operating conditions. Working air pressure for spring assist units is 50 psi min - 100 psi max [3.5 bar min - 7 bar max]. For spring grip forces, see table on page 18.



FSR2



FSE2



LETTER DIM	SIZE															
	19 & 25 (GRS34)		25 (GRS33)		27		28		32		40		50		63	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
(B4)			1.126	28.6	1.130	28.7	1.395	35.4	1.848	46.9	2.127	54.0	2.438	61.9	3.648	92.7
B5			0.610	15.5	0.610	15.5	0.610	15.5	0.905	23.0	1.024	26.0	1.162	29.5	1.300	33.0
B6			1.736	44.1	1.740	44.2	2.005	50.9	2.753	69.9	3.151	80.0	3.600	91.4	4.948	125.7
B7			1.642	41.7	1.646	41.8	1.889	48.0	2.592	65.8	2.990	75.9	3.415	86.7	4.708	119.6
(B8)			0.089	2.3	0.039	1.0	0.029	0.7	0.087	2.2	0.039	1.0	—	—	—	—
J9	Contact PHD Custom Solutions		1.265	32.1	1.212	30.8	1.336	33.9	1.843	46.8	2.083	52.9	2.390	60.7	3.092	78.5
J10			1.3313	33.8	1.2989	33.0	1.4564	37.0	2.0077	51.0	2.3033	58.5	2.6180	66.5	3.4646	88.0
P25			0.512	13.0	0.591	15.0	0.512	13.0	0.591	15.0	0.709	18.0	0.965	24.5	1.181	30.0
P26			0.482	12.2	0.482	12.2	0.433	11.0	0.591	15.0	0.709	18.0	1.016	25.8	1.181	30.0
P27			0.201	5.1	0.201	5.1	0.201	5.1	0.236	6.0	0.236	6.0	0.389	9.9	0.413	10.5
P28			0.906	23.0	1.112	28.2	1.138	28.9	1.553	39.4	1.765	44.8	2.087	53.0	2.736	69.5
P29			10-32	M5 x 0.8	10-32	M5 x 0.8	10-32	M5 x 0.8	10-32	M5 x 0.8	10-32	M5 x 0.8	1/8 NPT	1/8 BSPP	1/8 NPT	1/8 BSPP

**NOTES:**

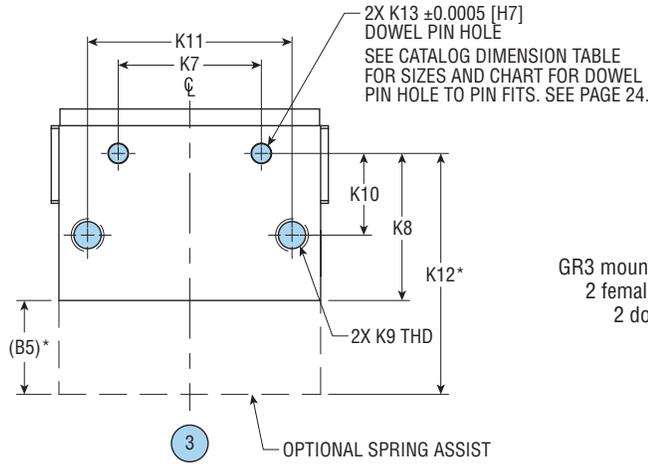
- 1) DESIGNATED  $\phi$  IS CENTERLINE OF MOUNTING PATTERN
- 2) METRIC INFORMATION SHOWN IN [ ] OR IN COLUMNS DESIGNATED mm.

All dimensions are reference only unless specifically tolerated.

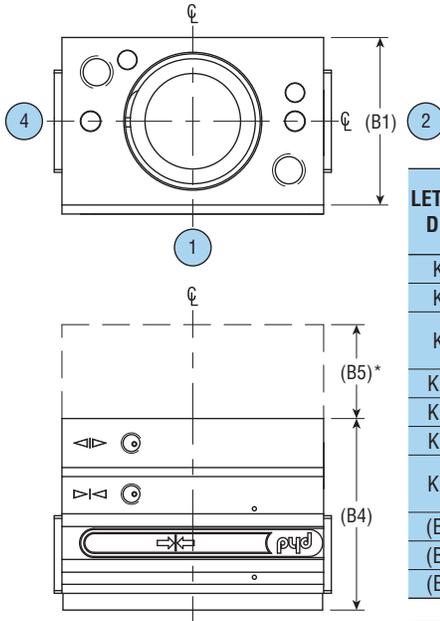
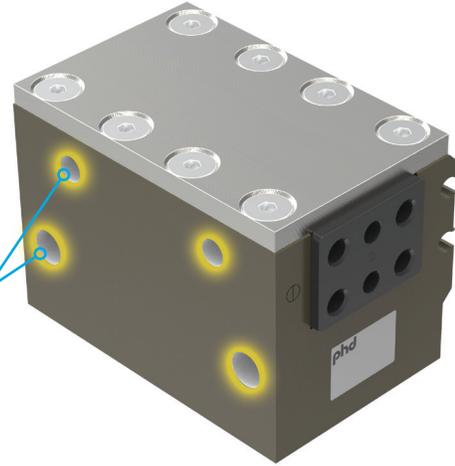
## GR3

### MOUNTING OPTION IN LOCATION 37

This option provides mounting threads and dowel holes on the side opposite the standard ports.



GR3 mounting includes:  
2 female threads and  
2 dowel pin holes



LETTER DIM	SIZE									
	19		25 (GRS34)		25 (GRS33)		27		28	
	in	mm	in	mm	in	mm	in	mm	in	mm
K7	0.5512	14.0	1.1811	30.0	0.7480	19.0	0.7480	19.0	0.9449	24.0
K8	0.938	23.8	0.748	19.0	0.866	22.0	0.866	22.0	1.063	27.0
K9	8-32 x 0.315 DP	M4 x 0.7 x 8.0 DP	8-32 x 0.374 DP	M4 x 0.7 x 9.5 DP	6-32 x 0.384 DP	M4 x 0.7 x 9.75 DP	8-32 x 0.315 DP	M5 x 0.8 x 8.0 DP	1/4-20 x 0.512 DP	M6 x 1.0 x 13.0 DP
K10	0.374	9.5	0.315	8.0	0.433	11.0	0.433	11.0	0.551	14.0
K11	0.787	20.0	1.260	32.0	1.220	31.0	1.220	31.0	1.496	38.0
K12*	—	—	—	—	1.476	37.5	1.476	37.5	1.673	42.5
K13	0.0947 x 0.137 DP	3.0 x 3.3 DP	0.1259 x 0.197 DP	3.0 x 5.0 DP	0.1259 x 0.197 DP	3.0 x 5.0 DP	0.1259 x 0.236 DP	3.0 x 6.0 DP	0.1884 x 0.236 DP	5.0 x 6.0 DP
(B1)	1.040	26.4	1.250	31.8	1.250	31.8	1.378	35.0	1.496	38.0
(B4)	1.180	30.0	1.126	28.6	1.126	28.6	1.130	28.7	1.395	35.4
(B5)*	—	—	—	—	0.610	15.5	0.610	15.5	0.610	15.5

LETTER DIM	SIZE							
	32		40		50		63	
	in	mm	in	mm	in	mm	in	mm
K7	1.3780	35.0	1.5748	40.0	1.9685	50.0	3.1496	80.0
K8	1.417	36.0	1.693	43.0	1.890	48.0	2.717	69.0
K9	5/16-18 x 0.591 DP	M8 x 1.25 x 15.0 DP	5/16-18 x 0.591 DP	M8 x 1.25 x 15.0 DP	3/8-16 x 0.630 DP	M10 x 1.5 x 16.0 DP	1/2-13 x 1.024 DP	M12 x 1.75 x 26.0 DP
K10	0.787	20.0	0.984	25.0	1.024	26.0	1.378	35.0
K11	1.969	50.0	2.362	60.0	2.559	65.0	4.134	105.0
K12*	2.323	59.0	2.717	69.0	3.051	77.5	4.016	102.0
K13	0.1884 x 0.197 DP	5.0 x 5.0 DP	0.1884 x 0.197 DP	5.0 x 5.0 DP	0.3134 x 0.315 DP	8.0 x 8.0 DP	0.3759 x 0.394 DP	10.0 x 10.0 DP
(B1)	1.614	41.0	1.969	50.0	2.283	58.0	2.953	75.0
(B4)	1.848	46.9	2.127	54.0	2.438	61.9	3.648	92.7
(B5)*	0.905	23.0	1.024	26.0	1.162	29.5	1.300	33.0

#### NOTES:

- 1) DESIGNATED  $\phi$  IS CENTERLINE OF UNIT
- 2) CIRCLED NUMBERS INDICATE POSITIONS
- 3) \* APPLIES TO SPRING ASSIST UNITS ONLY
- 4) METRIC INFORMATION SHOWN IN [ ] OR IN COLUMNS DESIGNATED mm.

All dimensions are reference only unless specifically tolerated.

# OPTIONS: Series GRS Grippers

## L11-UB99

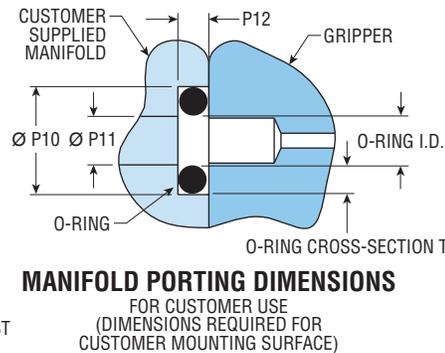
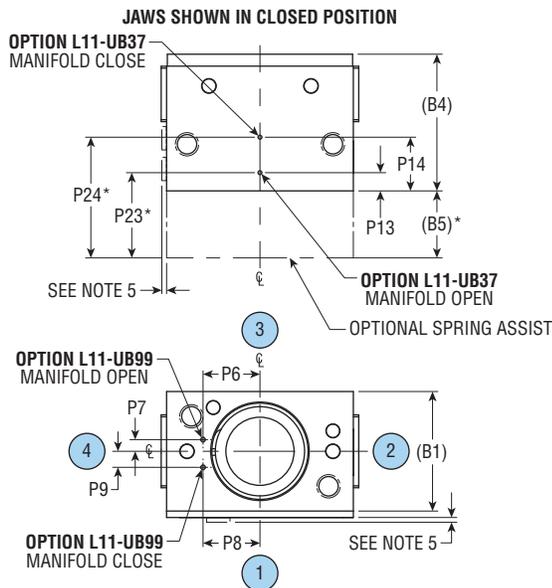
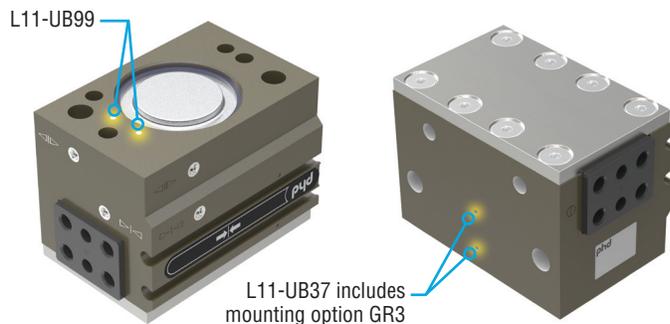
### MANIFOLD PORTS ON BOTTOM

## L11-UB37

### MANIFOLD PORTS ON BACK

With these options the gripper is configured for manifold mounting on either the standard or optional mounting face, according to the selected option code. The standard ports are plugged. O-ring seals are provided for mounting between the gripper and the manifold.

When the L11-UB37 option is specified, the GR3 option is automatically included to provide mountings on the manifold surface. See previous page for GR3 mounting information.



### REPLACEMENT MANIFOLD

SIZE	KIT NUMBER
19	88325-19-2
25	88325-25-2
27	88325-27-2
28	88325-28-2
32	88325-32-2
40	88325-40-2
50	88325-50-2
63	88325-63-2

Kit includes 2 replacement o-rings and 1 spare o-ring

LETTER DIM	SIZE																	
	19		25 (GRS34)		25 (GRS33)		27		28		32		40		50		63	
	in	mm																
P6	0.394	10.0	0.551	14.0	0.591	15.0	0.608	15.4	0.650	16.5	0.768	19.5	0.984	25.0	1.181	30.0	1.811	46.0
P7	0.236	6.0	0.315	8.0	0.276	7.0	0.236	6.0	0.177	4.5	0.157	4.0	0.276	7.0	0.276	7.0	0.472	12.0
P8	0.374	9.5	0.551	14.0	0.591	15.0	0.591	15.0	0.650	16.5	0.768	19.5	0.984	25.0	1.437	36.5	1.811	46.0
P9	0.374	9.5	0.413	10.5	0.394	10.0	0.295	7.5	0.236	6.0	0.217	5.5	0.276	7.0	0.276	7.0	0.472	12.0
P10	0.197	5.0	0.197	5.0	0.197	5.0	0.197	5.0	0.197	5.0	0.197	5.0	0.197	5.0	0.236	6.0	0.236	6.0
P10 O-RING (I.D. x T.)	2 mm x 1.5 mm		3 mm x 1.5 mm		3 mm x 1.5 mm													
P11	0.078	2.0	0.078	2.0	0.078	2.0	0.078	2.0	0.078	2.0	0.078	2.0	0.078	2.0	0.098	2.5	0.098	2.5
P12	0.048	1.2	0.048	1.2	0.048	1.2	0.048	1.2	0.048	1.2	0.048	1.2	0.048	1.2	0.048	1.2	0.048	1.2
P13	0.180	4.6	0.191	4.9	0.191	4.9	0.191	4.9	0.190	4.8	0.246	6.2	0.246	6.2	0.290	7.4	0.343	8.7
P14	0.460	11.7	0.490	12.4	0.498	12.6	0.489	12.4	0.545	13.8	0.725	18.4	0.846	21.5	1.060	26.9	1.504	38.2
P23*	—	—	—	—	0.191	4.9	0.191	4.9	0.190	4.8	0.246	6.2	0.246	6.2	0.290	7.4	0.343	8.7
P24*	—	—	—	—	1.099	27.9	1.006	25.6	1.121	28.5	0.725	18.4	1.765	44.8	2.071	52.6	2.743	69.7
(B1)	1.040	26.4	1.250	31.8	1.250	31.8	1.378	35.0	1.496	38.0	0.246	6.2	1.969	50.0	2.283	58.0	2.953	75.0
(B4)	1.180	30.0	1.126	28.6	1.126	28.6	1.130	28.7	1.395	35.4	1.848	46.9	2.127	54.0	2.438	61.9	3.648	92.7
(B5)*	—	—	—	—	0.610	15.5	0.610	15.5	0.610	15.5	0.905	23.0	1.024	26.0	1.162	29.5	1.300	33.0

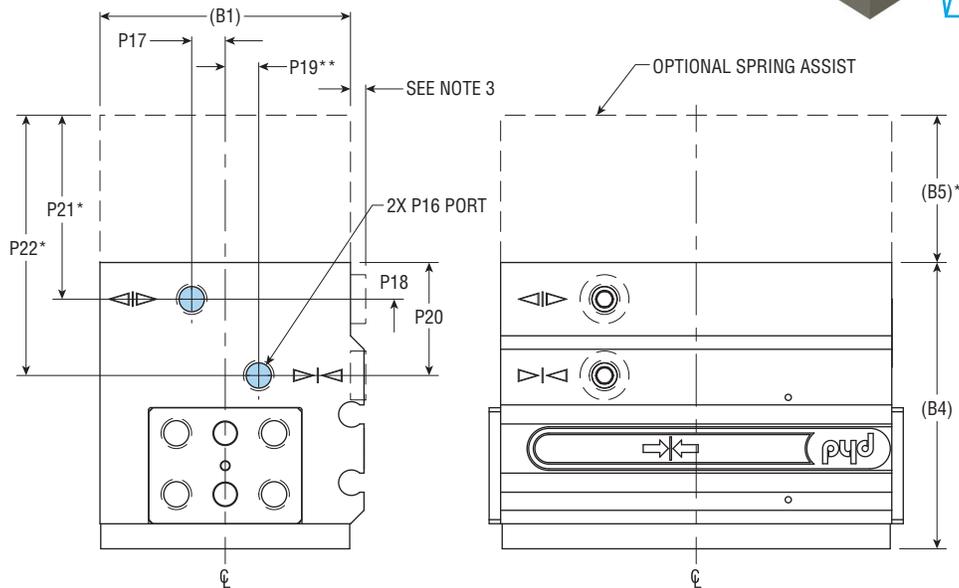
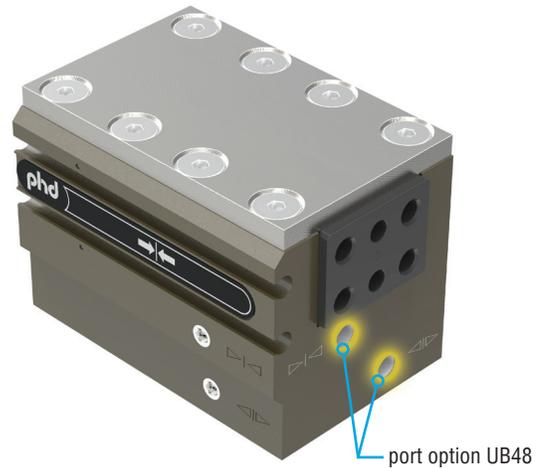
#### NOTES:

- DESIGNATED  $\phi$  IS CENTERLINE OF UNIT
- CIRCLED NUMBERS INDICATE POSITIONS
- \* APPLIES TO SPRING ASSIST UNITS ONLY
- METRIC INFORMATION SHOWN IN [ ] OR IN COLUMNS DESIGNATED mm.
- 0.098 [2.5] THICK PORT PLUG HEAD FOR SIZE 50 & 63 METRIC UNITS ONLY. FOR ALL OTHER SIZES, PORT PLUG HEAD MAY PROTRUDE UP TO 0.040 [1].

All dimensions are reference only unless specifically tolerated.

## UB48 PORT OPTION IN LOCATION 48

This option provides ports in location 48.  
The standard ports are plugged.



LETTER DIM	SIZE																	
	19		25 (GRS34)		25 (GRS33)		27		28		32		40		50		63	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
P16	10-32	M5	10-32	M5	10-32	M5	10-32	M5	10-32	M5	10-32	M5	10-32	M5	10-32	M5	1/8 NPT	1/8 BSPP
P17	0.236	6.0	0.315	8.0	0.276	7.0	0.276	7.0	0.236	6.0	0.216	5.5	0.276	7.0	0.295	7.5	0.472	12.0
P18	0.207	5.3	0.207	5.3	0.201	5.1	0.201	5.1	0.201	5.1	0.236	6.0	0.236	6.0	0.295	7.5	0.394	10.0
P19**	0.335	8.5	0.374	9.5	0.413	10.5	0.433	11.0	0.236	6.0	0.216	5.5	0.276	7.0	0.787**	20.0**	0.472	12.0
P20	0.492	12.5	0.423	10.7	0.453	11.5	0.453	11.5	0.512	13.0	0.728	18.5	0.846	21.5	1.060	26.9	1.407	35.7
P21*	—	—	—	—	0.201	5.1	0.201	5.1	0.201	5.1	0.236	6.0	0.236	6.0	0.290	7.4	0.394	10.0
P22*	—	—	—	—	0.945	24.0	1.033	26.2	1.122	28.5	1.555	39.5	1.765	44.8	2.086	53.0	2.697	68.5
(B1)	1.040	26.4	1.250	31.8	1.250	31.8	1.378	35.0	1.496	38.0	1.614	41.0	1.969	50.0	2.283	58.0	2.953	75.0
(B4)	1.180	30.0	1.126	28.6	1.126	28.6	1.130	28.7	1.395	35.4	1.848	46.9	2.127	54.0	2.438	61.9	3.648	92.7
(B5)*	—	—	—	—	0.610	15.5	0.610	15.5	0.610	15.5	0.905	23.0	1.024	26.0	1.162	29.5	1.300	33.0

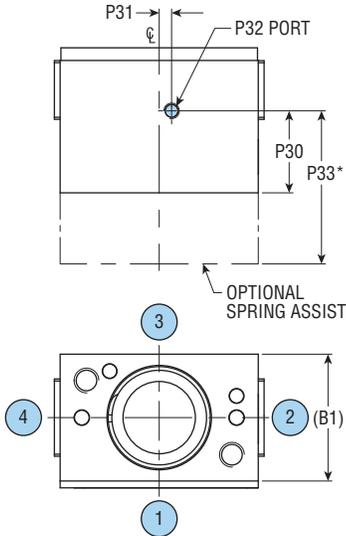
### NOTES:

- DESIGNATED  $\phi$  IS CENTERLINE OF UNIT
- \*APPLIES TO SPRING ASSIST UNITS ONLY
- 0.098 [2.5] THICK PORT PLUG HEAD FOR SIZE 50 & 63 METRIC UNITS ONLY. FOR ALL OTHER SIZES, PORT PLUG HEAD MAY PROTRUDE UP TO 0.040 [1]
- \*\*P19 DIMENSION FOR SIZE 50 SPRING ASSIST IS 0.295 [7.5] VS. STANDARD UNIT 0.787 [20.0]
- METRIC INFORMATION SHOWN IN [ ] OR IN COLUMNS DESIGNATED mm.

All dimensions are reference only unless specifically tolerated.

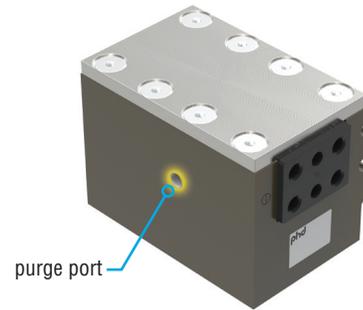
## LT37 PURGE PORT

This option provides a rear threaded port for maintaining a low positive pressure (1-2 psi [0.06-0.13 bar]) in the jaw and driver mechanism. For higher positive pressures, contact PHD for alternate covers.



**NOTES:**

- 1) DESIGNATED  $\phi$  IS CENTERLINE OF UNIT
- 2) CIRCLED NUMBERS INDICATE POSITIONS
- 3) \*APPLIES TO SPRING ASSIST UNITS ONLY
- 4) METRIC INFORMATION SHOWN IN [ ] OR IN COLUMNS DESIGNATED mm.



LETTER DIM	SIZE									
	19		25 (GRS34)		25 (GRS33)		27		28	
	in	mm								
P30	0.807	20.5	0.630	16.0	0.650	16.5	0.669	17.0	0.787	20.0
P31	0.000	0.0	0.000	0.0	0.138	3.5	0.138	3.5	0.138	3.5
P32	10-32 x 0.157 DP	M5 x 4.0 DP								
P33*	—	—	—	—	1.260	32.0	1.280	32.5	1.398	35.5
(B1)	1.040	26.4	1.250	31.8	1.250	31.8	1.378	35.0	1.496	38.0

LETTER DIM	SIZE							
	32		40		50		63	
	in	mm	in	mm	in	mm	in	mm
P30	1.043	26.5	1.161	29.5	1.319	33.5	1.969	50.0
P31	0.157	4.0	0.177	4.5	0.217	5.5	0.236	6.0
P32	10-32 x 0.157 DP	M5 x 4.0 DP						
P33*	1.949	49.5	2.185	55.5	2.480	63.0	3.268	83.0
(B1)	0.246	6.2	1.969	50.0	2.283	58.0	2.953	75.0

## V1 FLUOROELASTOMER SEALS AND LUBRICANTS

Fluoroelastomer seals and lubricants are available to achieve increased performance with certain fluids and higher temperature applications. Seal compatibility should be checked with the fluid manufacturer for proper application.

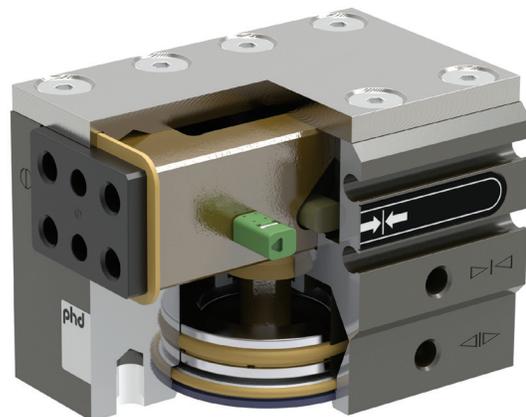
Temperature range for -V1 is -20°F min to +225°F max [-28°C min to +107°C max]. Higher temperature service available. Consult PHD.

**NOTE:** Fluoroelastomer seals may not achieve the rated life expectancy as the standard nitrile seals.

SWITCH TYPE	MAX OPERATING TEMPERATURE
JC1SD	176°F [80°C]
JC1STP Teachable	167°F [75°C]
Inductive Proximity	167°F [75°C]

## V6 FLUOROELASTOMER SEALS AND CLEANROOM GRADE LUBRICANT

Fluoroelastomer seals and cleanroom grade lubricant replace standard seals and lubrication for compatibility with various environments. Seal compatibility should be checked with fluid manufacturer for proper application.



## Y4 CLEANROOM GRADE LUBRICANT

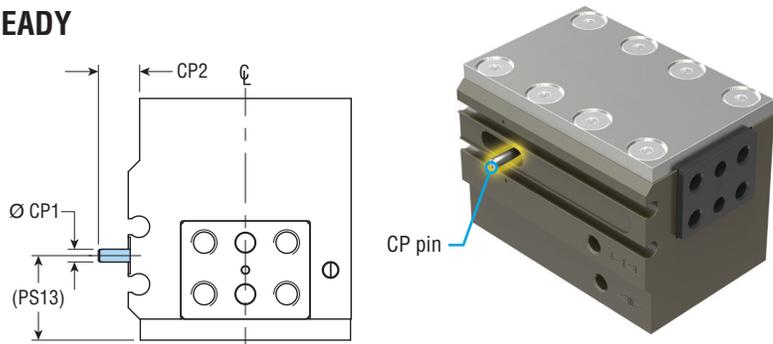
Cleanroom grade lubricant replaces all standard lubricants.

All dimensions are reference only unless specifically tolerated.

## CP INDUCTIVE PROXIMITY SWITCH READY (REPLACES -CU OPTION)

With this option the gripper includes a pin attached to the jaw for use with inductive proximity switches. Switches and switch mounting kits are required in addition to the -CP option. Units with -CP option do not maintain standard IP54 ingress protection.

SPxxx options conveniently include the -CP option. See accessories pages for switches and mounting kits.



LETTER DIM	SIZE																	
	19		25 (GRS34)		25 (GRS33)		27		28		32		40		50		63	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
CP1	0.098	2.5	0.098	2.5	0.098	2.5	0.098	2.5	0.098	2.5	0.098	2.5	0.158	4.0	0.158	4.0	0.158	4.0
CP2	0.391	9.9	0.317	8.1	0.317	8.1	0.256	6.5	0.256	6.5	0.315	8.0	0.275	7.0	0.364	9.2	0.364	9.2
PS13	0.413	10.5	0.449	11.4	0.449	11.4	0.449	11.4	0.548	13.9	0.646	16.4	0.680	17.3	0.783	19.9	1.481	37.6

## Sxxx BUNDLED SWITCH OPTIONS

These options conveniently provide switches with additional hardware if required. Series JC1SDx-x single position and inductive proximity switches are available as NPN or PNP. Series JC1STP-x teachable switch is available as PNP only. Connection method may also be specified along with quantity of switches, up to nine for Series JC and two for inductive proximity switches.

-CP option is automatically included with the selection of inductive proximity switches and is not compatible with Series JC. See Options & Accessories sections for dimensional and application information.

**S x x x x**

**SWITCH SERIES**

- C** - Series JC1SDx-x, Single Position
- E** - Series JC1STP-x, Teachable (PNP only)
- P** - Inductive Proximity Switch

**SWITCH CIRCUITRY**

- 0** - Mounting Hardware Only (No Switches)
- N** - NPN (Sink)
- P** - PNP (Source)

**QUANTITY**

- 1 or 2** Inductive Proximity Switches or Mounting Brackets
- 1 to 9** JC1SDx-x, JC1DTP-x

**CABLE TYPE**

- 0** - No Switches
- K** - Quick Connect Only (JC1SDx-K, JC1STP-K)
- 2** - 2 Meter Length Cable (Prox, JC1STP-2)
- 5** - 5 Meter Length Cable (JC1SDx-5)

## SWITCH SERIES

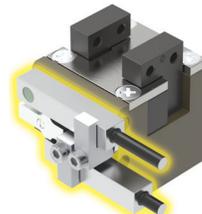


**C** - Series JC1SDx-x Single Position



**E** - Series JC1STP-x Teachable (PNP only)

**6 mm Square Prox Size 19**



**4 mm Round Prox Sizes 25, 27, 28, 32, 40**



**8 mm Threaded Round Prox Sizes 50, 63**



**P** - Inductive Proximity Switch (Includes -CP option, target, prox switch, and either one or two switch mounting brackets.) Target comes unassembled.

## SP00x OPTION



**SP001** - Target with **one** inductive proximity switch mounting bracket



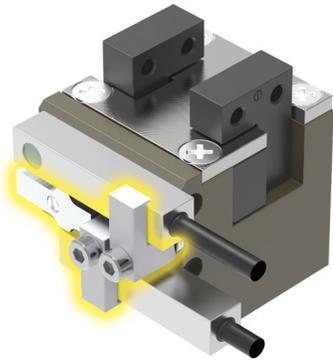
**SP002** - Target with **two** inductive proximity switch mounting brackets

All dimensions are reference only unless specifically toleranced.

## INDUCTIVE PROXIMITY SWITCHES, MOUNTING HARDWARE, AND BRACKETS (-CP OPTION REQUIRED)

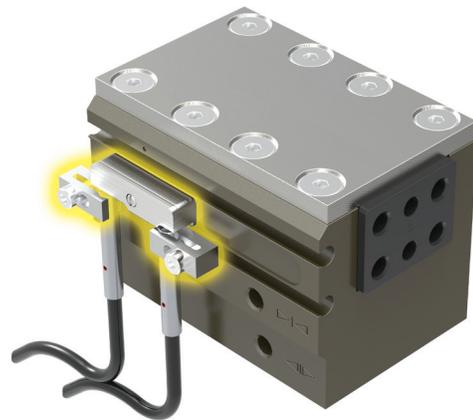
Inductive proximity switches and mounting hardware may be purchased as separate items as shown below. For greater ordering convenience, see the SPxxx options on previous page. -CP option is required for inductive proximity switch mounting. Dimensions shown on next page.

For additional switch information, go to [phdinc.com](http://phdinc.com).



**6 mm SQUARE INDUCTIVE PROXIMITY SWITCHES (SIZE 19)**

PART NO.	DESCRIPTION
18431-001-02	NPN (Sink), 10-30 VDC, 2 m cable
18431-002-02	PNP (Source), 10-30 VDC, 2 m cable



**4 mm ROUND INDUCTIVE PROXIMITY SWITCHES (SIZE 25, 27, 28, 32, 40)**

PART NO.	DESCRIPTION
18430-001-02	NPN (Sink), 10-30 VDC, 2 m cable
18430-002-02	PNP (Source), 10-30 VDC, 2 m cable



**8 mm THREADED INDUCTIVE PROXIMITY SWITCHES (SIZE 50, 63)**

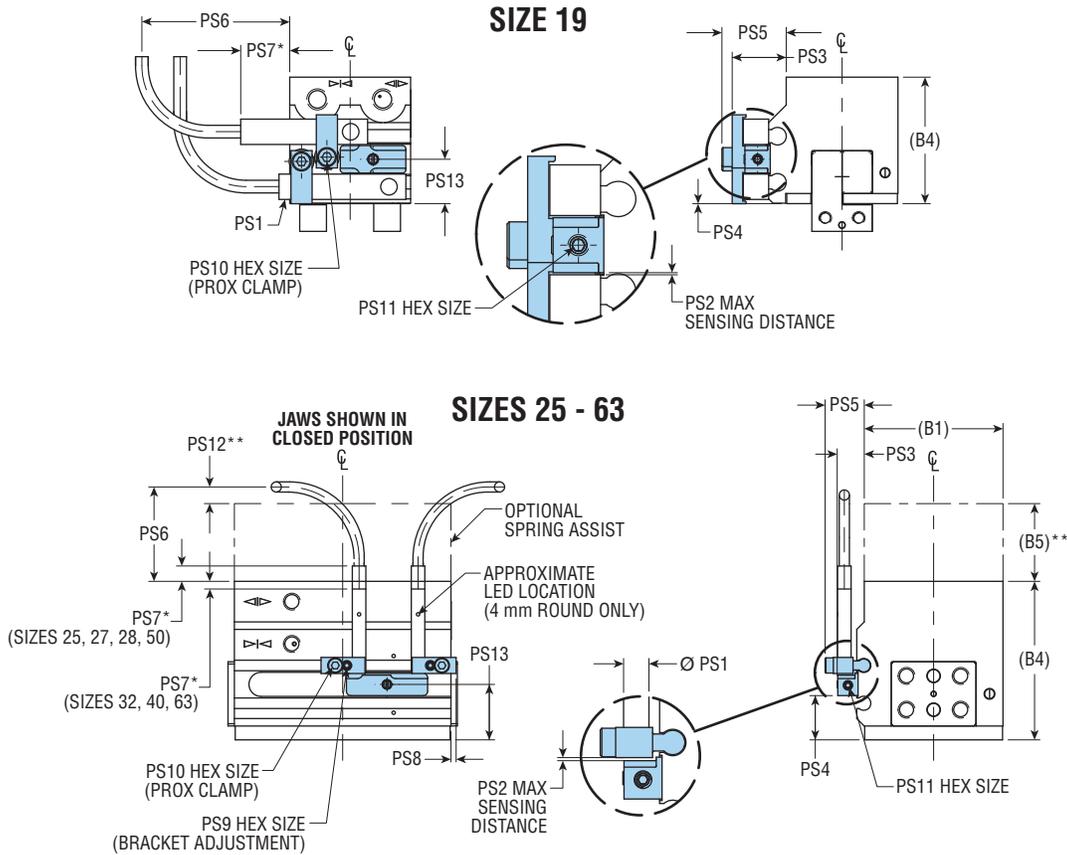
PART NO.	DESCRIPTION
51422-005-02	NPN (Sink) 2 m cable
51422-006-02	PNP (Source) 2 m cable

## INDUCTIVE PROXIMITY SWITCH MOUNTING KITS

SIZE	KIT NUMBER	
	1 BRACKET	2 BRACKETS
19	88326-19-1	88326-19-2
25 (GRS34)	88326-25-1	88326-25-2
25 (GRS33)	88326-27-1	88326-27-2
27	88326-27-1	88326-27-2
28	88326-28-1	88326-28-2
32	88326-32-1	88326-32-2
40	88326-40-1	88326-40-2
50	88326-50-1	88326-50-2
63	88326-63-1	88326-63-2

Kit includes 1 target and 1 or 2 switch mounting brackets. Requires -CP option.

## INDUCTIVE PROXIMITY SWITCHES, MOUNTING HARDWARE, AND BRACKETS (-CP OPTION REQUIRED)



LETTER DIM	SIZE																	
	19		25 (GRS34)		25 (GRS33)		27		28		32		40		50		63	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
PS1	6 mm Square				4 mm Round								8 mm Threaded					
PS2	0.031	0.8	0.020	0.5	0.020	0.5	0.020	0.5	0.020	0.5	0.020	0.5	0.020	0.5	0.030	0.8	0.030	0.8
PS3	0.503	12.8	0.325	8.3	0.324	8.2	0.275	7.0	0.265	6.7	0.315	8.0	0.275	7.0	0.380	9.7	0.453	11.5
PS4	0.001	0.03	0.319	8.1	0.318	8.1	0.318	8.1	0.417	10.6	0.515	13.1	0.549	13.9	0.652	16.6	1.350	34.3
PS5	0.598	15.2	0.450	11.4	0.460	11.7	0.410	10.4	0.400	10.2	0.458	11.6	0.411	10.4	0.453	11.5	0.453	11.5
PS6	1.376	35.0	1.357	34.5	1.354	34.4	1.350	34.3	1.185	30.1	0.831	21.1	0.585	14.9	1.160	29.5	0.658	16.7
PS7*	0.456	11.6	0.437	11.1	0.434	11.0	0.430	10.9	0.265	6.7	0.089	2.3	0.335	8.5	0.240	6.1	0.262	6.7
PS8	—	—	0.236	6.0	0.256	6.5	0.256	6.5	0.170	4.3	0.060	1.5	—	—	—	—	—	—
PS9	—	—	0.051	1.3	0.051	1.3	0.051	1.3	0.051	1.3	0.051	1.3	0.051	1.3	0.051	1.3	0.051	1.3
PS10	0.079	2.0	0.079	2.0	0.079	2.0	0.079	2.0	0.079	2.0	0.079	2.0	0.079	2.0	0.079	2.0	0.079	2.0
PS11	0.051	1.3	0.051	1.3	0.051	1.3	0.051	1.3	0.051	1.3	0.051	1.3	0.051	1.3	0.061	1.5	0.061	1.5
PS12**	—	—	0.744	18.9	0.744	18.9	0.740	18.8	0.575	14.6	—	—	—	—	—	—	—	—
PS13	0.413	10.5	0.449	11.4	0.449	11.4	0.449	11.4	0.548	13.9	0.646	16.4	0.680	17.3	0.783	19.9	1.481	37.6
(B1)	1.042	26.5	1.252	31.8	1.250	31.8	1.378	35.0	1.496	38.0	1.614	41.0	1.969	50.0	2.283	58.0	2.953	75.0
(B4)**	1.180	30.0	1.126	28.6	1.126	28.6	1.130	28.7	1.395	35.4	1.848	46.9	2.127	54.0	2.438	61.9	3.648	92.7
(B5)**	—	—	—	—	0.610	15.5	0.610	15.5	0.610	15.5	0.905	23.0	1.024	26.0	1.161	29.5	1.299	33.0

### NOTES:

- 1) DESIGNATED  $\bar{C}$  IS CENTERLINE OF UNIT
- 2) \*INDICATES BOTTOM OF PROXIMITY SWITCH BARREL. DIMENSIONS DO NOT APPLY TO UNITS WITH SPRING ASSIST. (PROXIMITY SWITCH BARREL DOES NOT PROTRUDE ON SPRING ASSIST.)
- 3) \*\*APPLIES TO SPRING ASSIST UNITS ONLY.
- 4) METRIC INFORMATION SHOWN IN [ ] OR IN COLUMNS DESIGNATED mm.

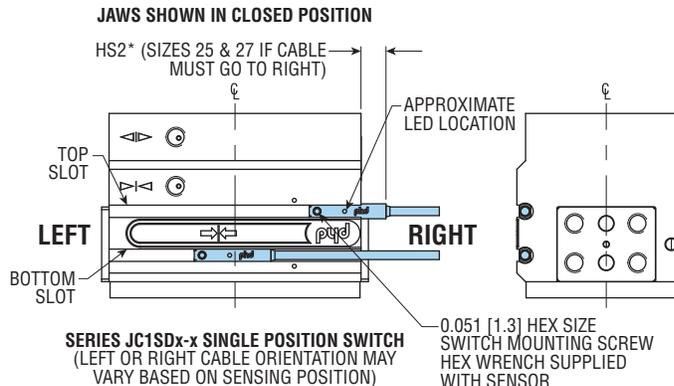
All dimensions are reference only unless specifically tolerated.

## SERIES JC1SDx-x SINGLE POSITION MAGNETIC SWITCH

This switch provides the ability to identify a single jaw position. Solid-state sensing technology provides a highly reliable switch. Elliptical housing allows for easy “drop-in” installation. Includes LED indicator for convenient means of positioning. Available with PNP or NPN output. Available with cable or 8 mm threaded Quick Connect.

### SERIES JC1SDx SINGLE POSITION SWITCHES

PART NO.	DESCRIPTION
JC1SDN-5	NPN (Sink) Solid State, 10-30 VDC, 5 m cable
JC1SDP-5	PNP (Source) Solid State, 10-30 VDC, 5 m cable
JC1SDN-K	NPN (Sink) Solid State, 10-30 VDC, Quick Connect
JC1SDP-K	PNP (Source) Solid State, 10-30 VDC, Quick Connect



#### NOTES:

- 1) DESIGNATED  $\phi$  IS CENTERLINE OF UNIT
- 2) \*HS2 DIMENSION APPLIES TO INDICATED END OF SWITCH HOUSING (NOT CABLE OR STRAIN RELIEF). SIZES WITHOUT HS2 REMAIN WITHIN GRIPPER BODY BOUNDARIES.
- 3) METRIC INFORMATION SHOWN IN [ ] OR IN COLUMNS DESIGNATED mm.

### SERIES JC1SDx CORDSET

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

### DIMENSION - HS2\* SERIES JC1SDx-x SINGLE POSITION INSTALLATION ORIENTATION

HS2*	UNIT SIZE	JC1SDP-K TOP SLOT		JC1SDP-K BOTTOM SLOT	
		OPEN	CLOSE	OPEN	CLOSE
		19	CABLE LEFT	0.4 [10.2] CABLE RIGHT	CABLE LEFT
25 (GRS34)	CABLE RIGHT	0.158 [4.0] CABLE LEFT	CABLE RIGHT	CABLE RIGHT	
25 (GRS33)	0.059 [1.5] CABLE RIGHT	0.335 [8.5] CABLE RIGHT	CABLE LEFT	CABLE LEFT	
27	0.059 [1.5] CABLE RIGHT	CABLE LEFT	CABLE LEFT	CABLE LEFT	
28	CABLE RIGHT	CABLE LEFT	CABLE LEFT OR RIGHT	CABLE LEFT	
32-63	CABLE LEFT OR RIGHT	CABLE LEFT OR RIGHT	CABLE LEFT OR RIGHT	CABLE LEFT OR RIGHT	

## SERIES JC1STP-x TWO POSITION TEACHABLE SWITCHES

This switch provides the ability to identify two separately programmable positions with a single switch. Programmable capability means no “fine-tuning.” With the switch properly aligned, just place the jaws in desired positions and program. Solid-state sensing technology provides a highly reliable switch. Elliptical housing allows for easy “drop-in” installation from the front, and does not have to be inserted from the end of the slot. LED indicators on module for convenient positioning and programming. Available with cable or 8 mm threaded Quick Connect.

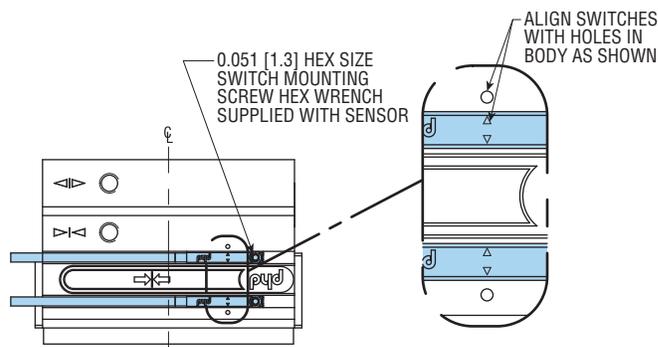
### SERIES JC1ST TWO POSITION TEACHABLE MAGNETIC SWITCHES

PART NO.	DESCRIPTION
JC1STP-2	PNP (Source), Solid State, 12-30 VDC, 2 m cable
JC1STP-K	PNP (Source), Solid State, 12-30 VDC, Quick Connect

Includes one switch and installation directions.

### SERIES JC1ST CORDSET

PART NO.	DESCRIPTION
81284-1-001	M8, 4 pin, Straight Female Connector, 5 m cable



SERIES JC1STP-x TEACHABLE SWITCH  
(SEE CHART FOR MINIMUM SENSING DISTANCES)

#### NOTES:

- 1) DESIGNATED  $\phi$  IS CENTERLINE OF UNIT
- 2) \*MINIMUM DISTANCE BETWEEN SET POINTS MUST BE LESS THAN TOTAL JAW TRAVEL OF UNIT. SEE CATALOG DIMENSIONS ON PAGES 24-26 FOR MINIMUM JAW TRAVEL.
- 3) METRIC INFORMATION SHOWN IN [ ] OR IN COLUMNS DESIGNATED mm.

NOTE 2 DIMENSIONS	SIZE																	
	19		25 (GRS34)		25 (GRS33)		27		28		32		40		50		63	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
Minimum Total Jaw Travel Distance Between Sensing Locations	0.138	3.5	0.138	3.5	0.197	5.0	0.138	3.5	0.138	3.5	0.138	3.5	0.217	5.5	0.276	7.0	0.551	14.0

All dimensions are reference only unless specifically tolerated.