

190/191



MICRO PARALLEL PNEUMATIC GRIPPER

Major Benefits

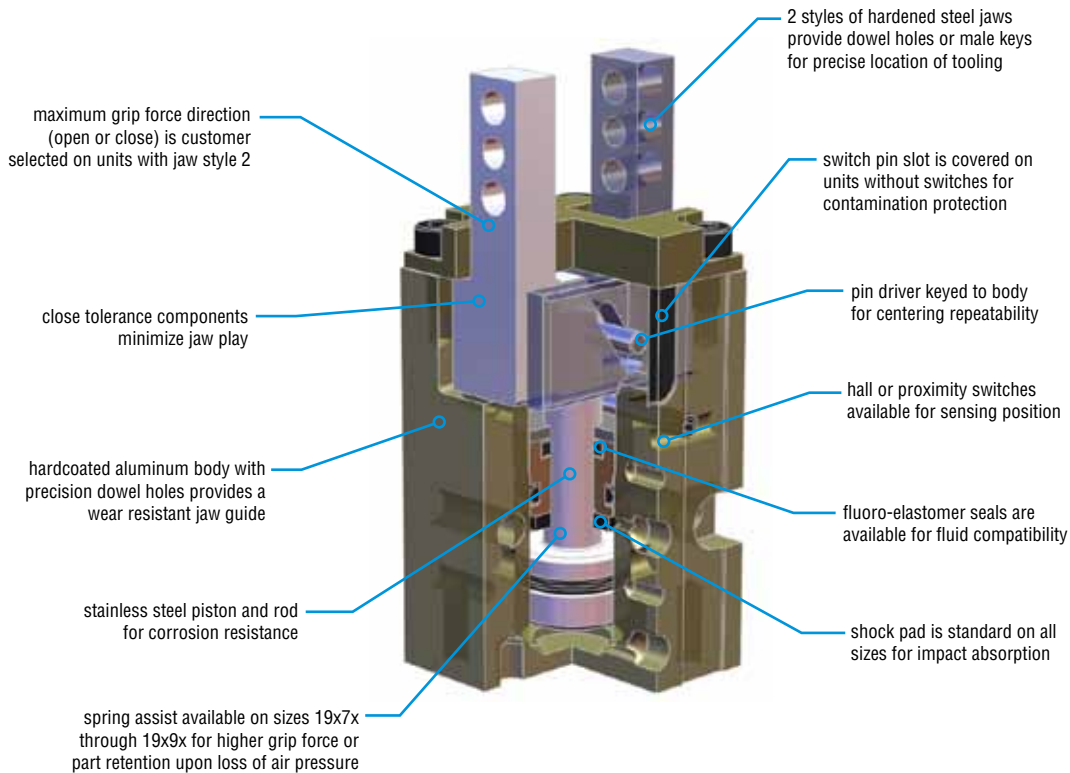
- Compact size
- Spring assist on open or close
Spring assist available on sizes 19x7x through 19x9x
Spring assist available in four sizes, two jaw styles, two jaw travels
- Mounting holes on one or three surfaces
- Jaw travel adjustment kits available
- 10 million cycles minimum rated life with standard seals
(includes spring assist units)



JAW STYLE 1



JAW STYLE 2

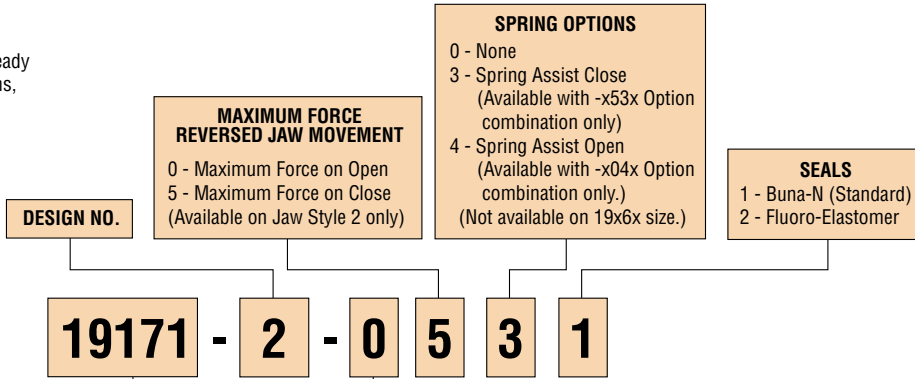
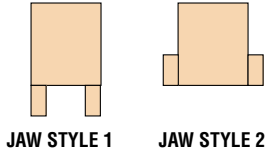


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ORDERING DATA: SERIES 190 & 191 PARALLEL GRIPPERS

TO ORDER SPECIFY:

Model, Design No., Sensor or Switch Ready Options, Maximum Force, Spring Options, and Seals.



MODEL	BORE SIZE		190 MODELS FULL MOUNTING		191 MODELS BOTTOM MOUNTING	
	mm	in	IMPERIAL	METRIC	IMPERIAL	METRIC
JAW STYLE 1			JAW STYLE 1	JAW STYLE 1	JAW STYLE 1	JAW STYLE 1
19x6x	8.7	.343	19060	19065	19160	19165
19x7x	12.7	.500	19070	19075	19170	19175
19x8x	19	.750	19080	19085	19180	19185
19x9x	25.4	1.00	19090	19095	19190	19195
JAW STYLE 2			JAW STYLE 2	JAW STYLE 2	JAW STYLE 2	JAW STYLE 2
SHORT TRAVEL			SHORT TRAVEL	SHORT TRAVEL	SHORT TRAVEL	SHORT TRAVEL
19x6x	8.7	.343	19061	19066	19161	19166
19x7x	12.7	.500	19071	19076	19171	19176
19x8x	19	.750	19081	19086	19181	19186
19x9x	25.4	1.00	19091	19096	19191	19196
LONG TRAVEL			LONG TRAVEL	LONG TRAVEL	LONG TRAVEL	LONG TRAVEL
19x6x	8.7	.343	19062	19067	19162	19167
19x7x	12.7	.500	19072	19077	19172	19177
19x8x	19	.750	19082	19087	19182	19187
19x9x	25.4	1.00	19092	19097	19192	19197

SENSOR OR SWITCH OPTIONS

0 - Plain
4 - Hall Sensor Ready or JC1STP-x Switch Ready (See notes 1 & 2.) (Not available with Spring Option)
5 - Proximity Switch Ready (6 mm square or Hall Effect proximity switches. See notes 1 & 2.)

SWITCH BRACKETS & TARGETS FOR INDUCTIVE PROXIMITY SWITCHES

GRIPPER MODEL	PART NUMBER	
	IMPERIAL	METRIC
19x6x	59792-1	18432
19x7x	59793-1	18437
19x8x	18438	18438
19x9x	18439	18439

Switches must be ordered separately. See Switches and Sensors section.

HALL SENSOR KITS

GRIPPER MODEL	PART NUMBER	
	IMPERIAL	METRIC
19x6x	18674-04	18057-04
19x7x	18675-04	18058-04
19x8x	18676-04	18059-04
19x9x	18677-04	18060-04

Sensors must be ordered separately. See Switches and Sensors section.

SWITCH BRACKETS & TARGET KITS FOR USE WITH: PHD SERIES 5580 SWITCHES

GRIPPER MODEL	PART NUMBER	
	IMPERIAL	METRIC
19x6x	59794-1	55770
19x7x	59795-1	55771
19x8x	55772	55772
19x9x	55773	55773

Switches must be ordered separately. See Switches and Sensors section.

NOTES:

- 1) Gripper with sensor option 4 or 5 is assembled with the internal components required to use the respective devices listed in each option. The sensor and any related devices and/or mounting kits must be ordered separately.
- 2) Switches and all kits must be ordered separately.

SERIES JC1ST TWO POSITION TEACHABLE MAGNETIC SWITCHES

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

Includes one switch and installation directions

MATCHING CORDSET

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

SERIES JCSTP SENSOR MOUNTING KITS

MODEL NO.	KIT PART NO.	
	IMPERIAL	METRIC
19x6x	86944-05-1	86944-05-5
19x7x	86944-06-1	86944-06-5
19x8x	86944-07-1	86944-07-5
19x9x	86944-08-1	86944-08-5

NOTE: See Switches and Sensors section for additional switch information and complete specification. Switches must be ordered separately.



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



Refer to this product's online catalog in the product section for complete information including related dimensions and additional specifications. See link at bottom of this page.



CAD & Sizing Assistance

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

ENGINEERING DATA: SERIES 190 & 191 PARALLEL GRIPPERS

SPECIFICATIONS	SERIES 190 & 191
OPERATING PRESSURE	30 psi min to 150 psi max [2 bar min to 10 bar max] air
OPERATING TEMPERATURE	-20° to +180°F [-28° to +82°C]
RATED LIFE	10 million cycles minimum with standard seals (including spring assist units)
GRIP REPEATABILITY	Within ±0.002 in [±0.05 mm] of original centered position
LUBRICATION	Factory lubricated for rated life
MAINTENANCE	Field repairable

GRIPPER NO.	DISPLACEMENT		GRIPPER WEIGHT				GRIP FORCE FACTOR G_F				SPRING ASSIST GRIP FORCE S_F	
			STANDARD		SPRING ASSIST		MAX. DIRECTION		MIN. DIRECTION		Imperial	Metric
			in ³	cm ³	lb	kg	oz	g	Imperial*	Metric*		
19x60 & 19x65	.012	0.2	0.11	0.05	—	—	.061	3.93	.049	3.16	—	—
19x61 & 19x66	.012	0.2	0.11	0.05	—	—	.061	3.93	.049	3.16	—	—
19x62 & 19x67	.012	0.2	0.13	0.06	—	—	.037	2.39	.029	1.87	—	—
19x70 & 19x75	.036	0.6	0.24	0.11	0.26	0.12	.122	7.87	.092	5.93	2.230	9.99
19x71 & 19x76	.036	0.6	0.25	0.11	0.26	0.12	.122	7.87	.092	5.93	2.230	9.99
19x72 & 19x77	.036	0.6	0.27	0.12	0.28	0.12	.093	6.00	.069	4.45	1.690	7.57
19x80 & 19x85	.110	1.8	0.64	0.29	0.65	0.29	.250	16.13	.210	13.55	4.280	19.17
19x81 & 19x86	.110	1.8	0.67	0.30	0.68	0.31	.250	16.13	.210	13.55	4.280	19.17
19x82 & 19x87	.110	1.8	0.71	0.32	0.73	0.33	.150	9.68	.130	8.39	2.630	11.78
19x90 & 19x95	.250	4.1	1.44	0.65	1.47	0.67	.490	31.61	.370	23.87	8.700	38.98
19x91 & 19x96	.250	4.1	1.46	0.66	1.48	0.67	.490	31.61	.370	23.87	8.700	38.98
19x92 & 19x97	.250	4.1	1.62	0.73	1.64	0.74	.270	17.42	.200	12.90	4.760	21.32

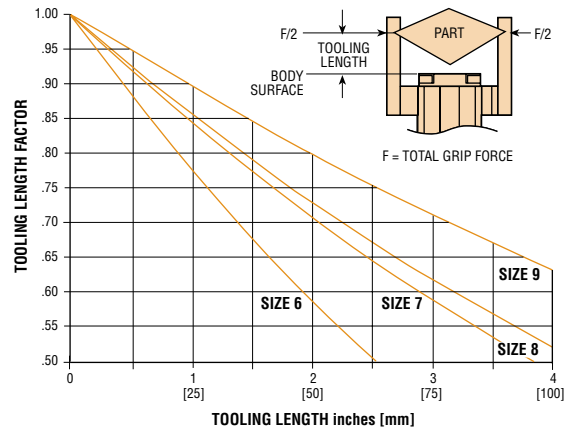
*Maximum grip force direction is always open (internal grip) on all Series 190 and 191 Jaw Style One units. (19x60, 19x65, 19x70, 19x75, 19x80, 19x85, 19x90, and 19x95)

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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_F) values given in the table above are for zero tooling length (body surface).

TOOLING LENGTH FACTOR



GRIP FORCE CALCULATION EQUATIONS:

IMPERIAL:

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

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

METRIC:

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

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



Sizing & Application Assistance

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

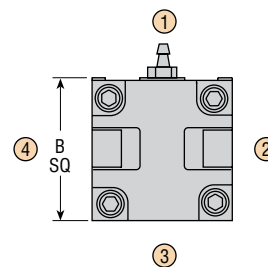
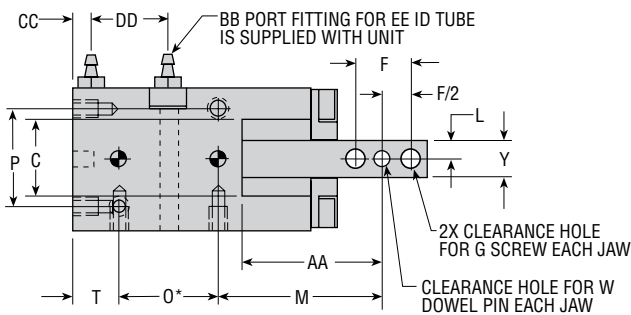
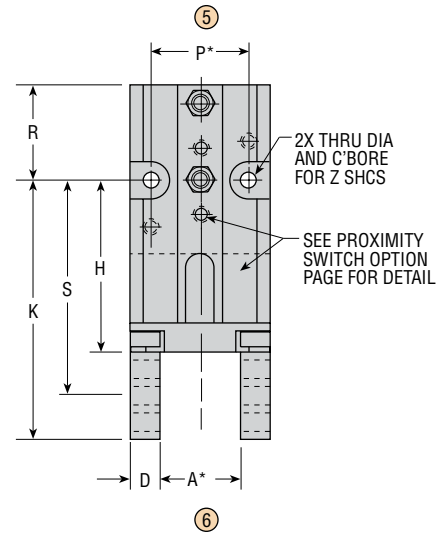
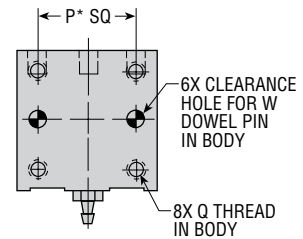
DIMENSIONS: SERIES 190 PARALLEL GRIPPERS - JAW STYLE 1

FULL MOUNTING IN POSITIONS 3 & 4

LETTER DIM.	MODEL NUMBER							
	19060	19065	19070	19075	19080	19085	19090	19095
	in	mm	in	mm	in	mm	in	mm
NOMINAL JAW TRAVEL	.157	4	.276	7	.394	10	.512	13
A CLOSED**	.315	7.75	.345	8.75	.581	14.75	.700	17.75
A OPEN**	.403	10.25	.540	13.75	.915	23.25	1.150	29.25
B	.787	20.0	1.024	26.0	1.496	38.0	1.968	50.0
C	.398	10.0	.555	14.0	.791	20.0	1.027	26.0
D	.177	4.5	.215	5.5	.256	6.5	.394	10.0
F	.312	8.0	.375	10.0	.500	12.0	.625	16.0
G	#4	M2.5	#5	M3	#8	M4	#10	M5
H	1.012	25.5	1.289	32.0	1.635	41.0	2.081	53.0
K	1.563	39.5	1.937	48.5	2.500	63.5	3.242	82.5
L	.098	2.5	.138	3.5	.196	5.0	.256	6.5
M	1.031	26.01	1.249	31.0	1.624	41.0	2.108	53.5
O*	.5310	14.0	.6875	18.0	.8430	22.0	1.0940	28.0
P*	.550	14.0	.710	18.0	1.100	28.0	1.535	39.0
Q	4-40 x .19 DP	M3 x 0.5 x 4.5 DP	6-32 x .22 DP	M3 x 0.5 x 4.5 DP	8-32 x .28 DP	M4 x 0.7 x 6.0 DP	10-24 x .38 DP	M5 x 0.8 x 7.5 DP
R	.601	15.5	.681	18.0	.785	20.5	.870	22.0
S	1.312	33.0	1.624	40.0	2.062	52.0	2.655	67.5
T	.351	8.5	.367	9.0	.380	9.5	.322	8.0
W	3/32	2.5	1/8	3.0	1/8	4.0	3/16	5.0
Y	.196	5.0	.276	7.0	.393	10.0	.511	13.0
Z	#4	M3	#6	M3	#8	M4	#10	M5
AA	.871	22.0	1.045	26.0	1.412	36.0	1.854	47.0
BB	10-32	M3 x 0.5	10-32	M3 x 0.5	10-32	M5 x 0.8	10-32	M5 x 0.8
CC	.167	3.0	.176	3.5	.193	5.5	.153	4.5
DD	.465	12.5	.505	14.5	.592	15.0	.750	19.5
EE	1/16	2.5	1/16	2.5	1/16	3.0	1/16	3.0

NOTES:

- 1) *TOLERANCE BETWEEN DOWEL PIN HOLES IS $\pm .0008$ [± 0.02]
- 2) NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm
- 3) CIRCLED NUMBERS INDICATE POSITIONS.
- 4) **A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION.
A OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION.



CAD & Sizing Assistance

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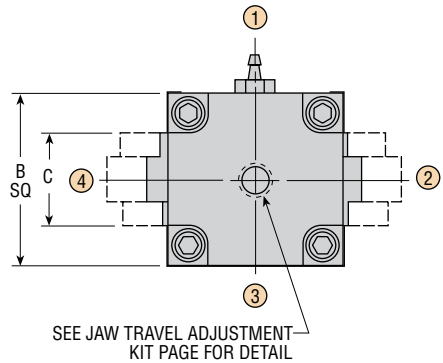
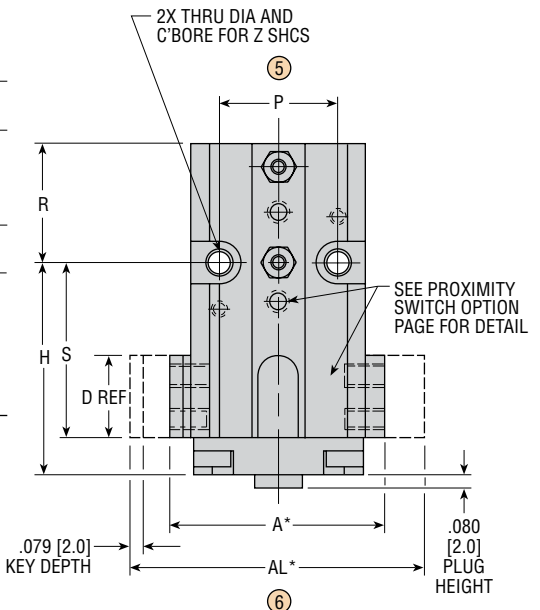
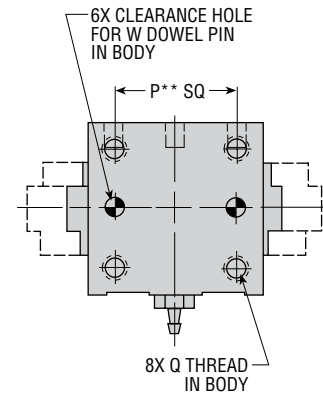
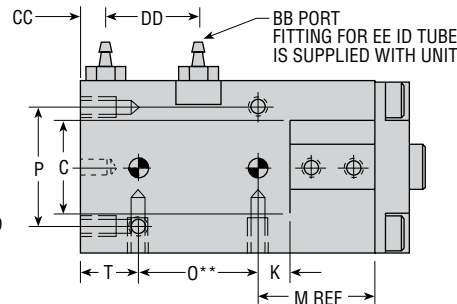
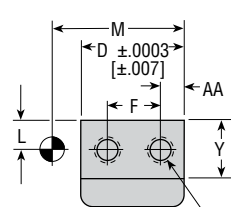
DIMENSIONS: SERIES 190 PARALLEL GRIPPERS - JAW STYLE 2

FULL MOUNTING IN POSITIONS 3 & 4

LETTER DIM.	MODEL NUMBER							
	19061/62	19066/67	19071/72	19076/77	19081/82	19086/87	19091/92	19096/97
	in	mm	in	mm	in	mm	in	mm
NOMINAL JAW TRAVEL								
SHORT	.157	4	.276	7	.394	10	.512	13
LONG	.315	8	.433	11	.630	16	.866	22
A CLOSED*	1.054	26.75	1.329	33.75	1.841	46.75	2.353	59.75
A OPEN*	1.151	29.25	1.545	39.25	2.175	55.25	2.805	71.25
AL CLOSED*	1.447	36.75	1.802	45.75	2.353	59.75	2.865	72.75
AL OPEN*	1.702	43.25	2.175	55.25	2.923	74.25	3.671	93.25
B	.787	20.0	1.024	26.0	1.496	38.0	1.968	50.0
C	.398	10.0	.555	14.0	.791	20.0	1.027	26.0
D	.3937	10.0	.4921	12.5	.7480	19.0	.9842	25.0
F	.188	5.0	.250	6.5	.375	10.0	.625	12.0
G	3-56 x .18 DP	M2.5 x 0.45 x 5.0 DP	6-32 x .28 DP	M3 x 0.5 x 6.0 DP	8-32 x .32 DP	M4 x 0.7 x 8.0 DP	10-24 x .38 DP	M5 x 0.8 x 10.0 DP
H	1.012	25.5	1.289	32.0	1.635	41.0	2.081	53.0
K	.159	4.0	.204	5.0	.212	5.5	.254	6.5
L	.098	2.5	.138	3.5	.197	5.0	.256	6.5
M	.553	14.0	.696	17.5	.960	24.0	1.238	31.5
O**	.5310	14.0	.6875	18.0	.8430	22.0	1.0940	28.0
P**	.550	14.0	.710	18.0	1.100	28.0	1.535	39.0
Q	4-40 x .19 DP	M3 x 0.5 x 4.5 DP	6-32 x .22 DP	M3 x 0.5 x 4.5 DP	8-32 x .28 DP	M4 x 0.7 x 6.0 DP	10-24 x .38 DP	M5 x 0.8 x 7.5 DP
R	.601	15.5	.681	18.0	.785	20.5	.870	22.0
S	.834	21.0	1.071	26.5	1.398	35.0	1.785	45.5
T	.351	8.5	.367	9.0	.380	9.5	.322	8.0
W	3/32	2.5	1/8	3.0	1/8	4.0	3/16	5.0
Y	.1970	5.0	.2756	7.0	.3940	10.0	.5118	13.0
	±.0006	±0.015	±.0006	±0.015	±.0007	±0.018	±.0008	±0.020
Z	#4	M3	#6	M3	#8	M4	#10	M5
AA	.103	2.5	.121	3.0	.186	4.5	.180	6.5
BB	10-32	M3 x 0.5	10-32	M3 x 0.5	10-32	M5 x 0.8	10-32	M5 x 0.8
CC	.167	3.0	.176	3.5	.193	5.5	.153	4.5
DD	.465	12.5	.505	14.5	.592	15.0	.750	19.5
EE	1/16	2.5	1/16	2.5	1/16	3.0	1/16	3.0

NOTES:

- 1) *A CLOSED & OPEN ARE FOR MODELS 19061, 71, 81, 91, 66, 76, 86, & 96
AL CLOSED & OPEN ARE FOR MODELS 19062, 72, 82, 92, 67, 77, 87, & 97
- 2) **TOLERANCE BETWEEN DOWEL PIN HOLES IS ±.0008 [±0.02]
- 3) CIRCLED NUMBERS INDICATE POSITIONS.
- 4) *A OR AL CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION.
A OR AL OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION.



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CAD & Sizing Assistance

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All dimensions are reference only unless specifically tolerated.

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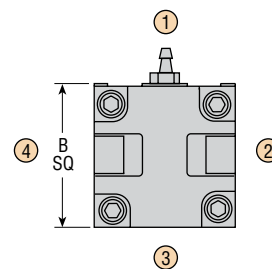
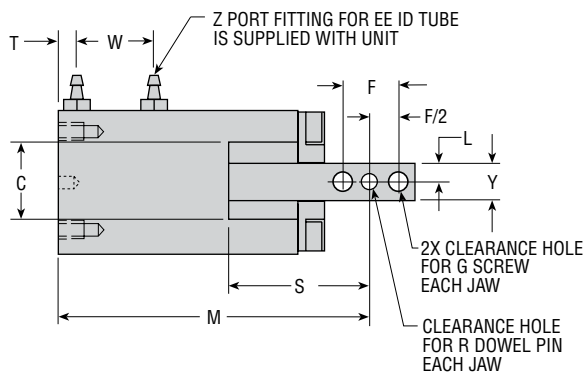
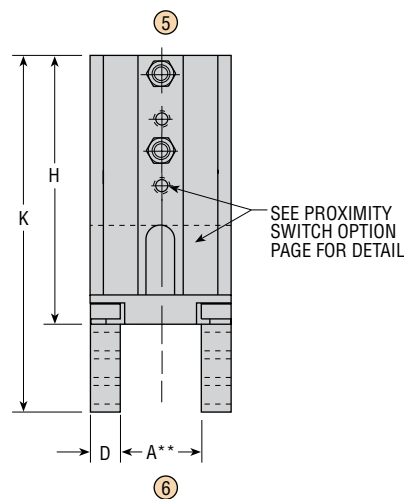
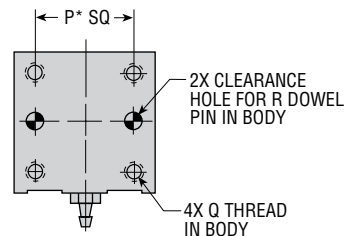
DIMENSIONS: SERIES 191 PARALLEL GRIPPERS - JAW STYLE 1

BOTTOM MOUNTING ONLY

LETTER DIM.	MODEL NUMBER							
	19160 in mm	19165 in mm	19170 in mm	19175 in mm	19180 in mm	19185 in mm	19190 in mm	19195 in mm
NOMINAL JAW TRAVEL	.157	4	.276	7	.394	10	.512	13
A CLOSED**	.315	7.75	.345	8.75	.581	14.75	.700	17.75
A OPEN**	.403	10.25	.540	13.75	.915	23.25	1.150	29.25
B	.787	20.0	1.024	26.0	1.496	38.0	1.968	50.0
C	.398	10.0	.555	14.0	.791	20.0	1.027	26.0
D	.177	4.5	.215	5.5	.256	6.5	.394	10.0
F	.312	8.0	.375	10.0	.500	12.0	.625	16.0
G	#4	M2.5	#5	M3	#8	M4	#10	M5
H	1.613	41.0	1.970	50.0	2.420	61.5	2.951	75.0
K	2.164	55.0	2.618	66.5	3.285	83.5	4.112	104.5
L	.098	2.5	.138	3.5	.196	5.0	.256	6.5
M	1.913	48.5	2.305	58.5	2.847	72.5	3.525	89.5
P*	.550	14.0	.710	18.0	1.100	28.0	1.535	39.0
Q	4-40 x .19 DP	M3 x 0.5 x 4.5 DP	6-32 x .22 DP	M3 x 0.5 x 4.5 DP	8-32 x .28 DP	M4 x 0.7 x 6.0 DP	10-24 x .38 DP	M5 x 0.8 x 7.5 DP
R	3/32	2.5	1/8	3.0	1/8	4.0	3/16	5.0
S	.871	22.0	1.045	26.0	1.412	36.0	1.854	47.0
T	.167	3.0	.176	3.5	.193	5.5	.153	4.5
W	.465	12.5	.505	14.5	.592	15.0	.750	19.5
Y	.196	5.0	.276	7.0	.393	10.0	.511	13.0
Z	10-32	M3 x 0.5	10-32	M3 x 0.5	10-32	M5 x 0.8	10-32	M5 x 0.8
EE	1/16	2.5	1/16	2.5	1/16	3.0	1/16	3.0

NOTES:

- *TOLERANCE BETWEEN DOWEL PIN HOLES IS $\pm .0008$ [± 0.02]
- NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm
- CIRCLED NUMBERS INDICATE POSITIONS.
- **A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION.
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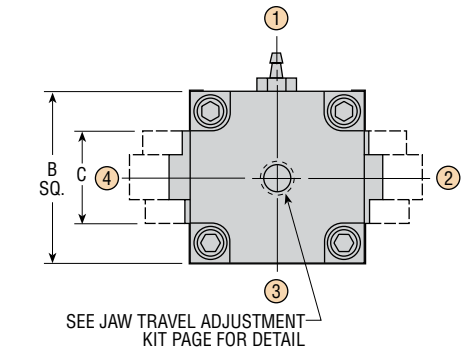
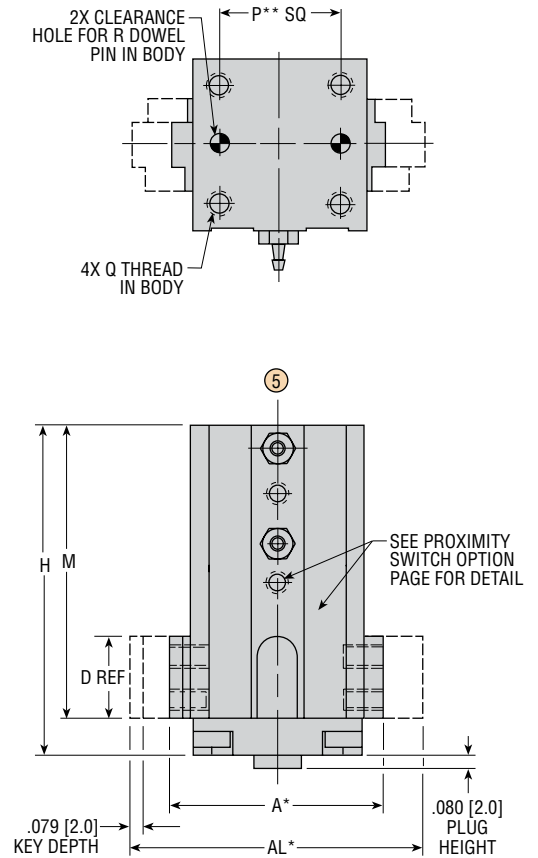
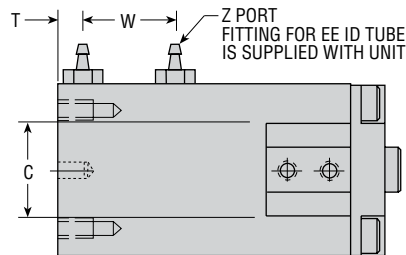
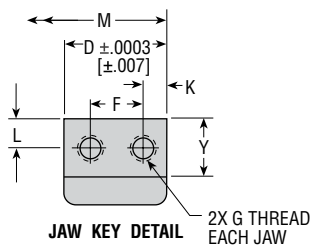
DIMENSIONS: SERIES 191 PARALLEL GRIPPERS - JAW STYLE 2

BOTTOM MOUNTING ONLY

LETTER DIM.	MODEL NUMBER							
	19161/62 in mm	19166/67 in mm	19171/72 in mm	19176/77 in mm	19181/82 in mm	19186/87 in mm	19191/92 in mm	19196/97 in mm
NOMINAL JAW TRAVEL								
SHORT	.157	4	.276	7	.394	10	.512	13
LONG	.315	8	.433	11	.630	16	.866	22
A CLOSED*	1.054	26.75	1.329	33.75	1.841	46.75	2.353	59.75
A OPEN*	1.151	29.25	1.545	39.25	2.175	55.25	2.805	71.25
AL CLOSED*	1.447	36.75	1.802	45.75	2.353	59.75	2.865	72.75
AL OPEN*	1.702	43.25	2.175	55.25	2.923	74.25	3.671	93.25
B	.787	20.0	1.024	26.0	1.496	38.0	1.968	50.0
C	.398	10.0	.555	14.0	.791	20.0	1.027	26.0
D	.3937	10.0	.4921	12.5	.7480	19.0	.9842	25.0
F	.188	5.0	.250	6.5	.375	10.0	.625	12.0
G	3-56 x .18 DP	M2.5 x 0.45 x 5.0 DP	6-32 x .28 DP	M3 x 0.5 x 6.0 DP	8-32 x .32 DP	M4 x 0.7 x 8.0 DP	10-24 x .38 DP	M5 x 0.8 x 10.0 DP
H	1.613	41.0	1.970	50.0	2.420	61.5	2.951	75.0
K	.103	2.5	.121	3.0	.186	4.5	.180	6.5
L	.098	2.5	.138	3.5	.197	5.0	.256	6.5
M	1.435	36.5	1.752	44.5	2.183	55.5	2.655	67.5
P**	.550	14.0	.710	18.0	1.100	28.0	1.535	39.0
Q	4-40 x .19 DP	M3 x 0.5 x 4.5 DP	6-32 x .22 DP	M3 x 0.5 x 4.5 DP	8-32 x .28 DP	M4 x 0.7 x 6.0 DP	10-24 x .38 DP	M5 x 0.8 x 7.5 DP
R	3/32	2.5	1/8	3.0	1/8	4.0	3/16	5.0
T	.167	3.0	.176	3.5	.193	5.5	.153	4.5
W	.465	12.5	.505	14.5	.592	15.0	.750	19.5
Y	.1970 ±.0006	5.0 ±0.015	.2756 ±.0006	7.0 ±0.015	.3940 ±.0007	10.0 ±0.018	.5118 —	13.0 —
Z	10-32	M3 x 0.5	10-32	M3 x 0.5	10-32	M5 x 0.8	10-32	M5 x 0.8
EE	1/16	2.5	1/16	2.5	1/16	3.0	1/16	3.0

NOTES:

- *A CLOSED AND OPEN ARE FOR MODELS 19161, 71, 81, 91, 66, 76, 86, & 96
AL CLOSED & OPEN ARE FOR MODELS 19162, 72, 82, 92, 67, 77, 87, & 97
- **TOLERANCE BETWEEN DOWEL PIN HOLES IS ±.0008 [±0.02]
- CIRCLED NUMBERS INDICATE POSITIONS.
- *A CLOSED REFLECTS THE LARGEST POSSIBLE CLOSED DIMENSION.
A OPEN REFLECTS THE SMALLEST POSSIBLE OPEN DIMENSION.



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CAD & Sizing Assistance

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

All dimensions are reference only unless specifically toleranced.

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OPTIONS & ACCESSORIES: SERIES 190 & 191 PARALLEL

4 HALL SENSOR READY/ JC1STP SWITCH READY

This option provides unit installed with magnet for use with PHD Hall Sensor. Kits must be ordered separately.



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



Refer to this product's online catalog in the product section for complete information including related dimensions and additional specifications. See link at bottom of this page.

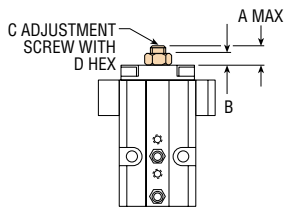
5 PROXIMITY SWITCH READY

This option provides the grippers with a pin to mount a switch target for 6 mm square inductive or Hall Effect proximity switch. See additional information online for details on switch bracket/target kits.

JAW TRAVEL ADJUSTMENT KIT

The Jaw Travel Adjustment Kit contains a screw and a lock nut used to limit the jaw opening on Jaw Style 2 parallel grippers. Jaw travel can be adjusted from zero opening to maximum opening.

If the option of maximum grip force on jaw closure is specified, (-x5xx option) the adjustment kit will limit the travel in the closing direction.



MODEL NO.	KIT NO.	LETTER DIM.			
		A	B	C	D
19x6x	18433	.197	.094	[M3 x 10.0]	.05
		[5.0]	[2.4]		[1.3]
19x7x	18434	.315	.157	[M5 x 14.0]	.094
		[8.0]	[4.0]		[2.4]
19x8x	18435	.394	.197	[M6 x 18.0]	.125
		[10.0]	[5.0]		[3.2]
19x9x	18436	.591	.315	[M10 x 22.0]	.188
		[15.0]	[8.0]		[4.8]

NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm

JAW TRAVEL ADJUSTMENT AVAILABLE ON STYLE 2 JAWS ONLY (19xx1, 19xx2, 19xx6, AND 19xx7 MODELS).

EACH JAW TRAVEL ADJUSTMENT KIT CONTAINS THE FOLLOWING ITEMS: ONE ADJUSTMENT SCREW AND NUT

TRAVEL CAN ONLY BE ADJUSTED IN THE MAX FORCE DIRECTION OF ANY MODEL.

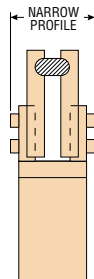
EXAMPLE 1: A MAX FORCE CLOSE GRIPPER; TRAVEL IS ONLY VARIED IN THE CLOSE DIRECTION, TRAVEL IN THE OPEN DIRECTION REMAINS UNCHANGED.

EXAMPLE 2: A MAX FORCE OPEN GRIPPER; TRAVEL IS ONLY VARIED IN THE OPEN DIRECTION, TRAVEL IN THE CLOSE DIRECTION REMAINS UNCHANGED.

JAW TOOLING

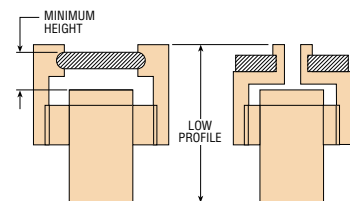
JAW STYLE 1

Jaw Style 1 is ideally suited for small parts. Simple tooling can provide a long narrowed profile for small parts or for reaching into confined areas.



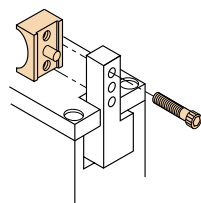
JAW STYLE 2

Jaw Style 2 allows simple tooling of wide parts. This type of tooling keeps the part close to the unit for a low profile package. Jaw Style 2 provides the lowest profile assembly for internal gripping by keeping the tooling close to the gripper.



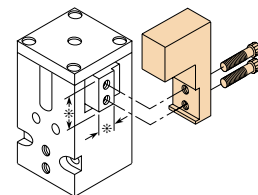
DOWEL PINS

Style 1 jaw is provided with a dowel pin hole as a means of orienting and locating jaw tooling.



MALE KEY

Style 2 jaws have a close tolerance* male key for orientation and precise location of jaw tooling. Jaw tooling can be readily machined to include a mating slot for the jaw key.

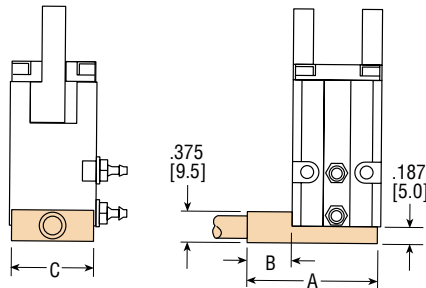


OPTIONS & ACCESSORIES: SERIES 190 & 191 PARALLEL

4

HALL SENSOR/JC1STP SWITCH READY

This option provides unit installed with magnet for use with PHD Hall Sensor and JC1STP Switch kits must be ordered separately.



NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm

HALL SENSOR KITS

MODEL NO.	KIT NO.		LETTER DIM.		
	IMPERIAL	METRIC	A	B	C
19x6x	18674-04	18057-04	1.431 [36.5]	.650 [16.5]	.777 [20.0]
19x7x	18675-04	18058-04	1.556 [39.5]	.550 [14.0]	.974 [25.0]
19x8x	18676-04	18059-04	1.800 [46.0]	.295 [7.5]	1.486 [38.0]
19x9x	18677-04	18060-04	2.272 [58.0]	.295 [7.5]	1.958 [50.0]

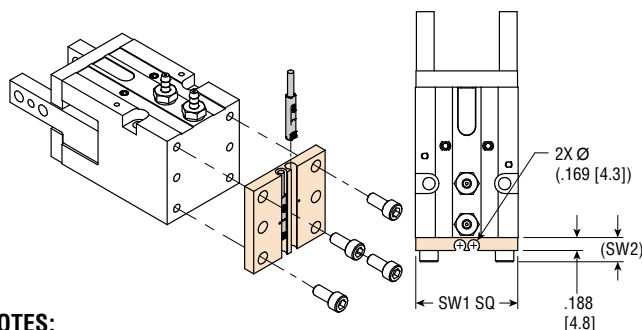
EACH HALL SENSOR KIT CONTAINS THE FOLLOWING ITEMS: ONE SENSOR WITH A 12 FOOT [4 m] SHIELDED CABLE TWO MOUNTING SCREWS

- 1) THE SENSOR MAY BE ROTATED TO ALLOW THE CABLE TO EXTEND FROM ANY SIDE OF UNIT EXCEPT THE PORT SIDE.
- 2) SENSOR MOUNTS TO UNIT USING BOTTOM MOUNTING HOLES. GRIPPERS MAY BE MOUNTED USING THESE HOLES. BUT THE SENSOR MUST BE SANDWICHED BETWEEN PLATE AND GRIPPER USING LONGER CUSTOMER SUPPLIED SCREWS.

MOUNTING KIT FOR SERIES JC1STP 2-POSITION TEACHABLE SENSOR

This kit provides the mounting components required to utilize one or two Series JC1STP-x Sensors. Using two sensors allows sensing of up to four positions throughout the jaw travel (see note). Sensors are ordered separately.

NOTE: Sensor ready option 4 must be specified to use these sensors.



NOTES:

- 1) For optimal switch performance, align arrows on switch with dots on mounting plate (see mounting instructions).
- 2) Switch plate may be rotated allowing the switch cable (s) to extend from any side of the gripper.
- 3) Switch plate must mount directly to gripper using bottom mounting holes. When mounting gripper from bottom, place switch plate between gripper and mounting surface using customer supplied fasteners.
- 4) Due to size limitations, the switch plate for the smallest of each gripper series has one switch slot and can accommodate one switch providing two jaw position sensing.

SERIES JCSTP SENSOR MOUNTING KITS

MODEL NO.	KIT PART NO.	
	IMPERIAL	METRIC
19x6x	86944-05-1	86944-05-5
19x7x	86944-06-1	86944-06-5
19x8x	86944-07-1	86944-07-5
19x9x	86944-08-1	86944-08-5

LETTER DIM	MODEL NUMBER							
	19x6x		19x7x		19x8x		19x9x	
	in	mm	in	mm	in	mm	in	mm
SW1	.770	19.6	.970	24.6	1.480	37.6	1.950	49.5
SW2 ^A	.303	7.7	.324	8.2	.350	8.9	.381	9.7

A) SW2 calculated using nominal head height of standard SHCS

All dimensions are reference only unless specifically toleranced.

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OPTIONS & ACCESSORIES: SERIES 190 & 191 PARALLEL

5

PROXIMITY SWITCH READY

This option provides the grippers with a pin to mount a switch target for 6 mm square inductive or Hall Effect proximity switch. See additional information below for details on switch bracket/target kits.

SERIES 5580 HALL EFFECT SWITCHES

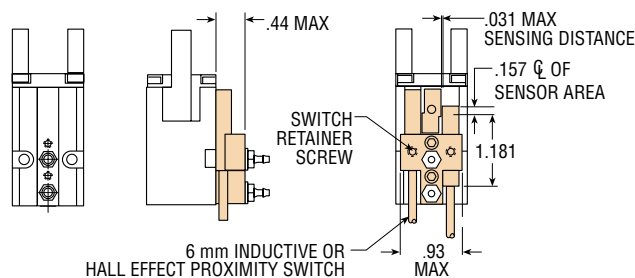
MODEL NO.	DESCRIPTION
55803-1-02	NPN 4.5-24 VDC with 2 meter cable
55804-1-02	PNP 4.5-24 VDC with 2 meter cable
55823-1	NPN 4.5-24 VDC with Quick Connect
55824-1	PNP 4.5-24 VDC with Quick Connect

6 mm SQUARE INDUCTIVE PROXIMITY SWITCHES

MODEL NO.	DESCRIPTION
18431-001-02	NPN 10-30 VDC with 2 meter cable
18431-002-02	PNP 10-30 VDC with 2 meter cable

SWITCH BRACKET AND TARGET KITS

FOR IMPERIAL MODELS 19x6x AND 19x7x ONLY



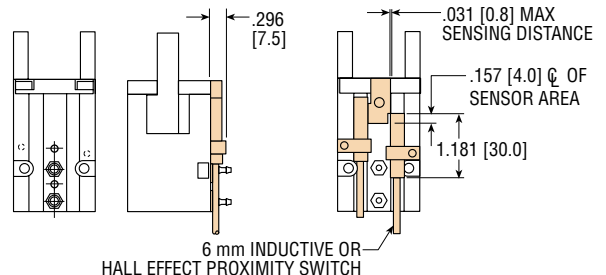
EACH SWITCH BRACKET & TARGET KIT CONTAINS THE FOLLOWING ITEMS:
 1 TARGET WITH SCREW
 BRACKET FOR 6 mm SQUARE SWITCH AND ALL MOUNTING COMPONENTS

SWITCHES ARE ORDERED SEPARATELY

FOR USE WITH: SERIES 5580 SWITCHES	
GRIPPER MODEL	SWITCH BRACKET & TARGET KIT
19x6x	59794-1
19x7x	59795-1

FOR USE WITH: 6 mm SQUARE INDUCTIVE PROXIMITY SWITCHES	
GRIPPER MODEL	SWITCH BRACKET & TARGET KIT
19x6x	59792-1
19x7x	59793-1

FOR IMPERIAL MODELS 19x8x & 19x9x METRIC MODELS 19x6x, 19x7x, 19x8x, & 19x9x



EACH SWITCH BRACKET & TARGET KIT CONTAINS THE FOLLOWING ITEMS:
 1 TARGET WITH SCREW
 2 SENSOR BRACKETS WITH MOUNTING SCREWS

SWITCHES ARE ORDERED SEPARATELY
 NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm

FOR USE WITH: SERIES 5580 SWITCHES	
GRIPPER MODEL	SWITCH BRACKET & TARGET KIT
19x6x*	55770
19x7x*	55771
19x8x	55772
19x9x	55773

* METRIC UNITS ONLY

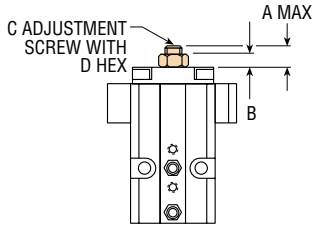
FOR USE WITH: 6 mm SQUARE INDUCTIVE PROXIMITY SWITCHES	
GRIPPER MODEL	SWITCH BRACKET & TARGET KIT
19x6x*	18432
19x7x*	18437
19x8x	18438
19x9x	18439

* METRIC UNITS ONLY

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ACCESSORIES & JAW TOOLING: SERIES 190 & 191 PARALLEL

JAW TRAVEL ADJUSTMENT KIT



MODEL NO.	KIT NO.	LETTER DIM.			
		A	B	C	D
19x6x	18433	.197 [5.0]	.094 [2.4]	[M3 x 10.0]	.05 [1.3]
19x7x	18434	.315 [8.0]	.157 [4.0]	[M5 x 14.0]	.094 [2.4]
19x8x	18435	.394 [10.0]	.197 [5.0]	[M6 x 18.0]	.125 [3.2]
19x9x	18436	.591 [15.0]	.315 [8.0]	[M10 x 22.0]	.188 [4.8]

NUMBERS IN [] ARE FOR METRIC UNITS AND ARE IN mm

JAW TRAVEL ADJUSTMENT AVAILABLE ON STYLE 2 JAWS ONLY (19xx1, 19xx2, 19xx6, AND 19xx7 MODELS).

EACH JAW TRAVEL ADJUSTMENT KIT CONTAINS THE FOLLOWING ITEMS: ONE ADJUSTMENT SCREW AND NUT

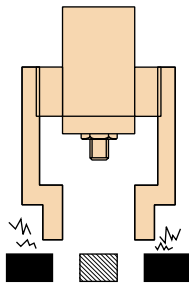
TRAVEL CAN ONLY BE ADJUSTED IN THE MAX FORCE DIRECTION OF ANY MODEL.

EXAMPLE 1: A MAX FORCE CLOSE GRIPPER; TRAVEL IS ONLY VARIED IN THE CLOSE DIRECTION, TRAVEL IN THE OPEN DIRECTION REMAINS UNCHANGED.

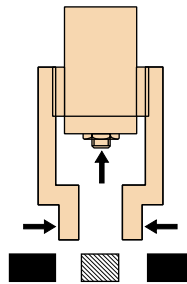
EXAMPLE 2: A MAX FORCE OPEN GRIPPER; TRAVEL IS ONLY VARIED IN THE OPEN DIRECTION, TRAVEL IN THE CLOSE DIRECTION REMAINS UNCHANGED.

The Jaw Travel Adjustment Kit contains a screw and a lock nut used to limit the jaw opening on Jaw Style 2 parallel grippers. Jaw travel can be adjusted from zero opening to maximum opening. Below is one application example showing how the jaw travel

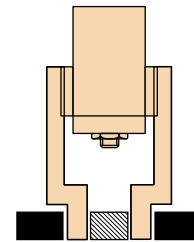
adjustment kit can be of benefit. If the option of maximum grip force on jaw closure is specified, (-x5xx option) the adjustment kit will limit the travel in the closing direction.



With jaws fully open, the tooling hits the obstruction and the part cannot be gripped.



Turning jaw travel adjustment screw inward reduces the maximum open position; allowing the tooling to clear the obstruction.

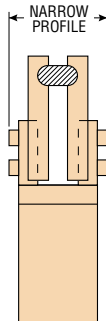


The part can now be gripped. (The jaw closed dimension is not affected by the jaw travel adjustment.)

JAW TOOLING

JAW STYLE 1

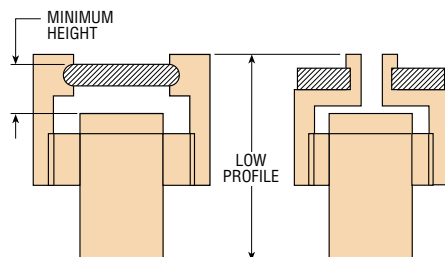
Jaw Style 1 is ideally suited for small parts. Simple tooling can provide a long narrowed profile for small parts or for reaching into confined areas.



JAW STYLE 2

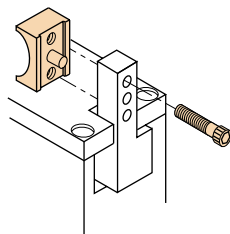
Jaw Style 2 allows simple tooling of wide parts. This type of tooling keeps the part close to the unit for a low profile package.

Jaw Style 2 provides the lowest profile assembly for internal gripping by keeping the tooling close to the gripper.



DOWEL PINS

Style 1 jaw is provided with a dowel pin hole as a means of orienting and locating jaw tooling.



MALE KEY

Style 2 jaws have a close tolerance* male key for orientation and precise location of jaw tooling.

Jaw tooling can be readily machined to include a mating slot for the jaw key.

