

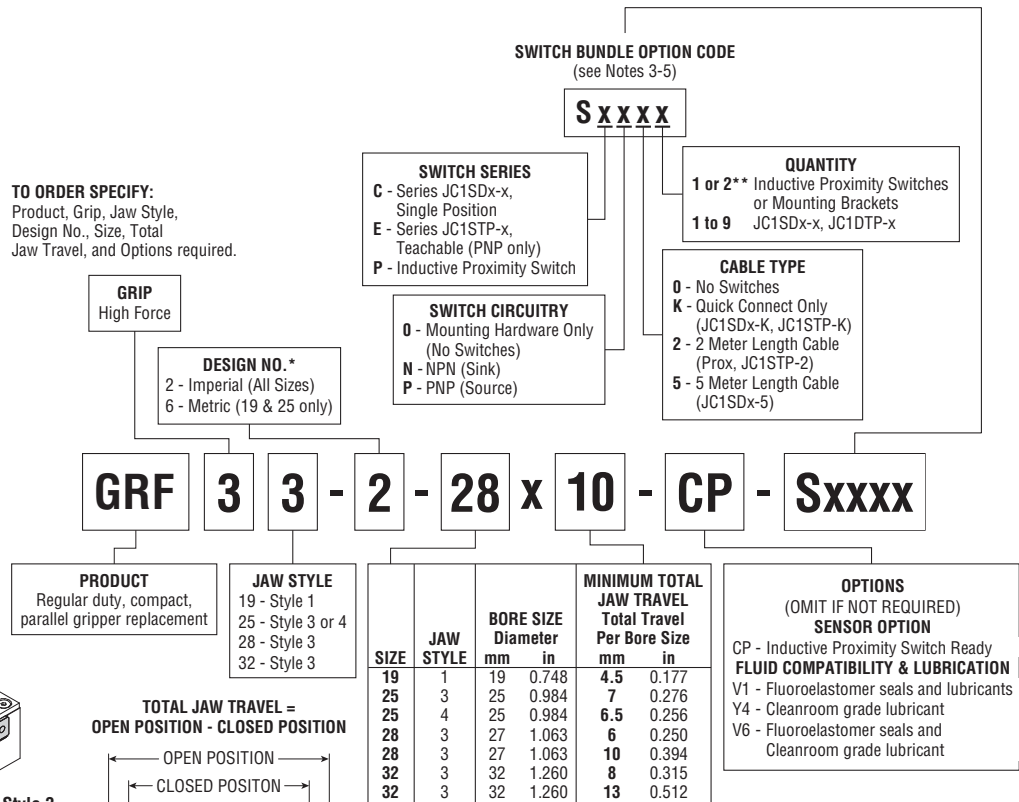
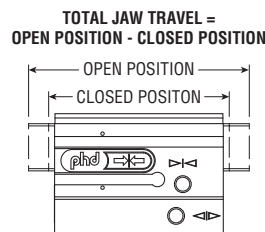
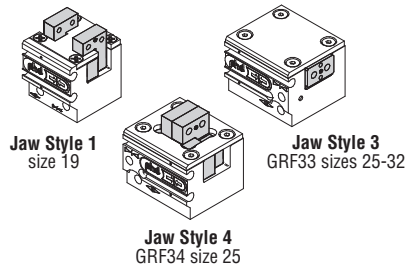
phd INFORMATION SHEET: SERIES GRF DESIGN 2 [6] GRIPPERS

IMPORTANT INFORMATION DO NOT DISCARD!

Use this information sheet to assist with gripper installation and setup.
File with maintenance or machine documentation.

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.



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

Includes one switch and installation instructions.

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

Includes one cordset.

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 instructions.

SERIES JC1ST CORDSET

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

Includes one cordset.

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

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phd[®] START-UP & MOUNTING INFORMATION: SERIES GRF DESIGN 2 [6] GRIPPERS

RECOMMENDATIONS

Design tooling so that the grip point is as close to the gripper surfaces as possible. The grip force factor (Gf) values are for zero tooling length. As the grip point is moved away from the jaw surface, the applied moment causes jaw friction to increase, resulting in reduced effective grip force.

The maximum load that grippers can handle will vary based on: size of the part being picked up, shape of the part, texture of the part, speed at which the part is transferred, working pressure, shape of the fingers, etc.

A synchronized unit is not recommended for use as a force multiplier for a single jaw.

START UP PROCEDURES

The gripper should be securely mounted with all tooling and external flow control devices attached prior to applying pressure to the unit. Care should be taken to provide adequate clearance for the jaws to open and close. At initial start-up, apply pressure slowly to the unit.

SEALS AND FLUIDS

Long life seals are standard on all Series GRF Grippers. These seals are compatible with standard paraffin-based lubrication oils used for pneumatic cylinders. For compatibility with other fluids, consult PHD.

DISASSEMBLY AND REPAIR

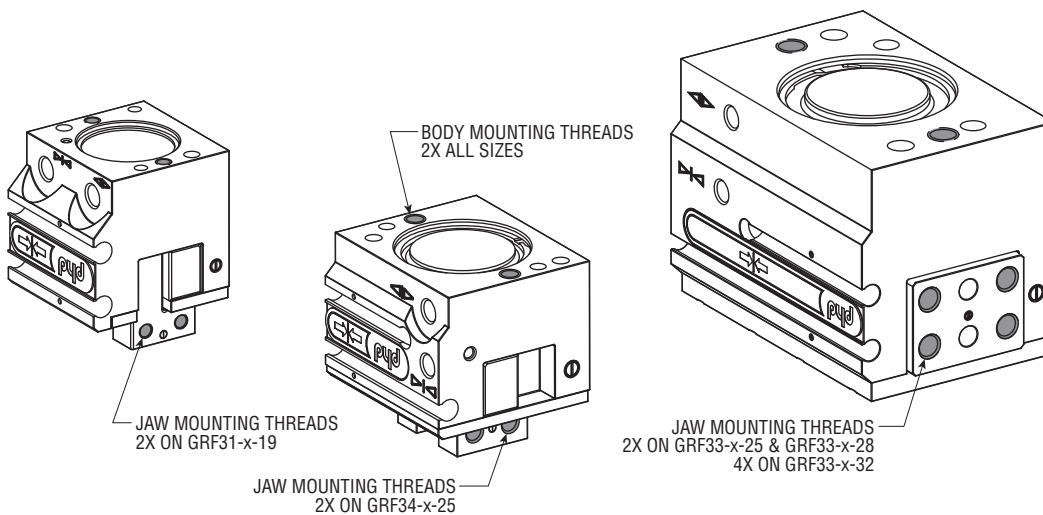
The GRF Series Design 2 [6] grippers are field repairable. To replace seals, see GRF repair sheet 6441-727 for directions and kit numbers.

MAXIMUM RECOMMENDED MOUNTING TORQUES

MODEL NUMBER	STANDARD BODY MOUNTING THREADS			JAW MOUNTING THREADS		
	THREAD	in-lb	Nm	THREAD	in-lb	Nm
GRF31-2-19x4.5	4-40 x 0.375 DP	1.4	12	6-32 x 0.249	2.5	22
GRF34-2-25x6.5	6-32 x 0.382 DP	2.5	22	6-32 x 0.249	2.5	22
GRF33-2-25x7	6-32 x 0.382 DP	2.5	22	6-32 x 0.197 DP	2.5	22
GRF33-2-28x6 or 10	1/4-20 x 0.500 DP	11.3	100	8-32 x 0.315 DP	4.5	40
GRF33-2-32x8 or 13	1/4-20 x 0.591 DP	11.3	100	10-32 x 0.394 DP	7.3	65
GRF31-6-19x4.5	M3 x 0.5 x 9.5 DP	1.4	12	M3 x 0.5 x 6.32	2.5	22
GRF34-6-25x6.5	M4 x 0.7 x 9.4 DP	2.5	22	M4 x 0.7 x 6.32	2.5	22
GRF33-6-25x7	M4 x 0.7 x 9.7 DP	2.5	22	M4 x 0.7 x 6.0 DP	2.5	22
GRF33-6-28x6 or 10	M6 x 1.0 x 12.5 DP	11.3	100	M4 x 0.7 x 8.0 DP	3.4	30
GRF33-6-32x8 or 13	M6 x 1.0 x 15 DP	11.3	100	M5 x 0.8 x 10.0 DP	5.6	50

NOTES:

- 1) ASSUMES USE OF AT LEAST 75% OF FULL THREADED DEPTH.
- 2) ASSUMES USE OF HIGH STRENGTH STEEL SOCKET HEAD CAP SCREWS.
- 3) PHD RECOMMENDS THE USE OF THREADLOCKER ON MOUNTING THREADS.

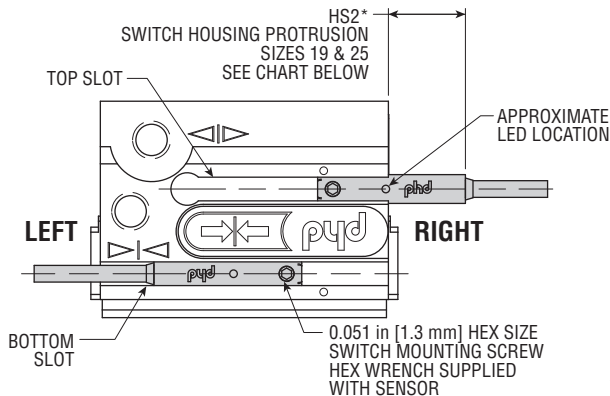


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phd SWITCH MOUNTING INFORMATION: SERIES GRF DESIGN 2 [6] GRIPPERS

SERIES JC1SDx-x SINGLE POSITION SWITCH



INSTALLING AND ADJUSTING SERIES JC1SDx-x SWITCHES. DO NOT EXCEED RECOMMENDED TORQUE SPECIFICATION.

- 1) Insert the switch into the switch slot.
- 2) Adjust on/off position per your requirements.
- 3) Torque the socket set screw to 14 in-oz [0.1 Nm].
- 4) See page 1 for switches and cordsets part numbers.

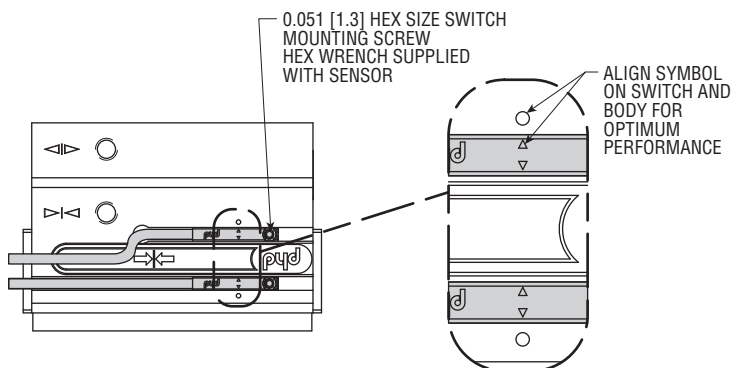
NOTES:

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

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

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	0.059 [1.5] CABLE LEFT
25 (GRF34)	CABLE RIGHT	0.158 [4.0] CABLE LEFT	CABLE RIGHT	CABLE RIGHT
25 (GRF33)	0.059 [1.5] CABLE RIGHT	0.335 [8.5] CABLE RIGHT	CABLE LEFT	CABLE LEFT
28	CABLE RIGHT	CABLE LEFT	CABLE LEFT	CABLE LEFT
32	CABLE LEFT OR RIGHT	CABLE LEFT OR RIGHT	CABLE LEFT OR RIGHT	CABLE LEFT OR RIGHT

SERIES JC1STP-x TEACHABLE SWITCH



INSTALLING SERIES JC1STP-x SWITCHES. DO NOT EXCEED RECOMMENDED TORQUE SPECIFICATION

- 1) Insert the switch into the switch slot.
- 2) Take note of the $\triangleleft \triangleright$ symbol on the switch and carefully align the symbol shown in Figure 1.
- 3) Torque the socket set screw to 14 in-oz [0.1 Nm].
- 4) Consult GRF Design 2 [6] catalog at www.phdinc.com for more information switch sensing limitations.
- 5) Consult the JC1STP-x Information Sheet for the appropriate programming instructions.
- 6) See page 1 for switches and cordset part numbers.

NOTES:

- 1) DESIGNATED ϕ IS CENTERLINE OF MOUNTING PATTERN
- 2) *MINIMUM DISTANCE BETWEEN SET POINTS MUST BE LESS THAN TOTAL JAW TRAVEL OF UNIT. SEE CATALOG DIMENSIONS FOR MINIMUM SHORT OR LONG TRAVEL.
- 3) METRIC INFORMATION SHOWN IN [] OR IN COLUMNS DESIGNATED mm.
- 4) DIMENSIONS SHOWN HIGHLIGHTED BLUE ARE NEW OR CHANGED FROM DESIGN 1 [5].

	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

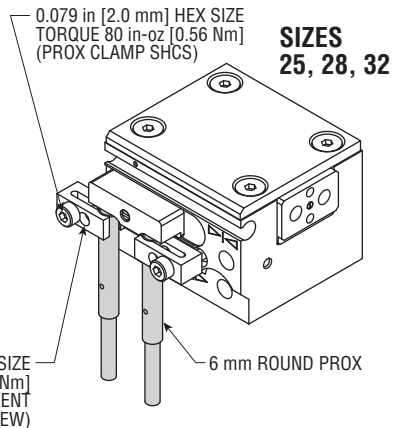
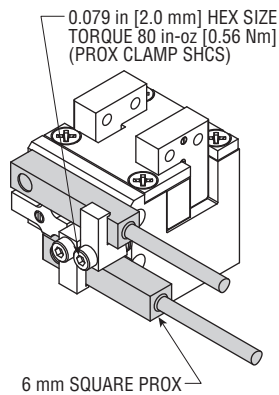
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phd SWITCH MOUNTING INFORMATION: SERIES GRF DESIGN 2 [6] GRIPPERS

PROXIMITY SWITCH MOUNTING

SIZE 19



INSTALLING PROXIMITY SWITCHES. DO NOT EXCEED RECOMMENDED TORQUE SPECIFICATION

- 1) Install targets and brackets per instructions 6441-726 supplied with prox bracket kits and available online.
- 2) Insert proximity switches, lightly tighten prox clamp SHCS.
- 3) Slide switch brackets with switches into slots in body.
- 4) Adjust distance between switch and target so switch trips properly. Tighten SHCS to recommended torque specification.
- 5) Adjust on / off position of switch per your requirements.
- 6) Tighten bracket adjustment set screw to recommended torque.
- 7) See GRF Design 2 [6] catalog at www.phdinc.com for recommended switch orientations and switch overhangs.
- 8) See page 1 for switches and cordset part numbers.

PROXIMITY SWITCH MOUNTING KITS

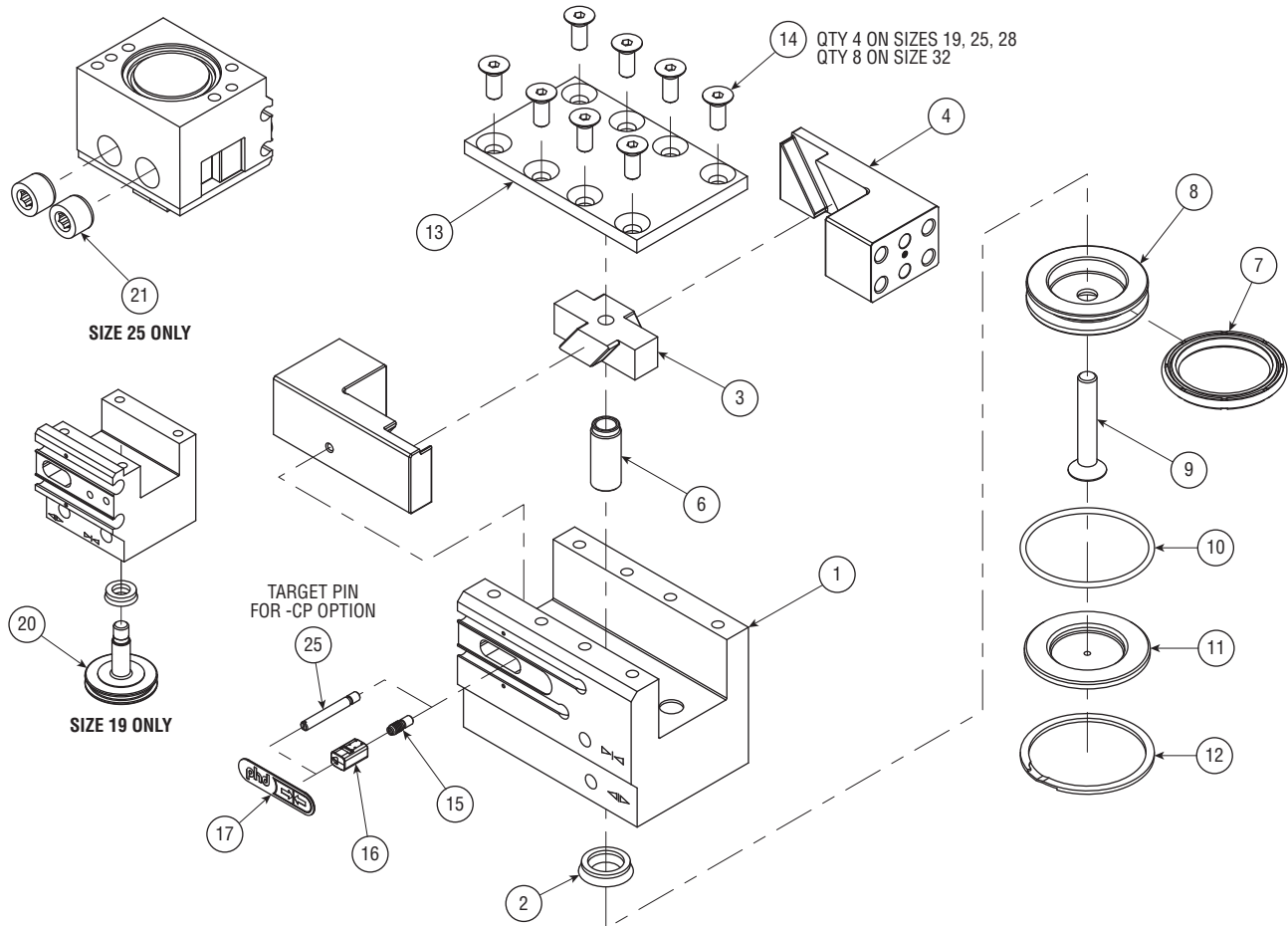
SIZE	KIT NUMBER	
	1 BRACKET	2 BRACKETS
GRF31-x-19	88327-19-1	88327-19-2
GRF34-x-25	88327-25-1	88327-25-2
GRF33-x-25	88327-28-1	88327-28-2
GRF33-x-28	88327-28-1	88327-28-2
GRF33-x-32	88327-32-1	88327-32-2

Kit includes 1 target and 1 or 2 switch mounting brackets.

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phd PARTS LIST & KITS: SERIES GRF DESIGN 2 [6] GRIPPERS



KEY	PART DESCRIPTION	H CODE
1	Body Assembly	Full Unit Description required -H2400
3	Jaw Driver	Full Unit Description required -H5610
4	Jaw	Full Unit Description required -H2600
20	Piston & Rod (size 19 only)	Full Unit Description required -H5810
6	Rod (sizes 25, 28, 32)	Full Unit Description required -H5810
8	Piston (sizes 25, 28, 32)	Full Unit Description required -H1005
9	Piston Assembly Fastener (sizes 25, 28, 32)	Full Unit Description required -H2050
11	Bore Plug	Full Unit Description required -H3100
12	Bore Plug Retainer	Full Unit Description required -H7101
13	Jaw Cover	Full Unit Description required -H1200
14	Jaw Cover Assembly Fasteners	Full Unit Description required -H1440 (All Fasteners) -H1441 (One Fastener)
2	Rod Seal	Full Unit Description required sold as part of seal kit only -H9000
7	Piston Seal	
10	Bore Plug Seal	
15	Magnetic Target Pin	Full Unit Description required -H5330
16	Magnetic Target	Full Unit Description required -H5335
17	Sensor Pin Slot Cover	Full Unit Description required -H5340
21	Bearing Screw	Full Unit Description required -H3400
25	-CP Target Pin	Full Unit Description required -H5331

NOTE: -H codes must be used with full unit description. This ensures the correct configuration of components is provided. Unless otherwise specified, -Hxxxx option code provides one replacement part.

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