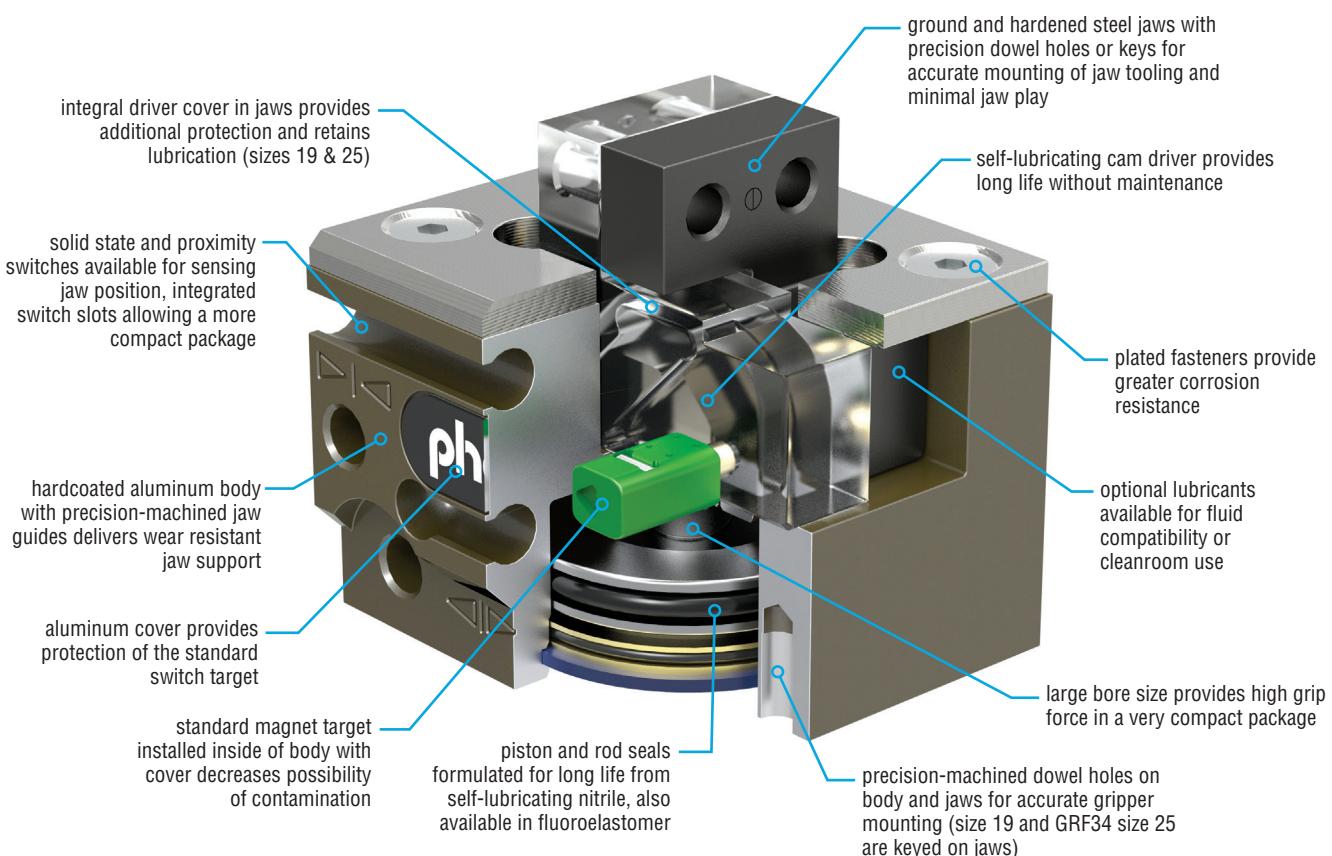


GRF

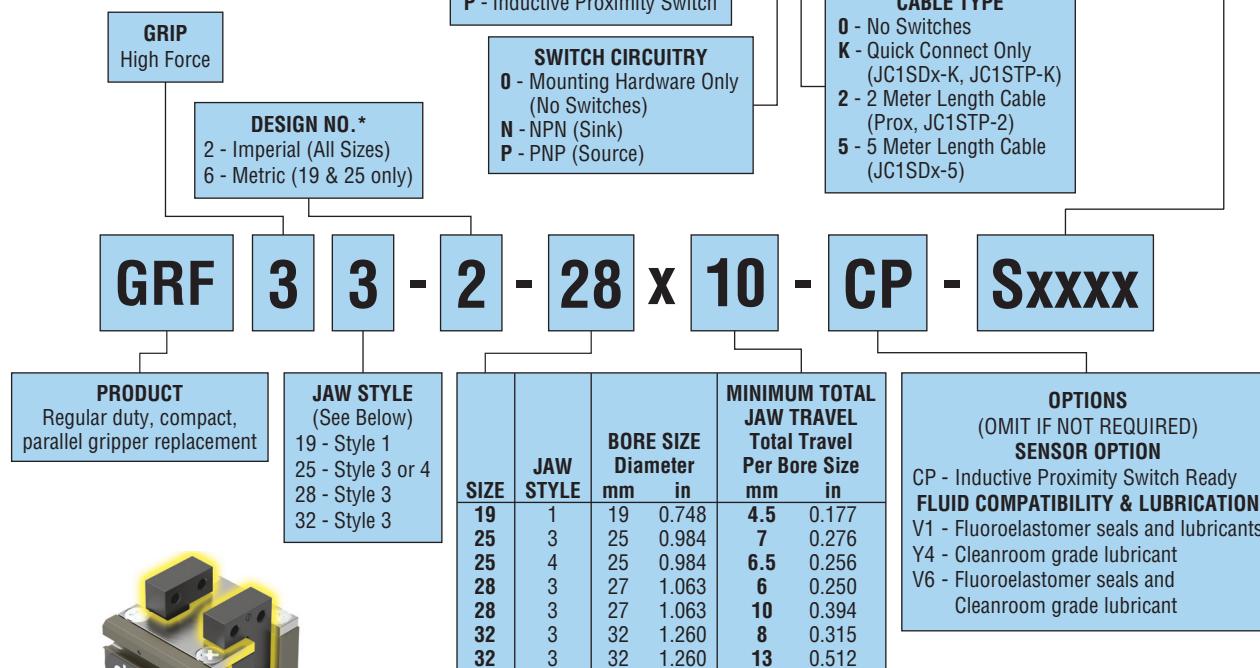
Major Benefits

- Four sizes available
- 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
- Jaw covers help prevent contamination and maintain lubrication by covering jaw working mechanisms at all times
- Low profile
- Six million cycles minimum rated life with proven reliability
- Solid state and inductive proximity switches available for sensing jaw position



ORDERING DATA: Series GRF Grippers

TO ORDER SPECIFY:
Product, Grip, Jaw Style,
Design No., Size, Total Jaw Travel,
and Options required.



JAW STYLE 1
SIZE 19

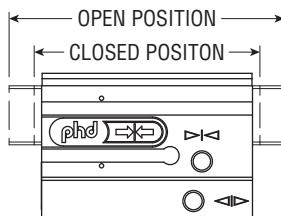


JAW STYLE 3
GRF33 SIZES 25-32



JAW STYLE 4
GRF34 SIZE 25

TOTAL JAW TRAVEL =
OPEN POSITION - CLOSED POSITION



NOTES:

- 1) Design number indicates imperial or metric mountings, dowel pin holes, and ports. Contact PHD for metric availability on sizes 28 and 32 or see GRS sizes 28 and 32.
- 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 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

SERIES JC1ST CORDSET

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

CAD & Sizing Assistance

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

ENGINEERING DATA: Series GRF Grippers

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

SIZE	MINIMUM TOTAL JAW TRAVEL		TOTAL CLOSE GRIP FORCE AT 87 psi [6 bar]		GRIPPER WEIGHT		CLOSE OR OPEN TIME 87 psi [6 bar]	DISPLACEMENT	GRIP FORCE FACTOR GF				
	in	mm	lb	N	lb	kg			in ³	cm ³	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
28 x 6	0.250	6	77	341	0.55	0.25	0.13	0.182	3.0	0.88	57	0.93	60
28 x 10	0.394	10	48	213	0.55	0.25	0.13	0.182	3.0	0.55	36	0.59	38
32 x 8	0.315	8	116	516	1.07	0.48	0.16	0.335	5.5	1.33	86	1.42	92
32 x 13	0.512	13	85	378	1.07	0.48	0.16	0.335	5.5	0.98	63	1.04	67

MAX. ALLOWABLE FORCES & MOMENTS ON GRIPPER JAWS

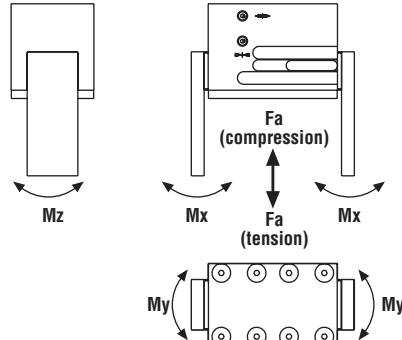
SIZE	Fa		Fa		Mx, My, and Mz			
	(tension)		(compression)		Per Jaw		Both Jaws	
	lb	N	lb	N	in-lb	Nm	in-lb	Nm
19	55	245	80	356	25	2.8	50	5.6
25	110	490	160	712	45	5	90	10
28	220	980	420	1870	80	9	160	18
32	425	1890	760	3380	150	17	300	34

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.



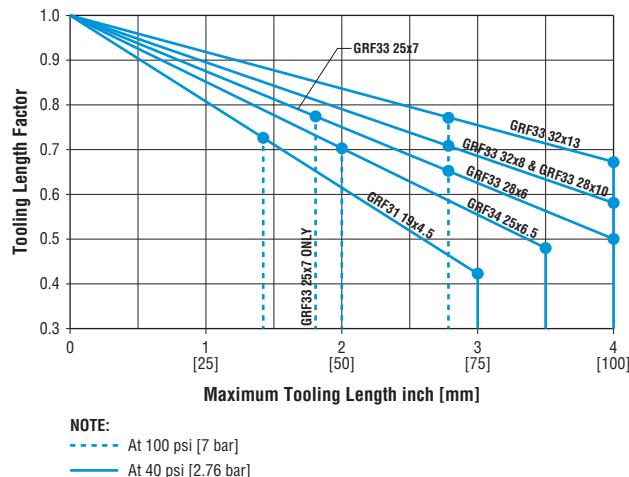
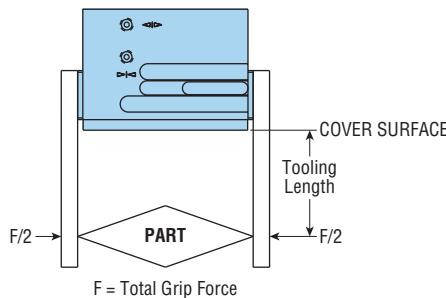
Application & Sizing Assistance

Use PHD's free online Product Sizing and Application at www.phdinc.com/apps/sizing

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 are for zero tooling length (cover surface).

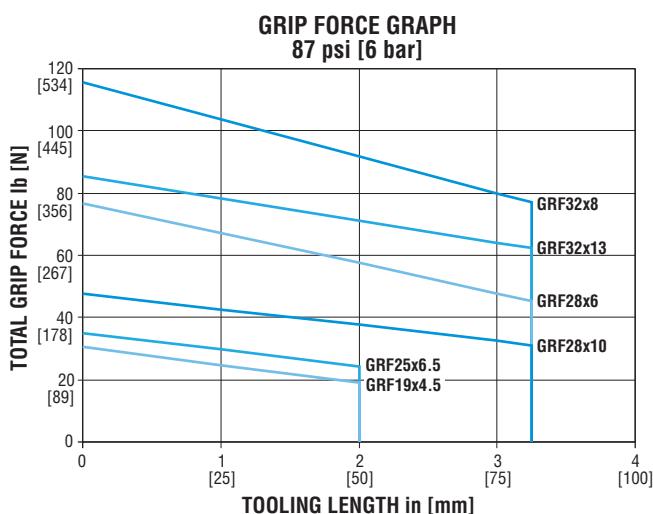
The Tooling Length Factor graph shows maximum tooling lengths at 40 psi [2.76 bar] and 100 psi [7 bar]. Refer to sizing software for maximum tooling lengths at other pressures.



GRIP FORCE

Total gripping force relative to tooling length is shown on the Grip Force Graph at the stated actuating pressure. Grip force per jaw equals the total grip force divided by two. The graph also indicates the maximum tooling length for each gripper size.

NOTE: The Grip Force Graph shown has been simplified for clarity. To predict grip forces more precisely, refer to the grip force calculation equations.



GRIP FORCE CALCULATION EQUATIONS:

IMPERIAL:

$$\text{Total Grip Force [lb]} = (\text{Pressure [psi]} \times G_F) \times \text{Tooling Length Factor}$$

METRIC:

$$\text{Total Grip Force [N]} = (\text{Pressure [bar]} \times G_F) \times \text{Tooling Length Factor}$$

GRIP FORCE CALCULATIONS

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

Example: GRF34-1-25x6.5 [GRF34-5-25x6.5]

Operating Pressure = 87 psi [6 bar]

Tooling Length = 1.5 in [38 mm]

Review Graph: (available for 87 psi [6 bar] only)

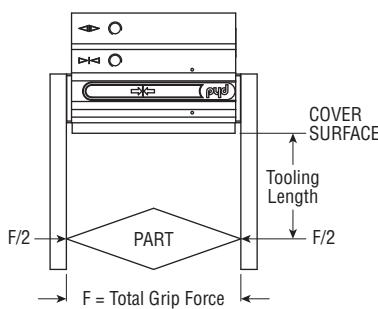
At 1.5 on the graph, the approximate total grip force would be 27 lb [121 N].

Calculations:

G_F Factor = 0.4 [26] (See table on previous page)

Tooling Length Factor = 0.78 (See Tooling Length Factor graph)

$$\text{Total Grip Force} = 87 [6] \times 0.4 [26] \times 0.78 = 27 \text{ lb [121 N]}$$



All dimensions are reference only unless specifically tolerated.

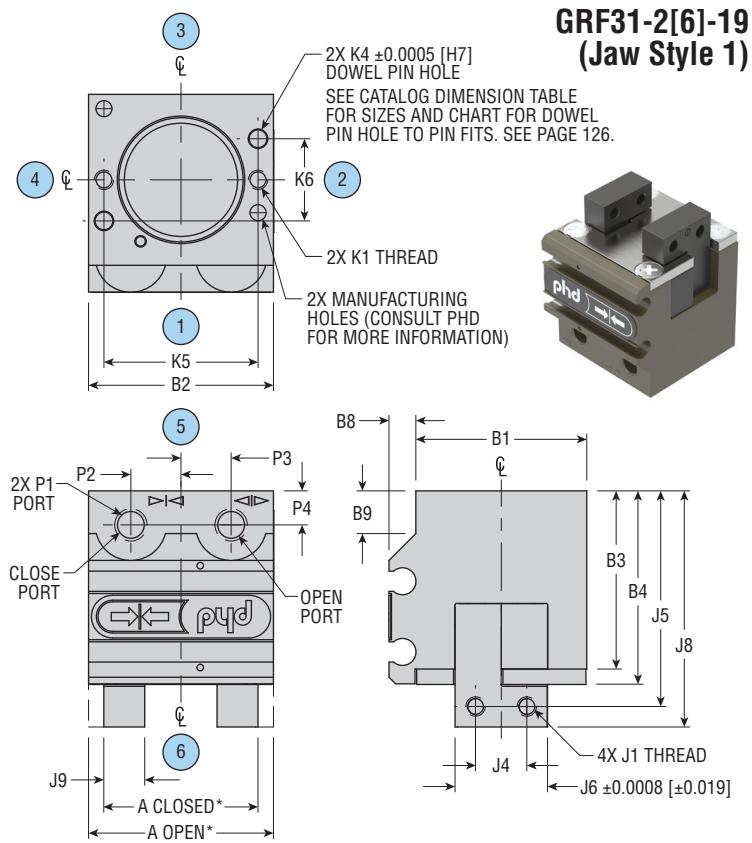
DIMENSIONS: Series GRF Grippers

LETTER DIM	GRF31-2[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

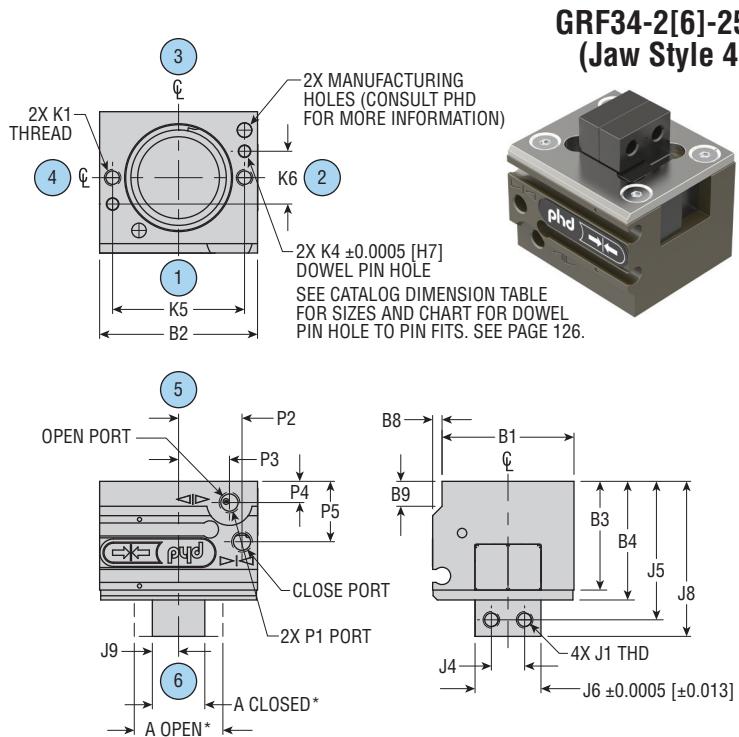
NOTES:

- 1) DESIGNATED \AA IS CENTERLINE OF MOUNTING PATTERN
- 2) * 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.

LETTER DIM	GRF34-2[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	28.6
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



**GRF31-2[6]-19
(Jaw Style 1)**

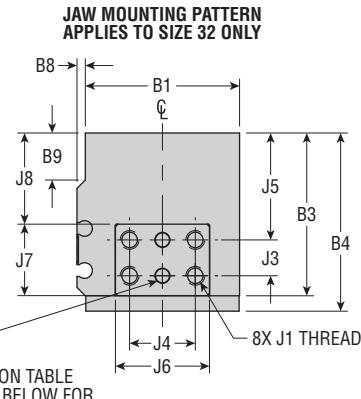
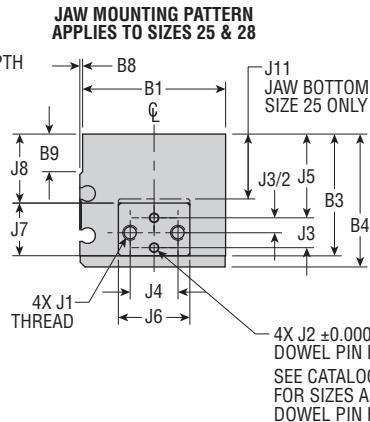
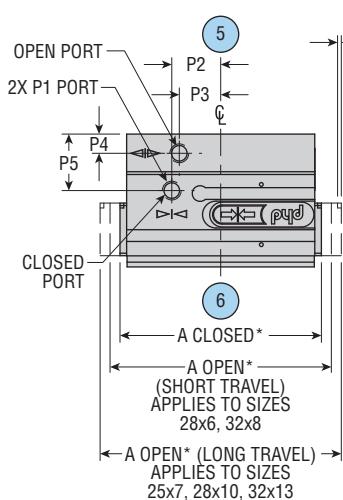
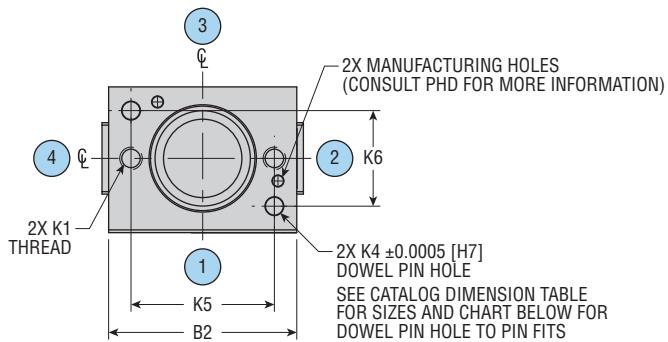


**GRF34-2[6]-25
(Jaw Style 4)**

CAD & Sizing Assistance

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

DIMENSIONS: Series GRF Grippers



LETTER DIM	SIZE					
	GRF33-2[6]-25		GRF33-2-28		GRF33-2-32	
	in	mm	in	mm	in	mm
SHORT TRAVEL (MIN TRAVEL PER JAW)	—	—	0.118	3.0	0.157	4.0
LONG TRAVEL (MIN TRAVEL PER JAW)	0.138	3.5	0.197	5.0	0.256	6.5
A CLOSED*	1.614	41.0	2.126	54.0	2.690	68.3
A OPEN SHORT*	—	—	2.370	60.2	3.000	76.2
A OPEN LONG*	1.890	48.0	2.500	63.5	3.190	81.0
B1	1.250	31.8	1.498	38.0	1.616	41.0
B2	1.496	38.0	1.968	50.0	2.522	64.1
B3	1.032	26.2	1.276	32.4	1.705	43.3
B4	1.126	24.60	1.392	35.36	1.866	47.40
B8	0.089	2.3	0.029	0.74	0.087	2.2
B9	0.236	6.0	0.394	10.0	0.492	12.5
J1	6-32 x 0.197 DP	M4 x 0.7 x 6.0 DP	8-32 x 0.315 DP	10-32 x 0.394 DP		
J2	0.0634 x 0.197 DP	2.0 x 5.0 DP	0.0943 x 0.197 DP	0.1259 x 0.236 DP		
J3	0.2500	6.35	0.3125	7.94	0.375	9.5

LETTER DIM	SIZE					
	GRF33-2[6]-25		GRF33-2-28		GRF33-2-32	
	in	mm	in	mm	in	mm
J4	0.313	7.94	0.500	12.7	0.687	17.46
J5	0.7212	18.32	0.8785	22.31	1.1211	28.48
J6	0.6245	15.86	0.7477	19.0	0.9840	25.0
J7	0.3755	9.54	0.5509	14.0	0.7477	19.0
J8	0.655	16.6	0.724	18.4	0.956	24.3
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	1/4-20 x 0.500 DP	1/4-20 x 0.591 DP		
K4	0.1259 x 0.250 DP	3.0 x 6.3 DP	0.1884 x 0.374 DP	0.1884 x 0.256 DP		
K5	1.2500	31.75	1.5000	38.1	2.0000	50.8
K6	0.5000	12.7	1.000	25.4	0.7500	19.05
P1	10-32	M5 x 0.8	10-32	10-32		
P2	0.591	15.0	0.512	13.0	0.591	15.0
P3	0.482	12.2	0.433	11.0	0.591	15.0
P4	0.201	5.1	0.202	5.1	0.236	6.0
P5	0.572	14.5	0.592	15.0	0.807	20.5

J2 & K4 DOWEL HOLE TO PIN FITS

DESIGN 2 IMPERIAL UNITS					
ASME B18.8.2 STANDARD TOLERANCE PIN					
CAT. DIM.	MIN CLEARANCE	MAX CLEARANCE	CAT. DIM.	MAX PRESS	MAX CLEARANCE
in	in	mm	in	mm	mm
0.0634, 0.0947	0.0001	0.003	0.0013	0.033	0.0001
0.1259, 0.1884					

DESIGN [6] METRIC UNITS					
ISO 8734 - m6 CLASS UNPLATED PIN					
CAT. DIM.	MAX PRESS	MAX CLEARANCE	CAT. DIM.	MAX PRESS	MAX CLEARANCE
mm	in	mm	mm	in	mm
2.0, 2.5, 3.0	0.0001	0.002	0.0005	0.012	
4.0	0.0002	0.004	0.0006	0.016	

All dimensions are reference only unless specifically toleranced.

CAD & Sizing Assistance

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

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.

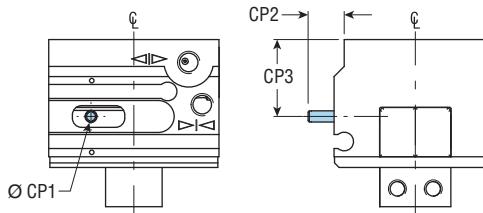
Temperature range for -V1 is -20°F min to +225°F max [-28°C min to +107°C max]. Higher temperature service available. Consult PHD.

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

CP INDUCTIVE PROXIMITY SWITCH READY (REPLACES -CU OPTION)

With this option the gripper includes a target pin attached to the jaw for use with inductive proximity switches. Switches and switch mounting kits are required in addition to the -CP option.

SPxx options automatically include the -CP option. See accessories pages for switches and mounting kits.



LETTER DIM	SIZE									
	19		25 (GRF34)		25 (GRF33)		28		32	
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
CP2	0.391	9.9	0.317	8.1	0.317	8.1	0.256	6.5	0.315	8.0
CP3	0.765	19.4	0.676	17.2	0.676	17.2	0.843	21.4	1.219	31.0

Sxxxx BUNDLED SWITCH OPTIONS

These options conveniently provide switches with additional hardware if required. Series JC1SDx-x single position, Series JC1STP-x two position and inductive proximity switches are available as NPN or PNP. Connection method may also be specified along with quantity of switches, up to nine for Series JC switches and two for inductive proximity switches. Inductive proximity switch mounting hardware is also available without the switches (SP00x).

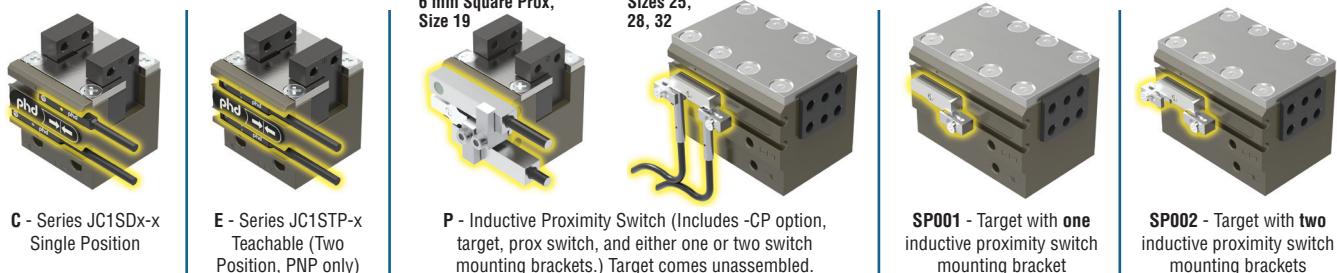
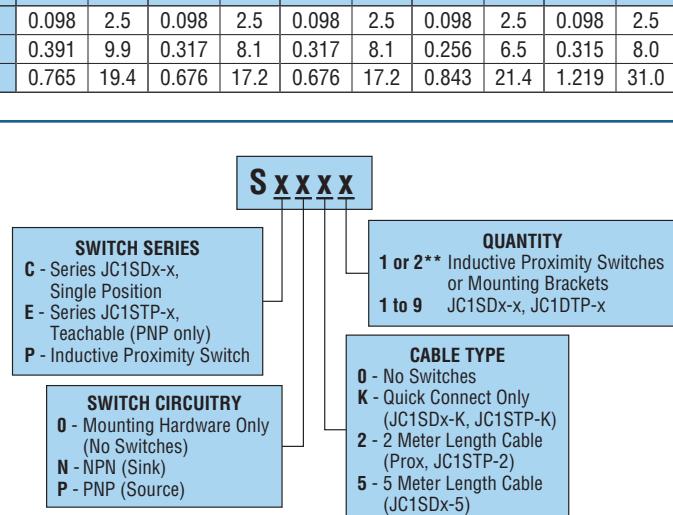
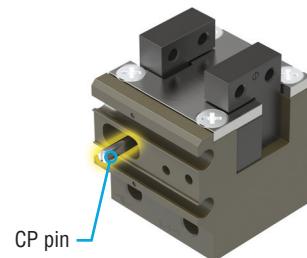
-CP option is automatically included with the selection of inductive proximity switches. Brackets come unassembled. See options and accessories pages for dimensional and application information.

Y4 CLEANROOM GRADE LUBRICANT

Cleanroom grade lubricant replaces all standard lubricants.

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.



All dimensions are reference only unless specifically toleranced.

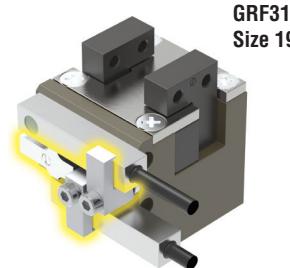
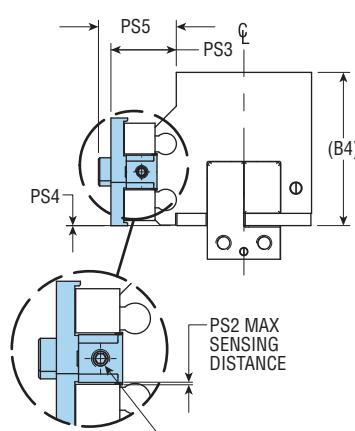
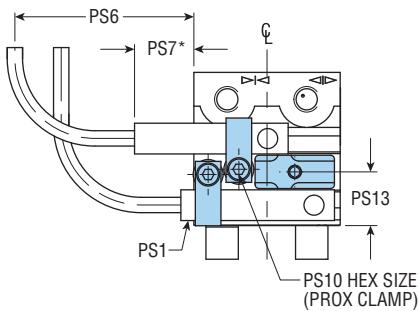
ACCESSORIES: Series GRF Grippers

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 SPxx options on previous page. -CP option is required.

For additional switch information, go to phdinc.com.

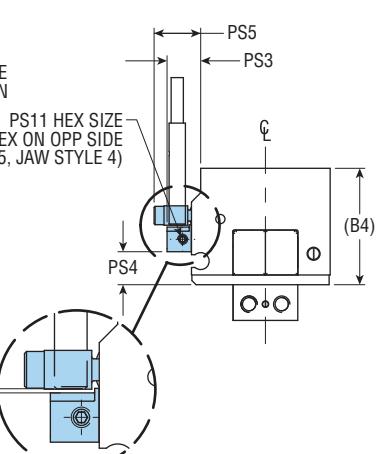
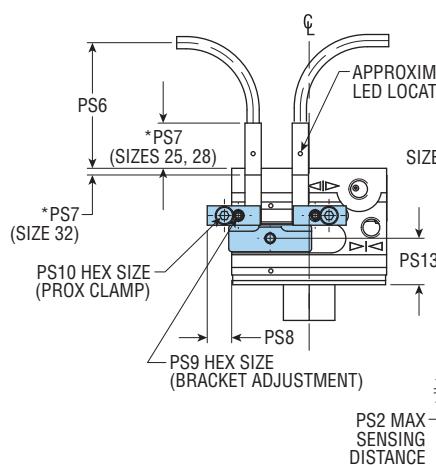
SIZE 19



GRF31
Size 19

SIZE 25-32

(GRF34-x-25 shown, PS8 dimension projects out opposite side for GRF33-x-25, 28 & 32)



GRF34
Size 25



GRF33
Sizes 25, 28, 32

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, 28, 32)

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

INDUCTIVE PROXIMITY SWITCH MOUNTING KITS

SIZE	KIT NUMBER	
	1 BRACKET	2 BRACKETS
GRF31-x-19	88327-19-1	88327-19-2
GRF34-x-25	88327-25-1	88327-25-2
GRF33-x-25	88327-28-1	88327-28-2
GRF33-x-28	88327-28-1	88327-28-2
GRF33-x-32	88327-32-1	88327-32-2

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

NOTES:

- 1) DESIGNATED \emptyset IS CENTERLINE OF MOUNTING PATTERN
- 2) *INDICATES BOTTOM OF PROXIMITY SWITCH BARREL.
- 3) METRIC INFORMATION SHOWN IN [] OR IN COLUMNS DESIGNATED mm.

LETTER DIM	SIZE									
	19		25 (GRF34)		25 (GRF33)		28		32	
	in	mm	in	mm	in	mm	in	mm	in	mm
PS1	6 mm Square		4 mm Round							
PS2	0.031	0.8	0.020	0.5	0.020	0.5	0.020	0.5	0.020	0.5
PS3	0.503	12.8	0.325	8.3	0.325	8.3	0.264	6.7	0.315	8.0
PS4	0.001	0.03	0.319	8.1	0.318	8.1	0.417	10.6	0.515	13.1
PS5	0.598	15.2	0.450	11.4	0.460	11.7	0.400	10.2	0.458	11.6
PS6	1.376	35.0	1.357	34.5	1.356	34.4	1.189	30.2	0.813	20.7
PS7*	0.456	11.6	0.437	11.1	0.436	11.1	0.269	6.8	0.107	2.7
PS8	—	—	0.236	6.0	0.256	6.5	0.170	4.3	0.070	1.8
PS9	—	—	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
PS11	0.051	1.3	0.051	1.3	0.051	1.3	0.051	1.3	0.051	1.3
PS13	0.413	10.5	0.449	11.4	0.448	11.4	0.547	13.9	0.645	16.4
(B4)	1.180	30.0	1.126	28.6	1.126	28.6	1.392	35.4	1.866	47.4

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.



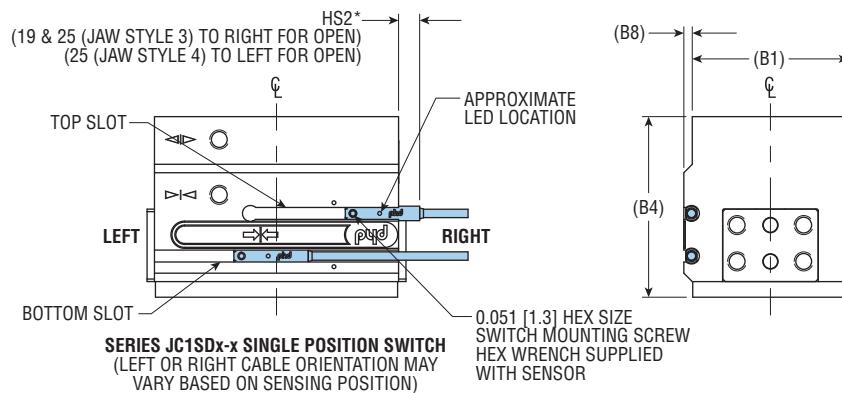
SERIES JC1SDx SINGLE POSITION SWITCHES

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

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

JAWS SHOWN IN CLOSED POSITION



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

HS2*	UNIT SIZE	JC1SDP-K TOP SLOT				JC1SDP-K BOTTOM SLOT			
		OPEN		CLOSE		OPEN		CLOSE	
		CABLE LEFT	CABLE RIGHT	CABLE LEFT	CABLE RIGHT	CABLE LEFT	CABLE RIGHT	CABLE LEFT	CABLE RIGHT
19	CABLE LEFT	0.4 [10.2]	CABLE RIGHT	CABLE LEFT	0.059 [1.5]	CABLE LEFT	CABLE RIGHT	CABLE LEFT	CABLE RIGHT
25 (GRF34)	CABLE RIGHT	0.158 [4.0]	CABLE LEFT	CABLE RIGHT	0.335 [8.5]	CABLE RIGHT	CABLE LEFT	CABLE LEFT	CABLE LEFT
25 (GRF33)	0.059 [1.5] CABLE RIGHT	0.335 [8.5]	CABLE RIGHT	CABLE LEFT	0.059 [1.5]	CABLE LEFT	CABLE LEFT	CABLE LEFT	CABLE LEFT
28	CABLE RIGHT	CABLE LEFT		CABLE LEFT	CABLE LEFT		CABLE LEFT	CABLE LEFT	
32	CABLE LEFT OR RIGHT	CABLE LEFT OR RIGHT		CABLE LEFT OR RIGHT	CABLE LEFT OR RIGHT		CABLE LEFT OR RIGHT	CABLE LEFT OR RIGHT	

LETTER DIM	SIZE									
		19		25 (GRS34)		25 (GRS33)		28		
		in	mm	in	mm	in	mm	in	mm	
(B1)	1.042	26.5	1.252	31.8	1.250	31.8	1.498	38.0	1.616	41.0
(B4)	1.180	30.0	1.126	28.6	1.126	28.6	1.392	35.4	1.866	47.4
(B8)	0.163	4.1	0.089	2.3	0.089	2.3	0.029	0.7	0.087	2.2

NOTES:

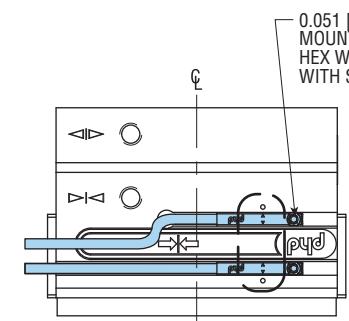
- 1) DESIGNATED C is CENTERLINE OF MOUNTING PATTERN
- 2) *HS2 DIMENSION APPLIES TO INDICATED END OF SWITCH HOUSING (NOT CABLE OR STRAIN RELIEF). SIZES WITHOUT HS2 REMAIN WITHIN GRIPPER BODY BOUNDARIES.
- 3) METRIC INFORMATION SHOWN IN [] OR IN COLUMNS DESIGNATED mm.

All dimensions are reference only unless specifically toleranced.

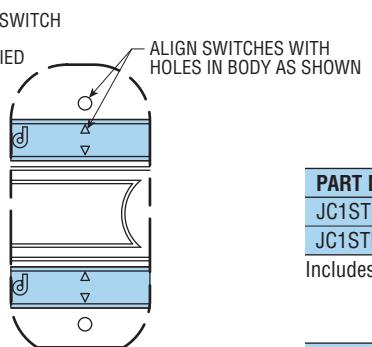
ACCESSORIES: Series GRF Grippers

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



ALIGN SWITCHES WITH HOLES IN BODY AS SHOWN



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

	SIZE									
	19		25 (GRF34)		25 (GRF33)		28		32	
	in	mm	in	mm	in	mm	in	mm	in	mm
*JC1STP-x Teachable 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

NOTES:

- 1) DESIGNATED ℓ IS CENTERLINE OF MOUNTING PATTERN
- 2) *MINIMUM DISTANCE BETWEEN SET POINTS MUST BE LESS THAN TOTAL JAW TRAVEL OF UNIT, SEE CATALOG DIMENSIONS ON PAGES 125 AND 126 FOR MINIMUM JAW TRAVEL.
- 3) METRIC INFORMATION SHOWN IN [] OR IN COLUMNS DESIGNATED mm.

CUSTOM SOLUTIONS

Illustrations are for concept only. Contact your local PHD Distributor for more information.

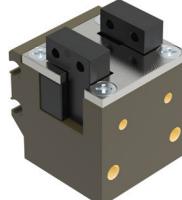
Other unique possibilities:

- Washout resistant lubrication
- Alternate stroke lengths
- Stroke adjustment
- Custom tooling for your application
- Metric size 28 and 32 (also see Series GRS)

www.phdinc.com/custom



Corrosion Resistant Jaws



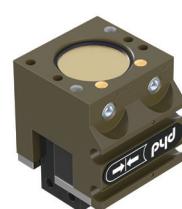
Alternate Mountings
(also see Series GRS)



Side Mounting Jaw Style 3
(Size 19)



Mechanically Retained Cover



Manifold Ports
(also see Series GRS)



Purge Port
(also see Series GRS)

All dimensions are reference only unless specifically toleranced.