

Pneumatic Workholding Clamp

- Ideal for sheet metal handling in transfer presses
- Design delivers superior clamp force and life
- Four sizes and up to 15 jaw styles to fit application needs



WHAT'S NEW

Hot Stamping Sensor Housing Kits page 100



T & U Jaw Styles page 21



Teachable Sensor page 87



**BEST
DESIGN,
DELIVERY, &
PERFORMANCE**



SERIES GRM CLAMPS

GRM

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Major Benefits

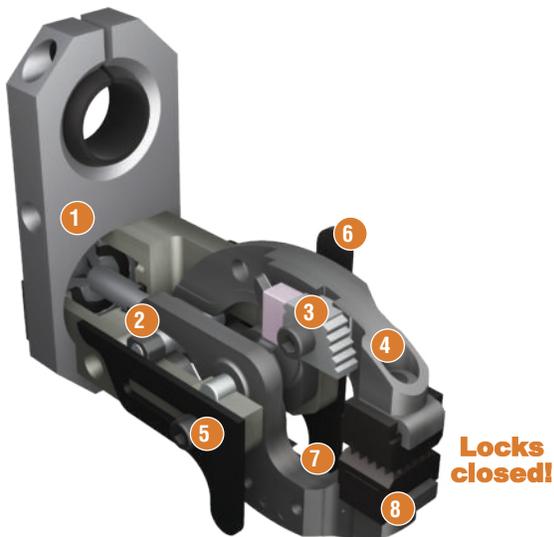
- Simple design
- Compact envelope size
- Long life
- High grip force
- Fast field maintenance
- Jaws lock in the closed position ensuring part retention if air pressure is lost due to line rupture or power loss
- Lowest cost of ownership
- Proven design for longevity
- Modular jaws and tips - easily changed
- Non-adjustable color-coded tips
- Modular mounting brackets
- Adjustable jaw rotations
- Hardened adjustable impact plates
- Integral shock pads
- Imperial and metric ports and mounting

The Series GRM Clamp continues to be the industry-leading pneumatic actuator of choice for material handling solutions worldwide. Its simple design and rugged construction have proven customer satisfaction and loyalty since 1998. Four standard sizes, 15 standard jaw styles, and countless options and accessories, make the Series GRM Clamp the most versatile and modular clamp in the world.



GRM Size 2 Teachable Panel Present Detection (-Uxxxx)

Provides push button teachable sensor to detect presence of part. See page 87.



Product Features

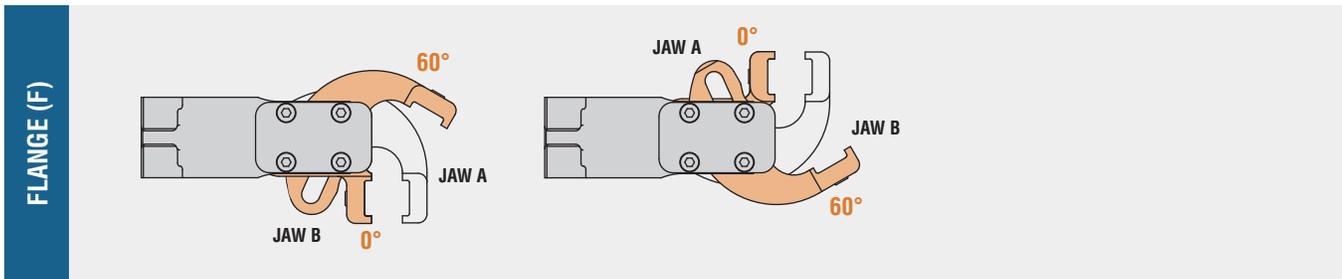
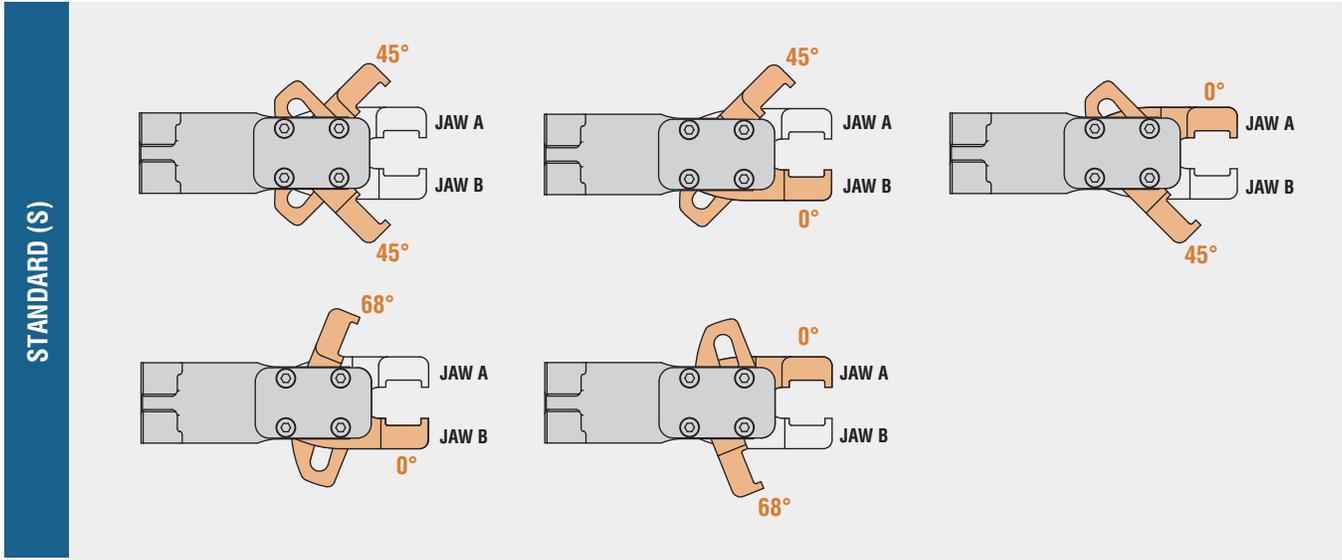
- 1 **Fixed or spherical mounting brackets** for side or rear mounting
- 2 **Cam design** locks clamp in the closed position ensuring part retention if air pressure is lost
- 3 **Adjustable rotation stop** allows for multiple jaw openings in one clamp (Sizes 2 and 4)
- 4 **Interchangeable hardened-steel jaws** minimize costly inventory and maximize wear resistance for long life
- 5 **Field repairable** in ten minutes using metric hex wrenches
- 6 **Hardened-steel impact plates** eliminate damage to body from panel impact and provide positive positioning. These are adjustable on sizes 1, 2, and 4.
- 7 **Wide and deep jaw throats** accommodate difficult clamping applications
- 8 **Self-locking internal threads** throughout eliminate need for thread locking adhesives or additional locking components

SELECTION GUIDE: Series GRM Clamps

JAW STYLE (units shown are size 2)	SIZE	CLAMP FORCE		JAW DESIGN & BENEFITS	PAGE	
		lb	N			
STANDARD 	0	135	600	Sizes 2 & 4 - Jaws have wide and deep jaw throats to accommodate non-flat applications Size 1 has same grip force as size 2	13	
	1	225	1001			
	2	225	1001			
	4	500	2224			
CHISEL 	Single 'C'	2	225	1001	Compact lower jaw Blank loading Sheet separation applications	17
	Double 'D'					
SHOVEL 	Single 'H'	2	225	1001	Blank loading and sheet separation applications Adjustable external rotation stop allows for multiple jaw openings in one clamp	19
	Double 'J'					
FLAT SHOVEL 	Single 'L'	2	225	1001	Completely fixed lower jaw Upper jaw does not swing through bottom of clamp Ideal for limited spaces	25
	Double 'M'					
NEW LOW PROFILE SHOVEL 	Single 'T'	1	160	710	Low profile shovel fits into tight spaces Increased throat clearance for parts with flanges Blank loading	21
	Double 'U'	2	225	1001		
FLANGE 	0	135	600	Adjustable external rotation stop allows for multiple jaw openings in one clamp (for sizes 2 & 4 only) Ideal to grip on bends or flanges	30	
	1	180	801			
	2	225	1001			
	4	500	2224			
NEEDLENOSE 'N'		2	225	1001	Jaws lock in closed position over wide panel thickness range (0.0 to 4.0 mm) Ideal for limited spaces and blank loading applications Integral diamond points eliminate need for tip options	34
HOOK 	'K'	2	225	1001	Short overall length to save space between rails Commonly used with 'C' style mounting brackets	37
TOOLABLE 	'G'	2	225	1001	Designed with large space between jaws to accommodate non-flat and large material applications	40
		4	500	2224		
SHORT 	'R'	2	330	1468	Ideal for limited space environments Higher grip force in smaller package	44

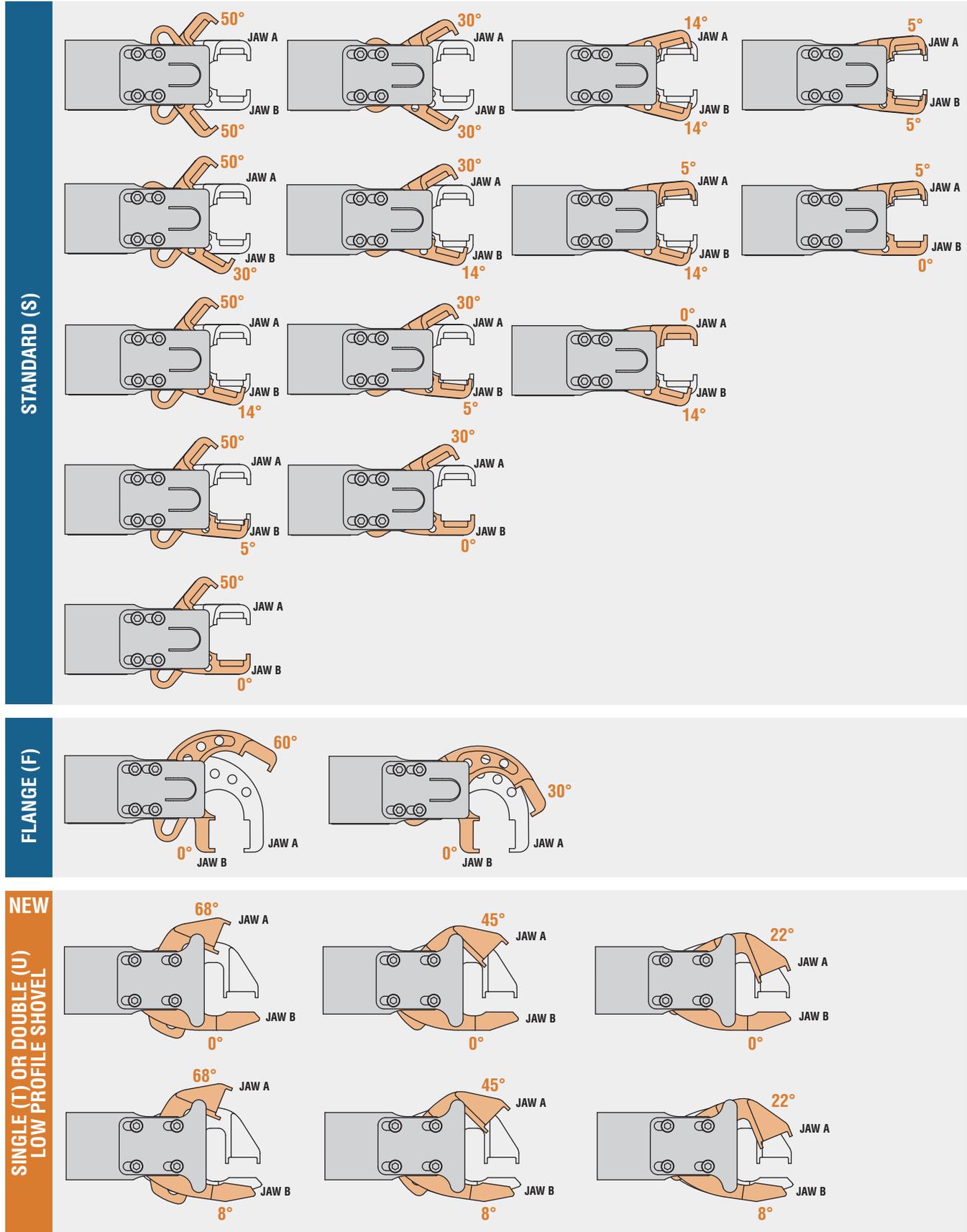
UNIT VIEWS: Size O - Jaw Styles S & F

The clamp can be flipped 180°. Refer to Jaw Opening Combinations charts on Ordering Data page.



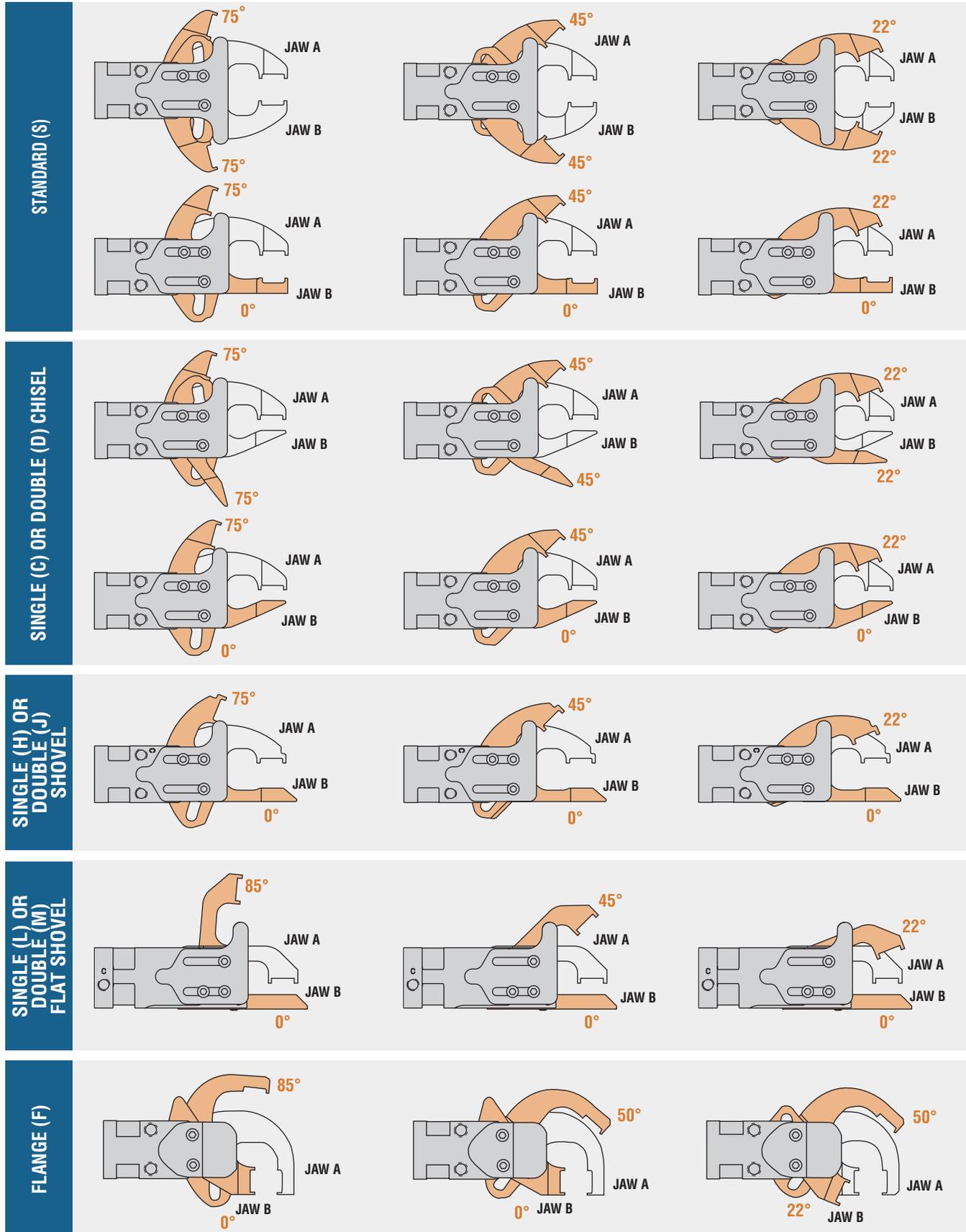
UNIT VIEWS: Size 1 - Jaw Styles S, F, T, & U

The clamp can be flipped 180°. Refer to Jaw Opening Combinations charts on Ordering Data page.



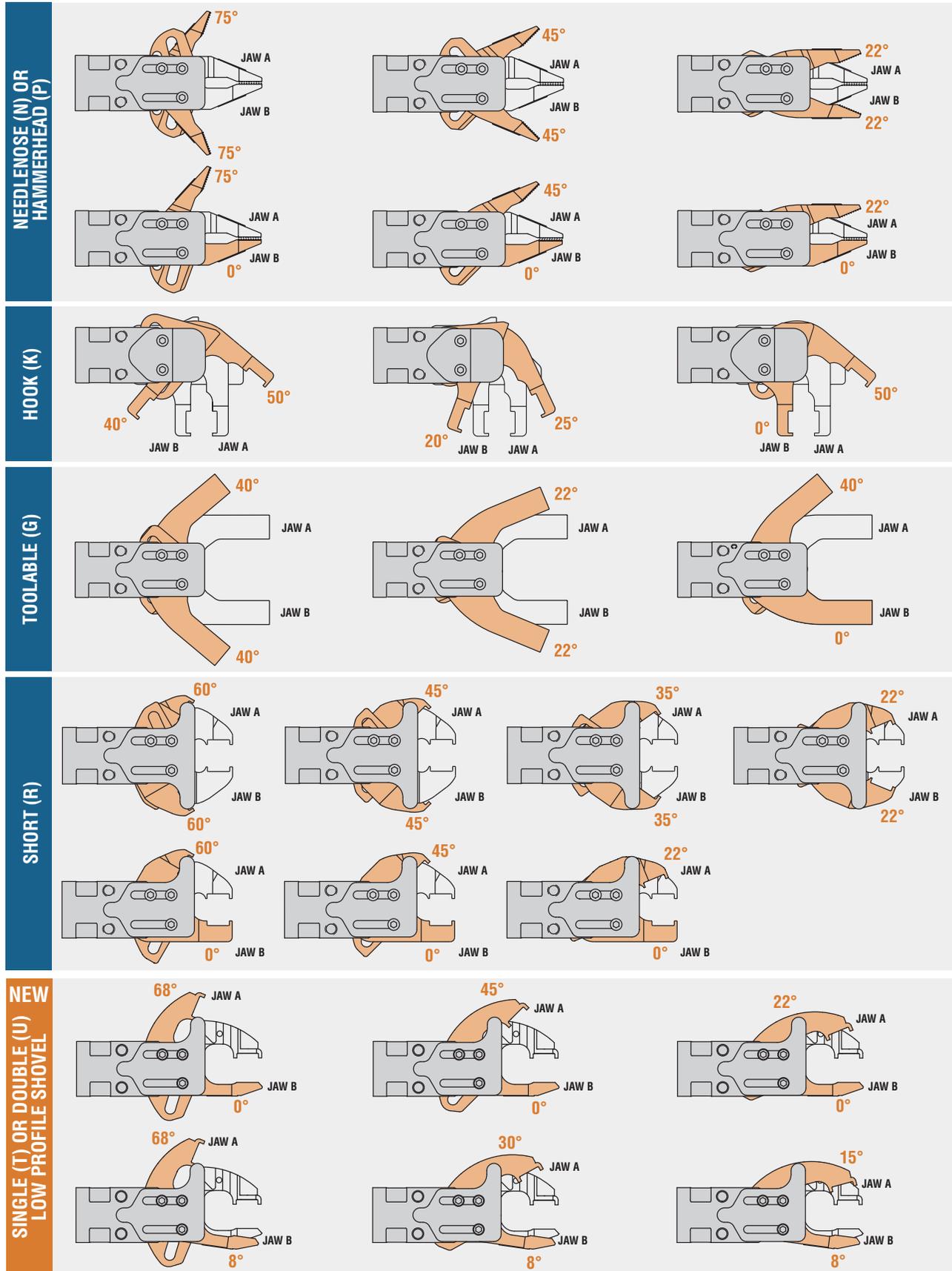
UNIT VIEWS: Size 2 - Jaw Styles S, C, D, H, J, L, M, & F

The clamp can be flipped 180°. Refer to Jaw Opening Combinations charts on Ordering Data page.



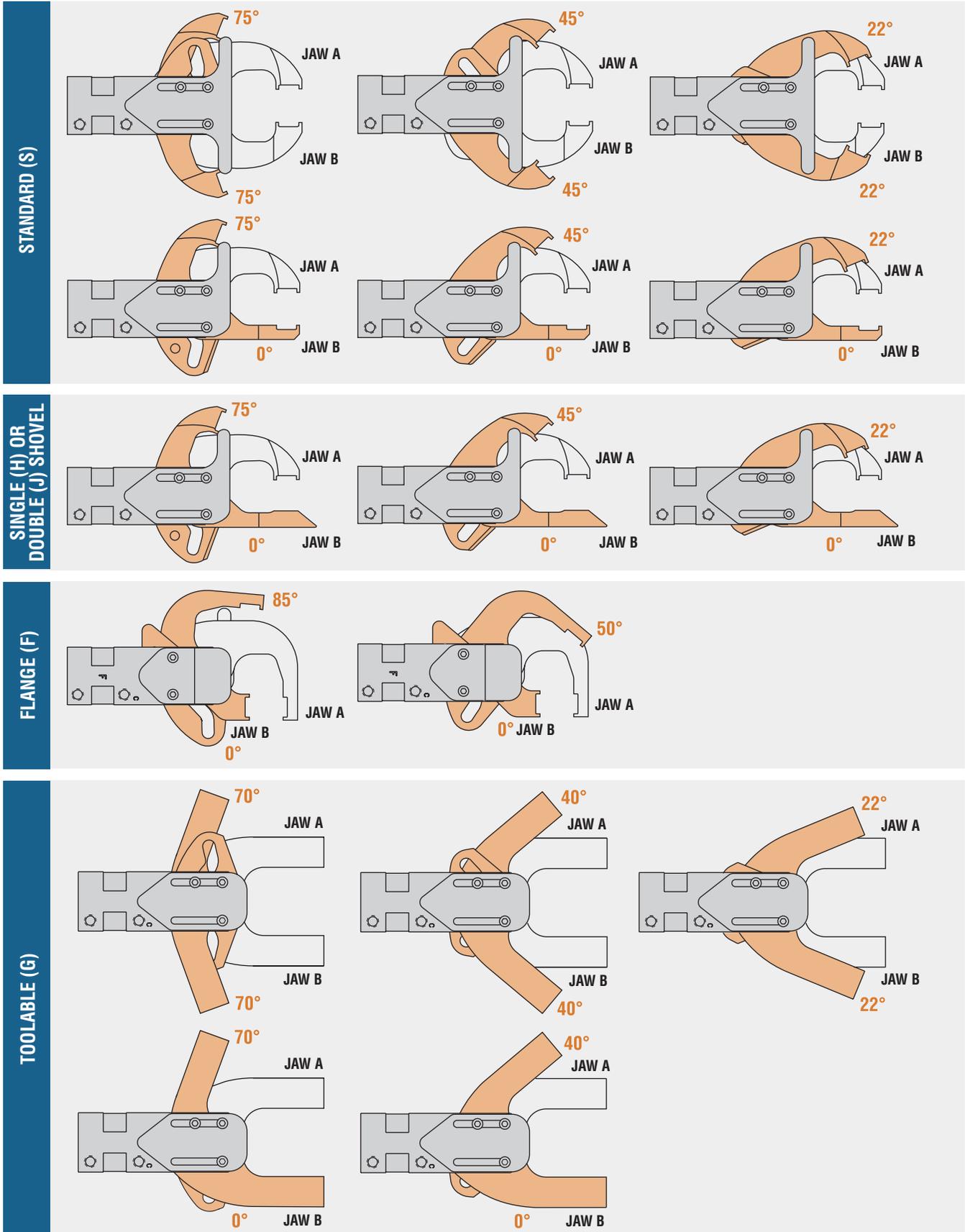
UNIT VIEWS: Size 2 - Jaw Styles N, P, K, G, R, T, & U

The clamp can be flipped 180°. Refer to Jaw Opening Combinations charts on Ordering Data page.



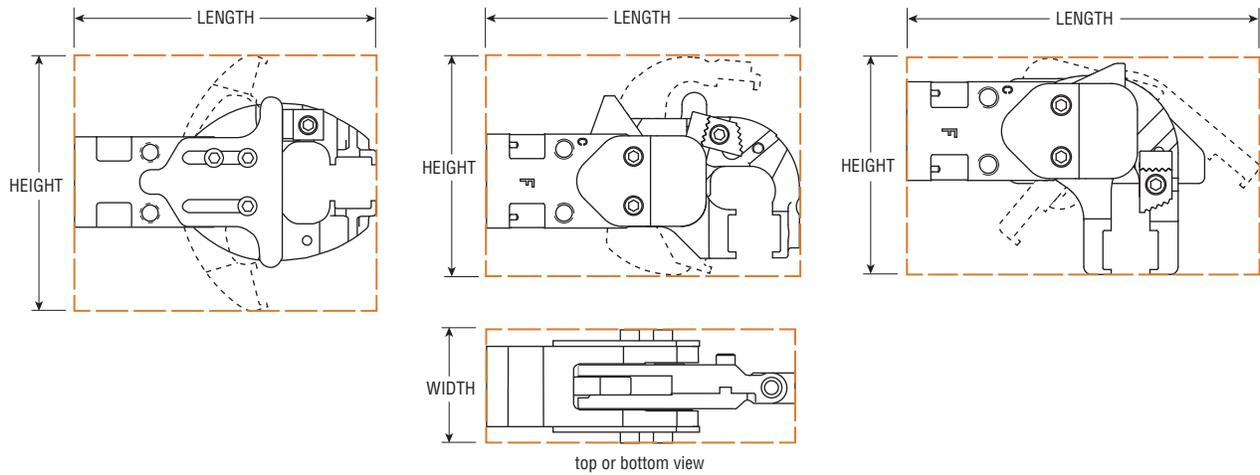
UNIT VIEWS: Size 4 - Jaw Styles S, H, J, F, & G

The clamp can be flipped 180°. Refer to Jaw Opening Combinations charts on Ordering Data page.



ENGINEERING DATA: Series GRM Clamps

MAXIMUM ENVELOPE SIZE



UNIT SIZE COMPARISON 1

JAW STYLE	SIZE	TOTAL GRIP FORCE		MAX. ENVELOPE SIZE						MAX. WEIGHT	
				LENGTH		WIDTH		HEIGHT			
				lb	N	in	mm	in	mm		
S	0	135	600	4.074	103.5	1.512	38.4	2.430	61.7	0.54	0.24
	1	225	1001	4.724	120.0	1.771	45.0	3.170	80.5	0.97	0.44
	2*	225	1001	6.453	163.9	2.336	59.3	5.444	138.3	2.10	0.95
	4	500	2224	8.799	223.5	2.662	67.6	6.894	175.1	4.20	1.91
C & D	2	225	1001	6.453	163.9	2.336	59.3	5.121	130.1	2.00	0.91
F	0	135	600	4.466	113.4	1.512	38.4	2.171	55.1	0.53	0.24
	1	180	801	5.721	145.3	2.106	53.5	3.211	81.6	1.23	0.56
	2	225	1001	6.699	170.2	2.291	58.2	4.438	112.7	2.10	0.95
	4	500	2224	9.110	231.4	2.941	74.7	5.885	149.5	4.30	1.95
G	2	225	1001	6.713	170.5	2.336	59.3	6.616	168.0	2.30	1.04
	4	500	2224	8.996	228.5	2.662	67.6	8.201	208.3	4.20	1.91
H & J	2	225	1001	6.820	173.2	2.336	59.3	4.488	114.0	2.10	0.95
	4	500	2224	9.429	239.5	2.662	67.6	5.989	152.1	4.20	1.91
K	2	225	1001	6.804	172.8	2.291	58.2	4.184	106.3	2.00	0.91
L & M	2	225	1001	7.065	179.5	2.750	69.9	4.498	114.2	2.70	1.22
N & P	2	225	1001	6.403	162.6	2.336	59.3	4.970	126.2	1.90	0.86
R	2	330	1468	5.748	146.0	2.336	59.3	4.060	103.1	1.96	0.89
T & U	1	160	710	5.140	130.6	2.080	52.8	3.160	80.3	1.37	0.62
	2	225	1001	6.470	164.3	2.336	59.3	4.488	114.0	2.10	0.95

NOTES:

- 1) Total grip force is based on 87 psi [6 bar] air pressure.
- 2) *B08 option provides up to 676 lb [3,007 N]. Available on size 2 only. Refer to B08 in Options and Accessories section for increased grip force.
- 3) Maximum envelope size of base unit without options.
- 4) Maximum weight of base unit without options.

UNIT SIZE COMPARISON 2

SIZE	CYLINDER PARAMETERS ⁽¹⁾								CYCLE TIME OPEN OR CLOSE ⁽²⁾	PRESSURE LIMITS		TEMPERATURE LIMITS			
	BORE Ø		MAX. STROKE		DISPLACEMENT							STANDARD		-G11 OPTION	
	in	mm	in	mm	in ³	cm ³	in ³	cm ³		min	max	min	max	min	max
					OPEN	CLOSE									
0	0.787	20.0	0.512	13.0	0.329	5.39	0.225	3.69	0.15	30 psi [2 bar]	100 psi [7 bar]	-20°F [-30°C]	180°F [82°C]	—	—
1	0.984	25.0	0.715	18.2	0.54	8.8	0.49	8.0	0.20					-20°F [-30°C]	392°F [200°C]
2	1.260	32.0	0.914	23.2	1.14	18.7	1.03	16.9	0.19						
4	1.575	40.0	1.228	31.2	2.39	39.2	2.18	35.7	0.14						

NOTES:

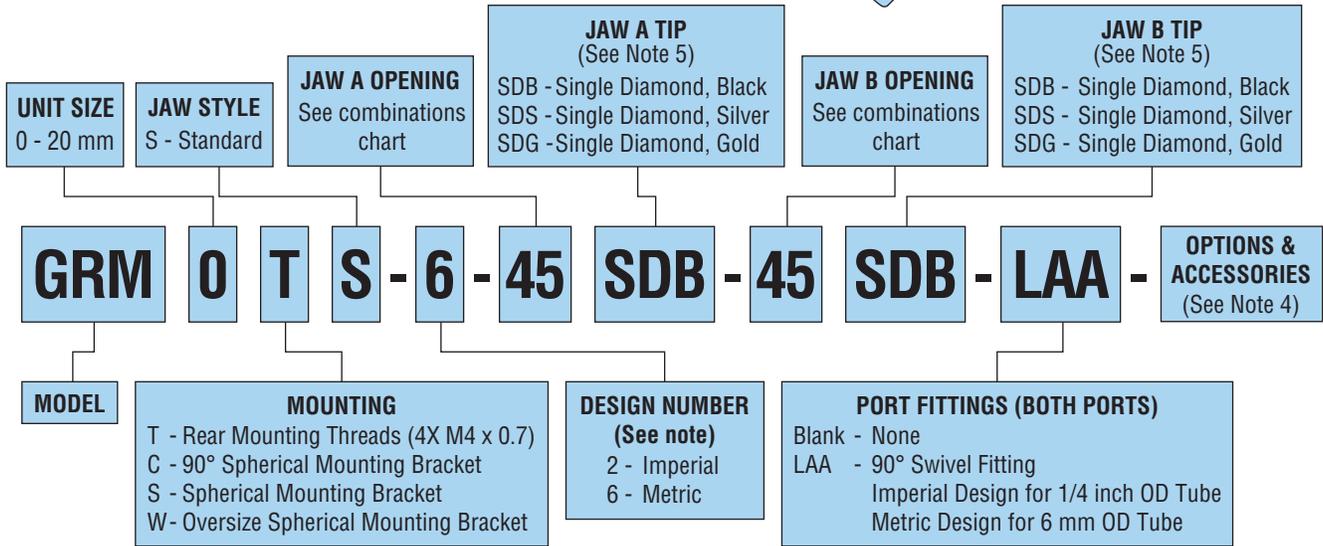
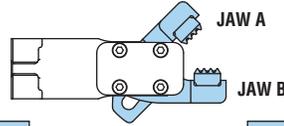
- 1) Refer to B08 and B10 options in Options and Accessories section for other cylinder parameters.
- 2) Based on 87 psi [6 bar] air pressure.

ORDERING DATA: Size 0 - Jaw Style S

Refer to page 14 for dimensions.

TO ORDER SPECIFY:

Size, Mounting, Jaw Style Option, Design No., Jaw Rotations (A & B), Jaw Tip Option (A & B), and Fitting Options if desired.



NOTES:

- 1) Imperial units have imperial mounts and fittings for imperial tubing. Metric units have metric mounts and fittings for metric tubing. All port threads are metric, regardless of design number.
- 2) Rear mounting threads (T option) must be specified when ordering an accessory mount (Mxx option).
- 3) Standard tip options must be left blank when ordering accessory tips.
- 4) For additional options, refer to Options and Accessories section of this catalog.
- 5) If other tip options are required, leave blank and refer to Options and Accessories - Tips section for available tips.

JAW OPENING COMBINATIONS GRM0xS

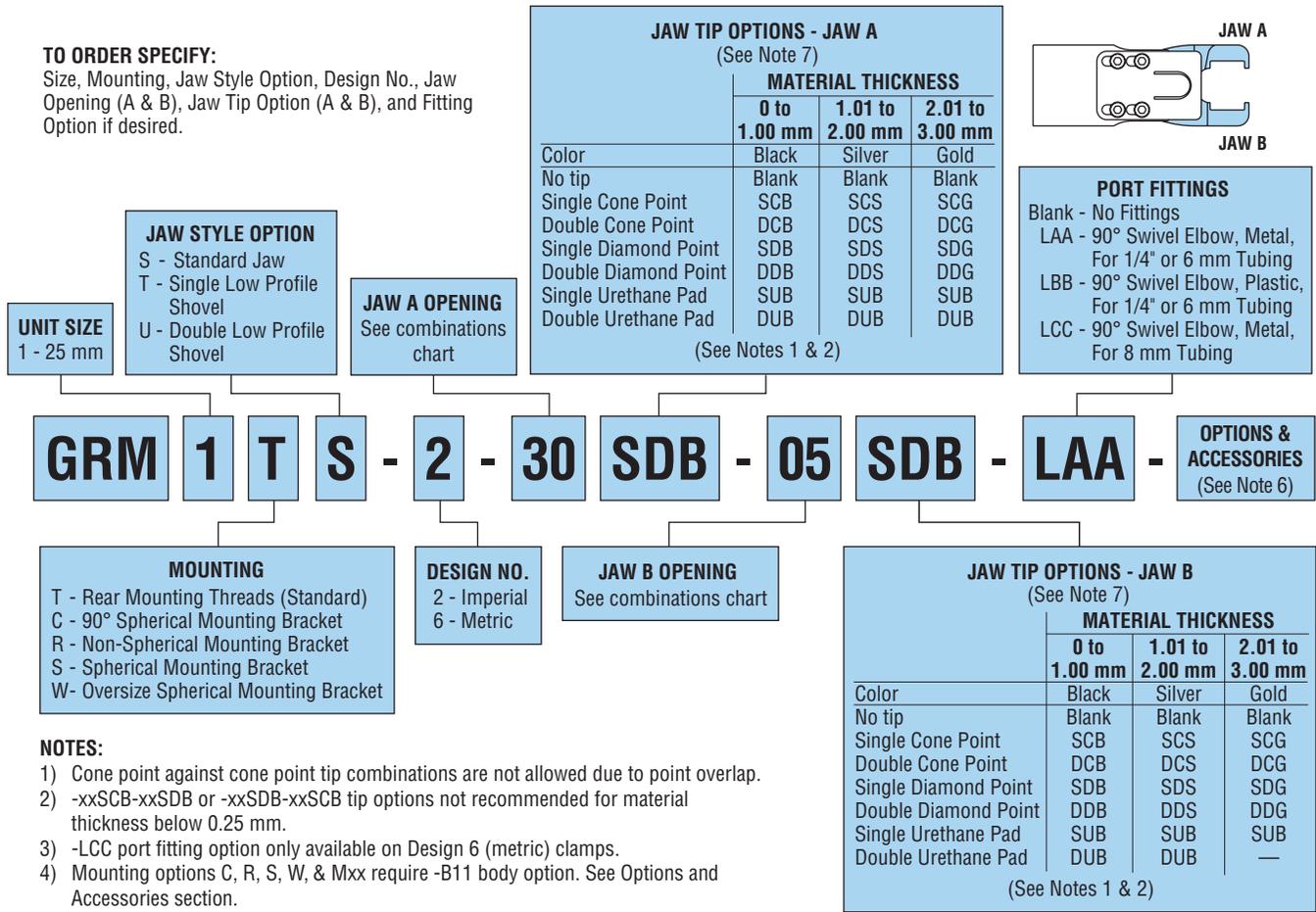
JAW STYLE OPTION S	JAW A		
	0°	45°	68°
JAW B	0°		
	45°		
	68°		

ORDERING DATA: Size 1 - Jaw Styles S, T, & U

Refer to pages 15 and 22 for dimensions.

TO ORDER SPECIFY:

Size, Mounting, Jaw Style Option, Design No., Jaw Opening (A & B), Jaw Tip Option (A & B), and Fitting Option if desired.



NOTES:

- 1) Cone point against cone point tip combinations are not allowed due to point overlap.
- 2) -xxSCB-xxSDB or -xxSDB-xxSCB tip options not recommended for material thickness below 0.25 mm.
- 3) -LCC port fitting option only available on Design 6 (metric) clamps.
- 4) Mounting options C, R, S, W, & Mxx require -B11 body option. See Options and Accessories section.
- 5) Metric units have metric ports and mounting. Imperial units have imperial ports and mounting.
- 6) For additional options, refer to Options and Accessories section of this catalog.
- 7) If other tip options are required, leave blank and refer to Options and Accessories - Tips section for available tips.

JAW OPENING COMBINATIONS

GRM1xS		JAW A				
JAW STYLE OPTION S		0°	5°	14°	30°	50°
JAW B	0°					
	5°					
	14°					
	30°					
	50°					

GRM1xT, GRM1xU		JAW A		
JAW STYLE OPTION T & U		22°	45°	68°
JAW B	0°			
	8°			

= Available Combinations

NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

For CAD & Ordering Assistance

phdinc.com/myphd

ORDERING DATA: Sizes 2 & 4 - Jaw Styles S, C, D, H, J, T, & U

Refer to pages 16, 18, 20, and 23 for dimensions.

TO ORDER SPECIFY:

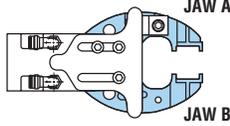
Size, Mounting, Jaw Style Option, Design No., Jaw Opening (A & B), Jaw Tip Option (A & B), and Fitting Option if desired.

JAW A OPENING
See combinations chart

JAW TIP OPTIONS - JAW A
(See Note 6)

	MATERIAL THICKNESS			
	0 to 1.50 mm	1.51 to 3 mm	3.01 to 4 mm	4.01 to 5 mm*
Color	Black	Silver	Gold	Red
No tip	Blank	Blank	Blank	Blank
Single Cone Point	SCB	SCS	SCG	SCR
Double Cone Point	DCB	DCS	DCG	DCR
Single Diamond Point	SDB	SDS	SDG	SDR
Double Diamond Point	DDB	DDS	DDG	DDR
Single Urethane Pad	SUB	SUB	SUB	SUB
Double Urethane Pad	DUB	DUB	DUB	DUB

(See Notes 1 & 5)



PORT FITTINGS

Blank - No Fittings
LAA - 90° Swivel Elbow, Metal, For 1/4" or 6 mm Tubing
LBB - 90° Swivel Elbow, Plastic, For 1/4" or 6 mm Tubing
LCC - 90° Swivel Elbow, Metal, For 8 mm Tubing

UNIT SIZE
2 - 32 mm
4 - 40 mm

JAW STYLE OPTIONS

Style	Size
S - Standard Jaw	2 & 4
C - Single Chisel Jaw	2
D - Double Chisel Jaw	2
H - Single Shovel Jaw	2 & 4
J - Double Shovel Jaw	2 & 4
T - Single Low Profile Shovel	2
U - Double Low Profile Shovel	2

GRM 2 S S - 2 - 75 DDB - 75 DDB - LAA -

OPTIONS & ACCESSORIES
(See Note 4)

MOUNTING

Side	Option
T	Rear Mounting Threads (Standard)
C	90° Spherical Mounting Bracket
R	Non-Spherical Mounting Bracket
S	Spherical Mounting Bracket
W	Oversize Spherical Mounting Bracket
A	Rear Spherical Mounting Bracket
B	Oversize Rear Spherical Mtg Bracket
P	Rear Mounting Plate

DESIGN NO.
2 - Imperial
6 - Metric

JAW B OPENING
See combinations chart

JAW TIP OPTIONS - JAW B
(See Note 6)

	MATERIAL THICKNESS			
	0 to 1.50 mm	1.51 to 3 mm	3.01 to 4 mm	4.01 to 5 mm*
Color	Black	Silver	Gold	Red
No tip	Blank	Blank	Blank	Blank
Single Cone Point	SCB	SCS	SCG	SCR
Double Cone Point	DCB	DCS	DCG	DCR
Single Diamond Point	SDB	SDS	SDG	SDR
Double Diamond Point	DDB	DDS	DDG	DDR
Single Urethane Pad	SUB	SUB	SUB	SUB
Double Urethane Pad	DUB	DUB	DUB	DUB

(See Notes 1 & 5)

- NOTES:**
- 1) Cone point against cone point tip combinations are not allowed due to point overlap.
 - 2) -LCC port fitting option only available on Design 6 (metric) clamps.
 - 3) Metric units have metric ports and mounting. Imperial units have imperial ports and mounting.
 - 4) For additional options, refer to Options and Accessories section of this catalog.
 - 5) *Material thickness for H, J, T, and U jaw styles = 4.01 to 4.5 mm
 - 6) If other tip options are required, leave blank and refer to Options and Accessories - Tips section for available tips.

JAW OPENING COMBINATIONS

GRM2xS		GRM2xC, GRM2xD		GRM2xH, GRM2xJ	
JAW STYLE	JAW A	JAW STYLE	JAW A	JAW STYLE	JAW A
OPTION S	0° 11° 14° 15° 22° 30° 45° 75°	OPTIONS C & D	0° 11° 15° 22° 30° 45° 75°	OPTIONS H & J	15° 22° 30° 45° 75°
JAW B	0°	JAW B	0°	JAW B	0°
	11°		11°		
	14°		14°		
	15°		15°		
	22°		22°		
	30°		30°		
	45°		45°		
	75°		75°		

GRM4xS		GRM4xH, GRM4xJ	
JAW STYLE	JAW A	JAW STYLE	JAW A
OPTION S	0° 22° 45° 75°	OPTIONS H & J	22° 45° 75°
JAW B	0°	JAW B	0°
	22°		22°
	45°		45°
	75°		75°

= Available Combinations

- NOTES:**
- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
 - 2) All jaw rotational angles are for reference only.
 - 3) For other configurations, consult your local distributor or PHD, Inc.

For CAD & Ordering Assistance
phdinc.com/myphd

STANDARD JAW STYLE S

Jaw Style 'S' Sizes 0, 1, 2, & 4

Common GRM Design Benefits

- Simple design, long life, and fast field maintenance
- Jaws lock in closed position ensuring part retention if air pressure is lost due to line rupture or power loss
- Accepts standard and custom tooling.
- Hardened impact plates, Sizes 1, 2, and 4 are adjustable
- Many jaw rotations available for wide variety of applications.
- Modular jaws and tips - easily changed
- Imperial and metric ports and mounting
- Available with fixed or spherical mounting brackets for side or rear mounting

Size 0 Benefits

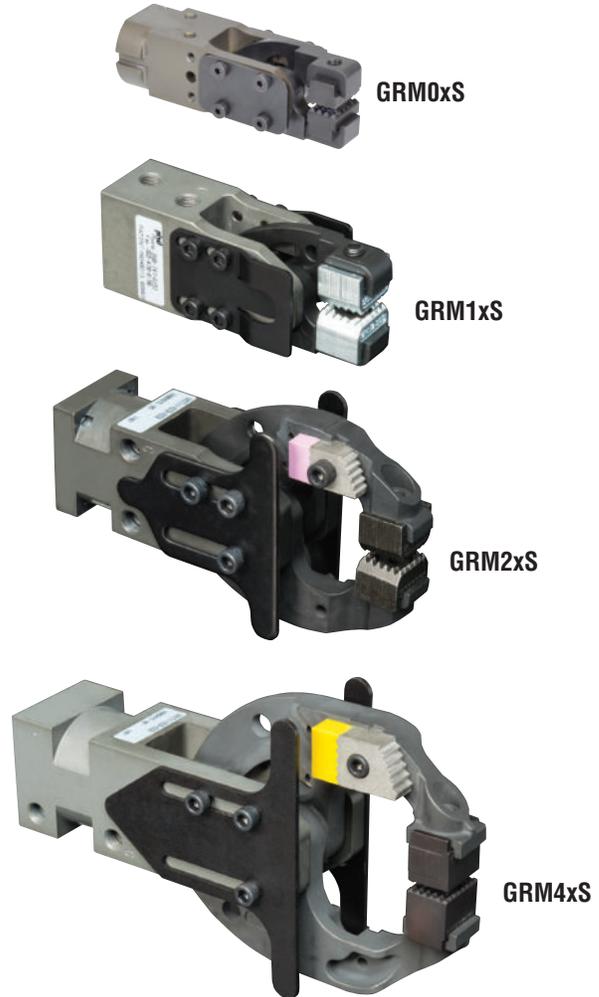
- Compact envelope size, lightweight, and strong
- Weighs under 0.54 lb [0.24 kg], the clamp generates up to 135 lb [600 N] of total clamp force
- Perfect for robotic crossbar transfer press applications
- A superior alternative to vacuum cups or magnetic-type grippers due to its ruggedness and part retention in the event of air pressure loss

Size 1 Benefits

- Provides the same grip force as size 2 in a smaller design and lighter weight
- Weighs under 1 lb [0.4 kg] without tips, and generates up to 225 lb [1000 N] of total clamp force

Sizes 2 and 4 Benefits

- Size 2 generates up to 225 lb [1,000 N] of clamp force and size 4 generates up to 500 lb [2,000 N] of clamp force
- Adjustable external rotation stop allows for multiple jaw openings in one clamp
- Jaws are designed with wide and deep jaw throats to accommodate non-flat applications.
- B08 Body option provides up to 676 lb [3,007 N] of grip force. Size 2 only



JAW OPENING COMBINATIONS

JAW STYLE OPTION S		JAW A		
		0°	45°	68°
JAW B	0°			
	45°			
	68°			

JAW STYLE OPTION S		JAW A				
		0°	5°	14°	30°	50°
JAW B	0°					
	5°					
	14°					
	30°					
	50°					

JAW STYLE OPTION S		JAW A							
		0°	11°	14°	15°	22°	30°	45°	75°
JAW B	0°								
	11°								
	14°								
	15°								
	22°								
	30°								
	45°								
	75°								

 = Available Combinations

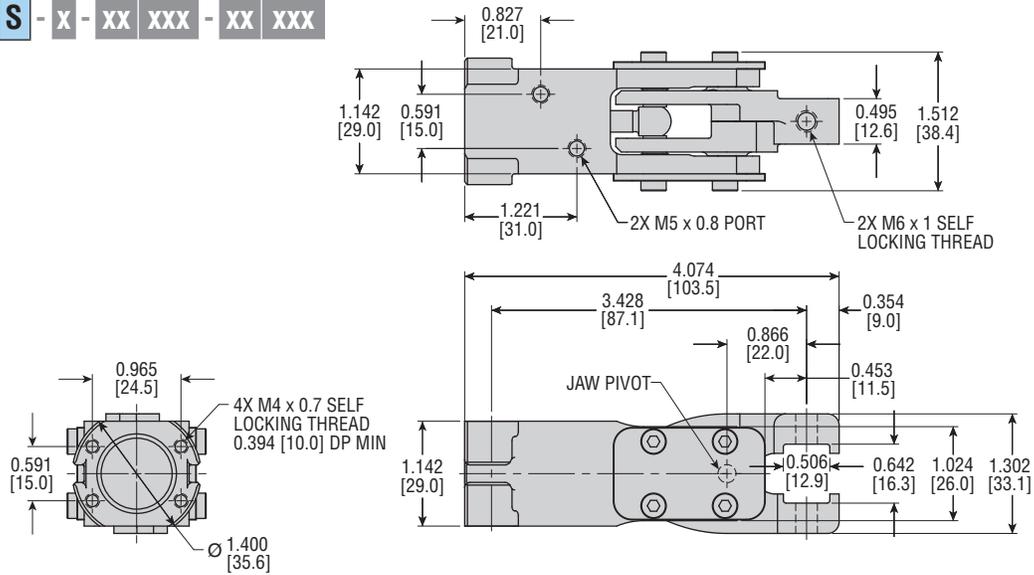
NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

JAW STYLE OPTION S		JAW A			
		0°	22°	45°	75°
JAW B	0°				
	22°				
	45°				
	75°				

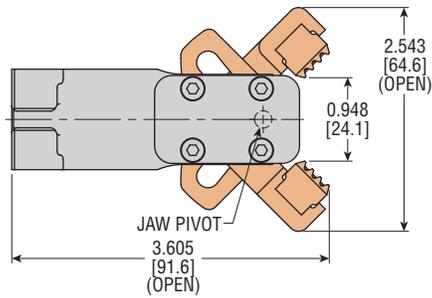
DIMENSIONS: Size 0 - Jaw Style S

GRM **0** x **S** - X - XX XXX - XX XXX

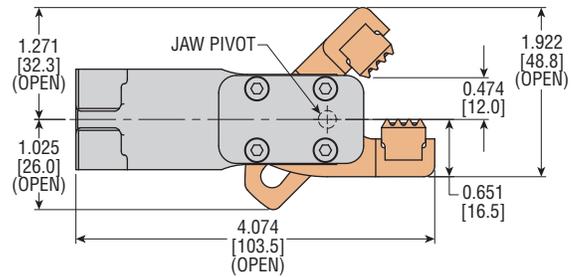


JAW OPENINGS

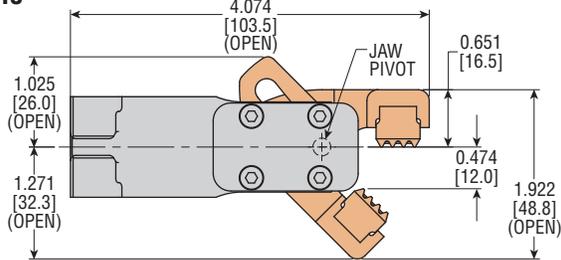
45° x 45°



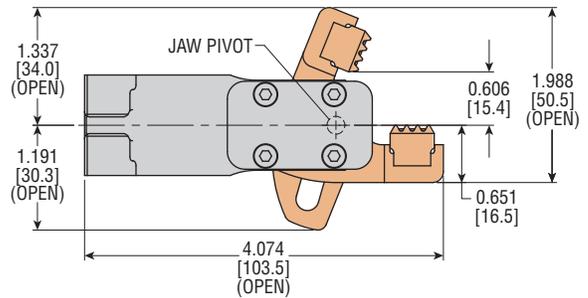
45° x 00°



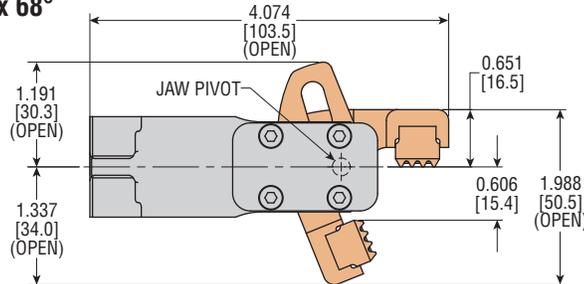
00° x 45°



68° x 00°



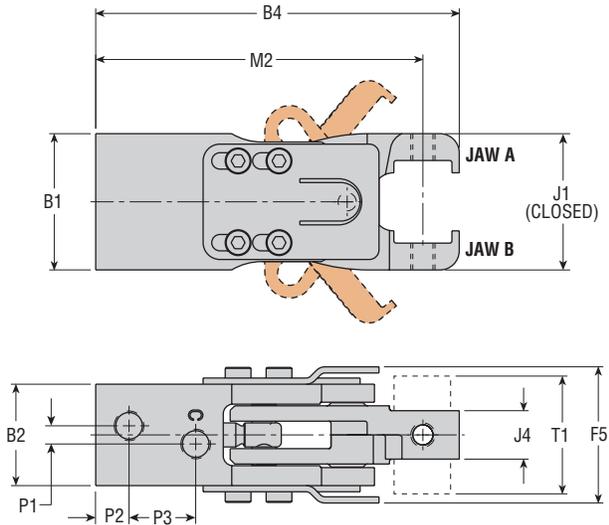
00° x 68°



All dimensions are reference only unless specifically tolerated.

DIMENSIONS: Size 1 - Jaw Style S

GRM **1** x **S** - X - XX XXX - XX XXX



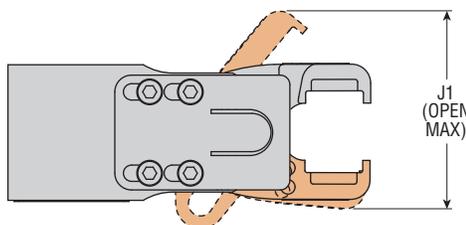
LETTER DIM	MODEL NUMBER	
	GRM1xS	
	in	mm
B1	1.772	45.0
B2	1.319	33.5
B4 (CLOSED)	4.724	120.0
F5	1.772	45.0
J1 (CLOSED)	1.772	45.0
J4*	0.630	16.0
M2 (CLOSED)	4.252	108.0
P1	0.236	6.0
P2	0.433	11.0
P3	0.866	22.0
T1**	1.530	38.9

NOTES:

- 1) *TOLERANCE FOR J4 = ± 0.003 [± 0.076]
- 2) **T1 IS THE LARGEST TIP AVAILABLE

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM1xS	
		in	mm
J1 (OPEN)	14° x 14°	2.318	58.9
	14° x 30° 30° x 14°	2.566	65.2
	14° x 50° 50° x 14°	2.744	69.7
	30° x 30°	2.814	71.5
	30° x 50° 50° x 30°	2.992	76.0
	50° x 50°	3.170	80.5

J1 OPEN DIMENSIONS

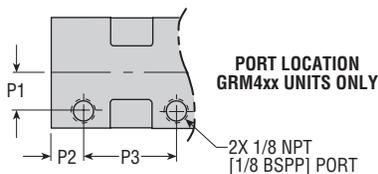
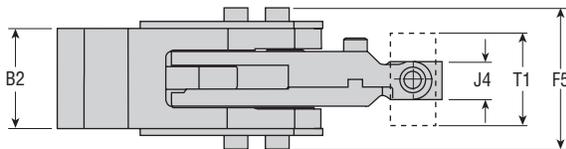
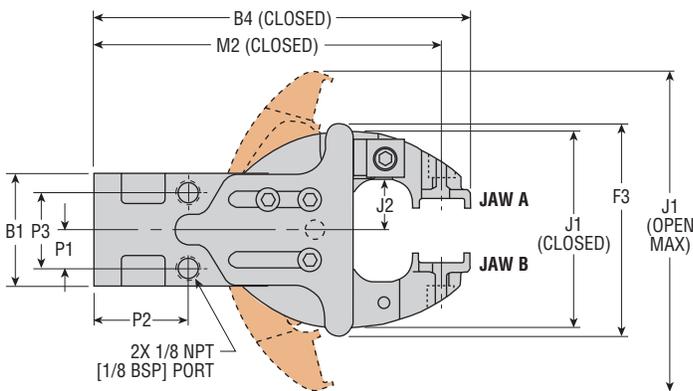


LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM1xS	
		in	mm
J1 (OPEN)	00° x 05° 05° x 00°	1.881	47.8
	00° x 14° 14° x 00°	2.047	52.0
	00° x 30° 30° x 00°	2.295	58.3
	00° x 50° 50° x 00°	2.437	61.9
	05° x 05°	1.986	50.4
	05° x 14° 14° x 05°	2.152	54.7
	05° x 30° 30° x 05°	2.400	61.0
	05° x 50° 50° x 05°	2.578	65.5

All dimensions are reference only unless specifically tolerated.

DIMENSIONS: Sizes 2 & 4 - Jaw Style S

GRM **2 or 4** x **S** - X - XX XXX - XX XXX
 GRM **2 or 4** x **S** - X - XX XXX - 00 XXX



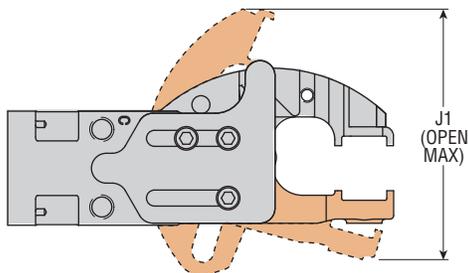
LETTER DIM	MODEL NUMBER			
	GRM2xS		GRM4xS	
	in	mm	in	mm
B1	1.910	48.5	2.176	55.3
B2	1.654	42.0	1.980	50.3
B4 (CLOSED)	6.453	163.9	8.799	223.5
F5	2.336	59.3	2.662	67.6
J1 (CLOSED)	3.314	84.2	4.724	120.0
J2 (CLOSED)	0.866	22.0	1.360	34.5
J4*	0.630	16.00	0.785	19.94
M2 (CLOSED)	5.965	151.5	8.307	211.0
P1	0.650	16.5	0.700	17.8
P2	1.575	40.0	0.452	11.5
P3	1.300	33.0	1.772	45.0
T1**	1.530	38.9	1.850	47.9

NOTES:
 1) *TOLERANCE FOR J4 = ± 0.003 [± 0.076]
 2) **T1 IS THE LARGEST TIP AVAILABLE

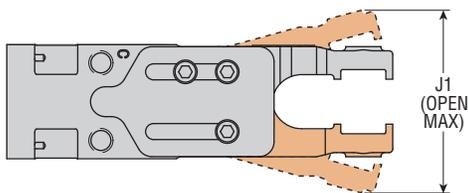
LETTER DIM	MODEL NUMBER							
	-xxxx-xxxx				-xxxx-00xxx			
	GRM2xS		GRM4xS		GRM2xS		GRM4xS	
	in	mm	in	mm	in	mm	in	mm
F3	3.602	91.5	5.120	130.0	1.801	45.7	2.560	65.0

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER			
		GRM2xS		GRM4xS	
		in	mm	in	mm
J1 (OPEN)	22° x 22°	3.972	100.9	5.528	140.4
	22° x 45° 45° x 22°	4.403	111.8	—	—
	30° x 30°	4.238	107.6	—	—
	30° x 75° 75° x 30°	4.784	121.5	—	—
	45° x 45°	4.834	122.8	6.159	156.4
	75° x 75°	5.330	135.4	6.894	175.1

J1 OPEN DIMENSIONS



LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER			
		GRM2xS		GRM4xS	
		in	mm	in	mm
J1 (OPEN)	00° x 22° 22° x 00°	2.908	73.9	3.945	100.2
	00° x 30° 30° x 00°	3.041	77.2	—	—
	00° x 45° 45° x 00°	3.339	84.8	4.257	108.1
	00° x 75° 75° x 00°	3.587	91.1	4.660	118.4
	11° x 11°	3.179	80.7	—	—
	14° x 30° 30° x 14°	3.604	91.5	—	—
	15° x 30° 30° x 15°	3.641	92.5	—	—
	15° x 75° 75° x 15°	4.187	106.3	—	—

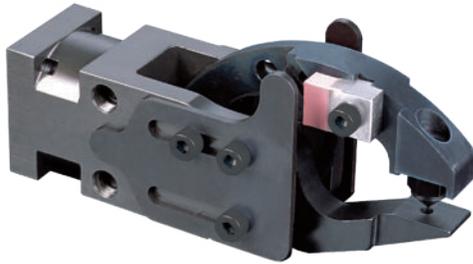


LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER			
		GRM2xS		GRM4xS	
		in	mm	in	mm
J1 (OPEN)	00° x 15° 15° x 00°	2.444	62.1	—	—
	15° x 15°	3.044	77.3	—	—

All dimensions are reference only unless specifically tolerated.

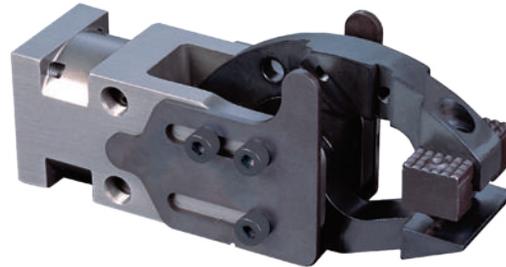
CHISEL JAW STYLES C & D

Jaw Style 'C' Size 2



Single Chisel
GRM2xC

Jaw Style 'D' Size 2



Double Chisel
GRM2xD

Jaw Design Benefits

- Jaws lock in closed position.
- Upper jaw accepts standard and custom tooling.
- Lower jaw is a compact design ideal for blank loading and sheet separation applications.
- Adjustable external rotation stop allows for multiple jaw openings in one clamp.
- Many jaw rotations available for wide variety of applications.

JAW OPENING COMBINATIONS

GRM2xC, GRM2xD

JAW STYLE OPTIONS C & D	JAW A						
	0°	11°	15°	22°	30°	45°	75°
JAW B	0°						
	11°						
	14°						
	15°						
	22°						
	45°						
	75°						

 = Available Combinations

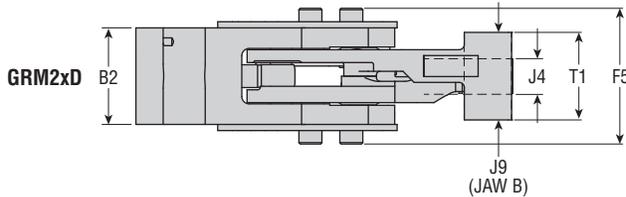
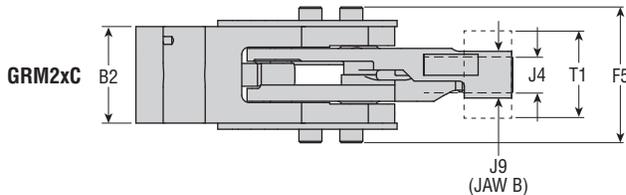
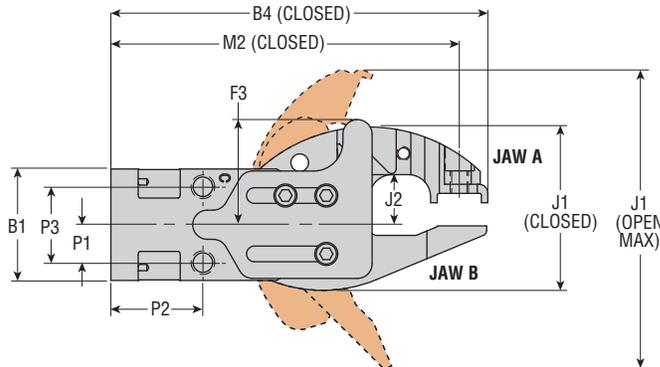
NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

DIMENSIONS: Size 2 - Jaw Styles C & D

GRM 2 x C or D - X - XX XXX - XX

GRM 2 x C or D - X - XX XXX - 00



LETTER DIM	MODEL NUMBER	
	GRM2xC, GRM2xD	
	xxxxx-xx, xxxxx-00	
	in	mm
B1	1.910	48.5
B2	1.654	42.0
B4 (CLOSED)	6.453	163.9
F3	1.801	45.7
F5	2.336	59.3
J2 (CLOSED)	0.866	22.0
J4*	0.630	16.00
M2 (CLOSED)	5.965	151.5
P1	0.650	16.5
P2	1.575	40.0
P3	1.300	33.0
T1**	1.530	38.9

NOTES:

1) *TOLERANCE FOR J4 = ± 0.003 [± 0.076] (JAW A ONLY)

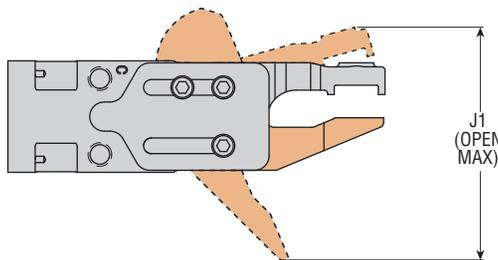
2) **T1 IS THE LARGEST TIP AVAILABLE

LETTER DIM	MODEL NUMBER			
	GRM2xC		GRM2xD	
	in	mm	in	mm
J9	0.800	20.3	1.500	38.1

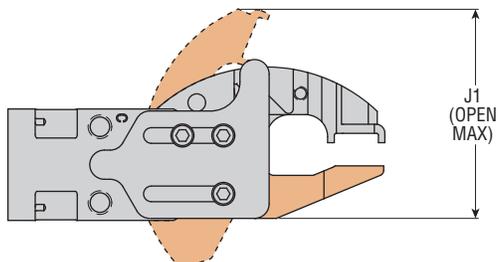
LETTER DIM	MODEL NUMBER			
	GRM2xC, GRM2xD			
	xxxxx-xx		xxxxx-00	
	in	mm	in	mm
J1 (CLOSED)	2.782	70.7	2.579	65.5

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM2xC, GRM2xD	
		in	mm
J1 (OPEN)	11° x 11°	2.857	72.6
	30° x 14°	3.198	81.2
	30° x 15°	3.193	81.1
	75° x 15°	3.755	95.4
	22° x 22°	3.138	79.7
	22° x 45°	3.923	99.6
	30° x 75°	4.559	115.8
	45° x 45°	4.368	110.9
	75° x 75°	5.121	130.1

J1 OPEN DIMENSIONS



LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM2xC, GRM2xD	
		in	mm
J1 (OPEN)	00° x 15°	2.018	51.3
	00° x 75°	3.384	86.0
	15° x 00°	2.452	62.3
	15° x 15°	2.622	66.6
	15° x 75°	3.988	101.3

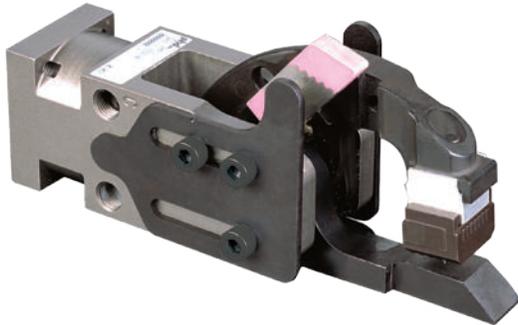


LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM2xC, GRM2xD	
		in	mm
J1 (OPEN)	22° x 00°	2.908	73.9
	30° x 00°	3.038	77.2
	45° x 00°	3.341	84.9
	75° x 00°	3.584	91.0

All dimensions are reference only unless specifically tolerated.

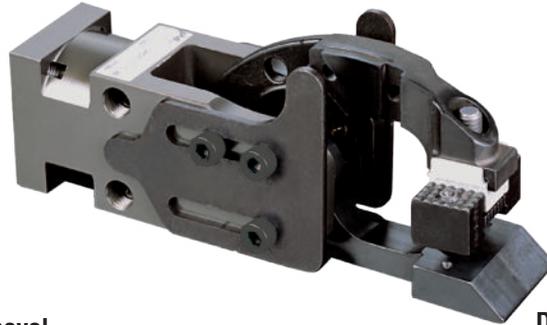
SHOVEL JAW STYLES H & J

Jaw Style 'H' Sizes 2 & 4



Single Shovel
GRM2xH

Jaw Style 'J' Sizes 2 & 4



Double Shovel
GRM2xJ

Jaw Design Benefits

- Jaws lock in closed position.
- Upper jaw accepts standard and custom tooling.
- Lower jaw is a compact design ideal for blank loading and sheet separation applications.
- Adjustable external rotation stop allows for multiple jaw openings in one clamp.

JAW OPENING COMBINATIONS

GRM2xH, GRM2xJ					
JAW STYLE	JAW A				
OPTIONS H & J	15°	22°	30°	45°	75°
JAW B	0°				

GRM4xH, GRM4xJ			
JAW STYLE	JAW A		
OPTIONS H & J	22°	45°	75°
JAW B	0°		

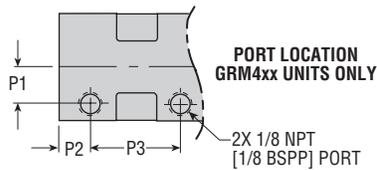
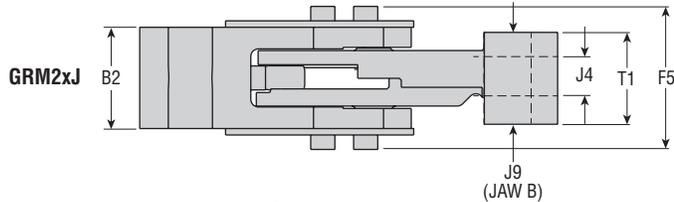
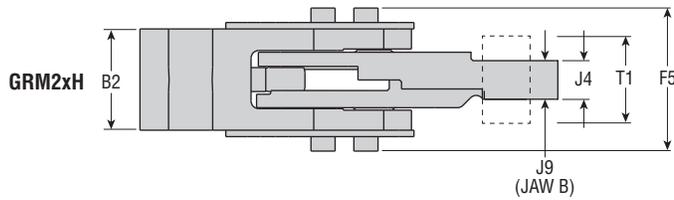
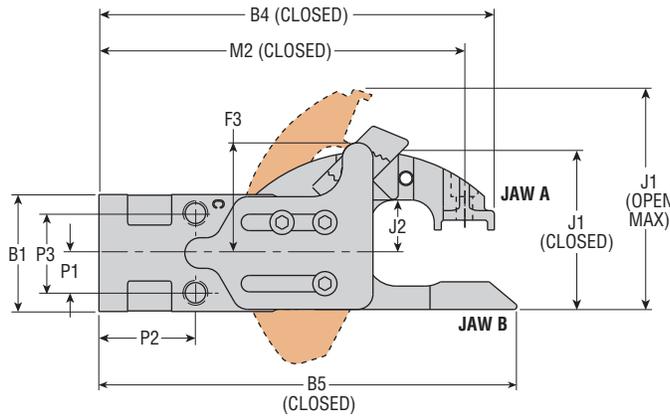
 = Available Combinations

NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

DIMENSIONS: Sizes 2 & 4 - Jaw Styles H & J

GRM 2 or 4 x H or J - X - XX XXX - 00



LETTER DIM	MODEL NUMBER			
	GRM2xH, GRM2xJ		GRM4xH, GRM4xJ	
	in	mm	in	mm
B1	1.910	48.5	2.176	55.3
B2	1.654	42.0	1.980	50.3
B4 (CLOSED)	6.453	163.9	8.799	223.5
B5 (CLOSED)	6.820	173.2	9.429	239.5
F3	1.801	45.7	2.560	65.0
F5	2.336	59.3	2.662	67.6
J1 (CLOSED)	2.782	70.7	3.532	89.7
J2 (CLOSED)	0.866	22.0	1.360	34.5
J4*	0.630	16.00	0.785	19.94
M2 (CLOSED)	5.965	151.5	8.307	211.0
P1	0.650	16.5	0.388	9.9
P2	1.575	40.0	0.452	11.5
P3	1.300	33.0	1.772	45.0
T1**	1.530	38.9	1.850	47.0

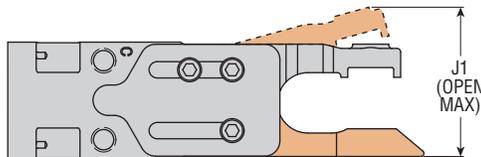
NOTES:

- 1) *TOLERANCE FOR J4 = ±0.003 [±0.076] (JAW A ONLY)
- 2) **T1 IS THE LARGEST TIP AVAILABLE.

LETTER DIM	MODEL NUMBER							
	GRM2xH		GRM2xJ		GRM4xH		GRM4xJ	
	in	mm	in	mm	in	mm	in	mm
J9	0.630	16.0	1.530	38.9	0.785	19.9	1.850	47.0

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER			
		GRM2xH, GRM2xJ		GRM4xH, GRM4xJ	
		in	mm	in	mm
J1 (OPEN)	22° x 00°	2.911	73.9	3.977	101.0
	30° x 00°	3.044	77.3	—	—
	45° x 00°	3.342	84.9	4.355	110.6
	75° x 00°	3.590	91.2	4.617	117.3

J1 OPEN DIMENSIONS



LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER			
		GRM2xH, GRM2xJ		GRM4xH, GRM4xJ	
		in	mm	in	mm
J1 (OPEN)	15° x 00°	2.447	62.2	—	—

All dimensions are reference only unless specifically tolerated.

NEW JAW STYLES

Jaw Style 'T' Size 1



Size 2

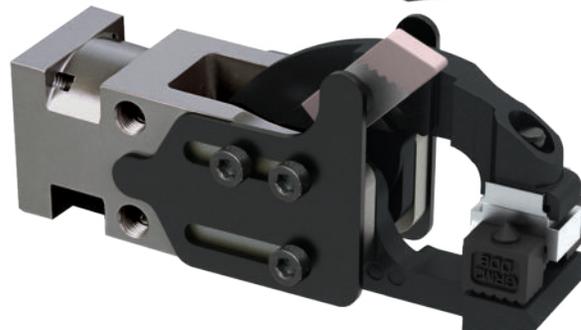


Single Low Profile Shovel
GRM2xT

Jaw Style 'U' Size 1



Size 2



Double Low Profile Shovel
GRM2xU

Jaw Design Benefits

- Jaws lock in closed position
- Upper jaw accepts standard and custom tooling
- Low profile lower shovel jaw fits in tight spaces for blank loading
- More compact than Styles H & J Shovel Jaws
- Lower jaw rotation is available to accommodate die geometry and part shape
- Adjustable external rotation stop allows for multiple jaw openings in one clamp (size 2 only)
- Many jaw rotations available for wide variety of applications.

JAW OPENING COMBINATIONS

GRM1xT, GRM1xU

JAW STYLE	JAW A		
OPTION T & U	22°	45°	68°
JAW B	0°		
	8°		

GRM2xT, GRM2xU

JAW STYLE	JAW A					
OPTION T & U	15°	22°	30°	37°	45°	75°
JAW B	0°					
	8°					

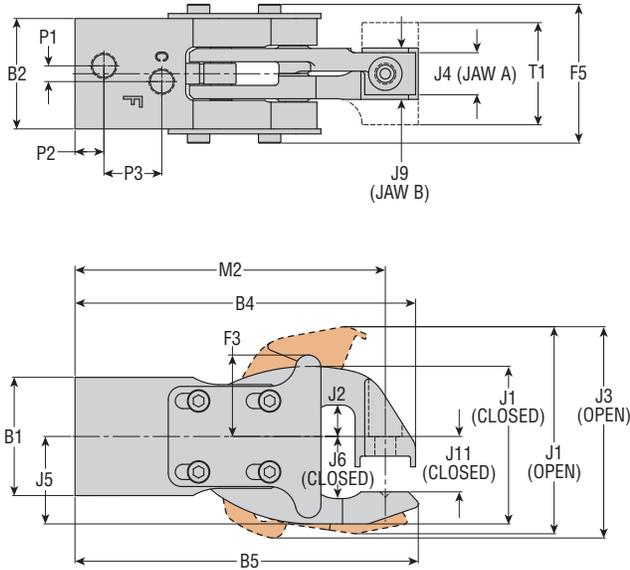
 = Available Combinations

NOTES:

- 1) The 0° lower jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

DIMENSIONS: Size 1 - Jaw Styles T & U

GRM 1 x T or U - X - XX XXX - XX



LETTER DIM	MODEL NUMBER	
	GRM1xT, GRM1xU	
	in	mm
B1	1.772	45.0
B2	1.654	42.0
B4 (CLOSED)	5.098	129.5
B5 (CLOSED)	5.139	130.5
F3	1.220	31.0
F5	2.079	52.8
J1 (CLOSED)	2.360	59.9
J1 (OPEN)	SEE JAW OPENING CHART	
J2 (CLOSED)	0.470	11.9
J3 (OPEN)	SEE JAW OPENING CHART	
J4 (JAW A) *	0.630	16.0
J5 (CLOSED)	1.310	33.3
J6 (CLOSED)	0.930	23.6
J9 (JAW B)	SEE MODEL NUMBER CHART	
J11 (CLOSED)	0.830	21.1
M2 (CLOSED)	4.646	118.0
P1	0.236	6.0
P2	0.433	11.0
P3	0.866	22.0
T1 **	1.530	38.9

NOTES:

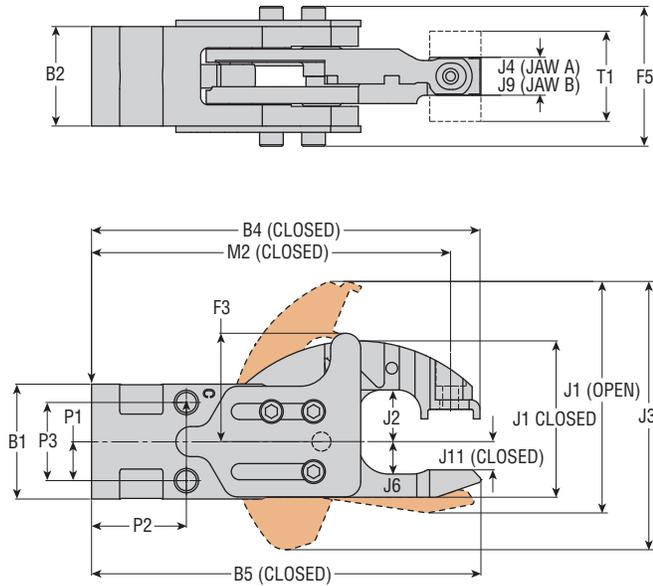
- 1) *TOLERANCE FOR J4 = ± 0.003 [± 0.076] (JAW A ONLY)
- 2) **T1 IS THE LARGEST TIP AVAILABLE.

LETTER DIM	MODEL NUMBER			
	GRM1xT		GRM1xU	
	in	mm	in	mm
J9	0.770	19.6	1.530	38.9

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM1xT, GRM1xU	
		in	mm
J1 (OPEN)	22° x 00°	2.563	65.1
	45° x 00°	2.743	69.7
	68° x 00°	2.956	75.1
	22° x 08°	2.709	68.8
	45° x 08°	2.889	73.4
J3 (OPEN)	68° x 08°	3.102	78.8
	68° x 00°	3.165	80.4
	68° x 08°	3.165	80.4

DIMENSIONS: Size 2 - Jaw Styles T & U

GRM 2 x T or U - X - XX XXX - XX



LETTER DIM	MODEL NUMBER	
	GRM2xT, GRM2xU	
	in	mm
B1	1.910	48.5
B2	1.654	42.0
B4 (CLOSED)	6.453	163.9
B5 (CLOSED)	6.469	164.3
F3	1.801	45.7
F5	2.336	59.3
J1 (CLOSED)	2.782	70.7
J1 (OPEN)	SEE JAW OPENING CHART	
J2 (CLOSED)	0.866	22.0
J3 (OPEN)	SEE JAW OPENING CHART	
J4 (JAW A)*	0.630	16.0
J6 (CLOSED)	0.540	13.7
J9 (JAW B)	SEE MODEL NUMBER CHART	
J11 (CLOSED)	0.470	11.9
M2 (CLOSED)	5.965	151.5
P1	0.650	16.5
P2	1.575	40.0
P3	1.300	33.0
T1**	1.530	38.9

NOTES:

- 1) *TOLERANCE FOR J4 = ±0.003 [±0.076] (JAW A ONLY)
- 2) **T1 IS THE LARGEST TIP AVAILABLE.

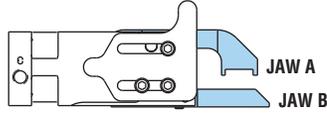
LETTER DIM	MODEL NUMBER			
	GRM2xT		GRM2xU	
	in	mm	in	mm
J9	0.630	16.0	1.530	38.9

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM2xT, GRM2xU	
		in	mm
J1 (OPEN)	15° x 00°	2.459	62.5
	22° x 00°	2.912	74.0
	30° x 00°	3.030	77.0
	45° x 00°	3.344	84.9
	75° x 00°	3.591	91.2
	15° x 08°	3.032	77.0
	30° x 08°	3.288	83.5
	37° x 08°	3.441	87.4
J3 (OPEN)	75° x 08°	3.850	97.8
	22° x 00°	3.070	78.0
	30° x 00°	3.326	84.5
	45° x 00°	3.910	99.3
	75° x 00°	4.461	113.3
	30° x 08°	3.326	84.5
	37° x 08°	3.608	91.6
	75° x 08°	4.461	113.3

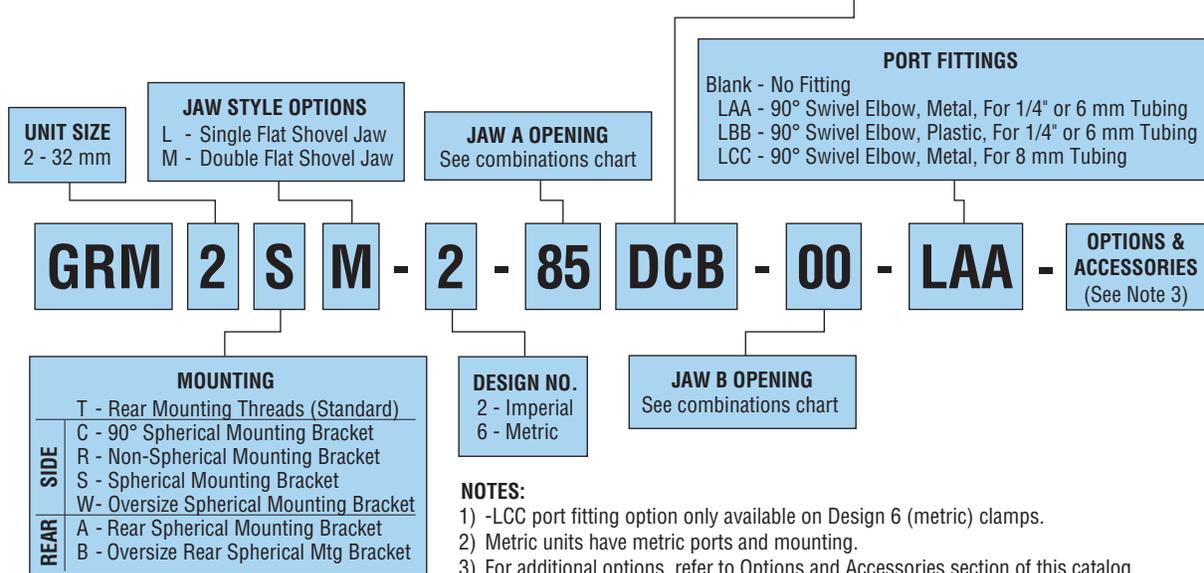
ORDERING DATA: Size 2 - Jaw Styles L & M

TO ORDER SPECIFY:

Size, Mounting, Jaw Style Option, Design No., Jaw Opening (A & B), Jaw Tip Option (A & B), and Fitting Option if desired.



JAW TIP OPTIONS - JAW A (See Note 4)				
	MATERIAL THICKNESS			
	0 to 1.50 mm	1.51 to 3 mm	3.01 to 4 mm	4.01 to 4.5 mm
Color	Black	Silver	Gold	Red
No tip	Blank	Blank	Blank	Blank
Single Cone Point	SCB	SCS	SCG	SCR
Double Cone Point	DCB	DCS	DCG	DCR
Single Diamond Point	SDB	SDS	SDG	SDR
Double Diamond Point	DDB	DDS	DDG	DDR
Single Urethane Pad	SUB	SUB	SUB	SUB
Double Urethane Pad	DUB	DUB	DUB	DUB



NOTES:

- 1) -LCC port fitting option only available on Design 6 (metric) clamps.
- 2) Metric units have metric ports and mounting.
- 3) For additional options, refer to Options and Accessories section of this catalog.
- 4) If other tip options are required, leave blank and refer to Options and Accessories - Tips section for available tips.

JAW OPENING COMBINATIONS

GRM2xL, GRM2xM

JAW STYLE OPTIONS L & M	JAW A		
	22°	45°	85°
JAW B	0°		

= Available Combinations

NOTES:

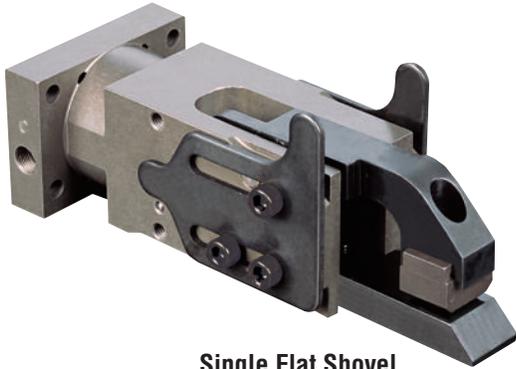
- 1) The 0° lower jaw is completely fixed. The upper jaw does not swing through the bottom of the clamp.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

For CAD & Ordering Assistance

phdinc.com/myphd

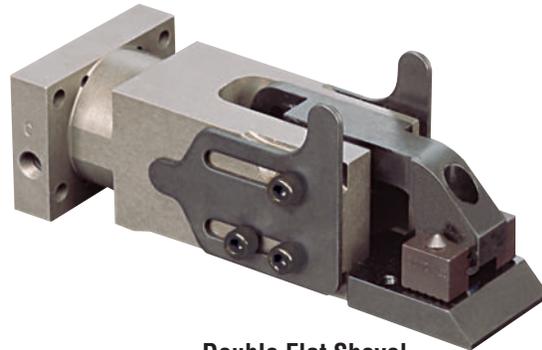
FLAT SHOVEL JAW STYLES L & M

Jaw Style 'L' Size 2



Single Flat Shovel
GRM2xL

Jaw Style 'M' Size 2



Double Flat Shovel
GRM2xM

Jaw Design Benefits

- Jaws lock in closed position.
- Adjustable internal rotation stop allows for multiple jaw openings in one clamp.
- Completely fixed lower jaw. Upper jaw does not swing through the bottom of the clamp.
- Ideal for scooping and lifting panel as clamp is extended.

JAW OPENING COMBINATIONS

GRM2xL, GRM2xM

JAW STYLE		JAW A		
OPTIONS L & M		22°	45°	85°
JAW B	0°			

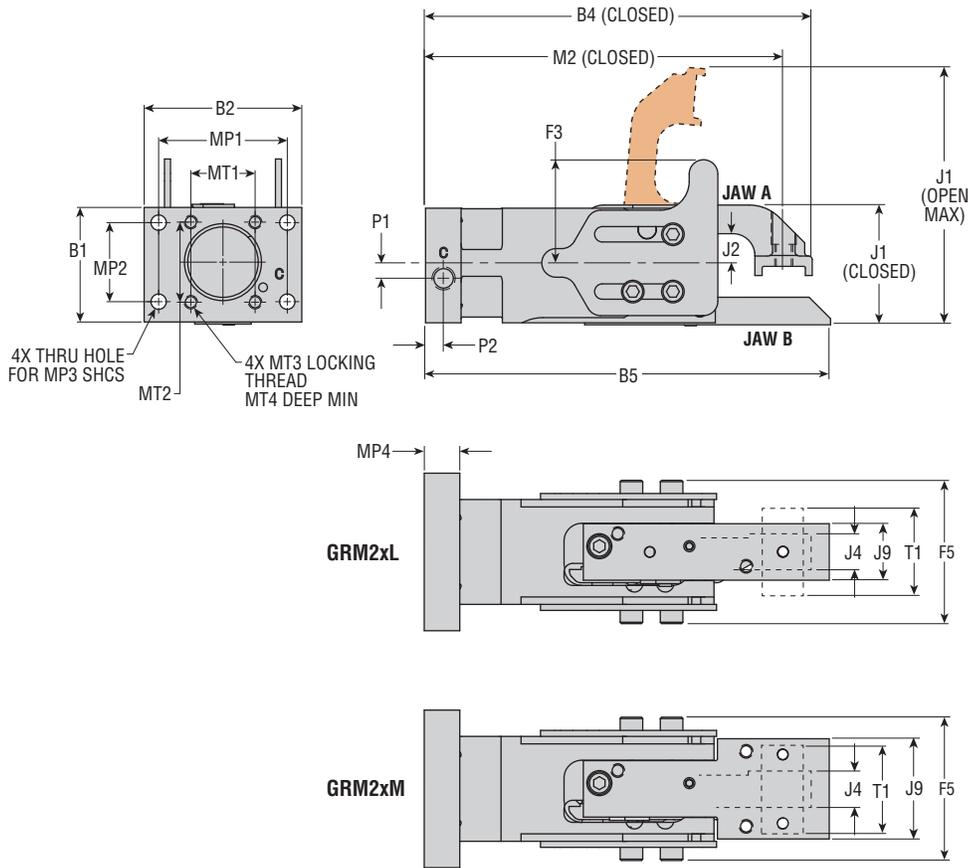
 = Available Combinations

NOTES:

- 1) The 0° lower jaw is completely fixed. The upper jaw does not swing through the bottom of the clamp.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

DIMENSIONS: Size 2 - Jaw Styles L & M

GRM 2 x L or M - x - XX XXX - 00



LETTER DIMENSIONS	MODEL NUMBER	
	GRM2xL, GRM2xM	
	in	mm
B1	2.000	50.8
B2	2.750	69.9
B4 (CLOSED)	6.745	171.3
B5	7.065	179.5
F3	1.801	45.7
F5	2.513	63.8
J1 (CLOSED)	2.090	53.1
J2 (CLOSED)	0.510	13.0
J4*	0.630	16.00
M2 (CLOSED)	6.249	158.7
MP1	2.244	57.0
MP2	1.380	35.1
MP3	1/4	M6
MP4	0.620	15.7
MT1	1.122	28.5
MT2	1.398	35.5
MT3	M6 x 1.0	
MT4	0.420	10.7
P1	0.270	6.9
P2	0.315	8.0
T1**	1.530	38.9

NOTES:

- *TOLERANCE FOR J4 = ± 0.003 [± 0.076] (JAW A ONLY)
- **T1 IS THE LARGEST TIP AVAILABLE.

LETTER DIM	MODEL NUMBER			
	GRM2xL		GRM2xM	
	in	mm	in	mm
J9	0.986	25.0	1.750	44.5

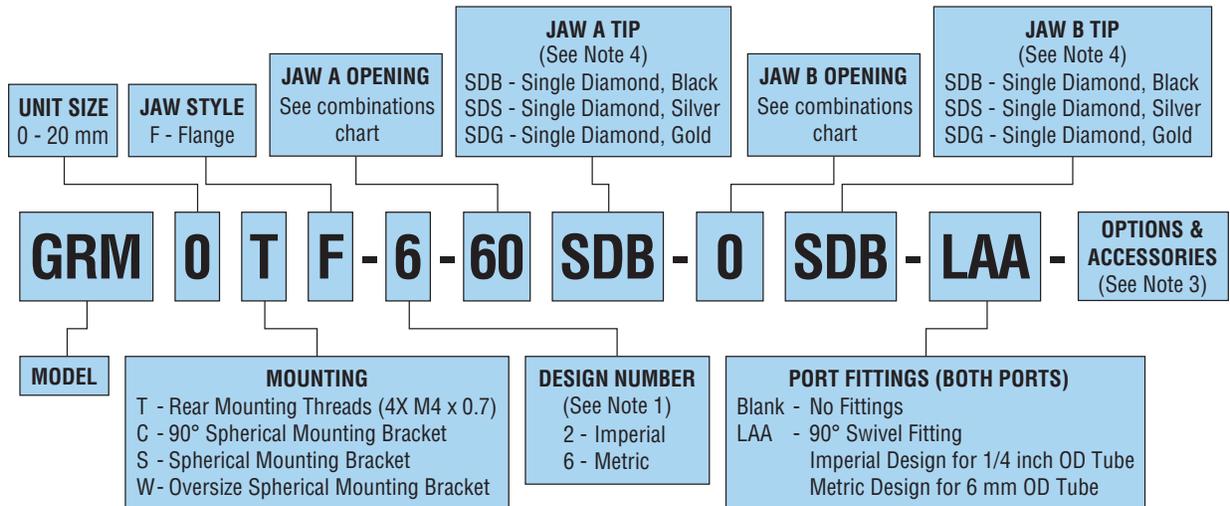
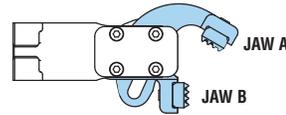
LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM2xL, GRM2xM	
		in	mm
J1 (OPEN)	22° x 00°	2.795	71.0
	45° x 00°	3.442	87.4
	85° x 00°	4.498	114.2

All dimensions are reference only unless specifically tolerated.

ORDERING DATA: Size 0 - Jaw Style F

TO ORDER SPECIFY:

Size, Mounting, Jaw Style Option, Design No., Jaw Rotations (A & B), Jaw Tip Option (A & B), and Fitting Options if desired.



NOTES:

- 1) Imperial units have imperial mounts and fittings for imperial tubing. Metric units have metric mounts and fittings for metric tubing. All port threads are metric, regardless of design number.
- 2) Rear mounting threads (T option) must be specified when ordering an accessory mount (Mxx option).
- 3) For additional options, refer to Options and Accessories section of this catalog.
- 4) If other tip options are required, leave blank and refer to Options and Accessories - Tips section for available tips.

JAW OPENING COMBINATIONS

GRM0xF

JAW STYLE OPTION F	JAW A	
	0°	60°
JAW B	0°	
	60°	

= Available Combinations

NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

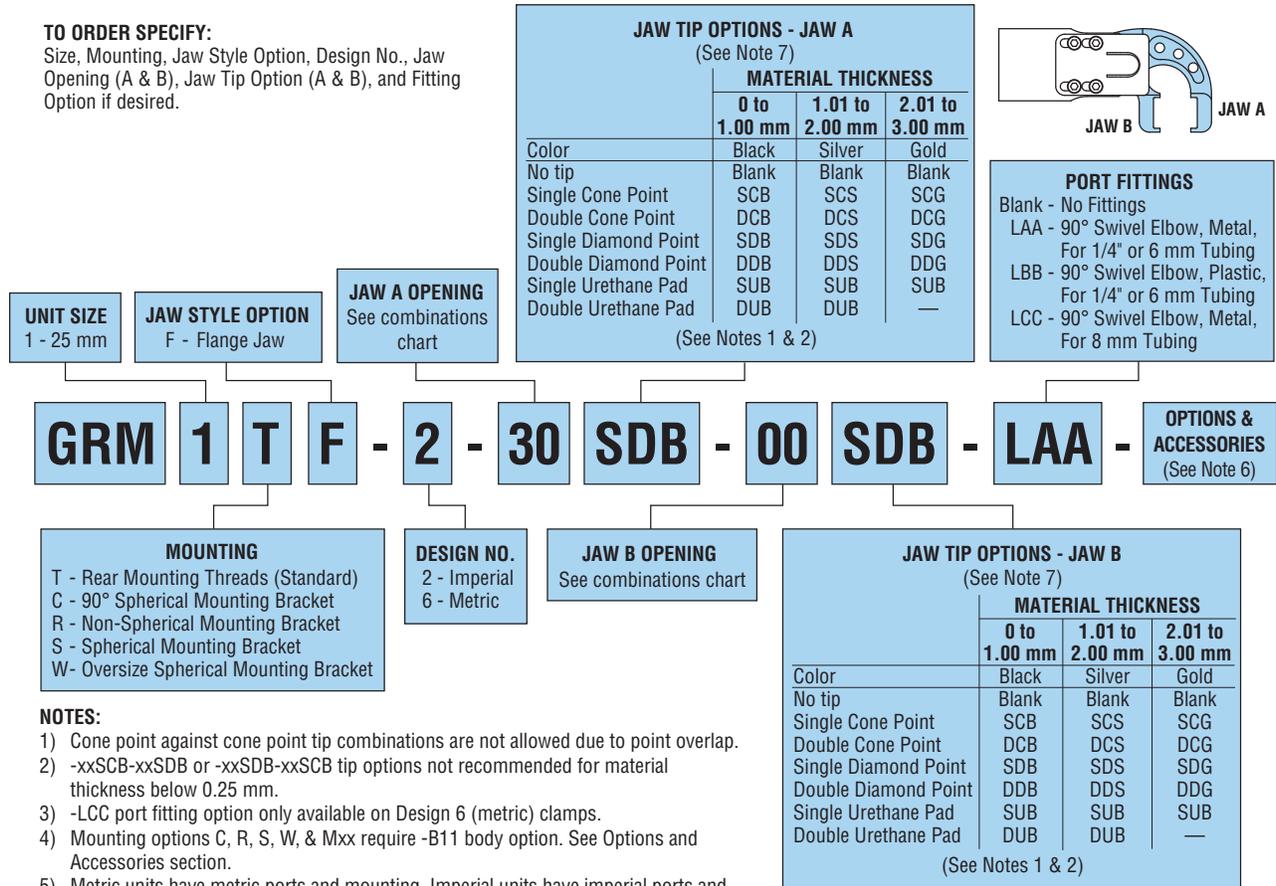
For CAD & Ordering Assistance

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ORDERING DATA: Size 1 - Jaw Style F

TO ORDER SPECIFY:

Size, Mounting, Jaw Style Option, Design No., Jaw Opening (A & B), Jaw Tip Option (A & B), and Fitting Option if desired.



NOTES:

- 1) Cone point against cone point tip combinations are not allowed due to point overlap.
- 2) -xxSCB-xxSDB or -xxSDB-xxSCB tip options not recommended for material thickness below 0.25 mm.
- 3) -LCC port fitting option only available on Design 6 (metric) clamps.
- 4) Mounting options C, R, S, W, & Mxx require -B11 body option. See Options and Accessories section.
- 5) Metric units have metric ports and mounting. Imperial units have imperial ports and mounting.
- 6) For additional options, refer to Options and Accessories section of this catalog.
- 7) If other tip options are required, leave blank and refer to Options and Accessories - Tips section for available tips.

JAW OPENING COMBINATIONS

GRM1xF

JAW STYLE OPTION F	JAW A	
	30°	60°
JAW B	0°	

= Available Combinations

NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

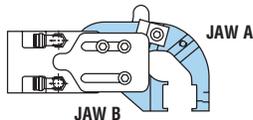
For CAD & Ordering Assistance

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ORDERING DATA: Sizes 2 & 4 - Jaw Style F

TO ORDER SPECIFY:

Size, Mounting, Jaw Style Option, Design No., Jaw Opening (A & B), Jaw Tip Option (A & B), and Fitting Option if desired.



JAW TIP OPTIONS - JAW A (See Note 7)								
	MATERIAL THICKNESS							
	0 to 0.85 mm	0.86 to 1.2 mm	1.21 to 1.52 mm	1.53 to 1.94 mm	1.95 to 2.29 mm	2.3 to 2.6 mm	2.61 to 3.0 mm	3.01 to 3.4 mm
Color	Black	Silver	Gold	Silver	Gold	Gold	Red	Red
No tip	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank
Single Cone Point	SCB	SCS	SCG	SCS	SCG	SCG	SCR	SCR
Double Cone Point	DCB	DCS	DCG	DCS	DCG	DCG	DCR	DCR
Single Diamond Point	SDB	SDS	SDG	SDS	SDG	SDG	SDR	SDR
Double Diamond Point	DDB	DDS	DDG	DDS	DDG	DDG	DDR	DDR
Single Urethane Pad	SUB	SUB	SUB	SUB	SUB	SUB	SUB	SUB
Double Urethane Pad	DUB	DUB	DUB	DUB	DUB	DUB	DUB	DUB

(See Notes 1 and 4)

UNIT SIZE
2 - 32 mm
4 - 40 mm

JAW STYLE OPTIONS
F - Flange Jaw

DESIGN NO.
2 - Imperial
6 - Metric

JAW A OPENING
See combinations chart

JAW B OPENING
See combinations chart

PORT FITTINGS
Blank - No Fittings
LAA - 90° Swivel Elbow, Metal, For 1/4" or 6 mm Tubing
LBB - 90° Swivel Elbow, Plastic, For 1/4" or 6 mm Tubing
LCC - 90° Swivel Elbow, Metal, For 8 mm Tubing

GRM 2 S F - 2 - 85 DCB - 00 DDB - LAA - OPTIONS & ACCESSORIES
(See Note 6)

MOUNTING	
SIDE	T - Rear Mounting Threads (Standard) C - 90° Spherical Mounting Bracket R - Non-Spherical Mounting Bracket S - Spherical Mounting Bracket W - Oversize Spherical Mounting Bracket
REAR	A - Rear Spherical Mounting Bracket B - Oversize Rear Spherical Mtg Bracket P - Rear Mounting Plate

JAW TIP OPTIONS - JAW B (See Note 7)								
	MATERIAL THICKNESS							
	0 to 0.85 mm	0.86 to 1.2 mm	1.21 to 1.52 mm	1.53 to 1.94 mm	1.95 to 2.29 mm	2.3 to 2.6 mm	2.61 to 3.0 mm	3.01 to 3.4 mm
Color	Black	Black	Black	Silver	Silver	Gold	Gold	Red
No tip	Blank	Blank	Blank	Blank	Blank	Blank	Blank	Blank
Single Cone Point	SCB	SCB	SCB	SCS	SCS	SCG	SCG	SCR
Single Diamond Point	SDB	SDB	SDB	SDS	SDS	SDG	SDG	SDR
Double Diamond Point	DDB	DDB	DDB	DDS	DDS	DDG	DDG	DDR
Single Urethane Pad	SUB	SUB	SUB	SUB	SUB	SUB	SUB	SUB
Double Urethane Pad	DUB	DUB	DUB	DUB	DUB	DUB	DUB	DUB

(See Notes 1, 4, and 5)

NOTES:

- 1) Cone point against cone point tip combinations are not allowed due to point overlap.
- 2) -LCC port fitting option only available on Design 6 (metric) clamps.
- 3) Metric units have metric ports and mounting. Imperial units have imperial ports and mounting.
- 4) Red tips are available only on GRM size 2.
- 5) 22° opening on Jaw B is available for size 2 flange jaw style.
- 6) For additional options, refer to Options and Accessories section of this catalog.
- 7) If other tip options are required, leave blank and refer to Options and Accessories - Tips section for available tips.

JAW OPENING COMBINATIONS

GRM2xF			GRM4xF		
JAW STYLE	JAW A		JAW STYLE	JAW A	
OPTION F	50°	85°	OPTION F	50°	85°
JAW B	0°		JAW B	0°	
	22°				

= Available Combinations

NOTES:

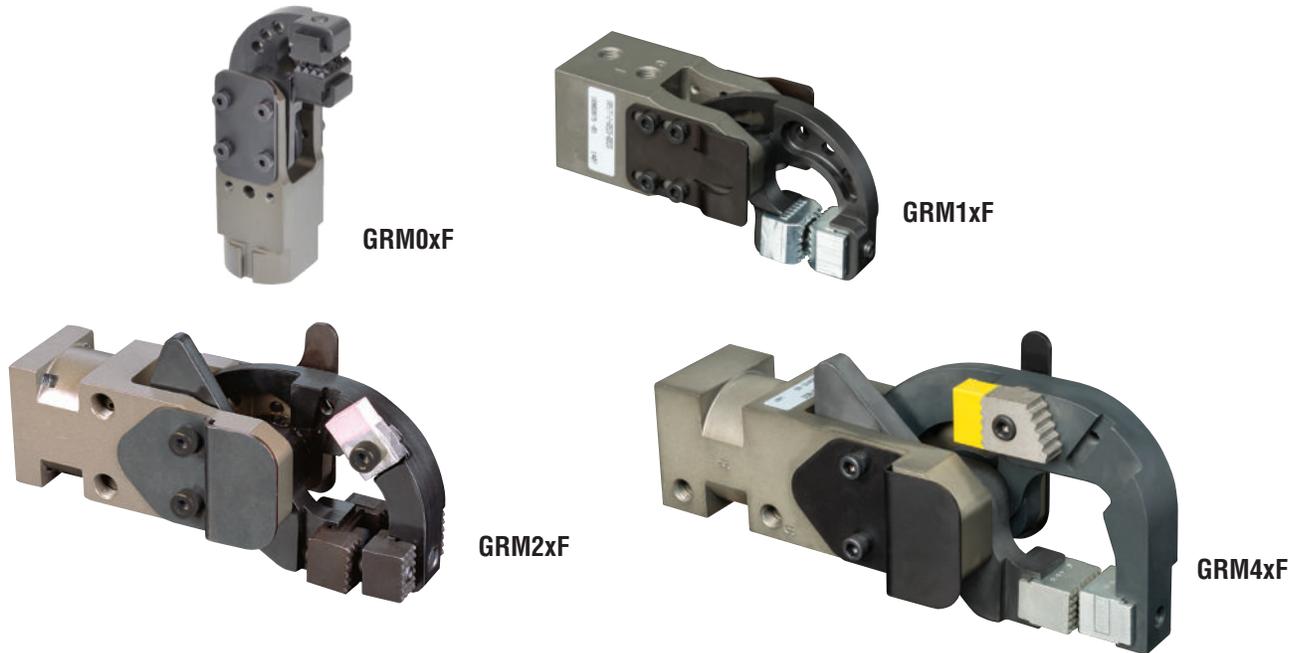
- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

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FLANGE JAW STYLE F

Jaw Style 'F' Sizes 0, 1, 2, & 4



Jaw Design Benefits

- Jaws lock in closed position.
- Accepts standard and custom tooling.
- Adjustable external rotation stop allows for multiple jaw openings in one clamp (for sizes 2 and 4).
- Ideal to grip over bends or flanges.

JAW OPENING COMBINATIONS

GRM0xF		
JAW STYLE OPTION F	JAW A	
	0°	60°
JAW B	0°	Available
	60°	Available

GRM1xF			
JAW STYLE OPTION F	JAW B	JAW A	
		30°	60°
JAW B	0°	Available	Available

GRM2xF			
JAW STYLE OPTION F	JAW B	JAW A	
		50°	85°
JAW B	0°	Available	Available
	22°	Available	Available

GRM4xF			
JAW STYLE OPTION F	JAW B	JAW A	
		50°	85°
JAW B	0°	Available	Available

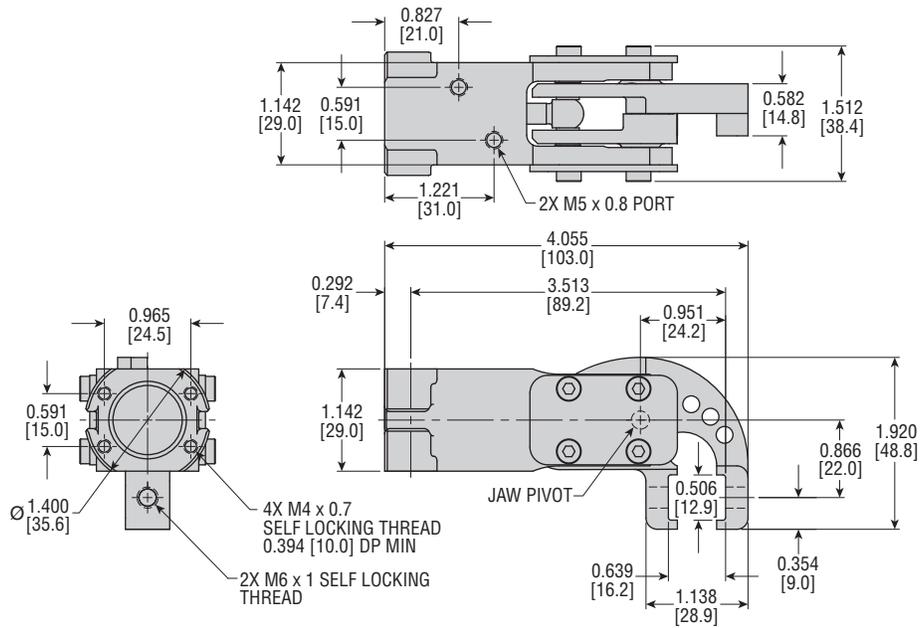
 = Available Combinations

NOTES:

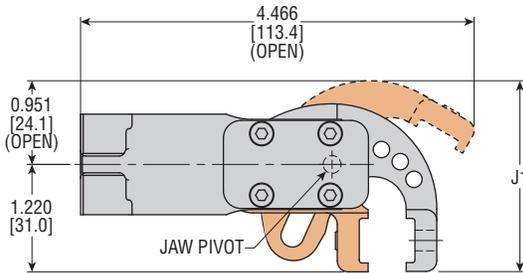
- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

DIMENSIONS: Size 0 - Jaw Style F

GRM **0** x **F** - X - XX XXX - XX XXX



J1 OPEN DIMENSIONS

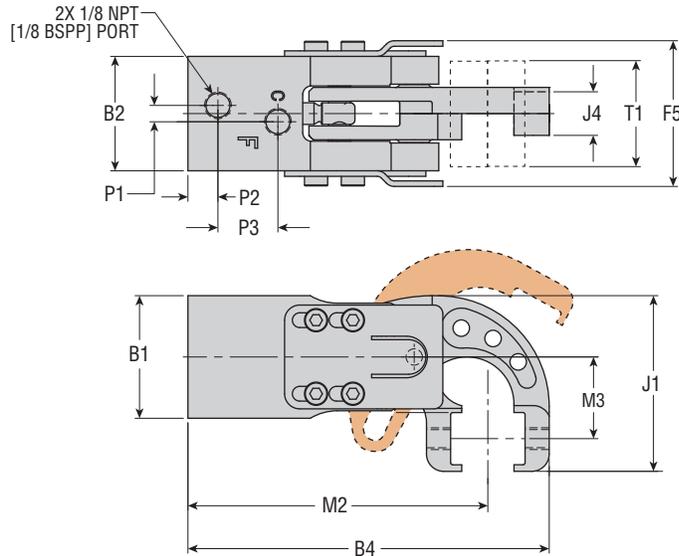


LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER GRM0xF	
		in	mm
J1 (OPEN)	60° x 00°	2.171	55.1

All dimensions are reference only unless specifically tolerated.

DIMENSIONS: Sizes 1, 2, & 4 - Jaw Style F

GRM 1 x F - x - XX XXX - XX XXX



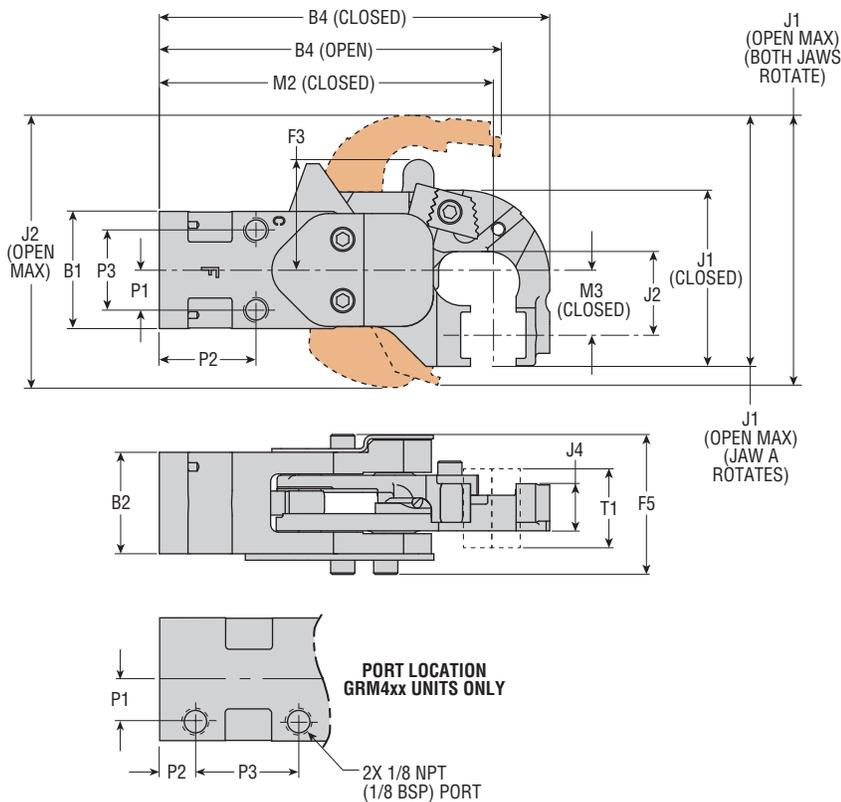
LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER GRM1xF	
		in	mm
B1	ALL	1.772	45.0
B2		1.654	42.0
B4 (OPEN)	30° x 00°	5.692	144.6
	60° x 00°	5.570	141.5
B4 (CLOSED)	ALL	5.217	132.5
F3		—	—
F5		2.106	53.5
J1 (CLOSED)		2.539	64.5
J4		0.630	16.0
M2 (CLOSED)		4.331	110.0
M3 (CLOSED)		1.181	30.0
P1		0.236	6.0
P2		0.433	11.0
P3		0.866	22.0
T1*	1.530	38.9	

NOTES:

- 1)*TOLERANCE FOR J4 = 0.003 [0.076]
- 2)** T1 IS THE LARGEST TIP AVAILABLE

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER GRM1xF	
		in	mm
J1 (OPEN)	30° x 00°	2.811	71.4
	60° x 00°	3.211	81.6

GRM 2 or 4 x F - x - XX XXX - XX XXX



LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER			
		GRM2xF		GRM4xF	
		in	mm	in	mm
B1	ALL	1.910	48.5	2.176	55.3
B2		1.654	42.0	1.980	50.3
B4 (OPEN)	50° x 00°	6.492	164.9	8.835	224.4
	85° x 00°	5.569	141.5	7.435	188.8
	50° x 22°	6.492	164.9	—	—
B4 (CLOSED)	ALL	6.358	161.5	8.692	220.8
F3		1.801	45.7	2.560	65.0
F5		2.291	58.2	2.941	74.7
J1 (CLOSED)		2.787	70.8	3.757	95.4
J2 (CLOSED)		1.350	34.3	2.008	51.0
J4*		0.630	16.00	0.785	19.94
M2 (CLOSED)		5.440	138.2	7.520	191.0
M3 (CLOSED)		1.063	27.0	1.181	30.0
P1		0.650	16.5	0.700	17.8
P2		1.575	40.0	0.452	11.5
P3	1.300	33.0	1.772	45.0	
T1*	1.530	38.9	1.850	47.0	

NOTES:

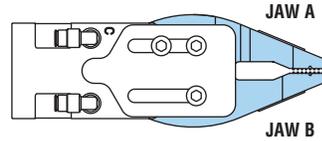
- 1)*TOLERANCE FOR J4 = 0.003 [0.076]
- 2)** T1 IS THE LARGEST TIP AVAILABLE

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER			
		GRM2xF		GRM4xF	
		in	mm	in	mm
J1 (OPEN)	50° x 00°	3.754	95.4	4.761	120.9
	85° x 00°	4.095	104.0	4.910	124.7
	50° x 22°	4.119	104.6	—	—
J2 (OPEN)	50° x 00°	3.830	97.3	5.267	133.8
	85° x 00°	4.438	112.7	5.885	149.5

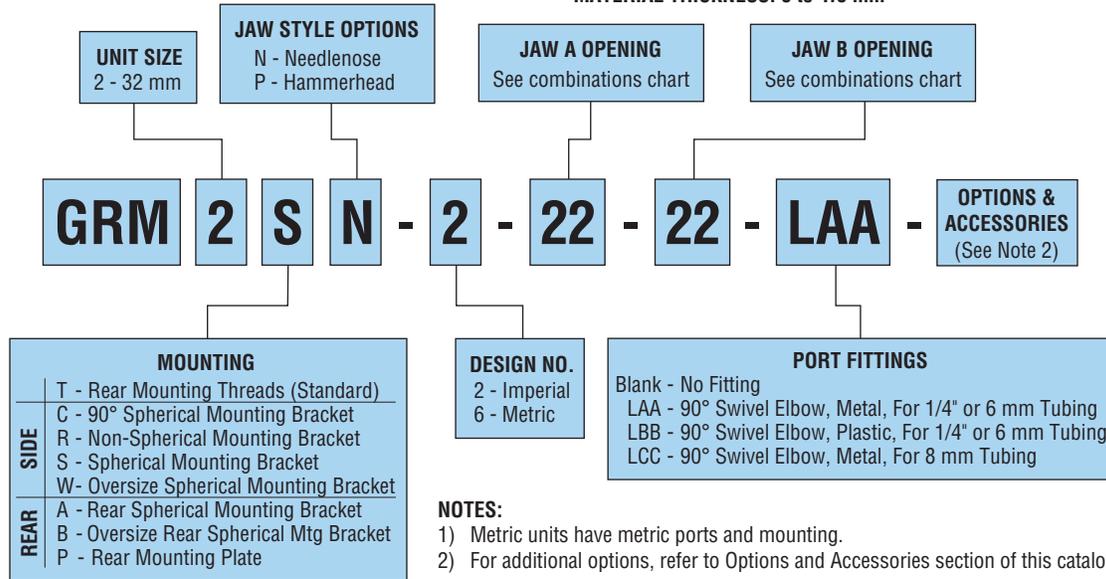
All dimensions are reference only unless specifically tolerated.

ORDERING DATA: Size 2 - Jaw Styles N & P

TO ORDER SPECIFY:
Size, Mounting, Jaw Style Option, Design No., Jaw Opening (A & B), and Fitting Option if desired.



MATERIAL THICKNESS: 0 to 4.0 mm



JAW OPENING COMBINATIONS

GRM2xN, GRM2xP

JAW STYLE OPTIONS N & P	JAW A				
	0°	12°	22°	45°	75°
JAW B	0°				
	12°				
	22°				
	45°				
	75°				

= Available Combinations

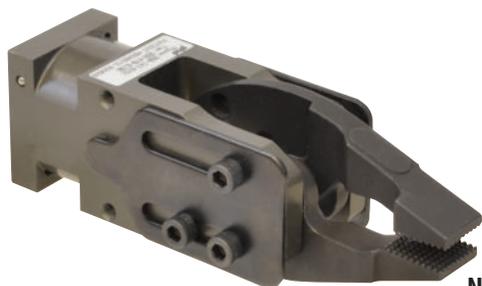
NOTES:

- The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- All jaw rotational angles are for reference only.
- For other configurations, consult your local distributor or PHD, Inc.

For CAD & Ordering Assistance

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Jaw Style 'N' Size 2



Needlenose
GRM2xN

Jaw Style 'P' Size 2



Hammerhead
GRM2xP

Jaw Design Benefits

- Jaws lock in closed position over a wide panel thickness range (0.0 to 4.0 mm).
- Compact jaw design ideal for limited spaces and blank loading applications.
- Jaws with integral diamond points eliminate the need for tip options.

JAW OPENING COMBINATIONS

GRM2xN, GRM2xP

JAW STYLE OPTIONS N & P	JAW A				
	0°	12°	22°	45°	75°
JAW B	0°				
	12°				
	22°				
	45°				
	75°				

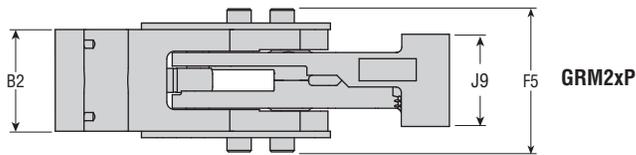
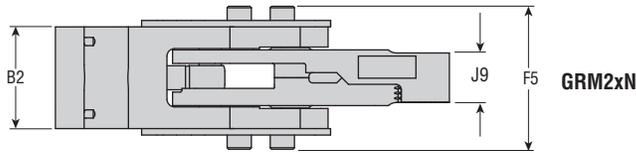
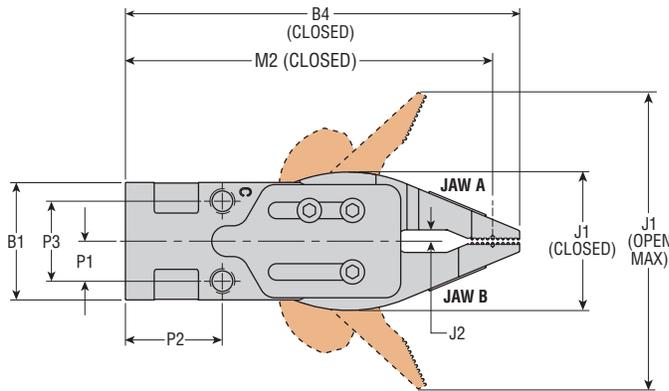
 = Available Combinations

NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

DIMENSIONS: Size 2 - Jaw Styles N & P

GRM 2 x N or P - X - XX - XX



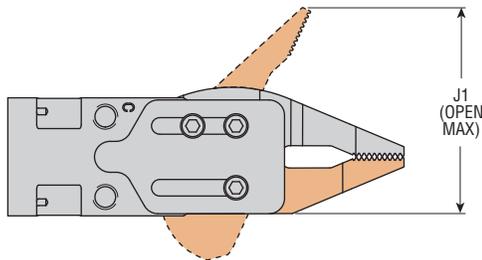
LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM2xN, GRM2xP	
		in	mm
B1	ALL	1.910	48.5
B2		1.654	42.0
B4 (CLOSED)		6.403	162.6
F5		2.336	59.3
J1 (CLOSED)	75° x 75°	2.250	57.2
	45° x 45°	2.250	57.2
	22° x 22°	2.250	57.2
	75° x 00°	2.045	51.9
	45° x 00°	2.045	51.9
J2 (CLOSED)	ALL	0.183	4.6
J4*		1.500	38.1
M2 (CLOSED)		5.965	151.5
P1		0.650	16.5
P2		1.575	40.0
P3		1.300	33.0

NOTE: *TOLERANCE FOR J4 = 0.003 [0.076]

LETTER DIM	MODEL NUMBER			
	GRM2xN		GRM2xP	
	in	mm	in	mm
J9	0.800	20.3	1.500	38.1

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM2xN, GRM2xP	
		in	mm
J1 (OPEN)	12° x 12°	2.225	56.5
	22° x 22°	2.286	58.1
	45° x 45°	3.894	98.9
	75° x 75°	4.869	123.7
	12° x 45° 45° x 12°	3.057	77.6
	22° x 75° 75° x 22°	3.578	90.9

J1 OPEN DIMENSIONS

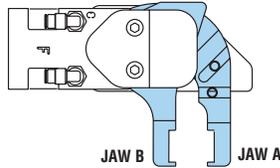


LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM2xN, GRM2xP	
		in	mm
J1 (OPEN)	00° x 12° 12° x 00°	2.032	51.6
	00° x 22° 22° x 00°	2.061	52.3
	00° x 45° 45° x 00°	2.568	65.2
	00° x 75° 75° x 00°	3.356	85.2

ORDERING DATA: Size 2 - Jaw Style K

TO ORDER SPECIFY:

Size, Mounting, Jaw Style Option, Design No., Jaw Opening (A & B), Jaw Tip Option, and Fitting Option if desired.



JAW TIP OPTIONS - JAW B (See Note 3)				
	MATERIAL THICKNESS			
	0 to 1.50 mm	1.51 to 3 mm	3.01 to 4 mm	4.01 to 5 mm
Color	Black	Silver	Gold	Red
No tip	Blank	Blank	Blank	Blank
Single Cone Point	SCB	SCS	SCG	SCR
Double Cone Point	DCB	DCS	DCG	DCR
Single Diamond Point	SDB	SDS	SDG	SDR
Double Diamond Point	DDB	DDS	DDG	DDR
Single Urethane Pad	SUB	SUB	SUB	SUB
Double Urethane Pad	DUB	DUB	DUB	DUB

UNIT SIZE 2 - 32 mm (Short)	JAW STYLE OPTIONS K - "Hook"	JAW A OPENING See combinations chart	JAW B OPENING See combinations chart
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GRM 2 C K - 2 - 50 DCB - 40 DDB - LAA - OPTIONS & ACCESSORIES
(See Note 2)

MOUNTING	
SIDE	T - Rear M6 Mounting Threads (Standard) C - 90° Spherical Mounting Bracket R - Non-Spherical Mounting Bracket S - Spherical Mounting Bracket W - Oversize Spherical Mounting Bracket
REAR	A - Rear Spherical Mounting Bracket B - Oversize Rear Spherical Mtg Bracket P - Rear Mounting Plate

DESIGN NO.
2 - Imperial
6 - Metric
(See Note 1)

JAW TIP OPTIONS - JAW A (See Note 3)				
	MATERIAL THICKNESS			
	0 to 1.50 mm	1.51 to 3 mm	3.01 to 4 mm	4.01 to 5 mm
Color	Black	Silver	Gold	Red
No tip	Blank	Blank	Blank	Blank
Single Cone Point	SCB	SCS	SCG	SCR
Double Cone Point	DCB	DCS	DCG	DCR
Single Diamond Point	SDB	SDS	SDG	SDR
Double Diamond Point	DDB	DDS	DDG	DDR
Single Urethane Pad	SUB	SUB	SUB	SUB
Double Urethane Pad	DUB	DUB	DUB	DUB

PORT FITTINGS
Blank - No Fitting
LAA - 90° Swivel Elbow, Metal, For 1/4" or 6 mm Tubing
LBB - 90° Swivel Elbow, Plastic, For 1/4" or 6 mm Tubing
LCC - 90° Swivel Elbow, Metal, For 8 mm Tubing

NOTES:

- Metric units have metric ports and mounting.
- For additional options, refer to Options and Accessories section of this catalog.
- If other tip options are required, leave blank and refer to Options and Accessories - Tips section for available tips.

JAW OPENING COMBINATIONS

GRM2xK

JAW STYLE OPTION K	JAW A	
	25°	50°
JAW B	0°	
	20°	
	40°	

 = Available Combinations

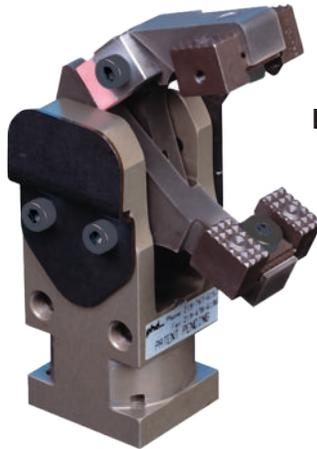
NOTES:

- The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- All jaw rotational angles are for reference only.
- For other configurations, consult your local distributor or PHD, Inc.

For CAD & Ordering Assistance

phdinc.com/myphd

Jaw Style 'K' Size 2



Hook Jaw Style
GRM2xK

Jaw Design Benefits

- Jaws lock in closed position.
- Accepts standard and custom tooling.
- Adjustable external rotation stop allows for multiple jaw openings in one clamp.
- Short overall length to save space between rails.
- Ideal for clamping where length is critical.

JAW OPENING COMBINATIONS

GRM2xK		
JAW STYLE OPTION K	JAW A	
	25°	50°
JAW B	0°	
	20°	
	40°	

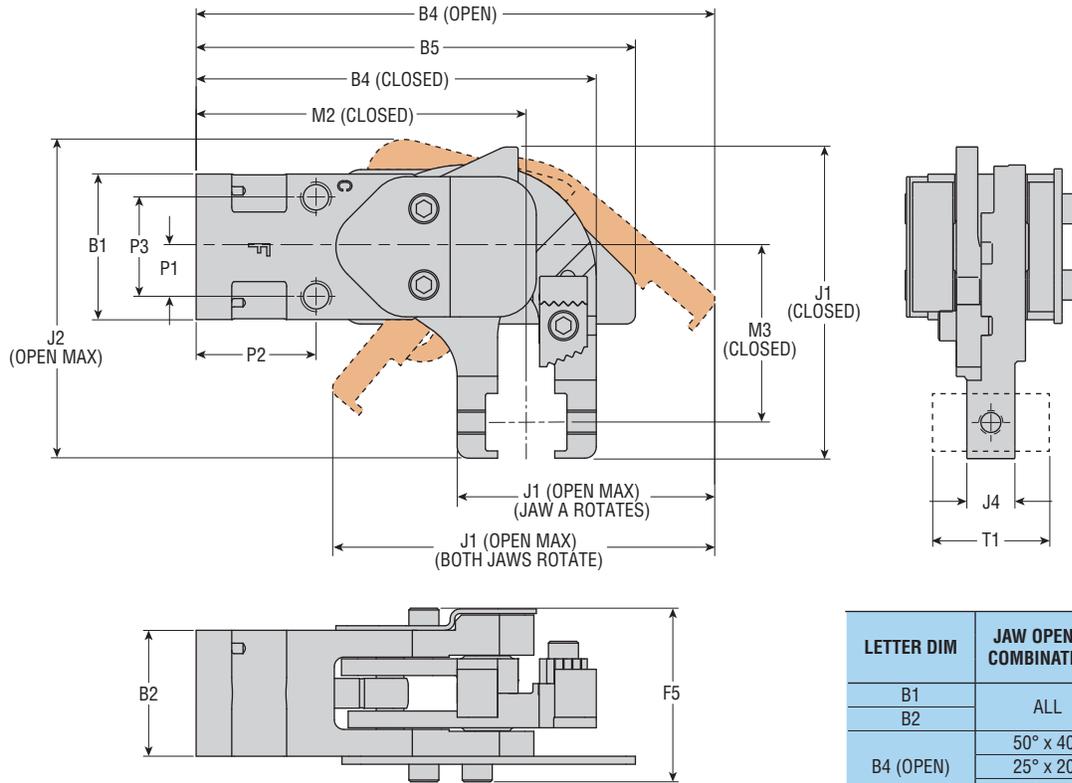
= Available Combinations

NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

DIMENSIONS: Size 2 - Jaw Style K

GRM **2** x **K** - X - XX XXX - XX XXX



LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER GRM2xK	
		in	mm
B1	ALL	1.910	48.5
B2		1.654	42.0
B4 (OPEN)	50° x 40°	6.804	172.8
	25° x 20°	6.240	158.5
	50° x 00°	6.804	172.8
B4 (CLOSED)	ALL	5.250	133.4
B5		5.763	146.4
F5		2.291	58.2
J1 (CLOSED)		4.086	103.8
J4*		0.630	16.00
M2 (CLOSED)		4.330	110.0
M3 (CLOSED)		2.303	58.5
P1		0.650	16.5
P2		1.575	40.0
P3		1.300	33.0
T1	1.530	38.9	

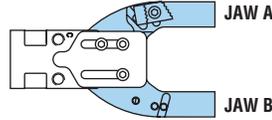
* TOLERANCE FOR J4 = 0.003 [0.076]

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER GRM2xK	
		in	mm
J1 (OPEN)	50° x 40°	5.012	127.3
	25° x 20°	3.714	94.3
	50° x 00°	3.385	86.0
J2 (OPEN)	50° x 40°	4.184	106.3

ORDERING DATA: Sizes 2 & 4 - Jaw Style G

TO ORDER SPECIFY:

Size, Mounting, Jaw Style Option, Design No., Jaw Opening (A & B), and Fitting Option if desired.



UNIT SIZE 2 - 32 mm (Short) 4 - 40 mm (Long)	JAW STYLE OPTIONS G - Toolable Jaw	JAW A OPENING See combinations chart	JAW B OPENING See combinations chart						OPTIONS & ACCESSORIES (See Note 2)				
GRM	2	S	G	-	2	-	40	-	40	-	LAA	-	OPTIONS & ACCESSORIES (See Note 2)
MOUNTING T - Rear Mounting Threads (Standard) C - 90° Spherical Mounting Bracket R - Non-Spherical Mounting Bracket S - Spherical Mounting Bracket W - Oversize Spherical Mounting Bracket				DESIGN NO. 2 - Imperial 6 - Metric		JAW TIP OPTIONS (JAWS A & B) BLANK - No Tip Available			PORT FITTINGS Blank - No Fitting LAA - 90° Swivel Elbow, Metal, For 1/4" or 6 mm Tubing LBB - 90° Swivel Elbow, Plastic, For 1/4" or 6 mm Tubing LCC - 90° Swivel Elbow, Metal, For 8 mm Tubing				
SIDE													
REAR	A - Rear Spherical Mounting Bracket B - Oversize Rear Spherical Mtg Bracket P - Rear Mounting Plate												

NOTES:
1) Metric units have metric ports and mounting.
2) For additional options, refer to Options and Accessories section of this catalog.

JAW OPENING COMBINATIONS

GRM2xG						GRM4xG				
JAW STYLE OPTION G	JAW A					JAW STYLE OPTION G	JAW A			
	0°	11°	18°	22°	40°		0°	22°	40°	70°
JAW B	0°					0°				
	11°					22°				
	18°					40°				
	22°					70°				
	40°									

= Available Combinations

NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

FINGER BLANKS

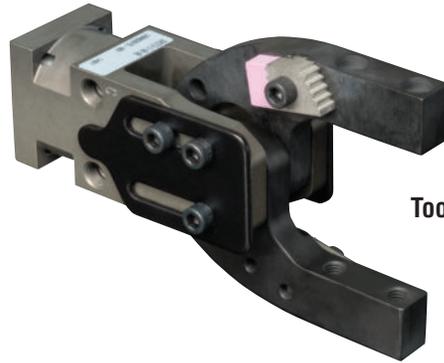
MODEL NUMBER	JAW OPENING COMBINATIONS	FINGER BLANK KIT NUMBER
GRM2x	70°-70°	—
	All Others	65225-02
GRM4x	70°-70°	65226-01
	All Others	65226-02

For CAD & Ordering Assistance

phdinc.com/myphd

TOOLABLE JAW STYLE G

Jaw Style 'G' Sizes 2 & 4



Toolable Jaw Style
GRM2xG

Jaw Design Benefits

- Jaws lock in closed position.
- Accepts custom tooling.
- Adjustable external rotation stop allows for multiple jaw openings in one clamp.
- Designed with large space between jaws to accommodate non-flat and large material applications.
- Jaws are made from 4140 steel, through hardened 30 to 35 Rc. They are machinable; customers can modify jaws to mount special tooling. Consult PHD on jaw modifications.

JAW OPENING COMBINATIONS

		GRM2xG					GRM4xG				
JAW STYLE OPTION G		JAW A					JAW STYLE OPTION G		JAW A		
		0°	11°	18°	22°	40°	0°	22°	40°	70°	
JAW B	0°										
	11°										
	18°										
	22°										
	40°										

 = Available Combinations

NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

Finger Blanks

- Available for easy machinability
- Made from 6061 aluminum

ALUMINUM FINGER BLANKS FOR JAW STYLE G

	CLAMP SIZE	JAW ROTATION	KIT NO.	TIP KIT WEIGHT	
				lb	kg
KITS	2	All	65225-02	0.60	0.27
	4	70° x 70°	65226-01	0.96	0.44
		All Other Rotations	65226-02	1.10	0.50

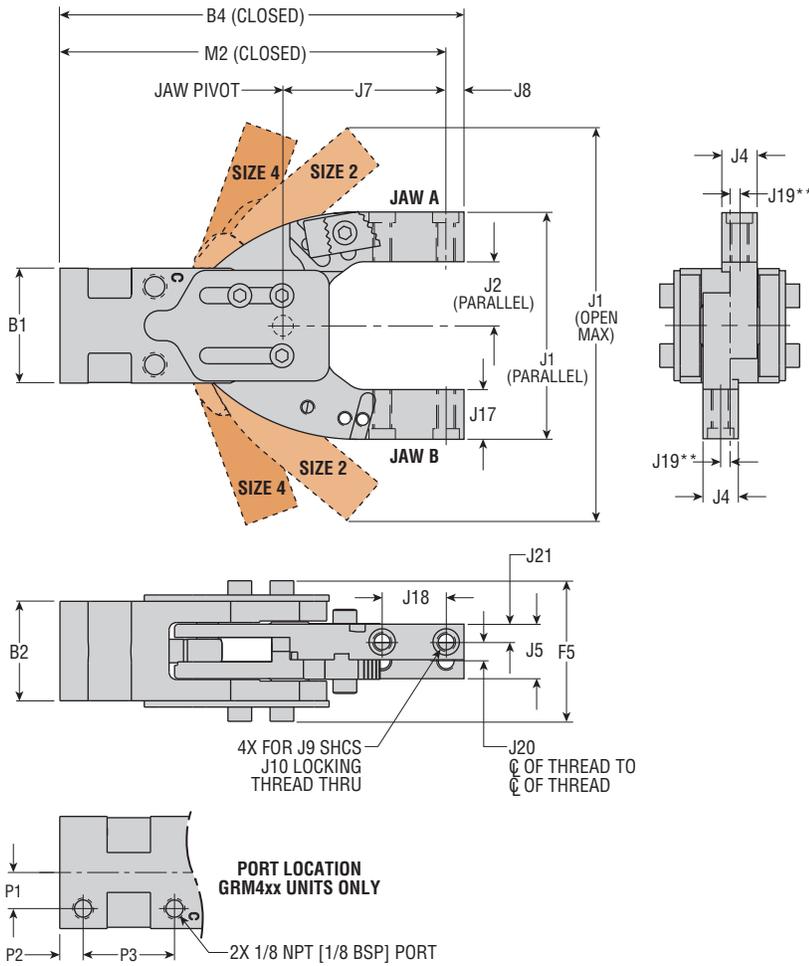
See page 42 for additional information and dimensions.



DIMENSIONS: Sizes 2 & 4 - Jaw Style G

GRM 2 or 4 x G - x - xx - xx

GRM 2 or 4 x G - x - xx - 00



LETTER DIM	MODEL NUMBER			
	GRM2xG		GRM4xG	
	xx-xx, xx-00			
	in	mm	in	mm
B1	1.910	48.5	2.176	55.3
B2	1.654	42.0	1.980	50.3
B4 (CLOSED)	6.713	170.5	8.996	228.5
F5	2.336	59.3	2.662	67.6
J1 (PARALLEL)	3.780	96.0	4.724	120.0
J2 (PARALLEL)	1.063	27.0	1.250	31.8
J4*	0.591	15.01	0.660	16.76
J5	0.906	23.0	1.136	28.9
J7	2.598	66.0	3.150	80.0
J8	0.296	7.5	0.354	9.0
J9	1/4	M6	5/16	M8
J10	M8 x 1.25		M10 x 1.5	
J17	0.827	21.0	1.112	28.2
J18	1.063	27.0	1.181	30.0
J19	0.158	4.0	0.238	6.0
J20	0.316	8.0	0.476	12.1
J21	0.295	7.5	0.330	8.4
M2 (CLOSED)	6.417	163.0	8.642	219.5
P1	0.650	16.5	0.388	9.9
P2	1.575	40.0	0.452	11.5
P3	1.300	33.0	1.772	45.0

NOTES:

- 1) *TOLERANCE FOR J4 = ±0.003 [±0.076]
- 2)**J19 DIMENSION IS ϕ OF CLAMP TO ϕ OF THREAD

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER			
		GRM2xG		GRM4xG	
		in	mm	in	mm
J1 (OPEN)	11° x 11°	4.812	122.2	—	—
	22° x 22°	5.704	144.9	7.070	179.6
	40° x 40°	6.616	168.0	8.135	206.6
	70° x 70°	—	—	8.194	208.1
	18° x 00° 00° x 18°	4.585	116.5	—	—
	40° x 00° 00° x 40°	5.203	132.2	6.430	163.3
70° x 00° 00° x 70°	—	—	6.470	164.3	

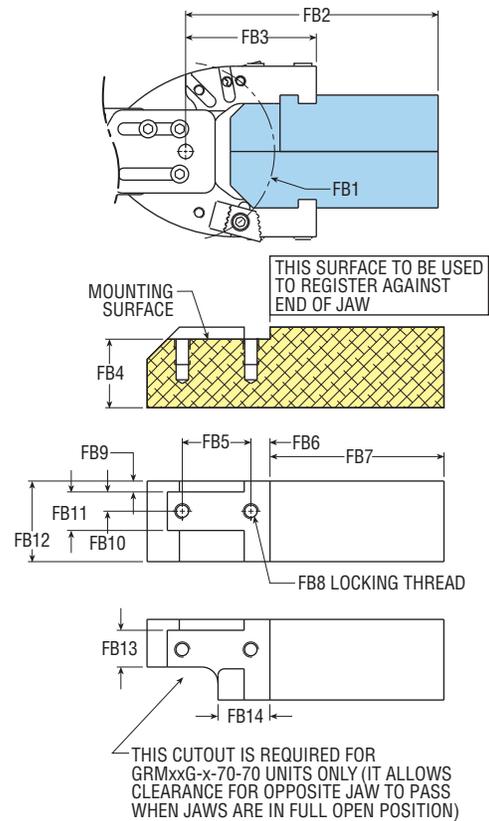
All dimensions are reference only unless specifically tolerated.

APPLYING MACHINABLE FINGER BLANKS OR CUSTOM TOOLING

Style G jaws are not in line with each other. They are shifted off center by dimension J19 (see unit dimensions above). This is necessary to clear the cam portion of the opposite jaw when opening 70°. Finger blanks or custom tooling must also clear this cam area when opening 70° (see finger blank dimension FB1). Consider the J19 offset dimension when modifying finger blanks or making special tooling so that the tooling can align properly.

Jaw width is controlled so tooling can be slotted to key into place. The end of the jaws are accurately machined to provide a tooling length registration stop. Jaw mounting threads dimension J10 (see unit dimensions above) can accept fasteners from inside or outside. They are self-locking when the fasteners are installed from the outside (as shown) and torqued properly. Use the mounting geometry shown shaded yellow on finger blanks (45° chamfer, cutout for 70° opening, thread locations and J19 offset dimensions) to design custom tooling.

Standard aluminum finger blanks can be used without the need for speed controls on the clamp. Dual rotation stops must be used on G jaws as shown. For custom finger blanks that are heavier, longer, or wider than the finger blanks shown, consult PHD for approval.



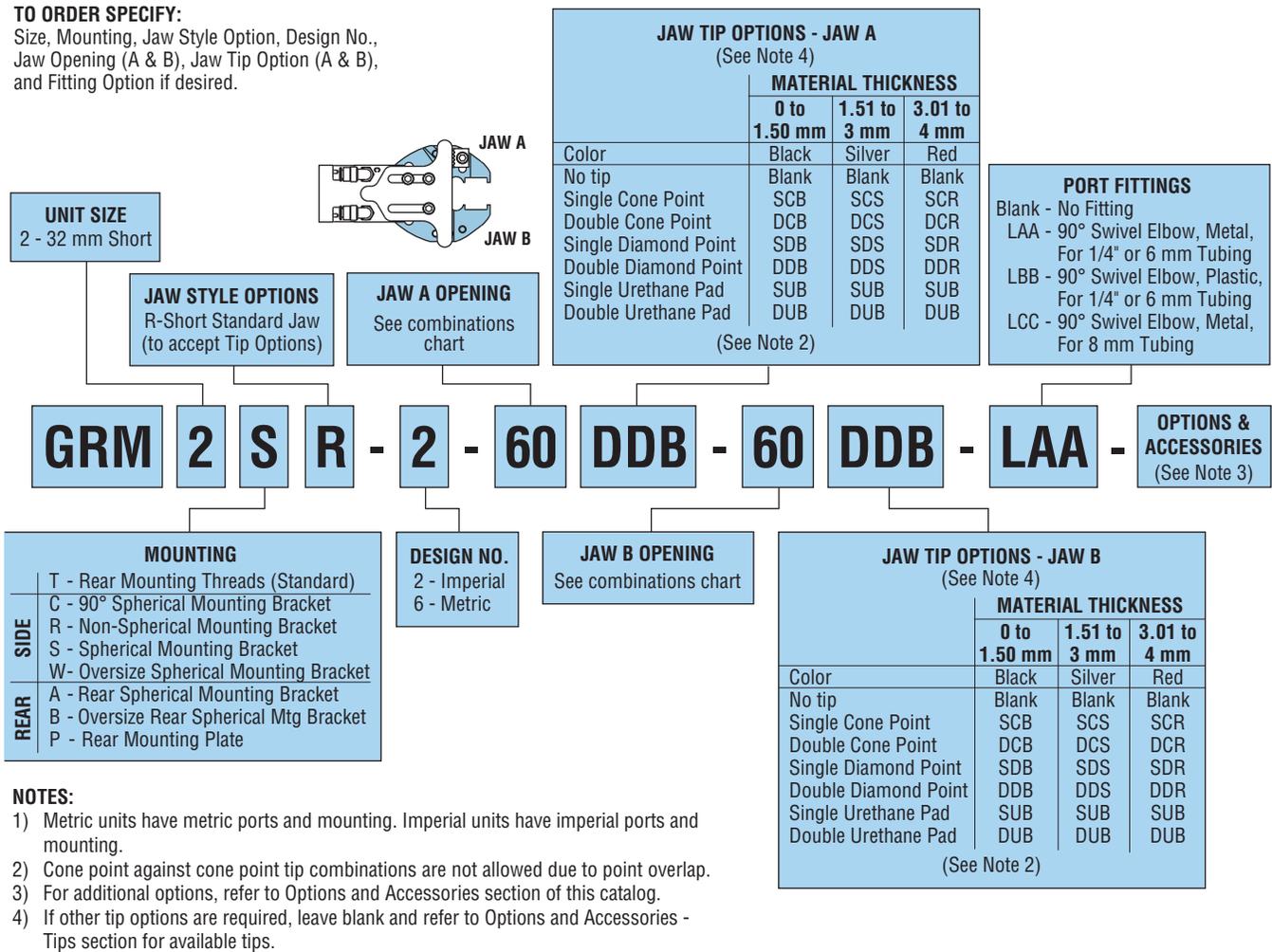
FINGER BLANK DIMENSIONS

LETTER DIM	MODEL NUMBER			
	GRM2xG		GRM4xG	
	in	mm	in	mm
FB1	—	—	2.677	68.0
FB2	4.921	125.0	6.142	156.0
FB3	2.894	73.5	3.504	89.0
FB4	1.063	27.0	1.250	31.8
FB5	1.063	27.0	1.181	30.0
FB6	0.296	7.5	0.354	9.0
FB7	2.027	51.5	2.638	67.0
FB8	M6 x 1.0		M8 x 1.25	
FB9	0.168	4.3	0.178	4.5
FB10	0.299	7.6	0.334	8.5
FB11	0.598	15.2	0.667	16.9
FB12	1.250	31.8	1.500	38.1
FB13	—	—	0.640	16.3
FB14	—	—	0.822	20.9

ORDERING DATA: Size 2 - Jaw Style R

TO ORDER SPECIFY:

Size, Mounting, Jaw Style Option, Design No., Jaw Opening (A & B), Jaw Tip Option (A & B), and Fitting Option if desired.



NOTES:

- 1) Metric units have metric ports and mounting. Imperial units have imperial ports and mounting.
- 2) Cone point against cone point tip combinations are not allowed due to point overlap.
- 3) For additional options, refer to Options and Accessories section of this catalog.
- 4) If other tip options are required, leave blank and refer to Options and Accessories - Tips section for available tips.

JAW OPENING COMBINATIONS

JAW STYLE OPTION R		JAW A				
		0°	22°	35°	45°	60°
JAW B	0°					
	22°					
	35°					
	45°					
	60°					

= Available Combinations

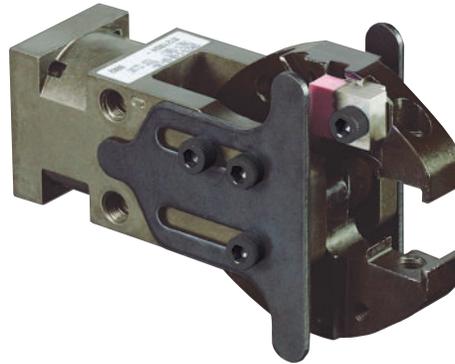
NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

For CAD & Ordering Assistance

phdinc.com/myphd

Jaw Style 'R' Size 2



Short Jaw Style
GRM2xR

Jaw Design Benefits

- Jaws lock in closed position.
- Accepts standard and custom tooling.
- Adjustable external rotation stop allows for multiple jaw openings in one clamp.
- Ideal for limited space environments.
- Higher grip force in smaller package.

JAW OPENING COMBINATIONS

		GRM2xR				
JAW STYLE OPTION R		JAW A				
		0°	22°	35°	45°	60°
JAW B	0°					
	22°					
	35°					
	45°					
	60°					

 = Available Combinations

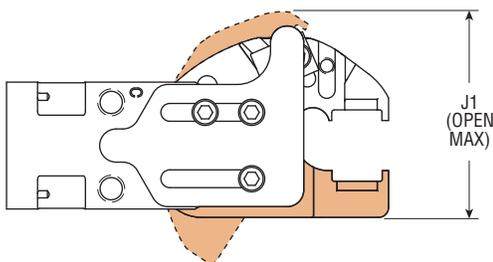
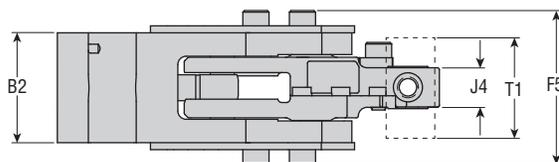
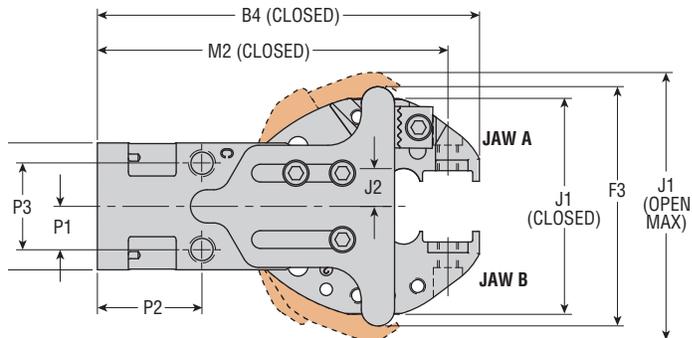
NOTES:

- 1) The 0° jaw rotates open slightly during the clamp cycle. The 0° jaw returns to 0° position as the opposing jaw reaches the fully open or fully closed positions.
- 2) All jaw rotational angles are for reference only.
- 3) For other configurations, consult your local distributor or PHD, Inc.

DIMENSIONS: Size 2 - Jaw Style R

GRM 2 x R - X - XX XXX - XX XXX

GRM 2 x R - X - XX XXX - 00 XXX



LETTER DIM	MODEL NUMBER	
	GRM2xR	
	-xxxxx, -00xxx	
	in	mm
B1	1.910	48.5
B2	1.654	42.0
B4 (CLOSED)	5.748	146.0
F5	2.336	59.3
J2 (CLOSED)	0.570	14.5
J4*	0.630	16.0
M2 (CLOSED)	5.275	134.0
P1	0.650	16.5
P2	1.575	40.0
P3	1.300	33.0
T1	1.530	38.9

LETTER DIM	MODEL NUMBER			
	GRM2xR			
	xxxxx-xx		xxxxx-00	
	in	mm	in	mm
F3	3.602	91.5	1.801	45.7
J1 (CLOSED)	2.782	70.7	2.695	68.5

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM2xR	
		in	mm
J1 (OPEN)	22° x 22°	3.573	90.8
	35° x 35°	3.667	93.1
	45° x 45°	3.848	97.7
	60° x 60°	4.060	103.1

LETTER DIM	JAW OPENING COMBINATIONS	MODEL NUMBER	
		GRM2xR	
		in	mm
J1 (OPEN)	22° x 00° 00° x 22°	2.869	72.9
	45° x 00° 00° x 45°	3.003	76.3
	60° x 00° 00° x 60°	3.112	79.0

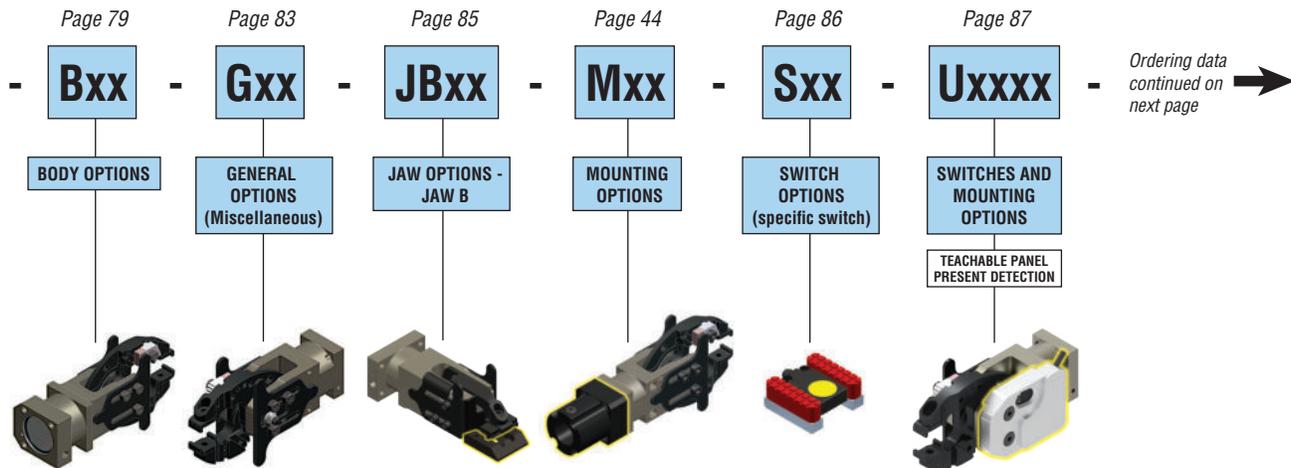
OPTIONS & ACCESSORIES: Ordering Data

PHD offers a wide variety of options and accessories for the Series GRM Clamp. From larger bore body options (B08 option) that increase grip force to switch options that detect part present (Pxxxx option) and double sheet conditions (Dxxxx option), PHD's Series GRM Clamp has the right solution for your specific application needs.

Use the information provided with each option to identify: specifications, compatibility with other options, ordering data, and replacement parts and kits if ordered separately. If you are unable to locate the option that suits your application needs or unsure about your selection, contact your local distributor or PHD for assistance.

BASE CLAMP NUMBER

GRM 2 T S - 2 - 45 -

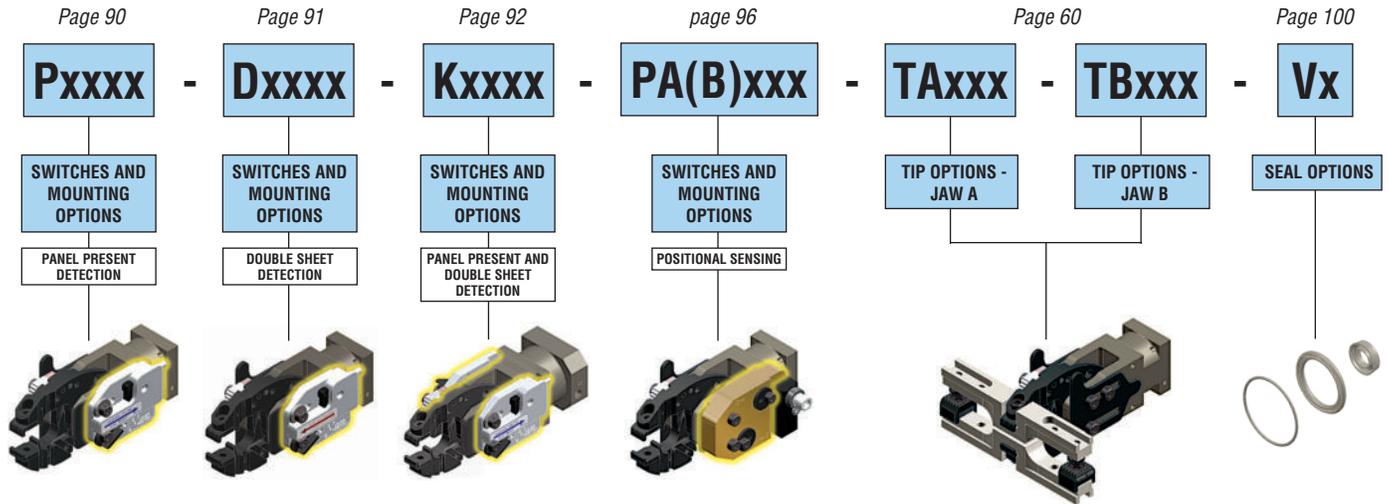


For CAD & Ordering Assistance

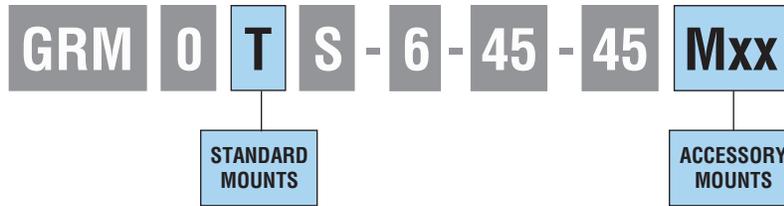
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45 - LAA - OPTIONS & ACCESSORIES

See expanded diagram below.

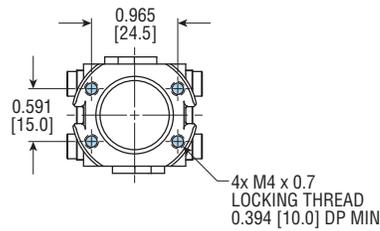


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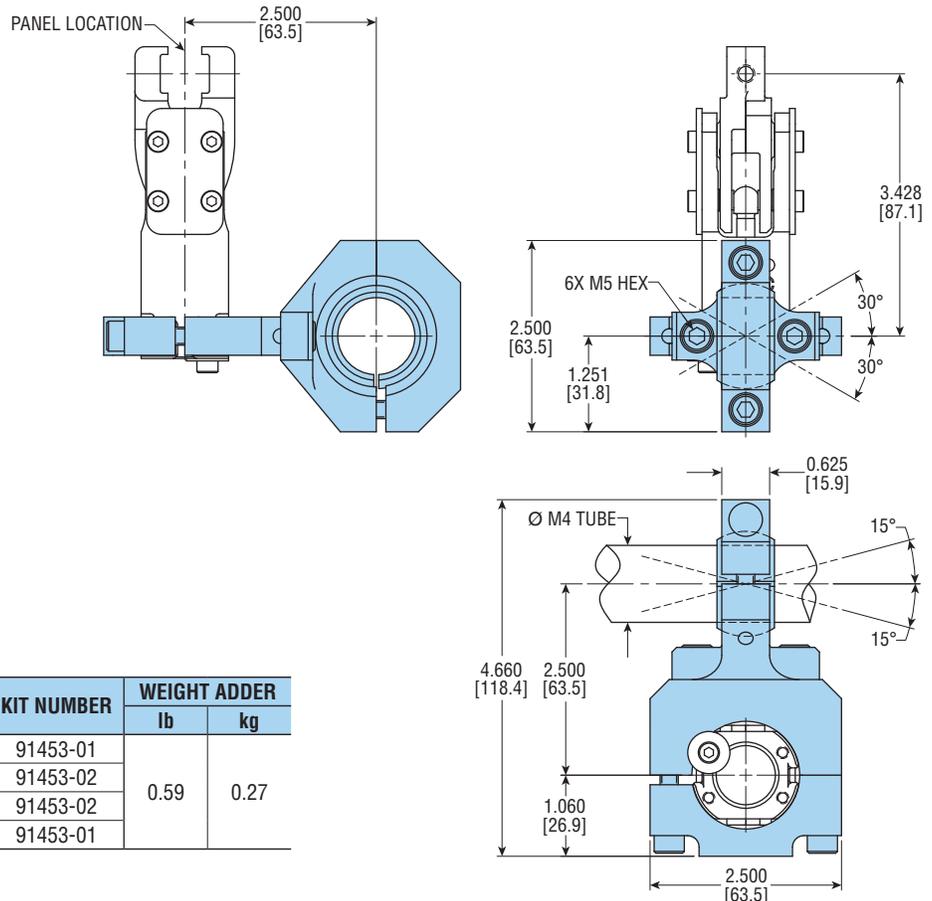
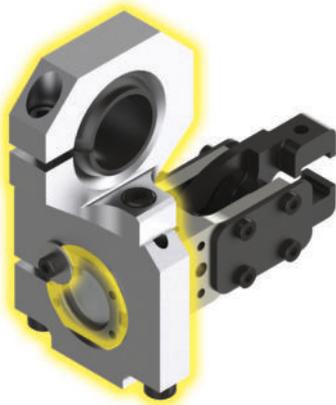


NOTE: Rear mounting threads (T option) must be specified when ordering an accessory mount (Mxx option).

GRM0 T REAR MOUNTING THREADS (4X M4 x 0.7)



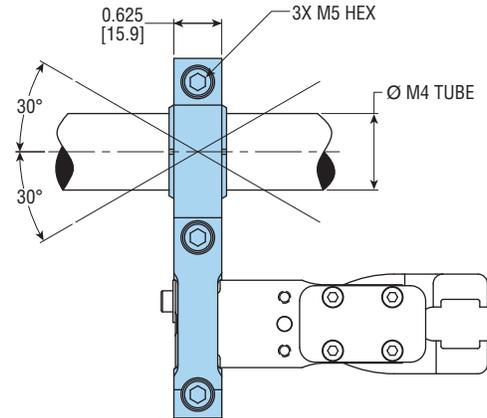
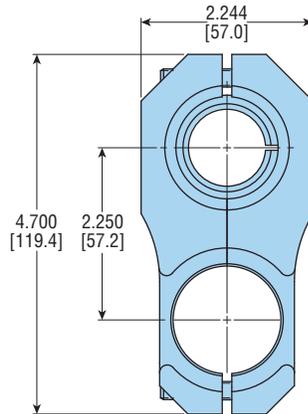
GRM0 C x or GRM0Tx- M21 M39 90° SPHERICAL MOUNTING BRACKET



MODEL NUMBER OR ACCESSORY CODE	Ø M4 MOUNTING TUBE SIZE	KIT NUMBER	WEIGHT ADDER	
			lb	kg
GRM0Cx-2	1.0 in	91453-01	0.59	0.27
GRM0Cx-6	25.0 mm	91453-02		
GRM0Tx-2-M21	25.0 mm	91453-02		
GRM0Tx-6-M39	1.0 in	91453-01		

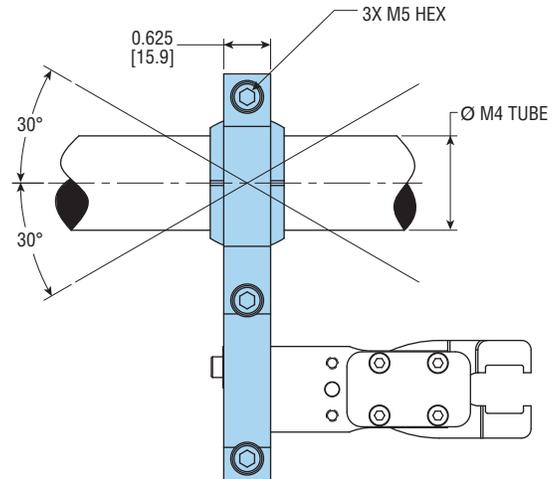
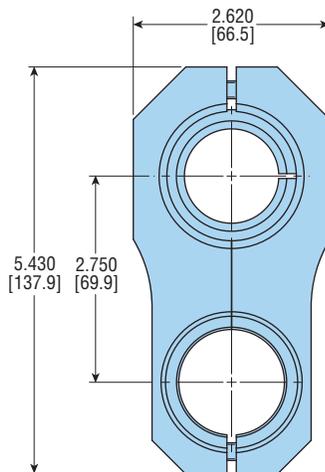
All dimensions are reference only unless specifically tolerated.

GRM0 **S** x or GRM0Tx- **M23** **M47** SPHERICAL MOUNTING BRACKET



MODEL NUMBER OR ACCESSORY CODE	Ø M4 MOUNTING TUBE SIZE	KIT NUMBER	WEIGHT ADDER	
			lb	kg
GRM0Sx-2	1.0 in	91454-01	0.47	0.21
GRM0Sx-6	25.0 mm	91454-02		
GRM0Tx-2-M23	25.0 mm	91454-02		
GRM0Tx-6-M47	1.0 in	91454-01		

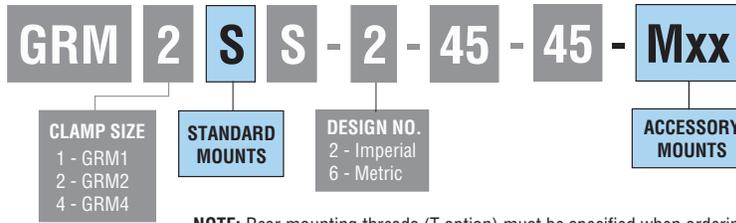
GRM0 **W** x or GRM0Tx- **M01** **M07** **M25** **M42** OVERSIZE SPHERICAL MOUNTING BRACKET



MODEL NUMBER OR ACCESSORY CODE	Ø M4 MOUNTING TUBE SIZE	KIT NUMBER	WEIGHT ADDER	
			lb	kg
GRM0Wx-2	1.25 in	91455-01	0.76	0.34
GRM0Wx-6	33.3 mm	91455-02		
GRM0Tx-x-M01	30.0 mm	91455-03		
GRM0Tx-x-M07	32.0 mm	91455-04		
GRM0Tx-6-M25	1.25 in	91455-01		
GRM0Tx-2-M42	33.3 mm	91455-02		

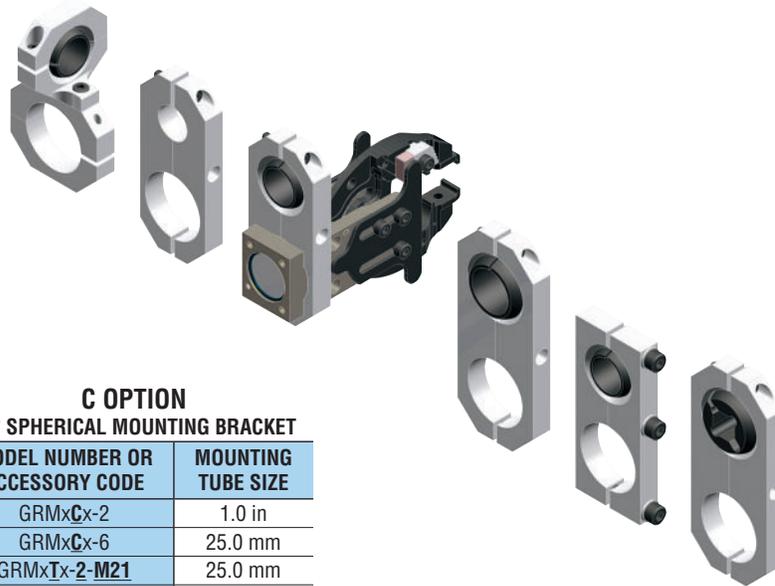
All dimensions are reference only unless specifically tolerated.

ORDERING DATA:



NOTE: Rear mounting threads (T option) must be specified when ordering an accessory mount (Mxx option).

SIDE MOUNTING OPTIONS ON SIZES GRM1, GRM2, AND GRM4



C OPTION 90° SPHERICAL MOUNTING BRACKET

MODEL NUMBER OR ACCESSORY CODE	MOUNTING TUBE SIZE
GRMxCx-2	1.0 in
GRMxCx-6	25.0 mm
GRMxTx-2-M21	25.0 mm
GRMxTx-6-M39	1.0 in



R OPTION NON-SPHERICAL MOUNTING BRACKET

MODEL NUMBER OR ACCESSORY CODE	MOUNTING TUBE SIZE
GRMxRx-2	1.0 in
GRMxRx-6	25.0 mm
GRMxTx-2-M22	25.0 mm
GRMxTx-6-M46	1.0 in



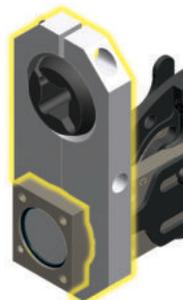
S AND W OPTIONS ON GRM2, GRM4

MODEL NUMBER OR ACCESSORY CODE	MOUNTING TUBE SIZE
GRMxSx-2	1.0 in
GRMxSx-6	25.0 mm
GRMxTx-2-M23	25.0 mm
GRMxTx-6-M47	1.0 in
GRMxWx-2	1.25 in
GRMxWx-6	33.3 mm
GRMxTx-x-M01	30.0 mm
GRMxTx-x-M07	32.0 mm
GRMxTx-6-M25	1.25 in
GRMxTx-2-M42	33.3 mm



M27-M30, M36-M37 OPTIONS SPHERICAL MOUNTING BRACKET WITH M8 FASTENERS

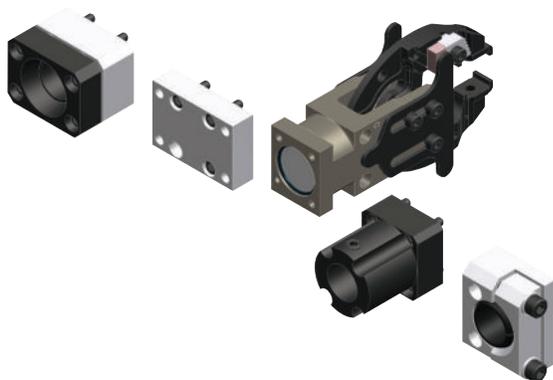
ACCESSORY CODE	MOUNTING TUBE SIZE
GRMxTx-x-M27	1.0 in
GRMxTx-x-M28	25.0 mm
GRMxTx-x-M29	1.25 in
GRMxTx-x-M30	33.3 mm
GRMxTx-x-M36	30.0 mm
GRMxTx-x-M37	32.0 mm



M38 OPTION SPHERICAL MOUNTING BRACKET FOR SQUARE TUBING

ACCESSORY CODE	MOUNTING TUBE SIZE
GRMxTx-x-M38	19.0 mm

REAR MOUNTING OPTIONS

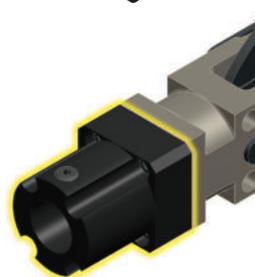


A AND B OPTIONS ON GRM2, GRM4



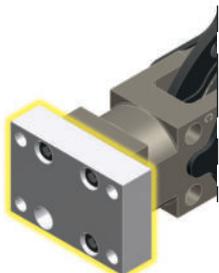
MODEL NUMBER OR ACCESSORY CODE	MOUNTING TUBE SIZE
GRMxAx-2	1.0 in
GRMxAx-6	25.0 mm
GRMxBx-2	1.25 in
GRMxBx-6	33.3 mm
GRMxTx-2-M24	25.0 mm
GRMxTx-2-M43	33.3 mm
GRMxTx-6-M44	1.0 in
GRMxTx-6-M45	1.25 in

NOTE: Spherical or non-spherical in one mount



M03 OPTION ON GRM2, GRM4

ACCESSORY CODE	INTERNAL MOUNTING DIAMETER	EXTERNAL MOUNTING DIAMETER
GRMxTx-x-M03	1.0 in [25.0 mm]	1.874 in [47.6 mm]



P OPTION ON GRM2, GRM4

MODEL NUMBER	MOUNTING FASTENER SIZE
GRM2Px	1/4 [M6]
GRM4Px	5/16 [M8]



M40-M41 OPTIONS ON GRM2, GRM4

ACCESSORY CODE	MOUNTING TUBE SIZE
GRMxTx-x-M40	1.0 in
GRMxTx-x-M41	25.0 mm

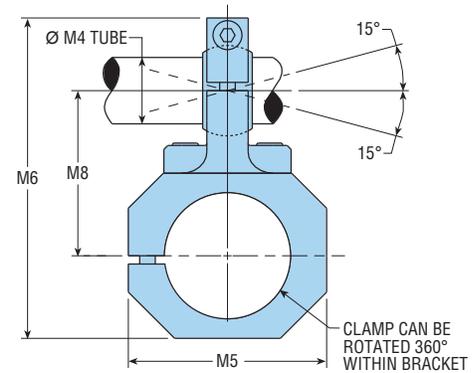
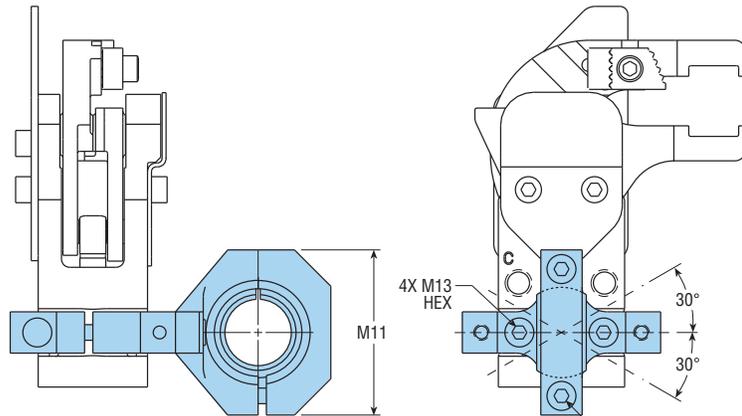
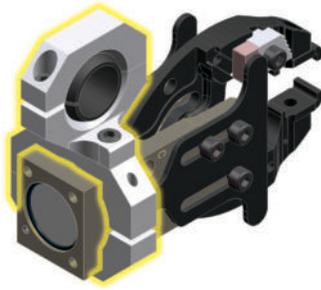
NOTE: Spherical or non-spherical in one mount



T OPTION ON GRM1, GRM2, GRM4

MODEL NUMBER	MOUNTING THREAD SIZE
GRM1Tx	M5 x 0.450 [11.4] DP
GRM2Tx	M6 x 0.413 [10.5] DP
GRM4Tx	M8 x 0.512 [13.0] DP

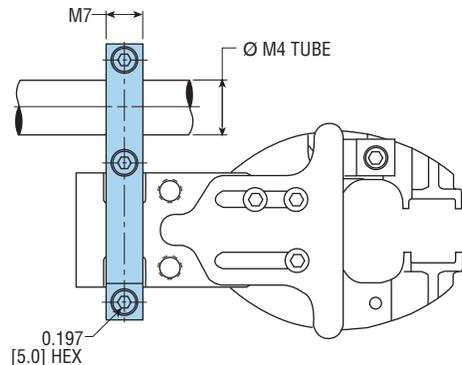
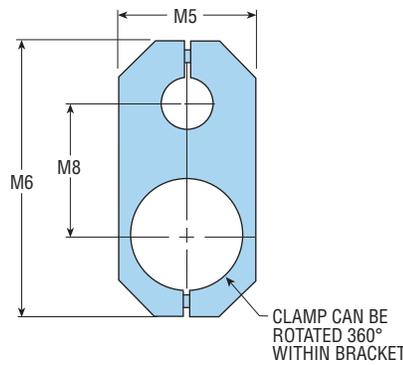
GRMx **C** x or GRMxTx- **M21** **M39** 90° SPHERICAL MOUNTING BRACKET



LETTER DIM	MODEL NUMBER			
	GRM1-B11 & GRM2		GRM4 (GRM2-B08)	
	in	mm	in	mm
M4 (C)	1.000	25.0	1.000	25.0
M4 (M21)	25.0 mm		25.0 mm	
M4 (M39)	1.000 in		1.000 in	
M5	3.000	76.2	3.500	88.9
M6	4.850	123.2	5.900	149.9
M8	2.500	63.5	3.350	85.1
M11	2.500	63.5	2.500	63.5
M13	0.197	5.0	0.197	5.0
M14	0.236	6.0	0.236	6.0

CLAMP SIZE	KIT NUMBER				WEIGHT ADDER	
	IMPERIAL	METRIC	M21	M39	lb	kg
1-B11	64658-02	64658-03	64658-03	64658-02	0.62	0.28
2	64658-02	64658-03	64658-03	64658-02	0.62	0.28
4, 2-B08	64658-04	64658-05	64658-05	64658-04	0.99	0.45

GRMx **R** x or GRMxTx- **M22** **M46** NON-SPHERICAL MOUNTING BRACKET



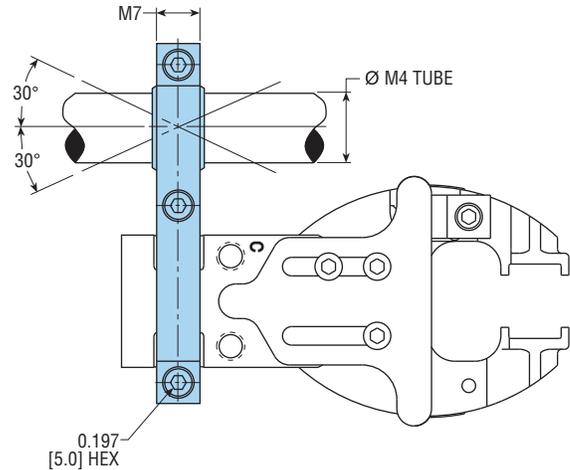
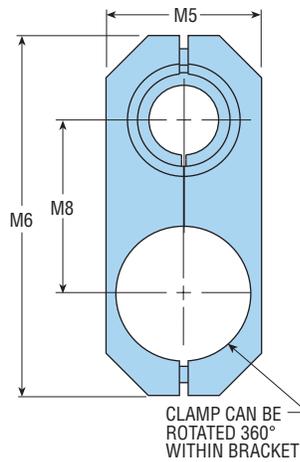
LETTER DIM	MODEL NUMBER			
	GRM1-B11 & GRM2		GRM4 (GRM2-B08)	
	in	mm	in	mm
M4 (R)	1.000	25.0	1.000	25.0
M4 (M22)	25.0 mm		25.0 mm	
M4 (M46)	1.000 in		1.000 in	
M5	2.244	57.0	2.618	66.5
M6	5.197	132.0	5.315	135.0
M7	0.625	15.9	0.750	19.1
M8	2.500	63.5	2.500	63.5

CLAMP SIZE	KIT NUMBER				WEIGHT ADDER	
	IMPERIAL	METRIC	M22	M46	lb	kg
1-B11	62149-02	62196-02	62196-02	62149-02	0.38	0.17
2	62149-02	62196-02	62196-02	62149-02	0.38	0.17
4, 2-B08	64646-02	64648-02	64648-02	64646-02	0.52	0.24

All dimensions are reference only unless specifically tolerated.

GRMx **S** x or GRMxTx- **M23** **M47** SPHERICAL MOUNTING BRACKET

GRMx **W** x or GRMxTx- **M01** **M07** **M25** **M42** OVERSIZE SPHERICAL MOUNTING BRACKET



FOR SPHERICAL MOUNTING BRACKET:

LETTER DIM	MODEL NUMBER			
	GRM1-B11 & GRM2		GRM4 (GRM2-B08)	
	in	mm	in	mm
M4 (S)	1.000	25.0	1.000	25.0
M4 (M23)	25.0 mm		25.0 mm	
M4 (M47)	1.000 in		1.000 in	
M5	2.244	57.0	2.618	66.5
M6	5.197	132.0	5.315	135.0
M7	0.625	15.9	0.750	19.1
M8	2.500	63.5	2.500	63.5

CLAMP SIZE	KIT NUMBER				WEIGHT ADDER	
	IMPERIAL	METRIC	M23	M47	lb	kg
1-B11	62149-01	62196-01	62196-01	62149-01	0.49	0.22
2	62149-01	62196-01	62196-01	62149-01	0.49	0.22
4, 2-B08	64646-01	64648-01	64648-01	64646-01	0.64	0.29

FOR OVERSIZE SPHERICAL MOUNTING BRACKET:

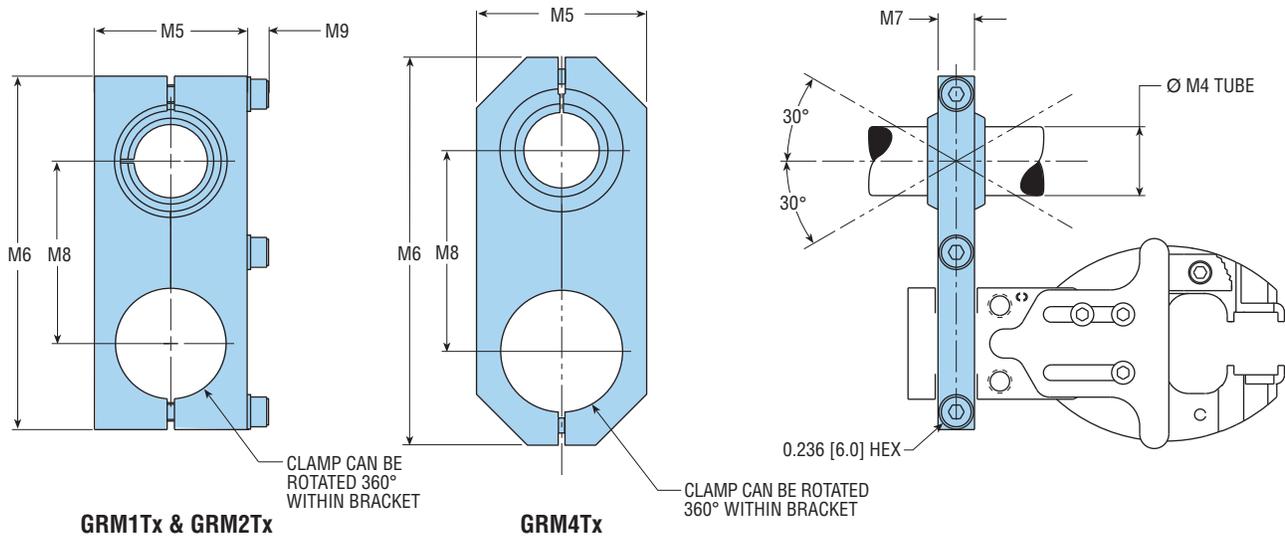
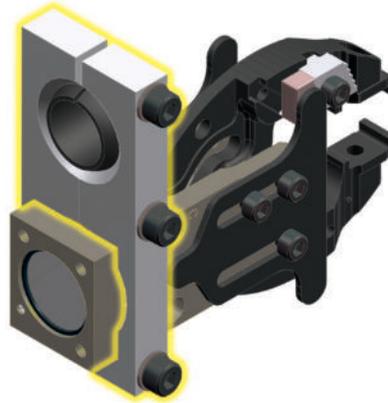
LETTER DIM	MODEL NUMBER			
	GRM1-B11 & GRM2		GRM4 (GRM2-B08)	
	in	mm	in	mm
M4 (W)	1.250	33.3	1.250	33.3
M4 (M01)	30.0 mm		30.0 mm	
M4 (M07)	32.0 mm		32.0 mm	
M4 (M25)	1.250 in		1.250 in	
M4 (M42)	33.3 mm		33.3 mm	
M5	2.618	66.5	2.618	66.5
M6	6.064	154.0	6.299	160.0
M7	0.625	15.9	0.750	19.1
M8	3.130	79.5	3.130	79.5

CLAMP SIZE	KIT NUMBER						WEIGHT ADDER	
	IMPERIAL	METRIC	M01	M07	M25	M42	lb	kg
1-B11	62201-01	62201-03	65001-01	62223-04	62201-01	62201-03	0.86	0.39
2	62201-01	62201-03	65001-01	62223-04	62201-01	62201-03	0.81	0.37
4, 2-B08	64647-01	64649-01	65001-06	62223-05	64647-01	64649-01	0.92	0.42

All dimensions are reference only unless specifically tolerated.

GRMxTx- **M27** **M30** SPHERICAL MOUNTING BRACKET WITH M8 FASTENERS

GRMxTx- **M36** **M37** SPHERICAL MOUNTING BRACKET WITH M8 FASTENERS



GRM1Tx-B11 & GRM2Tx

ACCESSORY CODE	LETTER DIMENSION										
	M4	M5		M6		M7		M8		M9	
	in	mm	in	mm	in	mm	in	mm	in	mm	
M27	1.000 in	2.244	57.0	5.197	132.0	0.625	15.9	2.500	63.5	0.374	9.5
M28	25.0 mm										
M29	1.250 in	2.618	66.5	6.064	154.0	0.625	15.9	3.130	79.5	0.374	9.5
M30	33.3 mm										
M36	30.0 mm	2.618	66.5	6.064	154.0	0.625	15.9	3.130	79.5	0.374	9.5
M37	32.0 mm										

GRM1Tx-B11 & GRM2Tx

ACCESSORY CODE	KIT NUMBER	WEIGHT ADDER	
		lb	kg
M27	62149-04	0.69	0.31
M28	62196-04	0.69	0.31
M29	62201-04	1.03	0.47
M30	62201-05	0.99	0.45
M36	65001-11	1.07	0.48
M37	62223-07	1.03	0.47

GRM4Tx (GRM2Tx-B08)

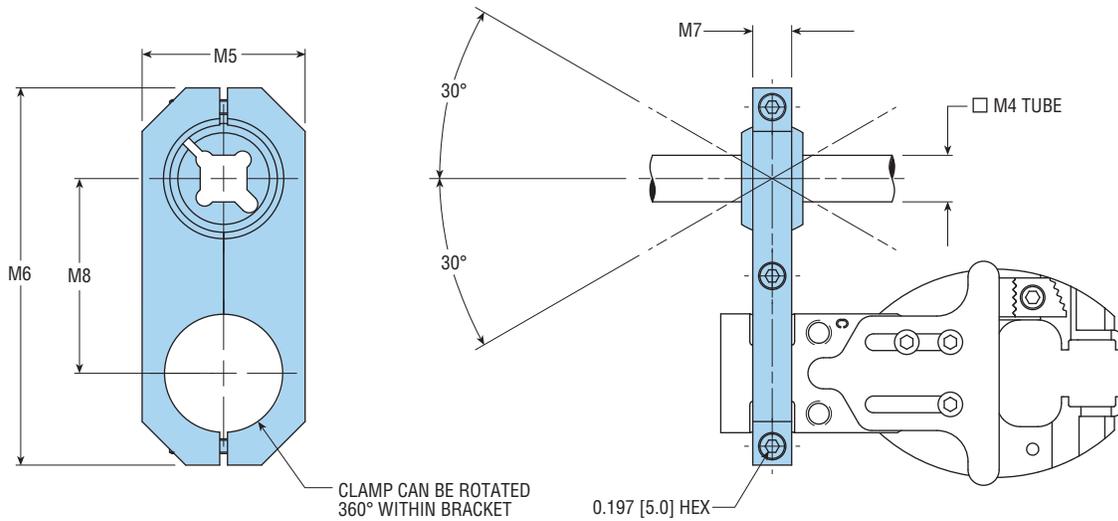
ACCESSORY CODE	LETTER DIMENSION										
	M4	M5		M6		M7		M8		M9	
	in	mm	in	mm	in	mm	in	mm	in	mm	
M27	1.000 in	2.618	66.5	5.315	135.0	0.750	19.1	2.500	63.5	—	—
M28	25.0 mm										
M29	1.250 in	2.618	66.5	6.299	160.0	0.750	19.1	3.130	79.5	—	—
M30	33.3 mm										
M36	30.0 mm	2.618	66.5	6.299	160.0	0.750	19.1	3.130	79.5	—	—
M37	32.0 mm										

GRM4Tx (GRM2Tx-B08)

ACCESSORY CODE	KIT NUMBER	WEIGHT ADDER	
		lb	kg
M27	64646-06	0.77	0.35
M28	64648-05	0.78	0.35
M29	64647-02	1.05	0.47
M30	64649-02	1.00	0.45
M36	65001-12	1.08	0.49
M37	62223-08	1.04	0.47

All dimensions are reference only unless specifically tolerated.

GRMxTx- **M38** SPHERICAL MOUNTING BRACKET FOR SQUARE TUBE



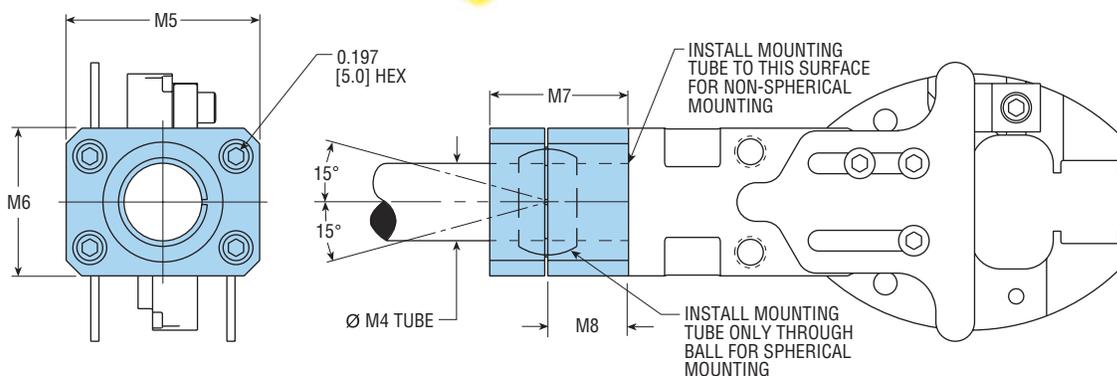
CLAMP SIZE	LETTER DIMENSION								
	M4	M5		M6		M7		M8	
		in	mm	in	mm	in	mm	in	mm
GRM1Tx-B11 GRM2Tx	19.0 mm	2.618	66.5	6.064	154.0	0.625	15.9	3.130	79.5
GRM4Tx GRM2Tx-B08	19.0 mm	2.618	66.5	6.299	160.0	0.750	19.1	3.130	79.5

CLAMP SIZE	KIT NUMBER	WEIGHT ADDER	
		lb	kg
1-B11	81269-190	1.00	0.45
2	81269-190	1.00	0.45
4, 2-B08	81270-190	1.10	0.50

All dimensions are reference only unless specifically tolerated.

GRMx **A** x or GRMxTx- **M24** **M44** REAR MOUNTING BRACKET (SPHERICAL OR NON-SPHERICAL)

GRMx **B** x or GRMxTx- **M43** **M45** OVERSIZE REAR MOUNTING BRACKET (SPHERICAL OR NON-SPHERICAL)



FOR REAR MOUNTING BRACKET:

LETTER DIM	MODEL NUMBER			
	GRM2		GRM4 (GRM2-B08)	
	in	mm	in	mm
M4 (A)	1.000	25.0	1.000	25.0
M4 (M24)	25.0 mm		25.0 mm	
M4 (M44)	1.000 in		1.000 in	
M5	2.500	63.5	3.000	76.2
M6	1.910	48.5	2.240	56.9
M7	1.791	45.5	1.791	45.5
M8	1.043	26.5	1.043	26.5

CLAMP SIZE	KIT NUMBER				WEIGHT ADDER	
	IMPERIAL	METRIC	M24	M44	lb	kg
	2	65008-03	65008-05	65008-05	65008-03	1.00
4, 2-B08	65008-04	65008-06	65008-06	65008-04	1.68	0.76

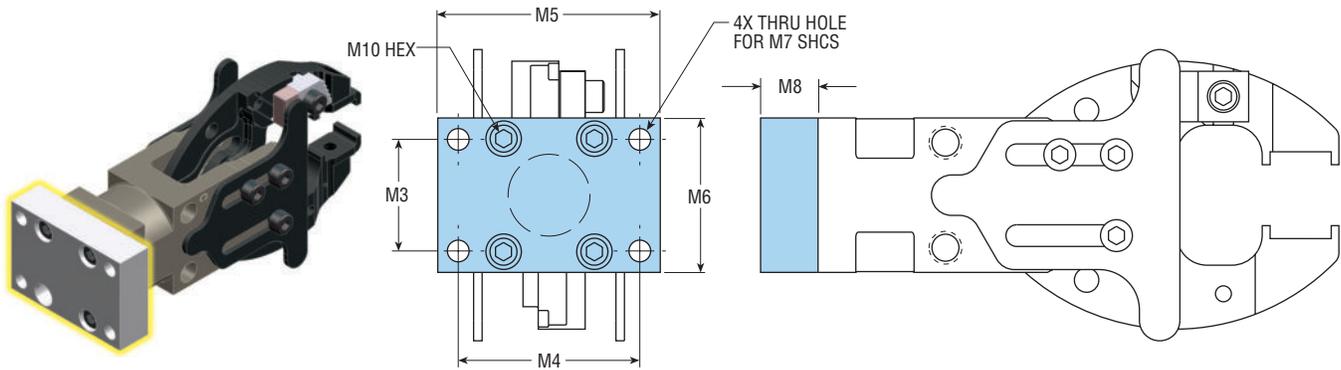
FOR OVERSIZE REAR MOUNTING BRACKET:

LETTER DIM	MODEL NUMBER			
	GRM2		GRM4 (GRM2-B08)	
	in	mm	in	mm
M4 (B)	1.250	33.3	1.250	33.3
M4 (M43)	33.3 mm		33.3 mm	
M4 (M45)	1.250 in		1.250 in	
M5	3.000	76.2	3.000	76.2
M6	2.240	56.9	2.500	63.5
M7	2.087	53.0	2.087	53.0
M8	1.305	33.1	1.305	33.1

CLAMP SIZE	KIT NUMBER				WEIGHT ADDER	
	IMPERIAL	METRIC	M43	M45	lb	kg
	2	65016-03	65016-04	65016-04	65016-03	1.67
4, 2-B08	65016-05	65016-06	65016-06	65016-05	1.71	0.78

All dimensions are reference only unless specifically tolerated.

GRMx **P** REAR MOUNTING PLATE



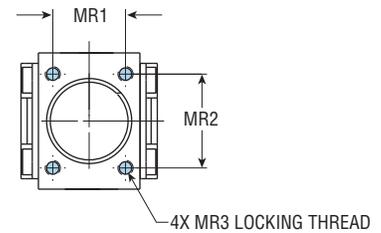
LETTER DIM	MODEL NUMBER			
	GRM2Px		GRM4Px (GRM2Px-B08)	
	in	mm	in	mm
M3	1.380	35.1	1.890	48.0
M4	2.244	57.0	2.992	76.0
M5	2.750	69.9	3.750	95.3
M6	1.910	48.5	2.500	63.5
M7	1/4	M6	5/16	M8
M8	0.710	18.0	0.846	21.5
M10	0.197	5.0	0.236	6.0

CLAMP SIZE	KIT NUMBER		WEIGHT ADDER	
	IMPERIAL	METRIC	lb	kg
2	65004-03	65004-03	0.24	0.11
4, 2-B08	65004-04	65004-04	0.56	0.25

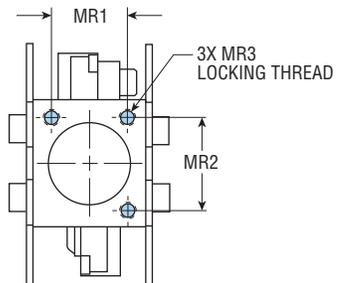
GRMx **T** REAR MOUNTING THREADS (STANDARD ON ALL CLAMPS)



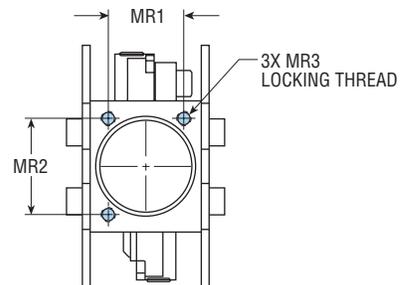
GRM1 **T**



GRM2 **T**



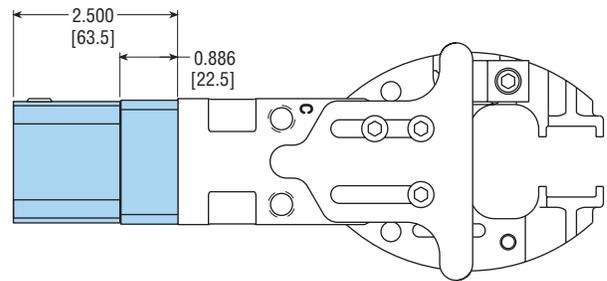
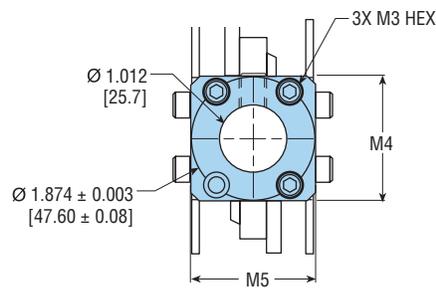
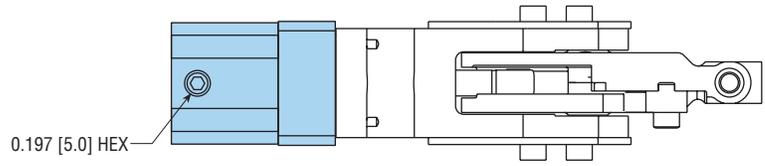
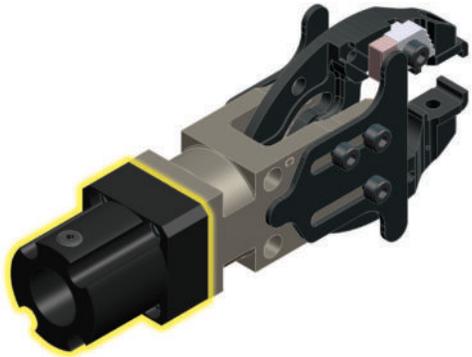
GRM4 **T**



LETTER DIM	MODEL NUMBER					
	GRM1Tx		GRM2Tx		GRM4Tx (GRM2Tx-B08)	
	in	mm	in	mm	in	mm
MR1	0.945	24.0	1.122	28.5	1.496	38.0
MR2	1.220	31.0	1.398	35.5	1.693	43.0
MR3	M5 x 0.8 x 0.450 [11.4] DP		M6 x 1.0 x 0.413 [10.5] DP		M8 x 1.25 x 0.512 [13.0] DP	

All dimensions are reference only unless specifically tolerated.

GRMxTx- **M03** RIGID REAR MOUNTING BRACKET



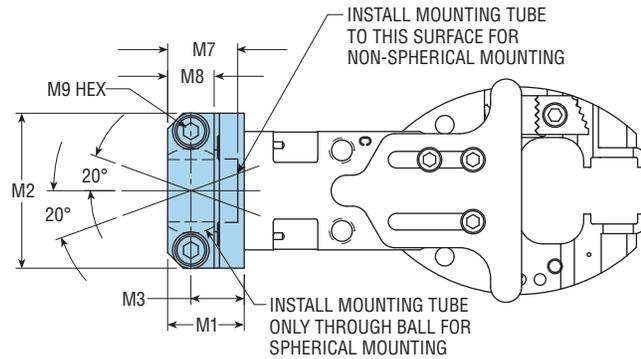
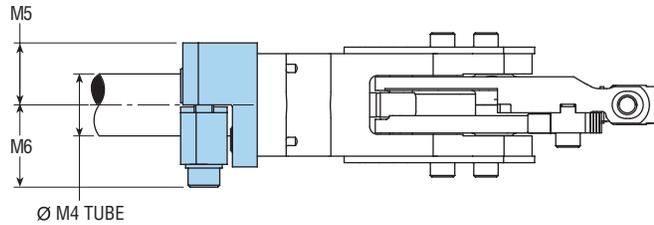
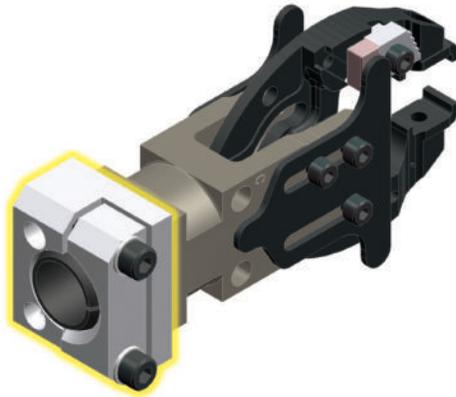
CLAMP SIZE	LETTER DIMENSION					
	M3		M4		M5	
	in	mm	in	mm	in	mm
GRM2Tx	0.197	5.0	1.910	48.5	1.910	48.5
GRM4Tx GRM2Tx-B08	0.236	6.0	2.362	60.0	2.165	55.0

CLAMP SIZE	KIT NUMBER	WEIGHT ADDER	
		lb	kg
2	65002-03	0.52	0.23
4, 2-B08	65002-04	0.72	0.32

All dimensions are reference only unless specifically tolerated.

GRMxTx- **M40** 1" REAR MOUNTING BRACKET (SPHERICAL OR NON-SPHERICAL)

GRMxTx- **M41** 25 mm REAR MOUNTING BRACKET (SPHERICAL OR NON-SPHERICAL)



CLAMP SIZE	LETTER DIMENSION																	
	M1		M2		M3		M4		M5		M6		M7		M8		M9	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
GRM2Tx	1.235	31.4	2.500	63.5	0.860	21.8	1.000	25.0	1.000	25.4	1.327	33.7	1.135	28.8	0.750	19.1	0.236	6.0
GRM4Tx GRM2Tx-B08	1.335	33.9	2.500	63.5	0.960	24.4	1.000	25.0	1.120	28.4	1.327	33.7	1.135	28.8	0.750	19.1	0.236	6.0

GRM2Tx

ACCESSORY CODE	KIT NUMBER	WEIGHT ADDER	
		lb	kg
M40	71201-04	0.60	0.27
M41	71201-05	0.61	0.27

GRM4Tx (GRM2Tx-B08)

ACCESSORY CODE	KIT NUMBER	WEIGHT ADDER	
		lb	kg
M40	71201-06	0.72	0.33
M41	71201-07	0.72	0.33

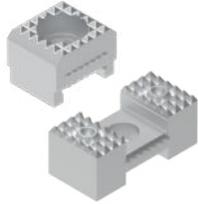
All dimensions are reference only unless specifically toleranced.

OPTIONS & ACCESSORIES - TIPS OVERVIEW

PHD has a wide variety of standard and accessory tooling (tips) available for the Series GRM Clamps. Selecting the right tips for your application is the most important step in specifying a GRM Clamp, because this is the point where the clamp makes contact with the part.

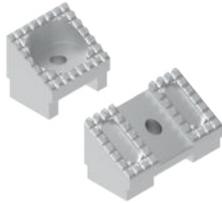
All Series GRM Clamps tips are non-adjustable, meaning they are designed for a specific material thickness, material shape, and application function.

NOTE: The selected tips must allow the jaws to close completely for the clamp to achieve peak grip force, locking function, and proper contact with the part. Tips also perform differently for different unit sizes and jaw styles. Use the following information provided in this section to help in your selection process. If you are unable to locate tips that suit your application needs or unsure about your selection, contact your local distributor or PHD for assistance.



SINGLE OR DOUBLE DIAMOND TIP

Grips flat panel surfaces in line with the jaws. The diamond tips provide large gripping area and superior force on panels minimizing panel movement.



30° SINGLE OR DOUBLE DIAMOND TIP

Grips angled surfaces on a 30° angle while keeping the clamp parallel, decreasing the space required by the clamp.



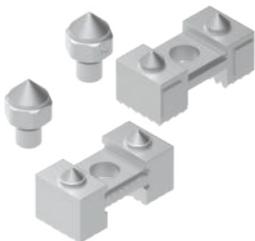
15° SINGLE OR DOUBLE DIAMOND TIP

Grips angled surfaces on a 15° angle while keeping the clamp parallel, decreasing the space required by the clamp.



NO SCRATCH TIP

Reduces the “fines” or flakes generated when transferring galvanized panels. Designed with smooth, curved surfaces that eliminate scratches to the plating, minimizing fines that cause dirty dies and marked panels.



STANDARD AND SHARP SINGLE OR DOUBLE CONE POINT TIP

Sharp cone points have a tip that is sharper than the standard cone point providing a better bite into the panel to reduce movement.



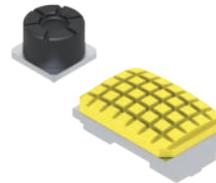
DOUBLE CONE AND DIAMOND TIP FOR MOUNTING FLAT PROXIMITY SWITCH

Provides in-jaw panel sensing while maintaining double diamond tip configuration.



SHORT AND LONG OFFSET TIP

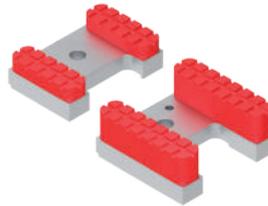
Double diamonds with the gripping surface shifted off the centerline, providing more clearance to clamp panels with flanges up to 1.125 in [28.5 mm] long.



HARD URETHANE TIP

Harder durometer urethane (93 red, 85 blue/yellow) than our standard black urethane (75 Durometer) provides increased wear resistance on class A panels.

Grooves on the tip's contact point provide greater resistance to panel slippage.



DOUBLE URETHANE TIP FOR MOUNTING FLAT PROXIMITY SWITCH

Provides in-jaw panel sensing with a double urethane tip used on Class A surfaces.



DOUBLE NO SCRATCH TIP FOR MOUNTING FLAT PROXIMITY SWITCH

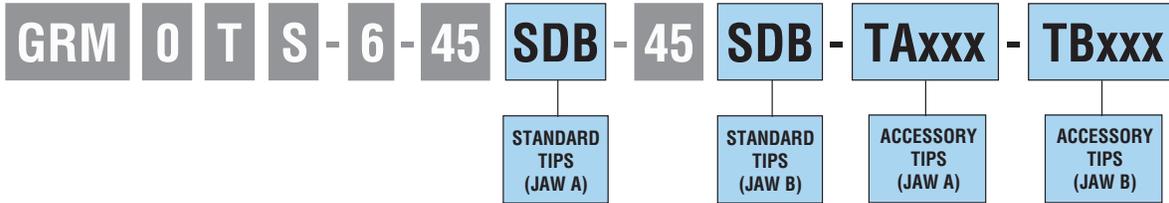
Reduce the “fines” or flakes generated when transferring galvanized panels. Designed with smooth, curved surfaces that eliminate scratches to the plating, minimizing fines that cause dirty dies and marked panels. Allows panel sensing by providing a protected mounting location for the (S01 option) proximity switch.



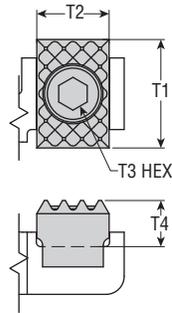
DRAWBEAD TIP

Double tip that is shaped like the inside of a drawbead. This shape allows it to transfer panels by gripping the center of the drawbead.

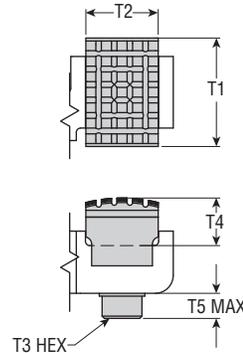
ORDERING DATA:



NOTE: Standard tip options must be left blank when ordering accessory tips.



Double Rounded Urethane Pad
-Tx069



NOTE: All high temp tips have ceramic coating that is dull gold in color.

MODEL NO. OR ACCESSORY CODE	TIP COLOR	KIT NUMBER	LETTER DIMENSION									
			T1		T2		T3		T4		T5	
			in	mm	in	mm	in	mm	in	mm	in	mm
SDB	Black	91448-01	0.750	19.1	0.500	12.7	0.197	5.0	0.319	8.10	—	—
SDS	Silver	91448-02					0.197	5.0	0.294	7.47	—	—
SDG	Gold	91448-03					0.197	5.0	0.274	6.96	—	—
-Tx180	Black	91448-04					0.197	5.0	0.319	8.10	—	—
-Tx181	Silver	91448-05					0.197	5.0	0.294	7.47	—	—
-Tx182	Gold	91448-06					0.197	5.0	0.274	6.96	—	—
-Tx069	Yellow	91448-07					0.118	3.0	0.329	8.4	0.181	4.6

TIP MODEL NUMBER OR ACCESSORY CODE FOR JAW A AND JAW B

xxx xxx	Standard Tip
-Txxxx -Txxxx	Accessory Tip
-Txxxx xxx	Accessory/Standard Tip Combination

[TIP COLOR]	JAW STYLES
[B] = Black	S = Standard
[S] = Silver	F = Flange
[G] = Gold	
[YU] = Yellow Urethane	
[X] = Dull Gold, High Temp.	

NOTES:

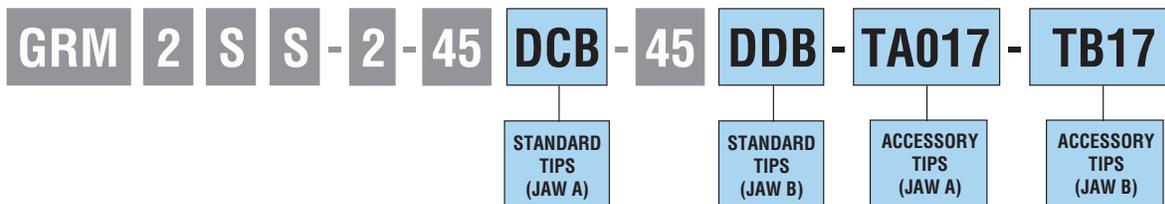
- Jaw A tips and Jaw B tips can be reversed.
- Tip options are not recommended for material thickness below 0.25 mm.

MATERIAL THICKNESS RANGE FOR JAW STYLES "S & F"

JAW A	JAW B	MATERIAL THICKNESS RANGE (mm)				
		0.0-0.6	0.7-1.2	1.3-1.8	1.9-2.4	2.5-3.0
SDB	SDB	[B]				
SDB	SDS		[B / S] Combination			
SDS	SDS			[S]		
SDS	SDG				[S / G] Combination	
SDG	SDG					[G]
-TA180	-TB180	[X]				
-TA180	-TA181		[X]			
-TA181	-TB181			[X]		
-TA181	-TA182				[X]	
-TA182	-TB182					[X]
-TA069	-TB069				[YU]	

All dimensions are reference only unless specifically tolerated.

ORDERING DATA:



NOTE: Standard tip options must be left blank when ordering accessory tips with the exception of Tx017 (Duckbill) tips.

SINGLE POINT TIPS (STEEL)



Single Cone Point (Fig. A)
SCB
SCS
SCG
SCR



Single Cone Point - Sharp (Fig. A)
-Tx019
-Tx020
-Tx021

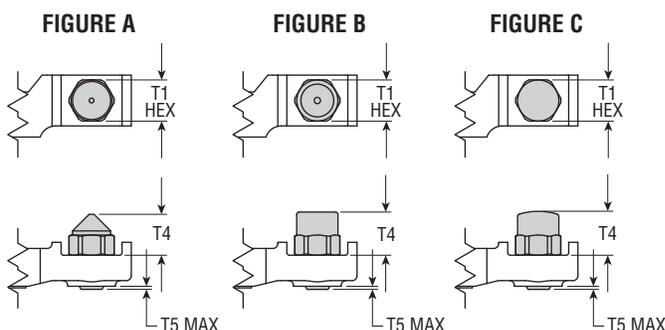


Single No Scratch Socket (Fig. B)
-Tx005
-Tx006
-Tx007



Single No Scratch Ball (Fig. C)
-Tx008
-Tx009
-Tx010

DIMENSIONS



See pages 70, 72, and 75 for material thickness range chart.

MODEL NO. OR ACCESSORY CODE	FIGURE ABOVE	TIP COLOR	GRM SIZE	KIT NUMBER	LETTER DIMENSION									
					T1		T2		T3		T4		T5	
					in	mm	in	mm	in	mm	in	mm	in	mm
SCB	A	Black	1 & 2	GRM2-SCB-1	0.511	13.0	-	-	-	-	0.545	13.8	0.084	2.1
			2xH, 2xT	62148-37							0.992	25.2	0.035	0.9
			4	GRM4-SCB-1							0.804	20.4	0.025	0.6
			4xH	62148-33							1.344	34.1	0.025	0.6
SCS	A	Silver	1 & 2	GRM2-SCS-1							0.520	13.2	0.084	2.1
			2xH, 2xT	62148-38							0.967	24.6	0.035	0.9
			4	GRM4-SCS-1							0.779	19.8	0.025	0.6
			4xH	62148-34							1.319	33.5	0.025	0.6
SCG	A	Gold	1 & 2	GRM2-SCG-1							0.507	12.9	0.084	2.1
			2xH, 2xT	62148-39							0.954	24.2	0.035	0.9
			4	GRM4-SCG-1							0.766	19.5	0.025	0.6
			4xH	62148-36							1.306	33.2	0.025	0.6
SCR	A	Red	2	GRM2-SCR-1							0.497	12.6	0.035	0.9
			2xH, 2xT	62148-47							0.944	24.0	0.035	0.9
-Tx005	B	Black	1 & 2	65100-13							0.535	13.6	0.084	2.1
			4	65100-19							0.794	20.2	0.025	0.6
-Tx006	B	Silver	1 & 2	65100-14	0.510	13.0	0.084	2.1						
			4	65100-20	0.769	19.5	0.025	0.6						
-Tx007	B	Gold	1 & 2	65100-15	0.497	12.6	0.084	2.1						
			4	65100-21	0.756	19.2	0.025	0.6						
-Tx008	C	Black	1 & 2	65100-16	0.545	13.8	0.084	2.1						
			4	65100-22	0.804	20.4	0.025	0.6						
-Tx009	C	Silver	1 & 2	65100-17	0.520	13.2	0.084	2.1						
			4	65100-23	0.779	19.8	0.025	0.6						
-Tx010	C	Gold	1 & 2	65100-18	0.507	12.9	0.084	2.1						
			4	65100-24	0.766	19.5	0.025	0.6						
-Tx019	A	Black	1 & 2	65131-09	0.565	14.4	0.084	2.1						
			4	65131-12	0.824	20.9	0.025	0.6						
-Tx020	A	Silver	1 & 2	65131-10	0.540	13.7	0.084	2.1						
			4	65131-13	0.799	20.3	0.025	0.6						
-Tx021	A	Gold	1 & 2	65131-11	0.527	13.4	0.084	2.1						
			4	65131-14	0.786	20.0	0.025	0.6						

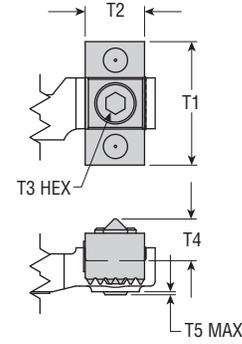
All dimensions are reference only unless specifically tolerated.

DOUBLE POINT TIPS (STEEL)



- | | | |
|--|--|---|
| Double Cone Point
DCB
DCS
DCG
DCR | Double Cone Point - Sharp
-Tx063
-Tx064
-Tx065 | Double Cone Point - High Temp.
-Tx188
-Tx189
-Tx190
-Tx191 |
|--|--|---|

DIMENSIONS



See pages 70, 72, and 76 for material thickness range chart.

MODEL NO. OR ACCESSORY CODE	TIP COLOR	GRM SIZE	KIT NUMBER	LETTER DIMENSION									
				T1		T2		T3		T4		T5	
				in	mm	in	mm	in	mm	in	mm	in	mm
DCB	Black	1 & 2	GRM2-DCB-1	1.530	38.9	0.750	19.1	0.197	5.0	0.555	14.1	0.050	1.3
		4	GRM4-DCB-1	1.850	47.0					0.804	20.4	—	—
DCS	Silver	1 & 2	GRM2-DCS-1	1.530	38.9					0.530	13.5	0.100	2.5
		4	GRM4-DCS-1	1.850	47.0					0.779	19.8	0.025	0.6
DCG	Gold	1 & 2	GRM2-DCG-1	1.530	38.9					0.517	13.1	0.126	3.2
		4	GRM4-DCG-1	1.850	47.0					0.766	19.5	0.051	1.3
DCR	Red	2	GRM2-DCR-1	1.530	38.9					0.507	12.9	0.098	2.5
-Tx063	Black	1 & 2	71231-03	1.530	38.9					0.555	14.1	0.050	1.3
-Tx064	Silver	1 & 2	71231-04	1.530	38.9					0.530	13.5	0.100	2.5
-Tx065	Gold	1 & 2	71231-05	1.530	38.9					0.517	13.1	0.126	3.2
-Tx188	Black	1 & 2	62148-52	1.530	38.9					0.555	14.1	0.050	1.3
		4	62148-60	1.850	47.0					0.804	20.4	—	—
-Tx189	Silver	1 & 2	62148-53	1.530	38.9					0.530	13.5	0.100	2.5
		4	62148-61	1.850	47.0					0.779	19.8	0.025	0.6
-Tx190	Gold	1 & 2	62148-54	1.530	38.9					0.517	13.1	0.126	3.2
		4	62148-62	1.850	47.0					0.766	19.5	0.051	1.3
-Tx191	Red	2	62148-55	1.530	38.9					0.507	12.9	0.098	2.5

URETHANE PADS



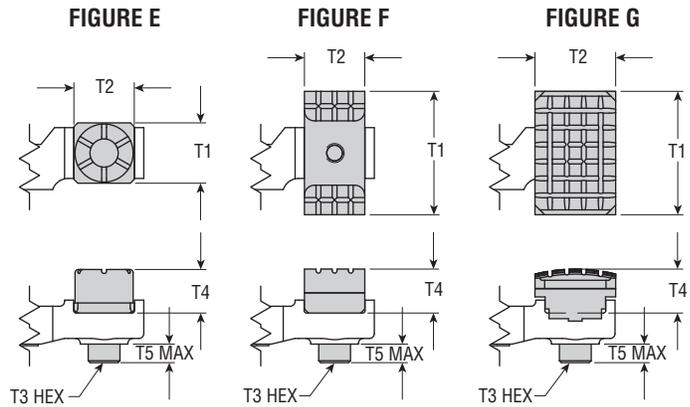
- | | | |
|--|--|---|
| Single Urethane Pad (Fig. E)
SUB
-Tx040
-Tx066 | Double Urethane Pad (Fig. F)
DUB
-Tx041
-Tx067 | Double Rounded Urethane Pad (Fig. G)
-Tx068
-Tx069 |
|--|--|---|

See pages 70, 72, and 76 for material thickness range chart.



Urethane tips (with the exception of Tx068 and Tx069) are not recommended for use with sensing options Pxxxx, Dxxxx, Kxxxx, PAxxx, or PBxxx.

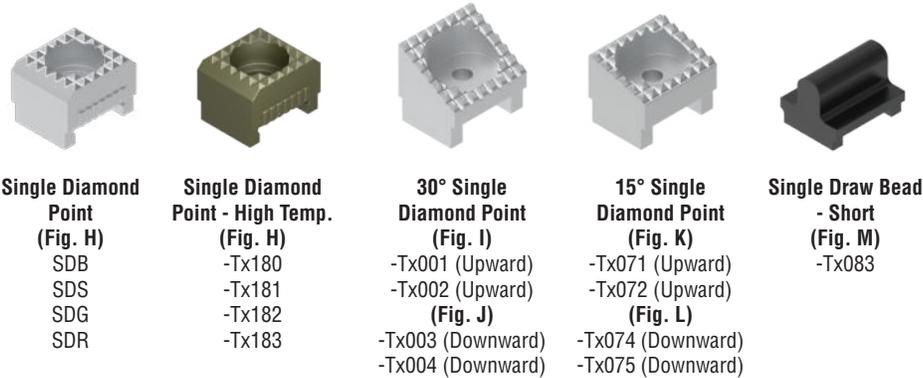
DIMENSIONS



MODEL NO. OR ACCESSORY CODE	FIGURE ABOVE	TIP COLOR	DUROMETER	GRM SIZE	KIT NUMBER	LETTER DIMENSION									
						T1		T2		T3		T4		T5	
						in	mm	in	mm	in	mm	in	mm	in	mm
SUB	E	Black	80 Shore A	1 & 2	GRM2-SUB-1	0.748	19.0	0.748	19.0	0.197	5.0	0.540	13.7	0.236	6.0
				4	GRM4-SUB-1	0.748	19.0					0.800	20.3		
-Tx040	E	Red	93 Shore A	1 & 2	65163-03	0.748	19.0					0.540	13.7		
				4	65163-05	0.748	19.0					0.800	20.3		
-Tx066	E	Blue	85 Shore A	1 & 2	65163-07	0.748	19.0					0.540	13.7		
				4	GRM2-DUB-1	1.530	38.9					0.545	13.8		
DUB	F	Black	80 Shore A	1 & 2	GRM2-DUB-1	1.530	38.9					0.794	20.2		
				4	GRM4-DUB-1	1.850	47.0					0.545	13.8		
-Tx041	F	Red	93 Shore A	1 & 2	65163-04	1.530	38.9					0.794	20.2		
				4	65163-06	1.850	47.0					0.545	13.8		
-Tx067	F	Blue	85 Shore A	1 & 2	65163-08	1.530	38.9	0.545	13.8						
-Tx068	G	Blue	85 Shore A	2	65174-05	1.530	38.9	1.000	25.4	0.545	13.8				
-Tx069	G	Yellow	85 Shore A	2	65174-08	1.530	38.9	1.000	25.4	0.565	14.4				

All dimensions are reference only unless specifically tolerated.

SINGLE PAD TIPS (STEEL)

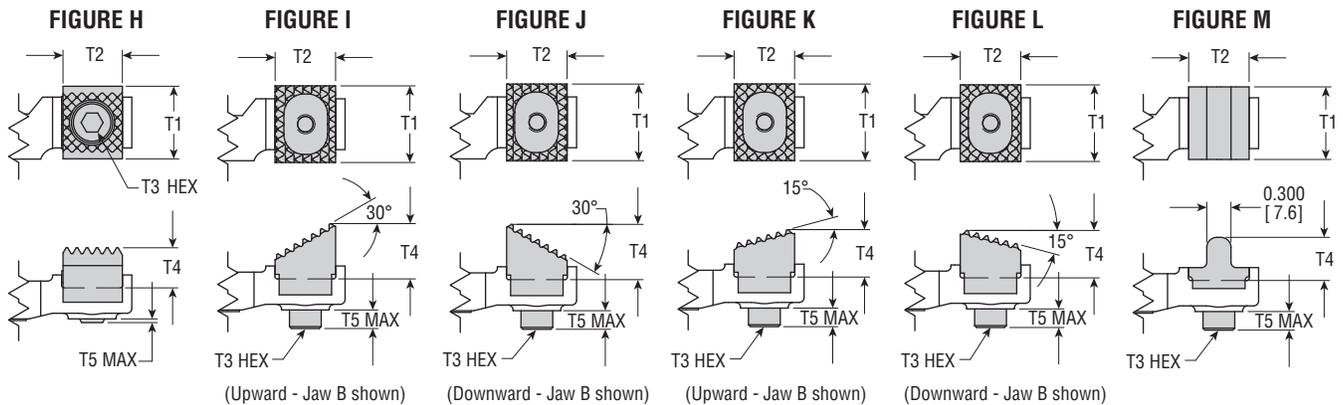


Single Diamond Point (Fig. H)	Single Diamond Point - High Temp. (Fig. H)	30° Single Diamond Point (Fig. I)	15° Single Diamond Point (Fig. K)	Single Draw Bead - Short (Fig. M)
SDB	-Tx180	-Tx001 (Upward)	-Tx071 (Upward)	-Tx083
SDS	-Tx181	-Tx002 (Upward)	-Tx072 (Upward)	
SDG	-Tx182	(Fig. J)	(Fig. L)	
SDR	-Tx183	-Tx003 (Downward)	-Tx074 (Downward)	
		-Tx004 (Downward)	-Tx075 (Downward)	

NOTES:

- 1) All high temp tips have ceramic coating that is dull gold in color.
- 2) See pages 71, 73, and 76 for material thickness range chart.

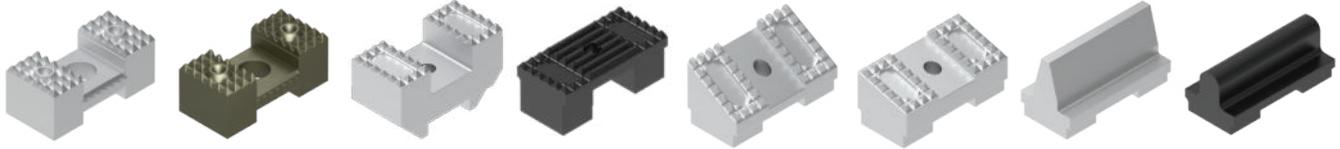
DIMENSIONS



MODEL NO. OR ACCESSORY CODE	FIGURE ABOVE	TIP COLOR	GRM SIZE	KIT NUMBER	LETTER DIMENSION									
					T1		T2		T3		T4		T5	
					in	mm	in	mm	in	mm	in	mm	in	mm
SDB	H	Black	1 & 2	GRM2-SDB-1	0.900	22.9					0.535	13.6	0.096	2.4
			4	GRM4-SDB-1	0.984	25.0					0.794	20.2	—	—
SDS	H	Silver	1 & 2	GRM2-SDS-1	0.900	22.9					0.510	13.0	0.121	3.1
			4	GRM4-SDS-1	0.984	25.0					0.769	19.5	—	—
SDG	H	Gold	1 & 2	GRM2-SDG-1	0.900	22.9					0.497	12.6	0.134	3.4
			4	GRM4-SDG-1	0.984	25.0					0.756	19.2	—	—
SDR	H	Red	2	GRM2-SDR-1	0.900	22.9					0.487	12.4	0.096	2.4
-Tx001	I	Black	1 & 2	65106-01	0.950	24.1					0.750	19.1	0.197	5.0
-Tx002	I	Silver	1 & 2	65106-02			0.686	17.4						
-Tx003	J	Black	1 & 2	65106-01							0.715	18.2		
-Tx004	J	Silver	1 & 2	65106-02							0.686	17.4		
-Tx071	K	Black	1 & 2	71229-03							0.614	15.6		
-Tx072	K	Silver	1 & 2	71229-04							0.588	14.9		
-Tx074	L	Black	1 & 2	71229-03							0.614	15.6		
-Tx075	L	Silver	1 & 2	71229-04							0.588	14.9		
-Tx083	M	Black	1 & 2	75646-03	0.900	22.9					0.535	13.6		
-Tx180	H	Black	1 & 2	62148-46	0.900	22.9					0.535	13.6		
			4	62148-57	0.984	25.0	0.794	20.2	—	—				
-Tx181	H	Silver	1 & 2	62148-44	0.900	22.9	0.510	13.0	0.121	3.1				
			4	62148-58	0.984	25.0	0.769	19.5	—	—				
-Tx182	H	Gold	1 & 2	62148-45	0.900	22.9	0.497	12.6	0.134	3.4				
			4	62148-59	0.984	25.0	0.756	19.2	—	—				
-Tx183	H	Red	2	62148-56	0.900	22.9	0.487	12.4	0.096	2.4				

All dimensions are reference only unless specifically tolerated.

DOUBLE PAD TIPS (STEEL)



Double Diamond Point (Fig. N)	Double Diamond Point - High Temp. (Fig. N)	Offset Double Diamond Point - Long (Fig. P)	Offset Double Diamond Point - Short (Fig. Q)	30° Double Diamond Point (Fig. R)	15° Double Diamond Point (Fig. T)	Double Draw Bead - Tall (Fig. V)	Double Draw Bead - Short (Fig. W)
DDB	-Tx184	-Tx031	-Tx030	-Tx034 (Upward)	-Tx077 (Upward)	-Tx060	-Tx084
DDS	-Tx185	-Tx032		-Tx035 (Upward)	-Tx078 (Upward)	-Tx061	
DDG	-Tx186	-Tx033		-Tx036 (Upward)	-Tx079 (Upward)		
DDR	-Tx187			(Fig. S)	(Fig. U)		
				-Tx037 (Downward)	-Tx080 (Downward)		
				-Tx038 (Downward)	-Tx081 (Downward)		
				-Tx039 (Downward)	-Tx082 (Downward)		

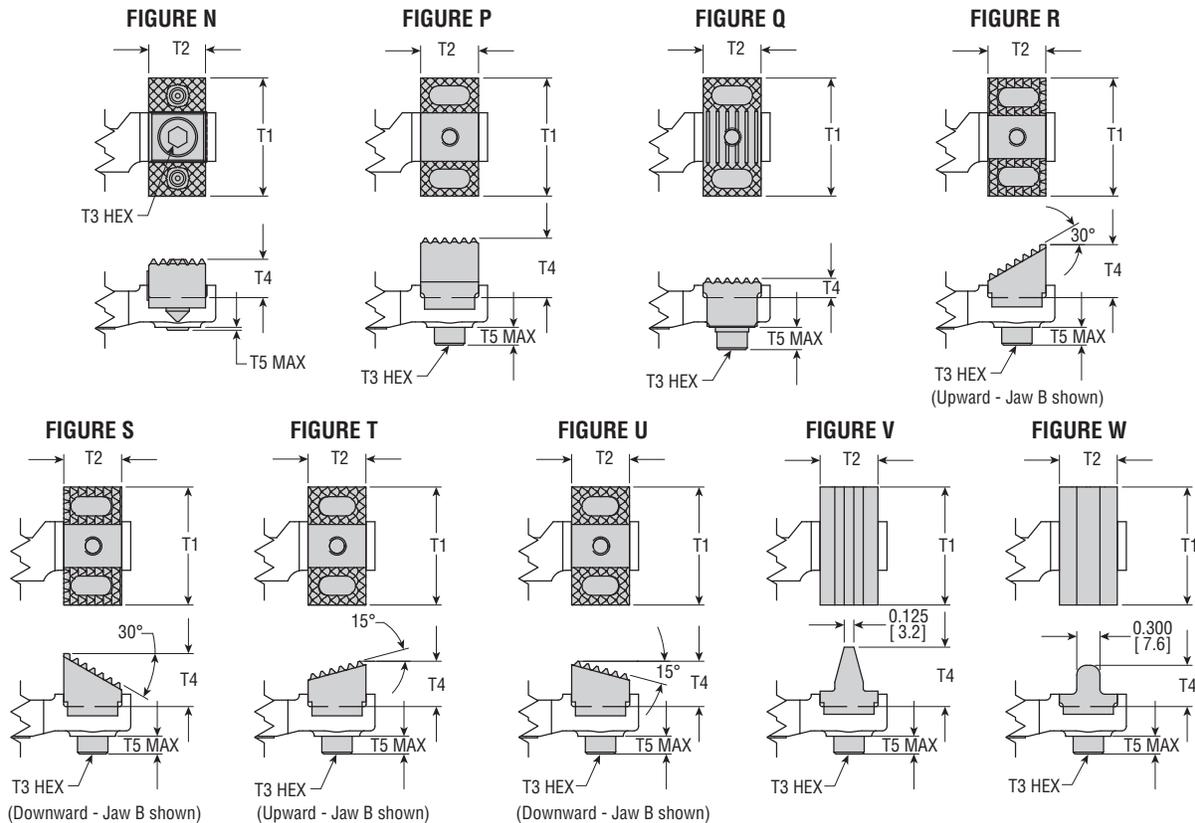
NOTES:

- 1) All high temp tips have ceramic coating that is dull gold in color.
- 2) See pages 71, 73, and 77 for material thickness range chart.

See the following page for tip dimensions.

DOUBLE PAD TIPS (STEEL)

DIMENSIONS



MODEL NO. OR ACCESSORY CODE	FIGURE ABOVE	TIP COLOR	GRM SIZE	KIT NUMBER	LETTER DIMENSION									
					T1		T2		T3		T4		T5	
					in	mm	in	mm	in	mm	in	mm	in	mm
DDB	N	Black	1 & 2	GRM2-DDB-1	1.530	38.9	0.750	19.1	0.197	5.0	0.535	13.6	0.050	1.3
			4	GRM4-DDB-1	1.850	47.0					0.794	20.2	—	—
DDS	N	Silver	1 & 2	GRM2-DDS-1	1.530	38.9					0.510	13.0	0.100	2.5
			4	GRM4-DDS-1	1.850	47.0					0.769	19.5	0.025	0.6
DDG	N	Gold	1 & 2	GRM2-DDG-1	1.530	38.9					0.497	12.6	0.126	3.2
			4	GRM4-DDG-1	1.850	47.0					0.756	19.2	0.051	1.3
DDR	N	Red	2	GRM2-DDR-1	1.530	38.9					0.487	12.4	0.098	2.5
-Tx030	Q	Black	1 & 2	65405-06	1.530	38.9					0.250	6.4	0.295	7.5
-Tx031	P	Black	1 & 2	65405-03*							0.820	20.8	0.236	6.0
-Tx032	P	Silver	1 & 2	65405-04*							0.770	19.6		
-Tx033	P	Gold	1 & 2	65405-05*							0.744	18.9		
-Tx034	R	Black	1 & 2	65149-03							0.715	18.2		
-Tx035	R	Silver	1 & 2	65149-04							0.686	17.4		
-Tx036	R	Gold	1 & 2	65149-05							0.658	16.7		
-Tx037	S	Black	1 & 2	65149-03							0.715	18.2		
-Tx038	S	Silver	1 & 2	65149-04							0.686	17.4		
-Tx039	S	Gold	1 & 2	65149-05							0.658	16.7		
-Tx077	T	Black	1 & 2	71229-06							0.614	15.6		
-Tx078	T	Silver	1 & 2	71229-07							0.588	14.9		
-Tx079	T	Gold	1 & 2	71229-08							0.563	14.3		
-Tx080	U	Black	1 & 2	71229-06			0.614	15.6						
-Tx081	U	Silver	1 & 2	71229-07			0.588	14.9						
-Tx082	U	Gold	1 & 2	71229-08			0.563	14.3						
-Tx060	V	Black	1 & 2	65171-03			0.820	20.8						
-Tx061	V	Silver	1 & 2	65171-04			0.770	19.6						
-Tx084	W	Black	1 & 2	75646-04			0.535	13.6						
-Tx184	N	Black	1 & 2	62148-52			1.530	38.9	0.535	13.6	0.050	1.3		
			4	62148-60	0.794	20.2			—	—				
-Tx185	N	Silver	1 & 2	62148-53	0.510	13.0			0.100	2.5				
			4	62148-61	1.850	47.0			0.769	19.5	0.025	0.6		
-Tx186	N	Gold	1 & 2	62148-54	1.530	38.9			0.497	12.6	0.126	3.2		
			4	62148-62	1.850	47.0			0.756	19.2	0.051	1.3		
-Tx187	N	Red	2	62148-55	1.530	38.9			0.487	12.4	0.098	2.5		

NOTE: *65405-xx INDICATES Tx030 TIP OPTION IS ALSO INCLUDED IN KIT.

All dimensions are reference only unless specifically tolerated.

DOUBLE PAD TIPS (SWITCH MOUNTING)



Double Cone Point - Use with Switch Mounting (Fig. X)
 -Tx022
 -Tx023
 -Tx024



Double Diamond Point - Switch Mounting (Fig. Y)
 -Tx025
 -Tx026
 -Tx027



Double No Scratch - Rounded - Use with Switch Mounting (Fig. Z)
 -Tx042
 -Tx043
 -Tx044



Double No Scratch - Flat Switch Mounting (Fig. AA)
 -Tx045
 -Tx046
 -Tx047



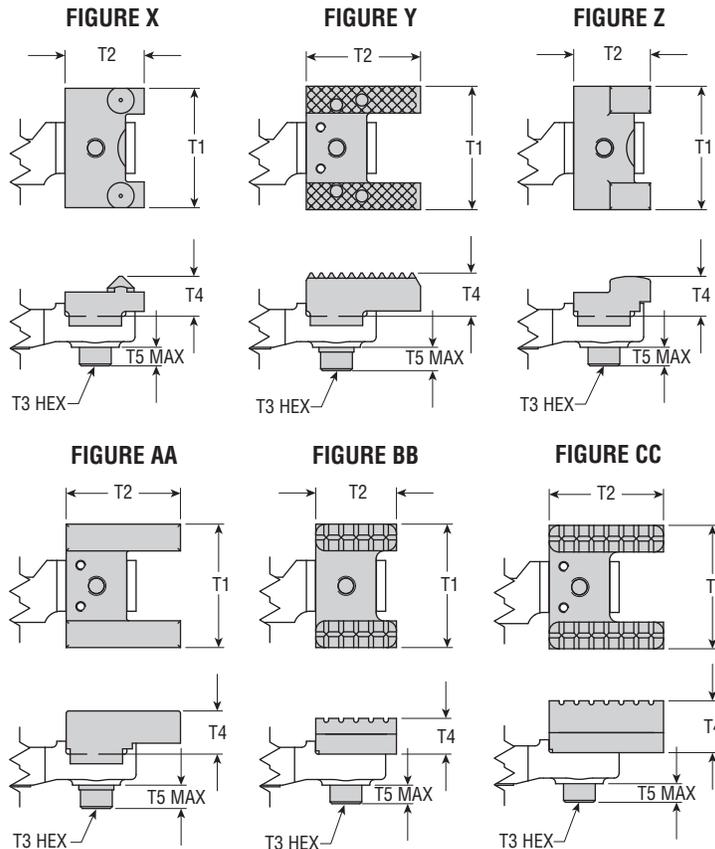
Double Urethane - Short - Use with Switch Mounting (Fig. BB)
 -Tx052



Double Urethane - Long - Switch Mounting (Fig. CC)
 -Tx055

See pages 74 and 77 for material thickness range chart.

DIMENSIONS



MODEL NO. OR ACCESSORY CODE	FIGURE ABOVE	TIP COLOR	GRM SIZE	KIT NUMBER	LETTER DIMENSION									
					T1		T2		T3		T4		T5	
					in	mm	in	mm	in	mm	in	mm	in	mm
-Tx022	X	Black	2	65136-04	1.480	37.6	0.980	24.9	0.197	5.0	0.520	13.2	0.236	6.0
-Tx023	X	Silver	2	65136-05							0.495	12.6		
-Tx024	X	Gold	2	65136-06							0.482	12.2		
-Tx025	Y	Black	2	65136-07							0.560	14.2		
-Tx026	Y	Silver	2	65136-08	0.535	13.6	0.295	7.5						
-Tx027	Y	Gold	2	65136-09	0.522	13.3								
-Tx042	Z	Black	2	65151-04	1.530	38.9	0.950	24.1			0.520	13.2	0.236	6.0
-Tx043	Z	Silver	2	65151-05							0.495	12.6		
-Tx044	Z	Gold	2	65151-06							0.470	11.9		
-Tx045	AA	Black	2	65151-07							0.560	14.2		
-Tx046	AA	Silver	2	65151-08	0.535	13.6	0.295	7.5						
-Tx047	AA	Gold	2	65151-09	0.510	13.0								
-Tx052	BB	Red	2	65150-04	1.000	25.4	0.443	11.3	0.236	6.0				
-Tx055	CC	Red	2	65150-05	1.416	36.0	0.643	16.3						

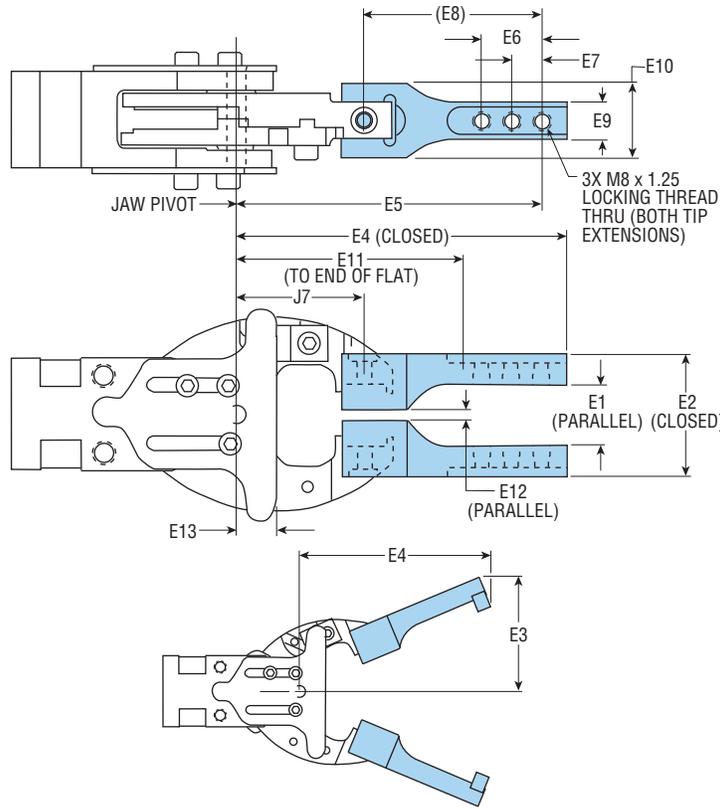
All dimensions are reference only unless specifically tolerated.

TIP EXTENSIONS



Duckbill Tip Extension
-Tx017

- Provides an extended tip mounting surface.
- Mounts to standard jaws, providing multiple tip locations.



LETTER DIMENSIONS	GRM2	
	in	mm
J7	2.146	54.5
E1	1.044	26.5
E2 (CLOSED)	2.074	52.7
E3 (OPEN 22°)	3.088	78.4
E3 (OPEN 45°)	4.669	118.6
E3 (OPEN 75°)	5.585	141.9
E4 (CLOSED)	5.566	141.4
E4 (OPEN 22°)	5.079	129.0
E4 (OPEN 45°)	3.878	98.5
E4 (OPEN 75°)	1.882	47.8
E5	5.146	130.7
E6	1.000	25.4
E7	0.500	12.7
E8	3.000	76.2
E9*	0.628	16.0
E10	1.250	31.8
E11	3.716	94.4
E12	0.174	4.4
E13	0.65	16.5

*TOLERANCE FOR E9 = ±0.003 [±0.076]

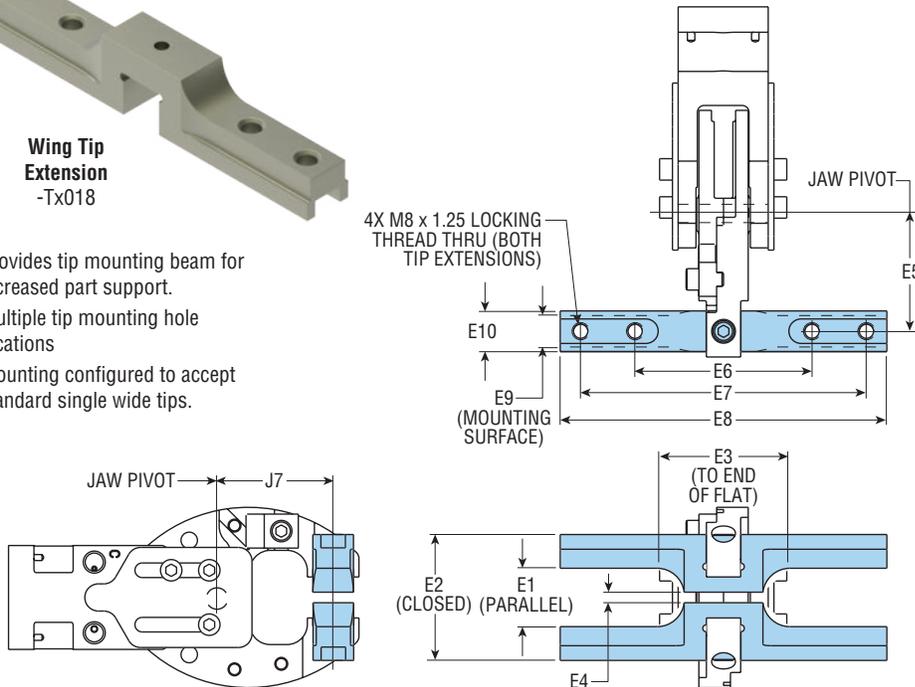
CLAMP SIZE	KIT NUMBER
2	65133-03

Kit includes: 1 Duckbill,
1 Mounting Screw



Wing Tip Extension
-Tx018

- Provides tip mounting beam for increased part support.
- Multiple tip mounting hole locations
- Mounting configured to accept standard single wide tips.



LETTER DIMENSIONS	GRM2		GRM4	
	in	mm	in	mm
J7	2.146	54.5	2.815	71.5
E1	1.074	27.3	1.584	40.2
E2 (CLOSED)	2.314	58.8	2.684	68.2
E3	2.440	62.0	2.680	68.1
E4	0.194	4.9	0.184	4.7
E5	2.146	54.5	2.815	71.5
E6	3.250	82.6	3.500	88.9
E7	5.250	133.4	5.500	139.7
E8	6.000	152.4	6.500	165.1
E9*	0.628	16.0	0.783	19.9
E10	0.746	18.9	1.125	28.6

* TOLERANCE FOR E9 = ±0.003 [±0.076]

If ordering as a kit, modification to impact plates may be required.

CLAMP SIZE	KIT NUMBER
2	65134-03
4	65134-04

Kit includes: 1 Wing Tip, 1 Mounting Screw, 1 Impact Plate Modification Print

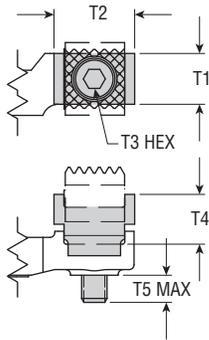
IMPACT PLATE REPLACEMENT KITS (requires no modification):

CLAMP SIZE	KIT NUMBER
2	63967-04
4	64638-04

Kit includes: 2 Impact Plates,
6 Screws

All dimensions are reference only unless specifically tolerated.

TIP EXTENSIONS – Jaw Styles H, J, T, & U only



MODEL NO. OR ACCESSORY CODE	TIP COLOR	GRM SIZE	KIT NUMBER	LETTER DIMENSION									
				T1		T2		T3		T4		T5	
				in	mm	in	mm	in	mm	in	mm	in	mm
H, J, T, & U TIP EXTENSION	Black	2	62148-40	0.750	19.1	1.000	25.4	0.197	5.0	0.617	15.7	0.394	10.0
	Red	4	62148-35	1.000	25.4	1.000	25.4	0.197	5.0	0.700	17.8	0.107	2.7

MACHINABLE TIPS – GRM1 & GRM2 only

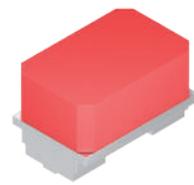
This customer-mounted tip provides a steel or urethane blank that can be machined to match panel contours. It has extra stock on all sides, so it can be fitted to many applications.

The steel blank is made of unplated 4140 steel hardened to 27 - 32 Rc, and coated with a rust preventative oil dip. It can be machined and used as is or sent out for additional hardening and plating.

The 90 Durometer red urethane blank is bonded to a steel interface that includes the mounting thread. Care should be taken when using these tips to ensure the jaws close to the correct dimension, so that full grip force and the locking feature are achieved. Do this by contouring both tips to match the panel's shape and thickness so that the dimension measured from the datum surface on back of one tip (including the panel) to the datum surface on the other tip is within the range specified. This tip can be mounted on moving and fixed standard and flange jaws.



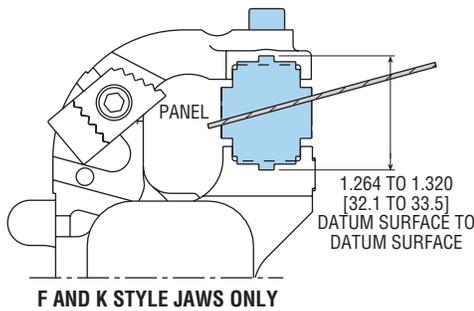
Machinable Steel Tip



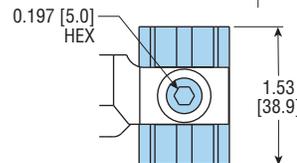
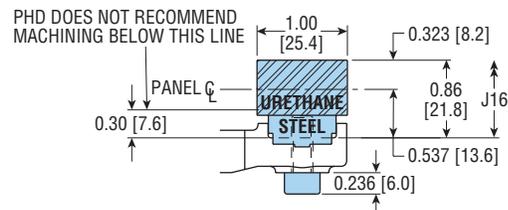
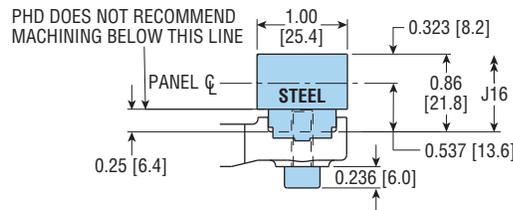
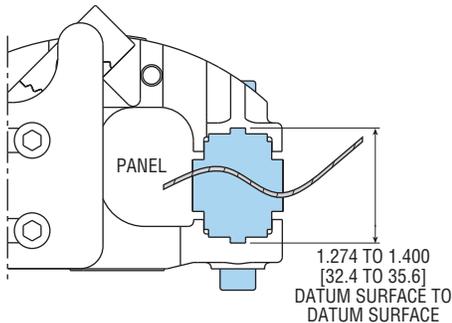
Machinable Urethane Tip

ACCESSORY TIP DESCRIPTION	KIT NUMBER	TIP KIT WEIGHT	
		lb	kg
Machinable Steel Tip	65174-03	0.37	0.17
Machinable Urethane Tip	65174-04	0.16	0.07

Kit includes: 1 Machinable Tip, 1 Mounting Screw



F AND K STYLE JAWS ONLY



NOTE: ALL NUMBERS IN [] ARE METRIC AND ARE IN mm

All dimensions are reference only unless specifically tolerated.

SINGLE POINT TIPS, DOUBLE POINT TIPS, & URETHANE PADS

TIP MODEL NUMBER OR ACCESSORY CODE FOR JAW A AND JAW B

Jaw A tips and Jaw B tips can be reversed.

xxx	xxx	Standard Tip
-Txxxx	-Txxxx	Accessory Tip
-Txxxx	xxx	Accessory/Standard Tip Combination

KEY	TIP COLOR
[B]	Black
[S]	Silver
[G]	Gold
[R]	Red or Red Urethane
[BU]	Blue Urethane
[X]	Dull Gold, High Temp.

KEY	JAW STYLES
S	Standard
F	Flange
T	Single Low Profile Shovel
U	Double Low Profile Shovel

NOTES:

- 1) TIP OPTIONS NOT RECOMMENDED FOR MATERIAL THICKNESS BELOW 0.25 mm.
- 2) SCx-SCx AND DCx-DCx TIP COMBINATIONS ARE NOT ALLOWED DUE TO POINT OVERLAP.
- 3) T OR U JAW STYLES DO NOT REQUIRE TIP OPTIONS ON JAW B (LEAVE BLANK)

MATERIAL THICKNESS RANGE FOR JAW STYLES "S, F, T, & U"

		MATERIAL THICKNESS RANGE													
Jaw A	Jaw B	0.00-0.30	0.31-0.50	0.51-0.70	0.71-0.80	0.81-1.00	1.01-1.50	1.51-2.00	2.01-2.30	2.31-2.50	2.51-2.80	2.81-3.00	3.01-3.50	3.51-3.75	
SINGLE POINT TIPS	SCB SDB	[B] S F T (Note 1)													
	SCS SDS							[S] S F T							
	SCG SDG							[G] S F T		[G] S F					
	SCR SDR													[R] T	
	-TA005 -TB008	[B] S													
	-TA006 -TB009							[S] S							
	-TA007 -TB010													[G] S	
	-TA019 SDB	[B] S F T													
	-TA020 SDS							[S] S F T							
	-TA021 SDG									[G] S F T		[G] S F			
DOUBLE POINT TIPS	DCB DDB	[B] S F U													
	DCS DDS							[S] S F U							
	DCG DDG									[G] S F U		[G] S F			
	DCR DCR													[R] U	
	-TA063 DDB	[B] S F U													
	-TA063 DDG							[B] S F							
	-TA064 —							[S] U							
	-TA065 DDG									[G] S F U		[G] S F			
	-TA188 -TB184	[X] S F U													
	-TA189 -TB185							[X] S F U							
URETHANE PADS	SUB SUB	[B] S F T													
	-TA040 -TB040	[R] S F T													
	-TA066 -TB066							[BU] S F T							
	DUB DUB	[B] S F U													
	-TA041 -TB041	[R] S F U													
	-TA067 -TB067	[BU] S F U													

SINGLE PAD TIPS & DOUBLE PAD TIPS

TIP MODEL NUMBER OR ACCESSORY CODE FOR JAW A AND JAW B

Jaw A tips and Jaw B tips can be reversed.

xxx	xxx	Standard Tip
-Txxx	-Txxx	Accessory Tip
-Txxx	xxx	Accessory/Standard Tip Combination

NOTE:
1) T OR U JAW STYLES DO NOT REQUIRE TIP OPTIONS ON JAW B (LEAVE BLANK)

KEY	TIP COLOR
[B]	Black
[S]	Silver
[G]	Gold
[X]	Dull Gold, High Temp.

KEY	JAW STYLES
S	Standard
F	Flange
T	Single Low Profile Shovel
U	Double Low Profile Shovel

MATERIAL THICKNESS RANGE FOR JAW STYLES "S, F, T, & U"

		MATERIAL THICKNESS RANGE												
Jaw A	Jaw B	0.00-0.30	0.31-0.50	0.51-0.70	0.71-0.80	0.81-1.00	1.01-1.50	1.51-2.00	2.01-2.30	2.31-2.50	2.51-2.80	2.81-3.00	3.01-3.50	3.51-3.75
SINGLE PAD TIPS	SDB SDB	[B] S F T												
	SDS SDS						[S] S F T							
	SDG SDG								[G] S F T		[G] S F			
	SDR SDR										[R] T			
	-TA001 -TB001			[B] S F										
	-TA002 -TB002						[S] S F							
	-TA003 -TB003			[B] S										
	-TA004 -TB004						[S] S							
	-TA071 -TB071			[B] S F										
	-TA071 -TB072						[B] S F							
	-TA072 -TB072								[S] S F					
	-TA074 -TB074			[B] S										
	-TA074 -TB075						[B] S							
	-TA075 -TB075								[S] S					
	-TA083 SDB			[B] S T										
	-TA083 SDG								[B] S					
	-TA180 -TB180			[X] S F T										
	-TA181 -TB181						[X] S F T							
-TA182 -TB182								[X] S F T		[X] S F				
-TA183 -TB183										[X] T				
DOUBLE PAD TIPS	DDB DDB		[B] S F U											
	DDS DDS						[S] S F U							
	DDG DDG								[G] S F U		[G] S F			
	DDR DDR										[R] U			
	-TA034 -TB034			[B] S F										
	-TA034 -TB035					[B] S F								
	-TA035 -TB035							[S] S F						
	-TA035 -TB036									[S] S F				
	-TA036 -TB036												[G] S F	
	-TA037 -TB037			[B] S										
	-TA037 -TB038					[B] S								
	-TA037 -TB039							[B] S						
	-TA038 -TB039									[S] S				
	-TA039 -TB039												[G] S	
	-TA077 -TB077			[B] S F										
	-TA077 -TB078						[B] S F							
	-TA078 -TB078								[S] S F					
	-TA078 -TB079									[S] S F				
	-TA079 -TB079												[G] S F	
	-TA080 -TB080			[B] S										
	-TA080 -TB081						[B] S							
	-TA081 -TB081								[S] S					
	-TA081 -TB082									[S] S				
	-TA082 -TB082												[G] S	
-TA060 -TB030			[B] S											
-TA084 DDB			[B] S U											
-TA084 DDG								[B] S						
-TA184 -TB184			[X] S F U											
-TA185 -TB185						[X] S F U								
-TA186 -TB186								[X] S F U		[X] S F				
-TA187 -TB187										[X] U				

SINGLE POINT TIPS, DOUBLE POINT TIPS, & URETHANE PADS

TIP MODEL NUMBER OR ACCESSORY CODE FOR JAW A AND JAW B

Jaw A tips and Jaw B tips can be reversed.

xxx	xxx	Standard Tip
-Txxxx	-Txxxx	Accessory Tip
-Txxxx	xxx	Accessory/Standard Tip Combination

KEY	TIP COLOR
[B]	Black
[S]	Silver
[G]	Gold
[R]	Red or Red Urethane
[BU]	Blue Urethane
[YU]	Yellow Urethane
[X]	Dull Gold, High Temp.

KEY	JAW STYLES
S	Standard
C	Single Chisel
D	Double Chisel
H	Single Shovel
J	Double Shovel
K	Hook
L	Single Flat Shovel
M	Double Flat Shovel
R	Short
T	Single Low Profile Shovel
U	Double Low Profile Shovel

NOTES:

- 1) **xxx**, **-Txxxx** (RED TEXT) INDICATES TIP OPTIONS AVAILABLE ON SIZE 2 UNITS ONLY.
xxx, **-Txxxx** (BLACK TEXT) INDICATES TIP OPTIONS AVAILABLE ON SIZE 2 & 4 UNITS.
- 2) INDICATES MATERIAL THICKNESS RANGE WHEN USED WITH Dxxxx, Pxxxx, OR Kxxxx OPTIONS ONLY.
- 3) C, D, H, J, L, M, T, OR U JAW STYLES DO NOT REQUIRE TIP OPTIONS ON JAW B (LEAVE BLANK).
- 4) C, D, K, L, M, OR R JAW STYLES AVAILABLE ON SIZE 2 UNITS ONLY.
- 5) SCx-SCx AND DCx-DCx TIP COMBINATIONS ARE NOT ALLOWED DUE TO POINT OVERLAP.

MATERIAL THICKNESS RANGE FOR JAW STYLES "S, C, D, H, J, K, L, M, R, T, & U"

(Note 1)		MATERIAL THICKNESS RANGE (mm)													
JAW A	JAW B	0.00-0.70	0.71-1.00	1.01-1.50	1.51-2.00	2.01-2.30	2.31-3.00	3.01-3.40	3.41-4.00	4.01-4.40	4.41-4.50	4.51-5.00			
SINGLE POINT TIPS	SCB SDB	[B] S C H K L R T													
	SCS SDS			[S] S C H K L R T											
	SCG SDG							[G] S C H K L T							
	SCR SDR							[R] R		[R] S C H K L T	[R] S C K				
	-TA005 -TB008	[B] S K R													
	-TA006 -TB009			[S] S K R											
	-TA007 -TB010							[G] S K							
	-TA019 SDB	[B] S C H K L R T													
	-TA020 SDS			[S] S C H K L R T											
	-TA021 SDG							[G] S K							
-TA021 SDR							[R] R		[R] S K						
DOUBLE POINT TIPS	DCB DDB	[B] S D J K M R U													
	DCS DDS			[S] S D J K M R U											
	DCG DDG							[G] S D J K M U							
	DCR DDR							[R] R		[R] S D J K M U	[R] S D K				
	-TA063 DDB	[B] S D J K M R U													
	-TA064 DDS			[S] S D J K M R U											
	-TA065 DDG							[G] S K							
	-TA065 DDR							[R] R		[R] S K					
	-TA188 -TB184	[X] S C H K L R T													
	-TA189 -TB185			[X] S C H K L R T											
URETHANE PADS	SUB SUB	[B] S C H K L R T								[X] S C H K L T	[X] S C K				
	-TA040 -TB040	[R] S C H K L R T		[R] S C H K L T											
	-TA066 -TB066	[BU] S C H K L R T		[BU] S C H K L T											
	DUB DUB	[B] S D J K M R U						[B] S D J K M U		[B] S D K					
	-TA041 -TB041	[R] S D J K M R U		[R] S D J K M U											
	-TA067 -TB067	[BU] S D J K M R U		[BU] S D J K M U											
	-TA068 -TB068	[BU] S D J K M R U		[BU] S D J K M U											
	-TA069 -TB069	[YU] S D J K M U													
	-TA069 -TB069	[YU] S D J K M U (Note 2)		[BU] S D J K M U (Note 2)											
	-TA068 -TB068	[BU] R (Note 2)													

SINGLE PAD TIPS & DOUBLE PAD TIPS

TIP MODEL NUMBER OR ACCESSORY CODE FOR JAW A AND JAW B

Jaw A tips and Jaw B tips can be reversed.

xxx	xxx	Standard Tip
-Txxxx	-Txxxx	Accessory Tip
-Txxxx	xxx	Accessory/Standard Tip Combination

KEY	TIP COLOR
[B]	Black
[S]	Silver
[G]	Gold
[R]	Red or Red Urethane
[X]	Dull Gold, High Temp.

KEY	JAW STYLES
S	Standard
C	Single Chisel
D	Double Chisel
H	Single Shovel
J	Double Shovel
K	Hook
L	Single Flat Shovel
M	Double Flat Shovel
R	Short
T	Single Low Profile Shovel
U	Double Low Profile Shovel

NOTES:

- 1) **xxx, -Txxxx** (RED TEXT) INDICATES TIP OPTIONS AVAILABLE ON SIZE 2 UNITS ONLY.
xxx, -Txxxx (BLACK TEXT) INDICATES TIP OPTIONS AVAILABLE ON SIZE 2 & 4 UNITS.
- 2) C, D, H, J, L, M, T, OR U JAW STYLES DO NOT REQUIRE TIP OPTIONS ON JAW B (LEAVE BLANK).
- 3) C, D, K, L, M, OR R JAW STYLES AVAILABLE ON SIZE 2 UNITS ONLY.

MATERIAL THICKNESS RANGE FOR JAW STYLES "S, C, D, H, J, K, L, M, R, T, & U"

(Note 1)		MATERIAL THICKNESS RANGE (mm)						
JAW A	JAW B	0.00-1.00	1.01-1.50	1.51-2.00	2.01-3.00	3.01-4.00	4.01-4.50	4.51-5.00
SINGLE PAD TIPS	SDB SDB	[B] S C H K L R T						
	SDS SDS			[S] S C H K L R T				
	SDG SDG					[G] S C H K L T		
	SDR SDR					[R] R	[R] S C H K L T	[R] S C K
	-TA001 -TB001	[B] S K R						
	-TA002 -TB002			[S] S K R				
	-TA003 -TB003	[B] S K R						
	-TA004 -TB004			[S] S K R				
	-TA071 -TB071	[B] S K R						
	-TA072 -TB072			[S] S K R				
	-TA074 -TB074	[B] S K R						
	-TA075 -TB075			[S] S K R				
	-TA083 SDB	[B] S C H K L R T						
	-TA180 -TB180	[X] S C H K L R T						
	-TA181 -TB181			[X] S C H K L R T				
	-TA182 -TB182					[X] S C H K L T		
	-TA183 -TB183						[X] S C H K L T	[X] S C K
	DOUBLE PAD TIPS	DDB DDB	[B] S D J K M R U					
DDS DDS				[S] S D J K M R U				
DDG DDG						[G] S D J K M U		
DDR DDR						[R] R	[R] S D J K M U	[R] S D K
-TA030 -TB031		[B] S K R						
-TA030 -TB032				[S] S K R				
-TA030 -TB033						[G] S K		
-TA034 -TB034		[B] S K R						
-TA035 -TB035				[S] S K R				
-TA036 -TB036						[G] S K		
-TA037 -TB037		[B] S K R						
-TA038 -TB038				[S] S K R				
-TA039 -TB039						[G] S K		
-TA077 -TB077		[B] S K R						
-TA078 -TB078				[S] S K R				
-TA079 -TB079						[G] S K		
-TA080 -TB080		[B] S K R						
-TA081 -TB081				[S] S K R				
-TA082 -TB082						[G] S K		
-TA060 -TB030		[B] S K R						
-TA061 -TB030			[S] S K R					
-TA084 DDB	[B] S D J K M R U							
-TA184 -TB184	[X] S D J K M R U							
-TA185 -TB185			[X] S D J K M R U					
-TA186 -TB186					[X] S D J K M U			
-TA187 -TB187						[X] S D J K M U	[X] S D K	

DOUBLE PAD TIPS (SWITCH MOUNTING)

TIP MODEL NUMBER OR ACCESSORY CODE FOR JAW A AND JAW B

Jaw A tips and Jaw B tips can be reversed.

xxx	xxx	Standard Tip
-Txxxx	-Txxxx	Accessory Tip
-Txxxx	xxx	Accessory/Standard Tip Combination

KEY	TIP COLOR
[B]	Black
[S]	Silver
[G]	Gold
[R]	Red or Red Urethane

KEY	JAW STYLES
S	Standard
D	Double Chisel
K	Hook
R	Short

NOTES:

- 1) xxx, -Txxxx (RED TEXT) INDICATES TIP OPTIONS AVAILABLE ON SIZE 2 UNITS ONLY.
- 2) C, D, H, J, L, M, T, & U JAW STYLES DO NOT REQUIRE TIP OPTIONS ON JAW B (LEAVE BLANK).

MATERIAL THICKNESS RANGE FOR JAW STYLES "S, D, K, & R"

(Note 1)		MATERIAL THICKNESS RANGE (mm)							
JAW A	JAW B	0.00-1.00	1.01-1.50	1.51-2.00	2.01-2.30	2.31-3.00	3.01-4.00	4.01-4.50	4.51-5.00
DOUBLE PAD TIPS (SWITCH MOUNTING)	-TA022 -TB025	[B] S K R							
	-TA025 —	[B] D							
	-TA023 -TB026			[S] S K R					
	-TA026 —			[S] D					
	-TA024 -TB027						[G] S K		
	-TA027 —						[G] D		
	-TA042 -TB045	[B] S K R							
	-TA045 —	[B] D							
	-TA043 -TB046			[S] S K R					
	-TA046 —			[S] D					
	-TA044 -TB047							[G] S K	
	-TA047 —							[G] D	
	-TA052 -TB055		[R] S K R			[R] S K			
	-TA055 —		[R] D						

SINGLE POINT TIPS

TIP MODEL NUMBER OR ACCESSORY CODE FOR JAW A AND JAW B

Jaw A tips and Jaw B tips can be reversed.

xxx	xxx	Standard Tip
-Txxxx	-Txxxx	Accessory Tip
-Txxxx	xxx	Accessory/Standard Tip Combination

KEY	TIP COLOR
[B]	Black
[S]	Silver
[G]	Gold
[R]	Red or Red Urethane

NOTES:

- 1) **xxx, -Txxxx** (RED TEXT) INDICATES TIP OPTIONS AVAILABLE ON SIZE 2 UNITS ONLY.
xxx, -Txxxx (BLACK TEXT) INDICATES TIP OPTIONS AVAILABLE ON SIZE 2 & 4 UNITS.
- 2) SCx-SCx AND DCx-DCx TIP COMBINATIONS ARE NOT ALLOWED DUE TO POINT OVERLAP.

MATERIAL THICKNESS RANGE FOR JAW STYLE "F"

(Note 1)		MATERIAL THICKNESS RANGE (mm)								
JAW A	JAW B	0.00-0.85	0.86-1.00	1.01-1.20	1.21-1.52	1.53-1.94	1.95-2.29	2.30-2.60	2.61-3.00	3.01-3.40
SINGLE POINT TIPS	SCB SDB	[B]								
	SCS SDB		[S / B] Comb.							
	SCG SDB				[G / B] Comb.					
	SCS SDS					[S]				
	SCG SDS						[G / S] Comb.			
	SCG SDG							[G]		
	SCR SDG								[R / G] Comb.	
	SCR SDR									[R]
	-TA005 -TB008	[B]								
	-TA005 -TB009		[B / S] Comb.							
	-TA005 -TB010				[B / G] Comb.					
	-TA006 -TB009					[S]				
	-TA006 -TB010							[S / G] Comb.		
	-TA007 -TB010								[G]	
	-TA019 SDB	[B]								
	-TA020 SDB		[S / B] Comb.							
	-TA021 SDB				[G / B] Comb.					
	-TA020 SDS					[S]				
	-TA021 SDS							[G / S] Comb.		
	-TA021 SDG								[G]	
-TA021 SDR									[G / R] Comb.	

DOUBLE POINT TIPS, URETHANE PADS, & SINGLE PAD TIPS

TIP MODEL NUMBER OR ACCESSORY CODE FOR JAW A AND JAW B

Jaw A tips and Jaw B tips can be reversed.

xxx	xxx	Standard Tip
-Txxxx	-Txxxx	Accessory Tip
-Txxxx	xxx	Accessory/Standard Tip Combination

NOTES:

- 1) **xxx**, **-Txxxx** (RED TEXT) INDICATES TIP OPTIONS AVAILABLE ON SIZE 2 UNITS ONLY.
xxx, **-Txxxx** (BLACK TEXT) INDICATES TIP OPTIONS AVAILABLE ON SIZE 2 & 4 UNITS.
- 2) INDICATES MATERIAL THICKNESS RANGE WHEN USED WITH Dxxxx, Pxxxx, OR Kxxxx OPTIONS ONLY.
- 3) SCx-SCx AND DCx-DCx TIP COMBINATIONS ARE NOT ALLOWED DUE TO POINT OVERLAP.

KEY	TIP COLOR
[B]	Black
[S]	Silver
[G]	Gold
[R]	Red or Red Urethane
[BU]	Blue Urethane
[YU]	Yellow Urethane
[X]	Dull Gold, High Temp.

MATERIAL THICKNESS RANGE FOR JAW STYLE "F"

(Note 1)		MATERIAL THICKNESS RANGE (mm)									
JAW A	JAW B	0.00-0.60	0.61-0.85	0.86-1.20	1.21-1.52	1.53-1.90	1.91-1.95 1.94-2.00	2.01-2.29	2.30-2.60	2.61-3.00	3.01-3.40
DOUBLE POINT TIPS	DCB DDB	[B]									
	DCS DDB			[S / B] Comb.							
	DCG DDB				[G / B] Comb.						
	DCS DDS					[S]					
	DCG DDS							[G / S] Comb.			
	DCG DDG								[G]		
	DCR DDG									[R / G] Comb.	
	DCR DDR										[R]
	-TA063 DDB	[B]									
	-TA064 DDB			[S / B] Comb.							
	-TA065 DDB				[G / B] Comb.						
	-TA064 DDS					[S]					
	-TA065 DDS								[G / S] Comb.		
	-TA065 DDG								[G]		
	-TA065 DDR									[G / R] Comb.	
	-TA188 -TB184	[X]									
	-TA189 -TB184			[X]							
	-TA190 -TB184				[X]						
-TA189 -TB185						[X]					
-TA190 -TB185								[X]			
-TA190 -TB186									[X]		
-TA191 -TB186										[X]	
-TA191 -TB187										[X]	
URETHANE PADS	SUB SUB									[B]	
	-TA040 -TB040			[R]							
	-TA066 -TB066			[BU]							
	DUB DUB									[B]	
	-TA041 -TB041			[R]							
	-TA067 -TB067			[BU]							
	-TA068 -TB068			[BU]							
	-TA069 -TB069			[YU]	Note 2						
	-TA068 -TB069				[BU / YU] Comb. Note 2						
	-TA068 -TB068					[BU] Note 2					
SINGLE PAD TIPS	SDB SDB	[B]									
	SDS SDB			[S / B] Comb.							
	SDG SDB				[G / B] Comb.						
	SDS SDS					[S]					
	SDG SDS							[G / S] Comb.			
	SDG SDG								[G]		
	SDR SDG									[R / G] Comb.	
	SDR SDR										[R]
	-TA001 -TB001	[B]									
	-TA002 -TB001			[S / B] Comb.							
	-TA002 -TB002					[S]					
	-TA071 -TB071	[B]									
	-TA072 -TB071			[S / B] Comb.							
	-TA072 -TB072					[S]					
	-TA180 -TB180	[X]									
	-TA181 -TB180			[X]							
	-TA182 -TB180				[X]						
	-TA181 -TB181					[X]					
-TA182 -TB181							[X]				
-TA182 -TB182								[X]			
-TA183 -TB182									[X]		
-TA183 -TB183										[X]	

DOUBLE PAD TIPS & DOUBLE PAD TIPS (SWITCH MOUNTING)

TIP MODEL NUMBER OR ACCESSORY CODE FOR JAW A AND JAW B

Jaw A tips and Jaw B tips can be reversed.

xxx	xxx	Standard Tip
-Txxx	-Txxx	Accessory Tip
-Txxx	xxx	Accessory/Standard Tip Combination

KEY	TIP COLOR
[B]	Black
[S]	Silver
[G]	Gold
[R]	Red or Red Urethane
[X]	Dull Gold, High Temp.

NOTES:

- 1) **xxx, -Txxx** (RED TEXT) INDICATES TIP OPTIONS AVAILABLE ON SIZE 2 UNITS ONLY.
xxx, -Txxx (BLACK TEXT) INDICATES TIP OPTIONS AVAILABLE ON SIZE 2 & 4 UNITS.
- 2) MATERIAL THICKNESS RANGE UP TO 1.50 mm.

MATERIAL THICKNESS RANGE FOR JAW STYLE "F"

(Note 1)		MATERIAL THICKNESS RANGE (mm)								
JAW A	JAW B	0.00-0.85	0.86-1.00	1.01-1.20	1.21-1.52	1.53-1.94	1.95-2.29	2.30-2.60	2.61-3.00	3.01-3.40
DOUBLE PAD TIPS	DDB DDB	[B]								
	DDS DDB		[S / B] Comb.							
	DDG DDB			[G / B] Comb.						
	DDS DDS					[S]				
	DDG DDS						[G / S] Comb.			
	DDG DDG							[G]		
	DDR DDG								[R / G] Comb.	
	DDR DDR									[R]
	-TA034 -TB034	[B]								
	-TA035 -TB034		[S / B] Comb.							
	-TA036 -TB034				[G / B] Comb.					
	-TA035 -TB035					[S]				
	-TA036 -TB035						[G / S] Comb.			
	-TA036 -TB036							[G]		
	-TA077 -TB077	[B]								
	-TA078 -TB077		[S / B] Comb.							
	-TA079 -TB077				[G / B] Comb.					
	-TA078 -TB078					[S]				
	-TA079 -TB078						[G / S] Comb.			
	-TA079 -TB079							[G]		
-TA184 -TB184	[X]									
-TA185 -TB184			[X]							
-TA186 -TB184				[X]						
-TA185 -TB185					[X]					
-TA186 -TB185						[X]				
-TA186 -TB186							[X]			
-TA187 -TB186								[X]		
-TA187 -TB187									[X]	
DOUBLE PAD TIPS (SWITCH MOUNTING)	-TA022 -TB025	[B]								
	-TA023 -TB025		[S / B] Comb.							
	-TA024 -TB025			[G / B] Comb.						
	-TA023 -TB026				[S]					
	-TA024 -TB026						[G / S] Comb.			
	-TA024 -TB027							[G]		
	-TA042 -TB045	[X]								
	-TA043 -TB045		[S / B] Comb.							
	-TA044 -TB045				[G / B] Comb.					
	-TA043 -TB046					[S]				
-TA044 -TB046						[G / S] Comb.				
-TA044 -TB047							[G]			
-TA052 -TB055		[R] Note 2								

PORT FITTINGS

LAA

90° SWIVEL ELBOW, METAL PORT FITTINGS FOR 1/4" OR 6 mm TUBING

LBB

90° SWIVEL ELBOW, PLASTIC PORT FITTINGS FOR 1/4" OR 6 mm TUBING

LCC

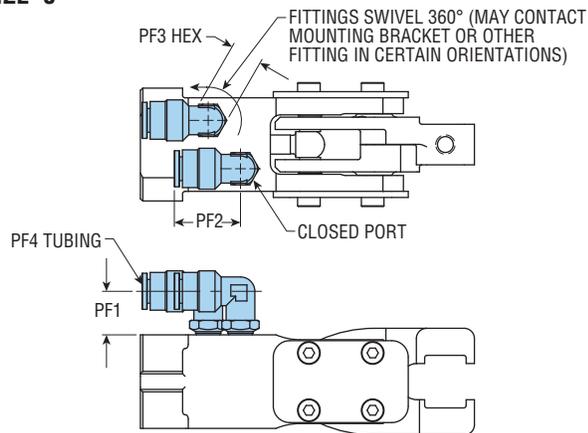
90° SWIVEL ELBOW, METAL PORT FITTINGS FOR 8 mm TUBING

FITTING PART NUMBERS IF ORDERED SEPARATELY

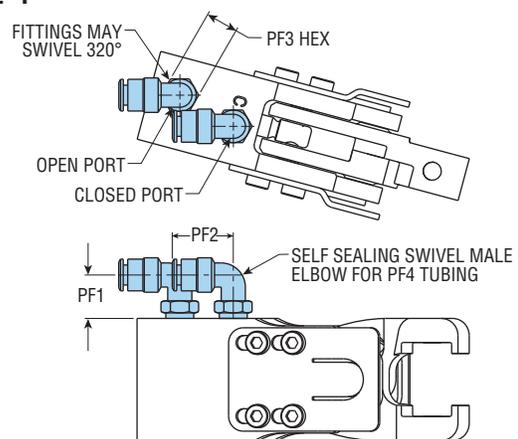
LETTER DIM	GRM0		GRM1, GRM2, & GRM4	
	in	mm	in	mm
PF1 (MIN)	0.531	13.0	0.630	16.0
PF1 (MAX)	—	—	0.748	19.0
PF2	0.807	20.0	0.886	22.5
PF3 -LAA	0.394	10.0	0.472	12.0
-LBB	—	—	0.437	11.1
-LCC	—	—	0.472	12.0
PF4 -LAA	1/4	6.0	1/4	6.0
-LBB	—	—	1/4	6.0
-LCC	—	—	—	8.0

PORT FITTING OPTION	PORTS			
	GRM0		GRM1, GRM2, & GRM4	
	IMPERIAL	METRIC	IMPERIAL	METRIC
LAA	62178-064	62195-073	62178-003	62195-005
LBB	—	—	71120-001	71121-001
LCC	—	—	—	62195-007

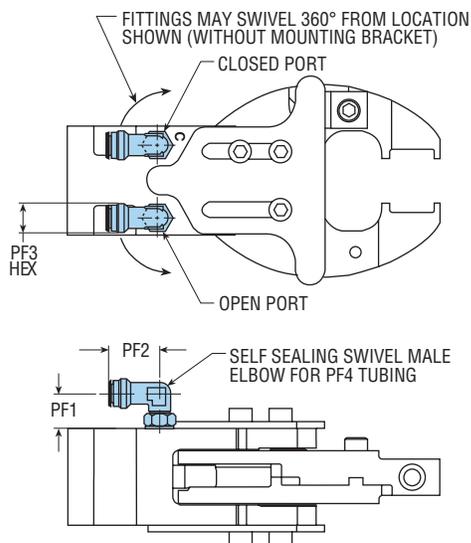
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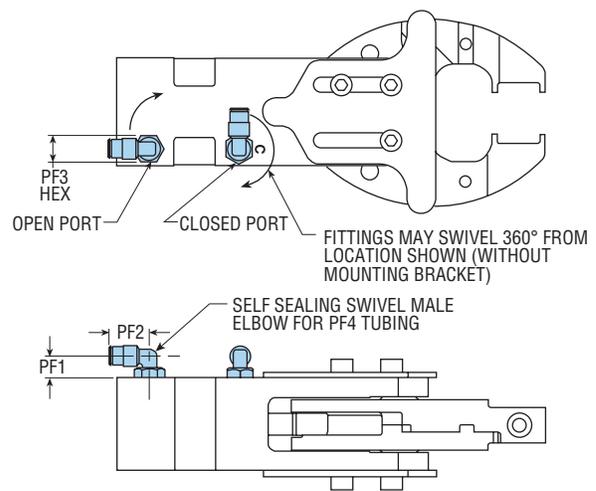
SIZE 1



SIZE 2



SIZE 4



NOTES:

- 1) CLOSED PORTS ARE MARKED WITH THE LETTER C.
- 2) -LCC PORT FITTING OPTION ONLY AVAILABLE ON DESIGN 6 (METRIC) CLAMPS.

All dimensions are reference only unless specifically tolerated.

LEGEND FOR EXAMPLE ORDERING DATA (Pages 79 - 100):

Gray codes are base clamp model.

Blue codes are required for this option.

White codes typically go with this option.

Example Ordering Data:

GRM **2** T S - 2 - 45 blank - 45 blank - LAA - S01 - TA022 - TB025

B04

LARGER PORT ORIFICES

- Option improves cycle time. See Specifications table.
- Available on Size 2: Jaw Styles S, C, D, F, H, J, K, N, P, R, T, U

Example Ordering Data:

GRM **2** T S - 2 - 45 DCB - 45 DDB - LAA - **B04**



SPECIFICATIONS

CLAMP SIZE	WEIGHT ADDER		CYCLE TIME OPEN OR CLOSE ⁽¹⁾
	lb	kg	sec
2	0.00	0.00	0.08

NOTE: 1) Based on 87 psi [6 bar] air pressure.

PART NOS. IF ORDERED SEPARATELY

CLAMP SIZE & JAW STYLE	PORT THREADS	
	IMPERIAL	METRIC
2xS, C, D, H, J, N, P, R, T, U	65312-11	65312-12
2xF, K	65314-11	65314-12

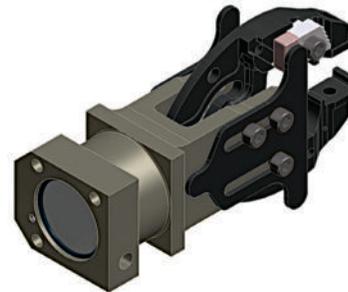
B08

HIGH FORCE CLAMP '2 X 4'

- Option provides more grip force. See Specifications table.
- Cylinder portion of clamp body utilizes larger cylinder and requires GRM4 mounting bracketry.
- Jaw portion of clamp utilizes GRM2 jaws and requires GRM2 tips.
- Available on Size 2: Jaw Styles S, C, D, F, G, H, J, K, N, P, R, T, U

Example Ordering Data:

GRM **2** T S - 2 - 45 DCB - 45 DDB - LAA - **B08**



SPECIFICATIONS

CLAMP SIZE & JAW STYLE	TOTAL GRIP FORCE ⁽¹⁾		ENVELOPE SIZE ADDER						WEIGHT ADDER		DISPLACEMENT			
			LENGTH		WIDTH		HEIGHT				OPEN		CLOSE	
	lb	N	in	mm	in	mm	in	mm	lb	kg	in ³	cm ³	in ³	cm ³
2xS, C, D, F, G, H, J, N, P, T, U	460	2046	0.846	21.5	0.171	4.3	0.000	0.0	0.45	0.20	1.95	32.0	1.83	30.0
2xF	460	2046												
2xK	360	1601												
2xR	676	3007												

NOTES:

- 1) Based on 87 psi [6 bar] air pressure.
- 2) For tips, use GRM2 weights, dimensions, and kit numbers.
- 3) For mounting brackets, use GRM4 weights, dimensions, and kit numbers.

PART NOS. IF ORDERED SEPARATELY

CLAMP SIZE & JAW STYLE	PORT THREADS	
	IMPERIAL	METRIC
2xS, C, D, G, H, J, N, P, R, T, U	65344-11	65344-12
2xF, K	65345-11	65345-12

B09

POSITION 2 PORTS

- Option provides both ports in position 2 of clamp (jaw A side of clamp).
- Available on Size 2: Jaw Styles S, C, D, F, G, H, J, K, N, P, R, T, U

Example Ordering Data:

GRM 2 T S - 2 - 45 DCB - 45 DDB - LAA - B09



SPECIFICATIONS

CLAMP SIZE	WEIGHT ADDER	
	lb	kg
2	0.00	0.00

PART NOS. IF ORDERED SEPARATELY

CLAMP SIZE & JAW STYLE	PORT THREADS	
	IMPERIAL	METRIC
2xS, C, D, G, H, J, N, P, R, T, U	65368-11	65368-12
2xF, K	79003-11	79003-12

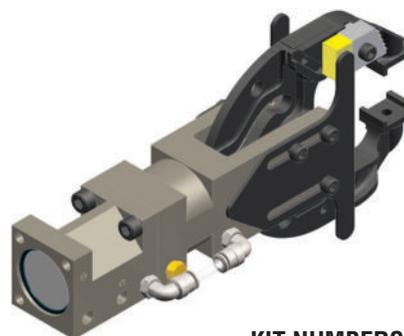
B10

TANDEM CYLINDER

- Option provides more grip force. See Specifications table.
- Tandem cylinder mounts to standard GRM4 body.
- Available on Size 4: Jaw Styles S, F, G, H, J

Example Ordering Data:

GRM 4 T S - 2 - 45 DCB - 45 DDB - LAA - B10



SPECIFICATIONS

CLAMP SIZE	TOTAL GRIP FORCE ⁽¹⁾		ENVELOPE SIZE ADDER						WEIGHT ADDER		DISPLACEMENT			
			LENGTH		WIDTH		HEIGHT				OPEN		CLOSE	
	lb	N	in	mm	in	mm	in	mm	lb	kg	in ³	cm ³	in ³	cm ³
4	875	3892	2.690	68.3	0.000	0.0	0.000	0.0	0.95	0.43	2.40	39.3	4.36	71.4

KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	PORT THREADS	
	IMPERIAL	METRIC
4	79710-03	79710-04

NOTE: 1) Based on 87 psi [6 bar] air pressure.

B11

SIDE MOUNT READY BODY

- Option provides body that accepts standard side mounts: C, R, S, W, and accessory mounts: M01, M07, M21, M22, M23, M25, M27, M28, M29, M30, M36, M37, M38, M39, M42, M46, and M47.
- Available on Size 1: Jaw Styles S, F, T, U

Example Ordering Data:

GRM 1 S S - 2 - 50 DCB - 50 DDB - LAA - B11



SPECIFICATIONS

CLAMP SIZE & JAW STYLE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT			
	in	mm	in	mm	in	mm	lb	kg
1xS	0.591	15.0	0.000	0.0	0.000	0.0	0.06	0.03
1xF, T, U							0.04	0.02

PART NOS. IF ORDERED SEPARATELY

CLAMP SIZE & JAW STYLE	PORT THREADS	
	IMPERIAL	METRIC
1xS	81663-005-00-11	81663-005-00-12
1xF, T, U	81663-005-04-11	81663-005-04-12



Tubing to connect cylinders may interfere with side mounting brackets. Installing a longer tube between cylinders can eliminate this.

B12 RIGID FLANGE MOUNT – POSITION 1 PORTS

- Option provides a body with an integral flange that includes 4X 0.354 in [9.0 mm] thru holes and 2X 0.3161 in [8.029 mm] dowel pin holes.
- Available on Size 2: Jaw Styles S, C, D, F, G, H, J, K, N, P, R, T, U

Example Ordering Data:

GRM **2** T S - 2 - 45 DCB - 45 DDB - LAA - **B12**



SPECIFICATIONS

CLAMP SIZE & JAW STYLE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT		lb	kg
	in	mm	in	mm	in	mm		
2xS, C, D, G, H, J, N, P, R, T, U	0.157	4.0	0.186	4.7	0.000	0.0	0.35	0.16
2xF or 2xK	0.157	4.0	0.231	5.9	0.000	0.0	0.39	0.18

PART NOS. IF ORDERED SEPARATELY

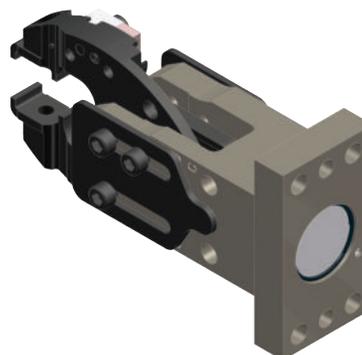
CLAMP SIZE	PORT THREADS	
	IMPERIAL	METRIC
2	78879-11	78879-12

B14 RIGID FLANGE MOUNT – POSITION 3 PORTS

- Option provides a body with an integral flange that includes 4X 0.354 in [9.0 mm] thru holes and 2X 0.3161 in [8.029 mm] dowel pin holes.
- Available on Size 2: Jaw Styles S, C, D, F, G, H, J, K, N, P, R, T, U

Example Ordering Data:

GRM **2** T S - 2 - 45 DCB - 45 DDB - LAA - **B14**



SPECIFICATIONS

CLAMP SIZE & JAW STYLE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT		lb	kg
	in	mm	in	mm	in	mm		
2xS, C, D, G, H, J, N, P, R, T, U	0.157	4.0	0.186	4.7	0.000	0.0	0.35	0.16
2xF or 2xK	0.157	4.0	0.231	5.9	0.000	0.0	0.39	0.18

PART NOS. IF ORDERED SEPARATELY

CLAMP SIZE	PORT THREADS	
	IMPERIAL	METRIC
2	78880-11	78880-12

B15 FLANGE BODY FOR POSITION 1 & 3 SWITCH MOUNTING – POSITION 2 PORTS

- Option provides a flange body with a completely flat side (position 1) allowing for switch mounting options.
- Both ports in position 2 of clamp (jaw A side of clamp).
- Available on Size 2: Jaw Styles S, C, D, F, G, H, J, K, N, P, R, T, U

Example Ordering Data:

GRM **2** T F - 2 - 85 DCB - 00 DDB - LAA - **B15**



SPECIFICATIONS

CLAMP SIZE & JAW STYLE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT		lb	kg
	in	mm	in	mm	in	mm		
2xS, C, D, G, H, J, N, P, R, T, U	0.000	0.0	0.189	4.8	0.000	0.0	0.08	0.03
2xF or 2xK	0.000	0.0	0.234	5.9	0.000	0.0	0.11	0.05

PART NOS. IF ORDERED SEPARATELY

CLAMP SIZE	PORT THREADS	
	IMPERIAL	METRIC
2	79003-11	79003-12

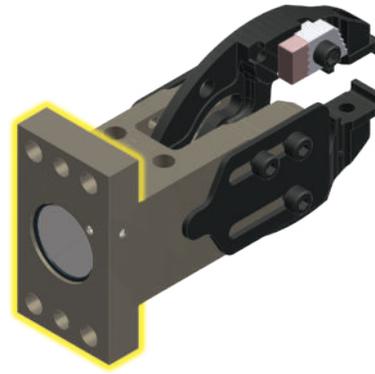
B16

RIGID FLANGE MOUNT – POSITION 2 PORTS

- Option provides a body with an integral flange that includes 4X 0.354 in [9.0 mm] thru holes and 2X 0.3161 in [8.029 mm] dowel pin holes.
- Available on Size 2: Jaw Styles S, C, D, F, G, H, J, K, N, P, R, T, U

Example Ordering Data:

GRM **2** T S - 2 - 45 DCB - 45 DDB - LAA - **B16**



SPECIFICATIONS

CLAMP SIZE & JAW STYLE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT		lb	kg
	in	mm	in	mm	in	mm		
2xS, C, D, G, H, J, N, P, R, T, U	0.157	4.0	0.186	4.7	0.000	0.0	0.35	0.16
2xF or 2xK	0.157	4.0	0.231	5.9	0.000	0.0	0.39	0.18

PART NOS. IF ORDERED SEPARATELY

CLAMP SIZE	PORT THREADS	
	IMPERIAL	METRIC
2	78898-11	78898-12

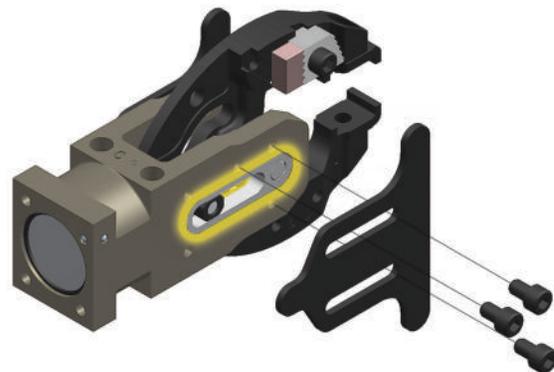
B17

STEEL SLIDER INSERTS

- Option provides body that includes steel slider bushing inserts to increase longevity in demanding conditions.
- Available on Size 2: All jaw styles
- Available as a standalone body option on Size 2

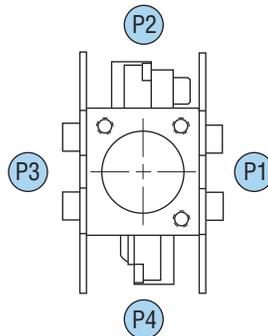
Example Ordering Data:

GRM **2** T S - 2 - 45 DCB - 45 DDB - LAA - **B17**



SPECIFICATIONS

CLAMP SIZE & JAW STYLE	WEIGHT ADDER	
	lb	kg
2xS, C, D, G, H, J, N, P, R, T, U	0.050	0.023
2xF or 2xK	0.033	0.015
2xL or 2xM	0.042	0.019



JAW STYLES

	S, C, D, F, G, H, J, K, N, P, R, T, U	L, M
PORT LOCATION	P2	P1 & P3

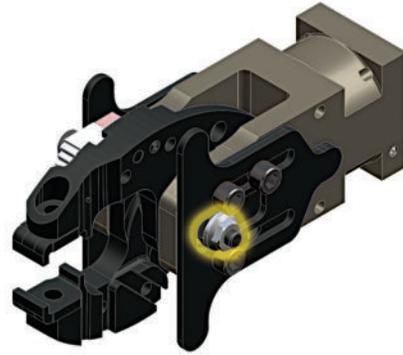
NOTE: Applies to imperial and metric models

G01

G02

CONTINUITY SENSING

- Option provides continuity path through clamp for low voltage current. Current can be used as signal to controller to indicate part present by sensing high/low condition.
- Special pivot pin with M6 thread accepts electrical connector. Flanged locknut is provided to clamp connector against shoulder of pivot pin.
- Full impact plate adjustment is retained.
- No special tips, jaws, or switches required.
- Available on Size 2: Jaw Styles S, C, D, F*, G, H, J, K*, N, P, R, T, U
*Option G02 not available for Jaw Styles F, K



Example Ordering Data:

GRM 2 T S - 2 - 45 DCB - 45 DDB - LAA - G01

ACCESSORY CODE	M6 THREAD POSITION
G01	3 Opp Ports
G02	1 Port Side

SPECIFICATIONS

CLAMP SIZE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT		lb	kg
	in	mm	in	mm	in	mm		
2	0.000	0.0	0.229	5.8	0.000	0.0	0.11	0.05



Continuity feature does not work with urethane tips.
Clamp must be insulated where mounted.

KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE & JAW STYLE	IMPACT PLATE EARS	KIT NUMBER
2xS, C, D, G, H, J, N, P, R, T, U	0	65467-03
	1	65467-04
	2	65467-05
2xF	0	65467-13
	1	65467-06
	2	65467-14
2xK	1	65467-12

G11

HIGH TEMPERATURE

- Option includes:
 - Replacement of urethane-based components with all metal components.
 - High temperature seals and lubrication rated to 392°F [200°C].
 - Ceramic coated tips that minimize thermal transfer from heat source to clamp.
- Customer must specify TA/TB option to receive high temperature tips. See chart below.
- Switches are not recommended over 158°F [70°C]. Switch warranty is not available.
- Available on Sizes 1, 2, and 4: All jaw styles



Example Ordering Data:

GRM 2 T S - 2 - 45 - 45 - LAA - G11 - TA180 - TB180

SPECIFICATIONS

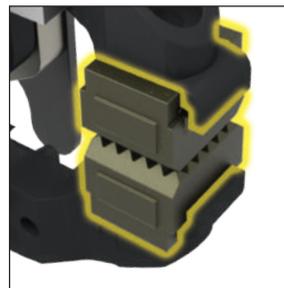
CLAMP SIZE	WEIGHT ADDER	
	lb	kg
1	0.00	0.00
2	0.04	0.02
4	0.15	0.07

SEAL KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	KIT NUMBER
1	65498-08
2	65498-03
2-B08	65498-04
4	65498-05

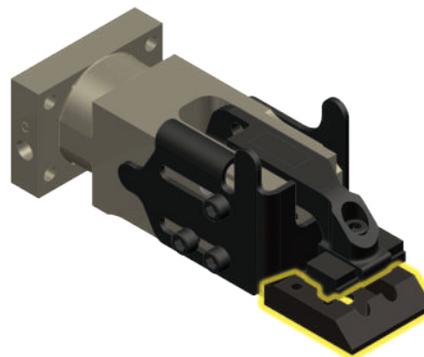
TA180 to TB180 HIGH TEMPERATURE CERAMIC COATED TIPS

ACCESSORY CODE	JAW TIP OPTION	TIP COLOR EQUIVALENT	AVAILABLE ON CLAMP SIZE
-Tx180	Single Diamond	Black	1, 2, and 4
-Tx181		Silver	
-Tx182		Gold	
-Tx183		Red	
-Tx184	Double Diamond	Black	1, 2, and 4
-Tx185		Silver	
-Tx186		Gold	
-Tx187		Red	
-Tx188	Double Cone	Black	1, 2, and 4
-Tx189		Silver	
-Tx190		Gold	
-Tx191		Red	



JB03x SWITCH MOUNTING JAW STYLE "M"

- Option provides lower flat shovel jaw with ability to mount S01 switch accessory.
- Optional double cone point and double diamond point tips stop false signal of switch when part is missing between jaws.
- Special impact plate included to protect switch cable.
- Switch sold separately (S01).
- Available on Size 2: Jaw Style M



Example Ordering Data:

GRM 2 T M - 2 - 85 blank - 00 - LAA - JB031 - S01

SPECIFICATIONS

CLAMP SIZE	ACCESSORY CODE	DESCRIPTION	TIP COLOR	WEIGHT ADDER		MATERIAL THICKNESS
				lb	kg	mm
2xM	JB030	Switch Ready Jaw - No Tip	—	0.07	0.03	—
	JB031	Switch Ready Jaw - Double Cone Point Tip	Black	0.19	0.09	0.00-1.50
	JB032	Switch Ready Jaw - Double Cone Point Tip	Silver	0.19	0.09	1.51-3.00
	JB033	Switch Ready Jaw - Double Cone Point Tip	Gold	0.19	0.09	3.01-4.00
	JB034	Switch Ready Jaw - Double Diamond Point Tip	Black	0.24	0.11	0.00-1.50
	JB035	Switch Ready Jaw - Double Diamond Point Tip	Silver	0.24	0.11	1.51-3.00

KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	DESCRIPTION	TIP COLOR	KIT NUMBER
2xM	Jaw Kit - No Tip	—	73068-03
	Tip Kit - Double Cone Point	Black	73068-04
	Tip Kit - Double Cone Point	Silver	73068-05
	Tip Kit - Double Cone Point	Gold	73068-06
	Tip Kit - Double Diamond Point	Black	76154-01
	Tip Kit - Double Diamond Point	Silver	76154-02

S01 SWITCH INSTALLED

Bi5-Q08-AP6X2-0.25M-RS4T/S34

- Option mounts the switch (Turck Part No. Bi5-Q08-AP6X2-0.25M-RS4T/S34) into the JB03x switch mounting jaw or special switch mounting tips Tx025, 026, 027, 045, 046, 047, or 055.
- Switch allows for panel present detection at point of grip.
- Available on Size 2: Jaw Styles S, F, K, M, R



Example Ordering Data:

GRM 2 T S - 2 - 45 blank - 45 blank - LAA - S01 - TA022 - TB025

SPECIFICATIONS

CLAMP SIZE	WEIGHT ADDER	
	lb	kg
2	0.11	0.05
2xM	0.08	0.03

MATCHING CORDSET 2 METERS LONG

CLAMP SIZE	PHD PART NO.	VENDOR PART NO.
2	65413-00-02	RK 4T-2

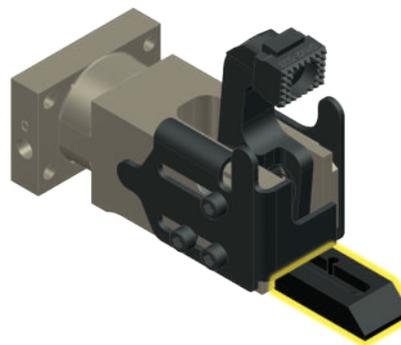
KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	ACCESSORY CODE	KIT NUMBER
GRM2xx-Tx0xx	S01	65136-03
GRM2xM-JB03x		65136-11

JB04x

SWITCH MOUNTING JAW STYLE “L”

- Option provides lower L style flat shovel jaw with ability to mount S19 or S20 switch accessory.
- Optional single diamond (SDx) tip stops false signal of switch when part is missing between jaws.
- Special impact plate included to protect switch cable.
- Switch sold separately (S19, S20).
- Available on Size 2: Jaw Style L



Example Ordering Data:

GRM 2 T L - 2 - 85 blank - 00 - LAA - JB041 - S19

SPECIFICATIONS

CLAMP SIZE	ACCESSORY CODE	DESCRIPTION	TIP COLOR	WEIGHT ADDER		MATERIAL THICKNESS
				lb	kg	mm
2xL	JB040	Switch Ready Jaw - No Tip	—	0.07	0.02	—
	JB041	Switch Ready Jaw - Single Diamond Black Tip	Black	0.15	0.05	0.00-1.50

KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	DESCRIPTION	TIP COLOR	KIT NUMBER
2xL	Jaw Kit - No Tip	—	82660-03
	Tip Kit - Single Diamond	Black	82660-04

S19

SWITCH INSTALLED IN JB04x, PNP Bi2-Q5.5-AP6X-0.3M-RS4T

S20

SWITCH INSTALLED IN JB04x, NPN Bi2-Q5.5-AN6X-0.3M-RS4T

- Option mounts the switch (see Turck part number above) into the JB04x switch mounting jaw.
- Switch allows for panel present detection at point of grip.
- Available on Size 2: Jaw Style L with JB04x



Example Ordering Data:

GRM 2 T L - 2 - 85 blank - 00 - LAA - JB04x - S19

SPECIFICATIONS

CLAMP SIZE	WEIGHT ADDER	
	lb	kg
2	0.08	0.03

MATCHING CORDSET 2 METERS LONG

CLAMP SIZE	PHD PART NO.	VENDOR PART NO.
2	65413-00-02	RK 4T-2

KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	ACCESSORY CODE	KIT NUMBER
GRM2xL-JB04x	S19	89038-03
	S20	89038-04

Uxxxx

TEACHABLE PANEL PRESENT DETECTION FOR GRM CLAMP SIZE 2

NEW OPTION

- Option provides push button teachable sensor to detect presence of part.
- Position of internal target relates directly to jaw position and thickness of material being gripped.
- Ideal choice for backup or redundant signaling detection.
- Cordset replaceable without having to remove or replace sensor.
- Drop-in retrofittable for -Pxxxx Panel Present Switch option
- Option functions within a wide range of material thicknesses 0.020 to 0.197 in [0.5 to 5.0 mm]
- Available on all 15 jaw styles.



See next page for Setup Procedure

Example Ordering Data:

GRM 2 T S - 2 - 45 DDB - 45 DDB - LAA - U3D00

HOUSING OPTION
U - Teachable Panel Present

POSITION OPTION
1 - Position 1
3 - Position 3

SWITCH OPTION
C - NPN, M12 x 1
D - PNP, M12 x 1

- NOTE:**
- 1) Position 1 is port side of clamp.
 - 2) Sensor shown in Position 3.

PANEL TOLERANCE ALLOWANCE			
CODE	DESCRIPTION	JAW STYLE	RECOMMENDED MATERIAL RANGE
00	Narrow	S, C, D, F, G, H, J, K, N, P, R, T, U	0.5 mm to 2.0 mm
		L, M	1.0 mm to 2.3 mm
99	Wide	S, C, D, F, G, H, J, K, N, P, R, T, U	2.1 mm to 5.0 mm
		L, M	2.4 mm to 5.0 mm

The Teachable Sensor option provides fast setup. Watch the setup video on YouTube!



OPTION COMPATIBILITY

CLAMP SIZE	ACCESSORY CODE	BODY OPTION	JAW OPTION	HOUSING POSITION
2	U1xxx	B14	S, C, D, F, G, H, J, K, N, P, R, T, U	1
	U3xxx	Standard, B04, B12, B17	S, C, D, F, G, H, J, K, N, P, R, T, U	3
	U3xxx	B08	F, K	3
	U1xxx or U3xxx	Standard, B17	L, M	1 or 3
	U1xxx or U3xxx	B08, B09, B15, B16, B17	S, C, D, G, H, J, N, P, R, T, U	1 or 3
	U1xxx or U3xxx	B09, B15, B16	F, K	1 or 3



Steel tips are recommended for panel present detection. For urethane tip applications, refer to Tx068 and Tx069.

Single cone point to single diamond tips are not recommended for panels ≤ 0.039 in [1.0 mm].

Single diamond to single diamond tips are recommended for panels ≤ 0.039 in [1.0 mm].

SWITCH ASSEMBLY SPECIFICATIONS

CLAMP SIZE & JAW STYLE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT		lb	kg
	in	mm	in	mm	in	mm		
2xS, C, D, F, G, H, J, K, N, P, R, T, U 2xL or 2xM	0.000	0.0	0.293 0.171	7.4 4.3	0.000	0.0	0.42	0.19

JAW REBUILD KIT

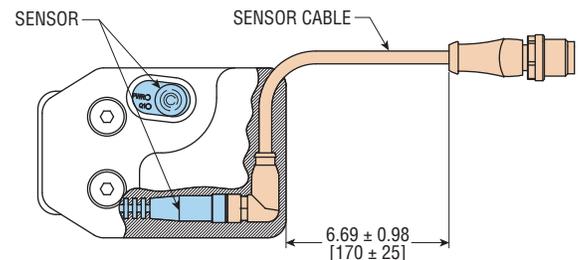
CLAMP SIZE & JAW STYLE	ACCESSORY CODE	KIT NUMBER
2xS, C, D, G, H, J, N, P, R, T, U	Uxxxx	62152-17
2xF or 2xK		62152-18
2xL or 2xM		62152-19
2-B12, 2-B14, 2-B15, 2-B16		62152-20

TEACHABLE PANEL PRESENT DETECTION REPLACEMENT KIT WHEN ORDERED SEPARATELY

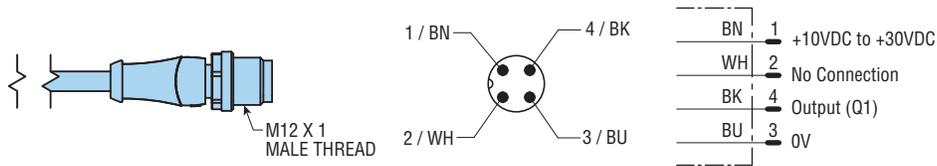
CLAMP SIZE/ JAW STYLE	TEACHABLE PANEL PRESENT DETECTION				DESCRIPTION
	ACCS.	KIT NO.	ACCS.	KIT NO.	
2xS, 2xC, 2xD, 2xH, 2xJ, 2xG, 2xN, 2xP, 2xR, 2xT, 2xU, 2-B04, 2-B08, 2-B09	UxC00	71964-200	UxC99	71964-208	Housing w/ NPN 4-pin DC switch kit
	UxD00	71964-201	UxD99	71964-209	Housing w/ PNP 4-pin DC switch kit
2xF(K), 2xF(K)-B04, 2xF(K)-B08	UxC00	71964-202	UxC99	71964-210	Housing w/ NPN 4-pin DC switch kit
	UxD00	71964-203	UxD99	71964-211	Housing w/ PNP 4-pin DC switch kit
2xL, 2xM	UxC00	71964-204	UxC99	71964-212	Housing w/ NPN 4-pin DC switch kit
	UxD00	71964-205	UxD99	71964-213	Housing w/ PNP 4-pin DC switch kit
2-B12, 2-B14, 2-B15, 2-B16	UxC00	71964-206	UxC99	71964-214	Housing w/ NPN 4-pin DC switch kit
	UxD00	71964-207	UxD99	71964-215	Housing w/ PNP 4-pin DC switch kit

REPLACEMENT SENSOR AND CABLE

PART DESCRIPTION	UxC00	UxC99	UxD00	UxD99
SENSOR	92986-003	92986-005	92986-001	92986-004
SENSOR CABLE	92987-001			



TEACHABLE PANEL PRESENT DETECTION WIRING/OUTPUT DIAGRAMS



SHORT CIRCUIT AND OVERLOAD PROTECTION

SENSOR SPECIFICATIONS

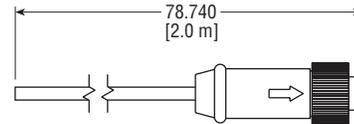
SPECIFICATIONS	UxCxx	UxDxx
OPERATING PRINCIPLE	Solid State Detection of Moving Magnet	
INPUT VOLTAGE	10-30 VDC	
OUTPUT TYPE (see Notes)	NPN (Sink)	PNP (Source)
CONTINUOUS CURRENT	≤ 200 mA	
REVERSE POLARITY PROTECTION	Yes	
SHORT CIRCUIT PROTECTION	Yes	
VOLTAGE DROP	≤ 1 VDC	
POWER CONSUMPTION	≤ 550 mW	
ENVIRONMENTAL	IP67	
OPERATING TEMPERATURE	-20° to +70° C	

SWITCH OPTION	Q1 PANEL PRESENT OUTPUT		Q1 NO PANEL OUTPUT	
	PIN 4 OUTPUT	INDICATOR LIGHT	PIN 4 OUTPUT	INDICATOR LIGHT
UxCxx	NPN	OFF	NONE*	ON
UxDxx	PNP	ON	NONE**	OFF

* When using an NPN/PNP test box, no panel output may show PNP.
 ** When using an NPN/PNP test box, no panel output may show NPN.

NOTES:

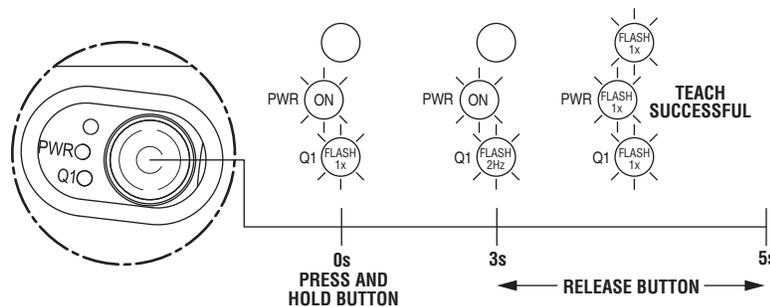
- 1) Not recommended for use with auto-sensing PLC inputs.
- 2) Some universal (NPN/PNP) test boxes will show unexpected output in no panel condition. See wiring/output diagrams.
- 3) Sensor must not be subjected to magnetic field strengths ≥ 20 mT.



MATING CORDSET 81284-1-010

TEACHABLE PANEL PRESENT DETECTION FIELD SETUP PROCEDURE

- 1) Connect sensor to operating voltage.
- 2) Open/Close GRM ≥ 5 times. (This step is only required on first startup.)
- 3) Teach sensor while gripping one panel:



HOW TO TEST SETUP FOR UxCxx (NPN)

- 1) Close tips on one panel using air pressure. Q1 should turn off.
- 2) Open jaws. Q1 should turn on.
- 3) Close tips without a panel using air pressure. Q1 should turn on.

HOW TO TEST SETUP FOR UxDxx (PNP)

- 1) Close tips on one panel using air pressure. Q1 should turn on.
- 2) Open jaws. Q1 should turn off.
- 3) Close tips without a panel using air pressure. Q1 should turn off.

NOTES:

- 1) With no panel is present, Q1 will flicker on as target passes through sensor, and will turn off as jaws reach full closure.
- 2) Steel tips are recommended. For urethane tip applications, refer to Tx068 and Tx069 in GRM catalog.
- 3) Single cone point to single diamond tips are not recommended for panels less than 0.039 in [1.0 mm]. Single diamond to single diamond tips are recommended for panels less than 0.039 in [1.0 mm].
- 4) PHD recommends teaching sensor when it's installed in final setup and gripped on intended workpiece.

Pxxxx

PANEL PRESENT DETECTION FOR SIZE 0

- Option provides switch housing and switch to detect presence of part.
- Position of internal target relates directly to jaw position and thickness of material gripped.
- Ideal choice for backup or redundant signaling detection.
- Option functions within a wide range of material thicknesses from 0.027 to 0.118 in [0.7 to 3.0 mm].
- Housing adjustment may be preset at factory for panel thickness in 0.004 in [0.1 mm] increments.
- P1x00 and P3x00 options do not require factory setup. For compatibility with other units, consult PHD.
- Available on Jaw Styles S, F



SPECIFICATIONS

CLAMP SIZE & JAW STYLE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT		lb	kg
	in	mm	in	mm	in	mm		
0xS, 0xF	0.000	0.0	0.375	9.5	0.000	0.0	0.09	0.04

Example Ordering Data:

GRM 0 T S - 6 - 45 SDB - 45 SDB - LAA - P1 D 1 0

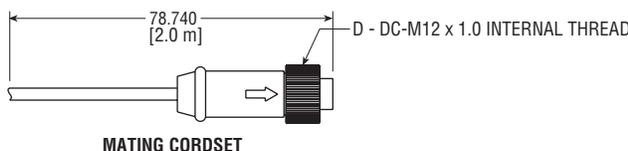
HOUSING OPTION
P - Panel Present

SWITCH HOUSING POSITION
1 - Position 1
3 - Position 3

PANEL THICKNESS OPTION
00 - No Panel (Not Set)
07 to 30 - 0.7 mm to 3.0 mm

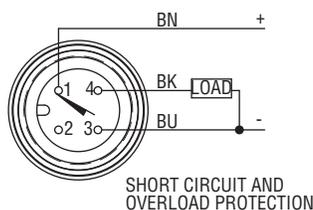
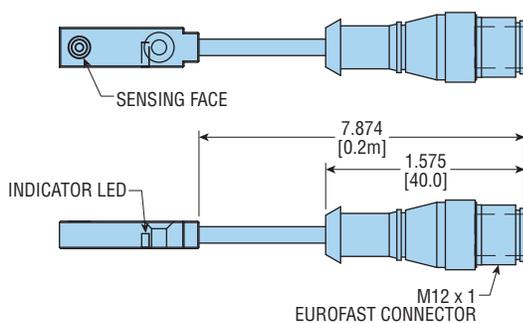
SWITCH OPTION
N - No Switch
D - 4-Pin PNP DC Switch, M12x1 Connector Switch

ACCESSORY CODE	KIT NUMBER	JAW REBUILD KIT NUMBER
D	91452-01	91447-02
N	91452-02	



SWITCH OPTION	SWITCH TYPE	PHD SWITCH NUMBER	VENDOR	VENDOR PART NUMBER	CORDSET PHD PART NUMBER	CORDSET VENDOR PART NUMBER
D	4-pin DC - N.O. - PNP	81686-001	Turck	BI 2-Q5.5-AP6X-0.2M-RS 4T	65413-00-02	RK 4T-2

SWITCH OPTION D: 81686-001 (PNP)



WIRING DIAGRAM

All dimensions are reference only unless specifically tolerated.



PANEL PRESENT DETECTION FIELD SET-UP PROCEDURE

- 1) Using air pressure, close clamp jaws with panel between tips.
- 2) Loosen both screws and remove lever from locating hole.
- 3) Push housing towards jaws to the extent of travel.
- 3) Carefully slide housing toward cylinder until switch turns on.
- 4) Snug flat washer screw. Housing should still slide back and forth.
- 5) Rotate lever into hole that matches present housing location and snug screw.
- 6) Slightly move housing forward and backward. If switch flickers off and on, rotate lever into next hole and repeat process until switch stays on.
- 7) Tighten both screws to 27 lb-in [3.1 Nm]. Switch is now set.

TO TEST SETUP:

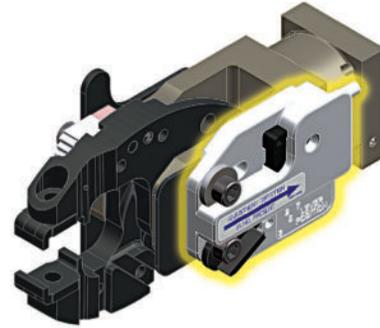
- 1) Using air pressure, close clamp jaws with one panel between tips. The switch should stay on.
- 2) Close clamp jaws with no panel between tips. The switch should turn off.

NOTE: With no panel present, the switch will flicker on as the target passes under the switch and turn off as the jaws reach full closed.

Pxxxx

PANEL PRESENT DETECTION FOR SIZES 1, 2, AND 4

- Option provides switch housing and switch to detect presence of part.
- Position of internal target relates directly to jaw position and thickness of material being gripped.
- Ideal choice for backup or redundant signaling detection.
- Option functions within a wide range of material thicknesses 0.027 to 0.157 in [0.7 to 4.0 mm].
- Housing adjustment may be preset at factory for panel thickness in 0.004 in [0.1 mm] increments.
- P1x00 and P3x00 options do not require factory setup. For compatibility with other units, consult PHD.
- For switch option, refer to page 94.
- Available on Sizes 1, 2, 4. Available on all 15 jaw styles.



See page 95 for Set-Up Procedure

Example Ordering Data:

GRM 2 T S - 2 - 45 DCB - 45 DDB - LAA - P3 A 1 0

HOUSING OPTION
P - Panel Present

SWITCH HOUSING POSITION
1 - Position 1
3 - Position 3

PANEL THICKNESS OPTION
00 - No Panel (Not Set)
07 to 40 - 0.7 mm to 4.0 mm

SWITCH OPTION
N - No Switch
A - 4-Pin AC/DC Switch
B - 3-Pin AC/DC Switch
C - 4-Pin NPN DC Switch
D - 4-Pin PNP DC Switch
E - 3-Pin PNP DC Switch
F - 3-Wire PNP DC Switch
G - 3-Pin AC/DC Switch

NOTES:

- 1) Position 1 is port side of clamp.
- 2) Housing adjustment may be preset at factory for panel thickness in 0.004 in [0.1 mm] increments.

JAW REBUILD KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	ACCESSORY CODE	BODY OPTION	JAW OPTION	HOUSING POSITION	CLAMP SIZE & JAW STYLE	ACCS. CODE	KIT NUMBER
1	P1xxx or P3xxx	Standard, B11	S, F, T, U	1 or 3	1xS	Pxxxx	81665-002-03
2	P1xxx	B14	S, C, D, F, G, H, J, K, N, P, R, T, U	1	1xF, 1xT, 1xU		81665-002-05
	P3xxx	Standard, B04, B12, B17	S, C, D, F, G, H, J, K, N, P, R, T, U	3	2xS, C, D, G, H, J, N, P, R, T, U		62152-08
	P3xxx	B08	F, K	3	2xF or 2xK		62152-09
	P1xxx or P3xxx	Standard, B17	L, M	1 or 3	2xL or 2xM		62152-13
	P1xxx or P3xxx	B08, B09, B15, B16, B17	S, C, D, G, H, J, N, P, R, T, U	1 or 3	2-B12, 2-B14, 2-B15, 2-B16		62152-15
	P1xxx or P3xxx	B09, B15, B16	F, K	1 or 3	4xS, G, H, J		62152-11
4	P3xxx	Standard	S, F, G, H, J	3	4xF		62152-12

SPECIFICATIONS

CLAMP SIZE & JAW STYLE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT		lb	kg
	in	mm	in	mm	in	mm		
1	0.000	0.0	0.501	12.7	0.000	0.0	0.27	0.12
2xS, C, D, G, H, J, N, P, R, T, U			0.293	7.4			0.16	0.07
2xF or 2xK			0.293	7.4			0.17	0.08
2xL or 2xM			0.171	4.3			0.17	0.07
4xS, G, H, J			0.322	8.2			0.21	0.09
4xF			0.322	8.2			0.24	0.11



Steel tips are recommended for panel present detection. For urethane tip applications, refer to Tx068 and Tx069.

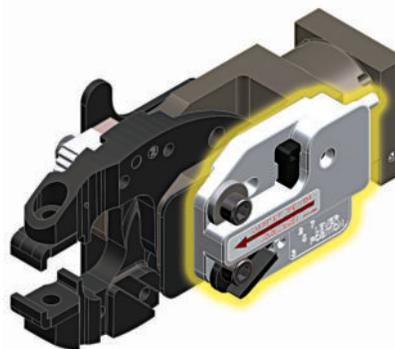
Single cone point to single diamond tips are not recommended for panels ≤ 0.039 in [1.0 mm].

Single diamond to single diamond tips are recommended for panels ≤ 0.039 in [1.0 mm].

Dxxxx

DOUBLE SHEET DETECTION

- Option provides switch housing and switch to detect presence of multiple parts.
- Position of internal target relates directly to jaw position and thickness of material being gripped.
- Ideal choice for backup or redundant signaling detection.
- Option functions within a wide range of material thicknesses 0.027 to 0.157 in [0.7 to 4.0 mm].
- Housing adjustment may be preset at factory for panel thickness in 0.004 in [0.1 mm] increments.
- D1x00 and D3x00 options do not require factory setup. For compatibility with other units, consult PHD.
- For switch option, refer to page 94.
- Available on Sizes 1, 2, and 4. Available on all 15 jaw styles.



See page 95 for Set-Up Procedure

Example Ordering Data:

GRM 2 T S - 2 - 45 DCB - 45 DDB - LAA - D3A10

HOUSING OPTION
D - Double Sheet

SWITCH HOUSING POSITION
1 - Position 1
3 - Position 3

PANEL THICKNESS OPTION
00 - No Panel (Not Set)
07 to 40 - 0.7 mm to 4.0 mm

SWITCH OPTION
N - No Switch
A - 4-Pin AC/DC Switch
B - 3-Pin AC/DC Switch
C - 4-Pin NPN DC Switch
D - 4-Pin PNP DC Switch
E - 3-Pin PNP DC Switch
F - 3-Wire PNP DC Switch
G - 3-Pin AC/DC Switch

NOTES:

- 1) Position 1 is port side of clamp.
- 2) Housing adjustment may be preset at factory for panel thickness in 0.004 in [0.1 mm] increments.

JAW REBUILD KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	ACCESSORY CODE	BODY OPTION	JAW OPTION	HOUSING POSITION	CLAMP SIZE & JAW STYLE	ACCS. CODE	KIT NUMBER
1	D1xxx or D3xxx	Standard, B11	S, F, T, U	1 or 3	1xS	Dxxxx	81665-002-03
2	D1xxx	B14	S, C, D, F, G, H, J, K, N, P, R, T, U	1	1xF, T, U		81665-002-05
	D3xxx	Standard, B04, B12, B17	S, C, D, F, G, H, J, K, N, P, R, T, U	3	2xS, C, D, G, H, J, N, P, R, T, U		62152-08
	D3xxx	B08	F, K	3	2xF or 2xK		62152-09
	D1xxx or D3xxx	Standard, B17	L, M	1 or 3	2xL or 2xM		62152-13
	D1xxx or D3xxx	B08, B09, B15, B16, B17	S, C, D, G, H, J, N, P, R, T, U	1 or 3	2-B12, 2-B14, 2-B15, 2-B16		62152-15
	D1xxx or D3xxx	B09, B15, B16	F, K	1 or 3	4xS, G, H, J		62152-11
4	D3xxx	Standard	S, F, G, H, J	3	4xF		62152-12

SPECIFICATIONS

CLAMP SIZE & JAW STYLE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT		lb	kg
	in	mm	in	mm	in	mm		
1	0.000	0.0	0.501	12.7	0.000	0.0	0.27	0.12
2xS, C, D, G, H, J, N, P, R, T, U			0.293	7.4			0.16	0.07
2xF or 2xK			0.293	7.4			0.17	0.08
2xL or 2xM			0.171	4.3			0.17	0.08
4xS, G, H, J			0.322	8.2			0.21	0.10
4xF			0.322	8.2			0.24	0.11



Steel tips are recommended for double sheet detection. For urethane tip applications, refer to Tx068 and Tx069.

Single cone point to single diamond tips are not recommended for panels ≤ 0.039 in [1.0 mm].

Single diamond to single diamond tips are recommended for panels ≤ 0.039 in [1.0 mm].

Kxxxx

PANEL PRESENT AND DOUBLE SHEET DETECTION

- Option provides switch housings and switches to detect presence of single to multiple parts.
- Position of internal targets relates directly to jaw position and thickness of material being gripped.
- Ideal choice for backup or redundant signaling detection.
- Option functions within a wide range of material thicknesses 0.027 to 0.157 in [0.7 to 4.0 mm].
- Housing adjustment may be preset at factory for panel thickness in 0.004 in [0.1 mm] increments.
- K1x00 and K3x00 options do not require factory setup. For compatibility with other units, consult PHD.
- For switch option, refer to page 94.
- Available on Sizes 1 and 2. Available on all 15 jaw styles.



See page 95 for Set-Up Procedure

Example Ordering Data:

GRM 2 T S - 2 - 45 DCB - 45 DDB - LAA - K 3 A 1 0

HOUSING OPTION
K - Panel Present and Double Sheet

SWITCH HOUSING POSITION
1 - Position 1
3 - Position 3

PANEL THICKNESS OPTION
00 - No Panel (Not Set)
07 to 40 - 0.7 mm to 4.0 mm

SWITCH OPTION
N - No Switch
A - 4-Pin AC/DC Switch
B - 3-Pin AC/DC Switch
C - 4-Pin NPN DC Switch
D - 4-Pin PNP DC Switch
E - 3-Pin PNP DC Switch
F - 3-Wire PNP DC Switch
G - 3-Pin AC/DC Switch

NOTES:

- 1) Position 1 is port side of clamp.
K1xxx - Panel present on side 1 and double sheet on side 3
K3xxx - Panel present on side 3 and double sheet on side 1
- 2) Housing adjustment may be preset at factory for panel thickness in 0.004 in [0.1 mm] increments.

JAW REBUILD KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	ACCESSORY CODE	BODY OPTION	JAW OPTION	HOUSING POSITION
1	K1xxx or K3xxx	Standard, B11	S, F, T, U	1 and 3
2		B08, B17	S, C, D, G, H, J, N, P, R, T, U	
		Standard, B17	L, M	
		B09, B15, B16	S, C, D, F, G, H, J, K, N, P, R, T, U	

CLAMP SIZE & JAW STYLE	ACCESSORY CODE	KIT NUMBER
1xS	Kxxxx	81665-002-04
1xF, 1xT, 1xU		81665-002-06
2xS, C, D, G, H, J, N, P, R, T, U		62152-10
2xL or 2xM		62152-13
2-B15, 2-B16		62152-17

SPECIFICATIONS

CLAMP SIZE & JAW STYLE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT		lb	kg
	in	mm	in	mm	in	mm		
1	0.000	0.0	1.002	25.5	0.000	0.0	0.54	0.24
2xS, C, D, G, H, J, N, P, R, T, U			0.586	14.9			0.32	0.15
2xF or 2xK			0.586	14.9			0.34	0.15
2xL or 2xM			0.342	8.7			0.34	0.15



Steel tips are recommended for panel present and double sheet detection. For urethane tip applications, refer to Tx068 and Tx069.

Single cone point to single diamond tips are not recommended for panels ≤ 0.039 in [1.0 mm].

Single diamond to single diamond tips are recommended for panels ≤ 0.039 in [1.0 mm].

OPTIONS & ACCESSORIES: Switches & Mounting Options

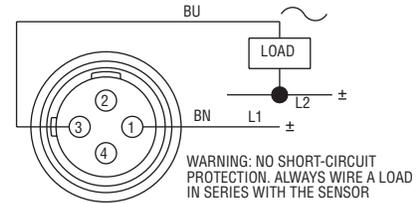
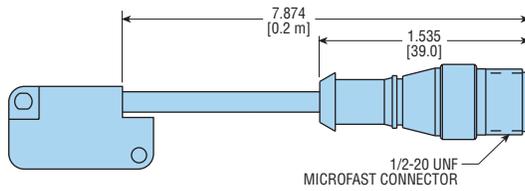
FOR SIZES 1, 2, & 4 - PANEL PRESENT & DOUBLE SHEET DETECTION -Pxxxx, -Dxxxx, and -Kxxxx OPTIONS REPLACEMENT KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE/ JAW STYLE	PANEL PRESENT DETECTION		DOUBLE SHEET DETECTION		PANEL PRESENT & DOUBLE SHEET DETECTION		DESCRIPTION
	ACCESSORY	KIT NO.	ACCESSORY	KIT NO.	ACCESSORY	KIT NO.	
1xS	PxNxx	81665-013-S-P-N	DxNxx	81665-013-S-D-N	KxNxx	81665-013-S-K-N	Housing without switch kit
	PxAxx	81665-013-S-P-A	DxAxx	81665-013-S-D-A	KxAxx	81665-013-S-K-A	Housing with 4-pin AC/DC switch kit
	PxBxx	81665-013-S-P-B	DxBxx	81665-013-S-D-B	KxBxx	81665-013-S-K-B	Housing with 3-pin AC/DC switch kit
	PxCxx	81665-013-S-P-C	DxCxx	81665-013-S-D-C	KxCxx	81665-013-S-K-C	Housing with 4-pin DC switch kit
	PxDxx	81665-013-S-P-D	DxDxx	81665-013-S-D-D	KxDxx	81665-013-S-K-D	Housing with 4-pin DC switch kit
	PxExx	81665-013-S-P-E	DxExx	81665-013-S-D-E	KxExx	81665-013-S-K-E	Housing with 3-pin DC switch kit
	PxFxx	81665-013-S-P-F	DxFxx	81665-013-S-D-F	KxFxx	81665-013-S-K-F	Housing with 3-wire DC switch kit
PxGxx	81665-013-S-P-G	DxGxx	81665-013-S-D-G	KxGxx	81665-013-S-K-G	Housing with 3-pin AC/DC switch kit	
1xF, 1xT, 1xU	PxNxx	81665-013-F-P-N	DxNxx	81665-013-F-D-N	KxNxx	81665-013-F-K-N	Housing without switch kit
	PxAxx	81665-013-F-P-A	DxAxx	81665-013-F-D-A	KxAxx	81665-013-F-K-A	Housing with 4-pin AC/DC switch kit
	PxBxx	81665-013-F-P-B	DxBxx	81665-013-F-D-B	KxBxx	81665-013-F-K-B	Housing with 3-pin AC/DC switch kit
	PxCxx	81665-013-F-P-C	DxCxx	81665-013-F-D-C	KxCxx	81665-013-F-K-C	Housing with 4-pin DC switch kit
	PxDxx	81665-013-F-P-D	DxDxx	81665-013-F-D-D	KxDxx	81665-013-F-K-D	Housing with 4-pin DC switch kit
	PxExx	81665-013-F-P-E	DxExx	81665-013-F-D-E	KxExx	81665-013-F-K-E	Housing with 3-pin DC switch kit
	PxFxx	81665-013-F-P-F	DxFxx	81665-013-F-D-F	KxFxx	81665-013-F-K-F	Housing with 3-wire DC switch kit
PxGxx	81665-013-F-P-G	DxGxx	81665-013-F-D-G	KxGxx	81665-013-F-K-G	Housing with 3-pin AC/DC switch kit	
2xS, 2xC, 2xD, 2xH, 2xJ, 2xG, 2xP, 2xR, 2xT, 2xU, 2-B04, 2-B08, 2-B09	PxNxx	71964-03	DxNxx	71964-09	KxNxx	71964-19	Housing without switch kit
	PxAxx	71964-04	DxAxx	71964-10	KxAxx	71964-20	Housing with 4-pin AC/DC switch kit
	PxBxx	71964-15	DxBxx	71964-17	KxBxx	71964-22	Housing with 3-pin AC/DC switch kit
	PxCxx	71964-35	DxCxx	71964-55	KxCxx	71964-58	Housing with 4-pin DC switch kit
	PxDxx	71964-05	DxDxx	71964-11	KxDxx	71964-21	Housing with 4-pin DC switch kit
	PxExx	71964-64	DxExx	71964-67	KxExx	71964-70	Housing with 3-pin DC switch kit
	PxFxx	71964-76	DxFxx	71964-79	KxFxx	71964-82	Housing with 3-wire DC switch kit
PxGxx	71964-88	DxGxx	71964-91	KxGxx	71964-94	Housing with 3-pin AC/DC switch kit	
2xF(K), 2xF(K)-B04, 2xF(K)-B08	PxNxx	71964-06	DxNxx	71964-12	—	—	Housing without switch kit
	PxAxx	71964-07	DxAxx	71964-13	—	—	Housing with 4-pin AC/DC switch kit
	PxBxx	71964-16	DxBxx	71964-18	—	—	Housing with 3-pin AC/DC switch kit
	PxCxx	71964-53	DxCxx	71964-56	—	—	Housing with 4-pin DC switch kit
	PxDxx	71964-08	DxDxx	71964-14	—	—	Housing with 4-pin DC switch kit
	PxExx	71964-65	DxExx	71964-68	—	—	Housing with 3-pin DC switch kit
	PxFxx	71964-77	DxFxx	71964-80	—	—	Housing with 3-wire DC switch kit
PxGxx	71964-89	DxGxx	71964-92	—	—	Housing with 3-pin AC/DC switch kit	
2xL, 2xM	PxNxx	71964-27	DxNxx	71964-23	KxNxx	71964-31	Housing without switch kit
	PxAxx	71964-28	DxAxx	71964-24	KxAxx	71964-32	Housing with 4-pin AC/DC switch kit
	PxBxx	71964-29	DxBxx	71964-25	KxBxx	71964-33	Housing with 3-pin AC/DC switch kit
	PxCxx	71964-54	DxCxx	71964-57	KxCxx	71964-59	Housing with 4-pin DC switch kit
	PxDxx	71964-30	DxDxx	71964-26	KxDxx	71964-34	Housing with 4-pin DC switch kit
	PxExx	71964-66	DxExx	71964-69	KxExx	71964-71	Housing with 3-pin DC switch kit
	PxFxx	71964-78	DxFxx	71964-81	KxFxx	71964-83	Housing with 3-wire DC switch kit
PxGxx	71964-90	DxGxx	71964-93	KxGxx	71964-95	Housing with 3-pin AC/DC switch kit	
2-B12, 2-B14, 2-B15, 2-B16	PxNxx	71964-113	DxNxx	71964-121	KxNxx	71964-129	Housing without switch kit
	PxAxx	71964-114	DxAxx	71964-122	KxAxx	71964-130	Housing with 4-pin AC/DC switch kit
	PxBxx	71964-115	DxBxx	71964-123	KxBxx	71964-131	Housing with 3-pin AC/DC switch kit
	PxCxx	71964-116	DxCxx	71964-124	KxCxx	71964-132	Housing with 4-pin DC switch kit
	PxDxx	71964-117	DxDxx	71964-125	KxDxx	71964-133	Housing with 4-pin DC switch kit
	PxExx	71964-118	DxExx	71964-126	KxExx	71964-134	Housing with 3-pin DC switch kit
	PxFxx	71964-119	DxFxx	71964-127	KxFxx	71964-135	Housing with 3-wire DC switch kit
PxGxx	71964-120	DxGxx	71964-128	KxGxx	71964-136	Housing with 3-pin AC/DC switch kit	
4xS, 4xH, 4xJ, 4xG	PxNxx	71964-36	DxNxx	71964-44	—	—	Housing without switch kit
	PxAxx	71964-37	DxAxx	71964-45	—	—	Housing with 4-pin AC/DC switch kit
	PxBxx	71964-39	DxBxx	71964-47	—	—	Housing with 3-pin AC/DC switch kit
	PxCxx	71964-60	DxCxx	71964-62	—	—	Housing with 4-pin DC switch kit
	PxDxx	71964-38	DxDxx	71964-46	—	—	Housing with 4-pin DC switch kit
	PxExx	71964-72	DxExx	71964-74	—	—	Housing with 3-pin DC switch kit
	PxFxx	71964-84	DxFxx	71964-86	—	—	Housing with 3-wire DC switch kit
PxGxx	71964-96	DxGxx	71964-98	—	—	Housing with 3-pin AC/DC switch kit	
4xF	PxNxx	71964-40	DxNxx	71964-48	—	—	Housing without switch kit
	PxAxx	71964-41	DxAxx	71964-49	—	—	Housing with 4-pin AC/DC switch kit
	PxBxx	71964-43	DxBxx	71964-51	—	—	Housing with 3-pin AC/DC switch kit
	PxCxx	71964-61	DxCxx	71964-63	—	—	Housing with 4-pin DC switch kit
	PxDxx	71964-42	DxDxx	71964-50	—	—	Housing with 4-pin DC switch kit
	PxExx	71964-73	DxExx	71964-75	—	—	Housing with 3-pin DC switch kit
	PxFxx	71964-85	DxFxx	71964-87	—	—	Housing with 3-wire DC switch kit
PxGxx	71964-97	DxGxx	71964-99	—	—	Housing with 3-pin AC/DC switch kit	

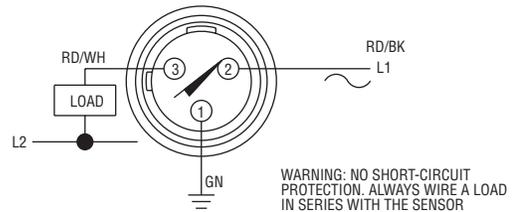
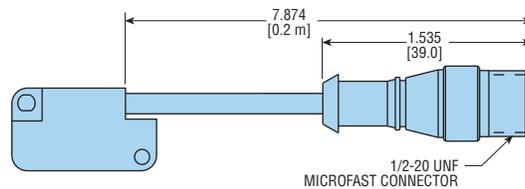
OPTIONS & ACCESSORIES: Switches & Mounting Options

FOR SIZES 1, 2, & 4 - PANEL PRESENT & DOUBLE SHEET DETECTION -Pxxxx, -Dxxxx, and -Kxxxx OPTIONS

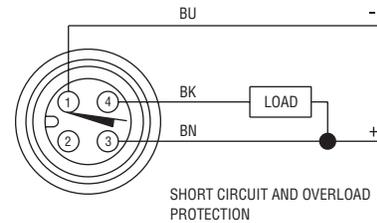
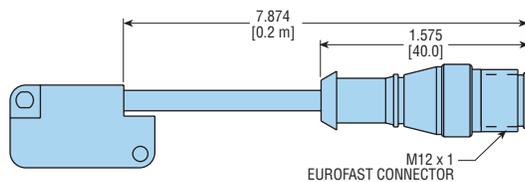
SWITCH OPTION A 72121-001



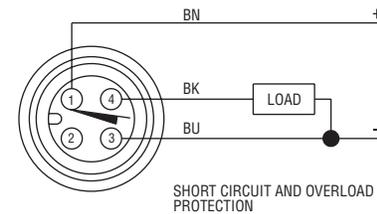
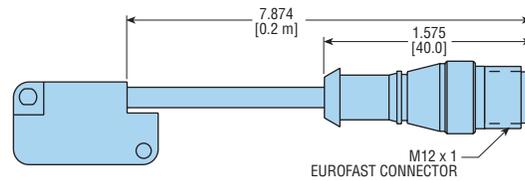
SWITCH OPTION B 72121-003



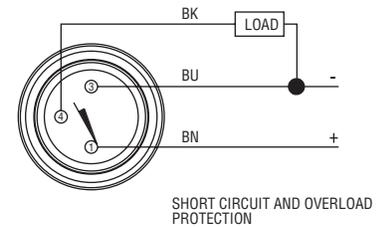
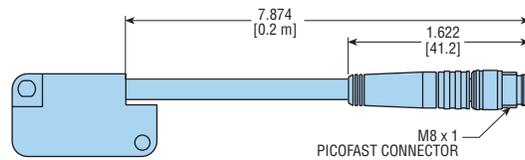
SWITCH OPTION C 72121-004 (NPN)



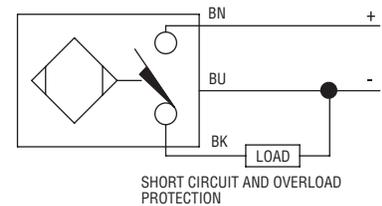
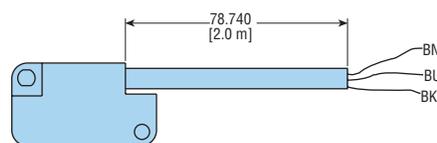
SWITCH OPTION D 72121-002 (PNP)



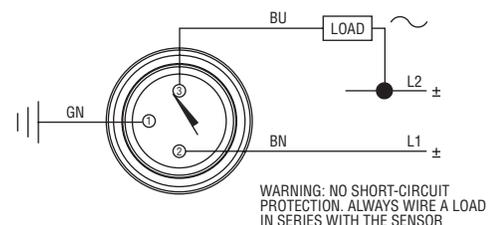
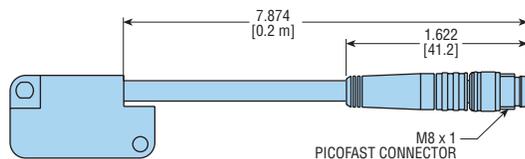
SWITCH OPTION E 72121-005 (PNP)



SWITCH OPTION F 72121-008 (PNP)



SWITCH OPTION G 72121-009



All dimensions are reference only unless specifically tolerated.

OPTIONS & ACCESSORIES: Switches & Mounting Options

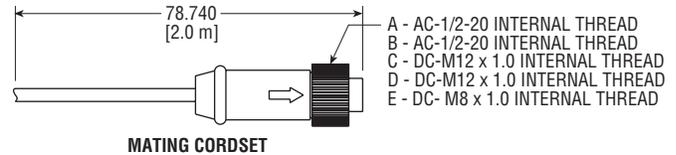
FOR SIZES 1, 2, & 4 - PANEL PRESENT & DOUBLE SHEET DETECTION -Pxxxx, -Dxxxx, and -Kxxxx OPTIONS

SWITCH NUMBERS IF ORDERED SEPARATELY

SWITCH OPTION	SWITCH TYPE	PHD SWITCH NUMBER	VENDOR	VENDOR PART NUMBER
A	4-pin AC/DC - N.O.	72121-001	Turck	Bi 2-Q10S-AZ31X-0.2M-SB 4T/S1597
B	3-pin AC/DC - N.O.	72121-003	Turck	Bi 2-Q10S-AZ31X-0.2M-SB 3T
C	4-pin DC - N.O. - NPN	72121-004	Turck	Bi 2-Q10S-AN6X-0.2M-RS 4T
D	4-pin DC - N.O. - PNP	72121-002	Turck	Bi 2-Q10S-AP6X-0.2M-RS 4T
E	3-pin DC - N.O. - PNP	72121-005	Turck	Bi 2-Q10S-AP6X-0.2M-PSG 3M
F	3-wire DC - N.O. - PNP	72121-008	Turck	Bi 2-Q10S-AP6X
G	3-pin AC/DC - N.O.	72121-009	Turck	Bi 2-Q10S-AZ31X-0.2M-PSG 3F

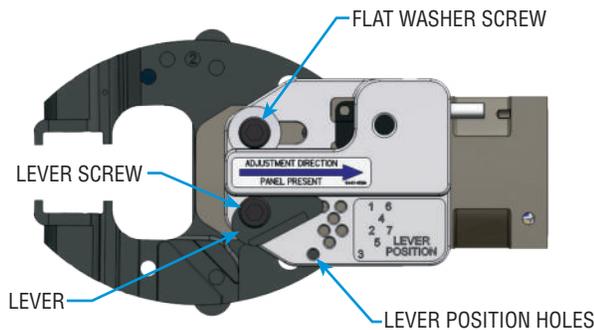
MATCHING CORDSETS 2 METERS LONG

SWITCH OPTION	PHD PART NUMBER	VENDOR PART NUMBER
A	—	—
B	76817-00-02	KB 3T-2
C	65413-00-02	RK 4T-2
D	65413-00-02	RK 4T-2
E	75733-00-02	PKG 3M-2
F	—	—
G	75733-00-02	PKG 3M-2



⚠️ PANEL PRESENT DETECTION FIELD SET-UP PROCEDURE

- Using pressure, close clamp jaws with panel between tips.
- Loosen both screws and remove lever from locating hole.
- Slide housing in direction of arrow (toward cylinder) until switch just turns on.
- Snug flat washer screw. The housing should still slide back and forth.
- Rotate lever into hole that matches present housing location and snug screw.
- Wiggle housing forward and backward. If switch flickers off and on, rotate the lever into the next hole with lower number (i.e., from 5 to 4). Wiggle housing again. Switch should stay on. If not, continue to lower numbered hole until switch does not flicker.
- Tighten both screws to 85 lb-in [9.6 Nm]. The switch is now set.

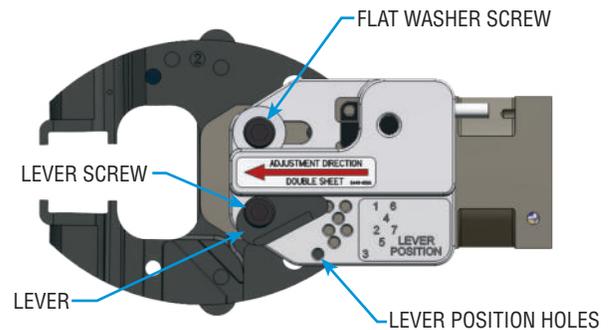


TO TEST SETUP:

- Using pressure, close clamp jaws with one panel between tips. The switch should stay on.
- Close clamp jaws with no panel between tips. The switch should turn off. **NOTE:** With no panel present, the switch will turn on as the target passes under the switch and turn off as the jaws reach full closed.

⚠️ DOUBLE SHEET DETECTION FIELD SET-UP PROCEDURE

- Using pressure, close clamp jaws with one panel between tips.
- Loosen both screws and remove lever from locating hole.
- Slide housing in direction of arrow (toward jaws) until switch just turns on.
- Snug flat washer screw. The housing should still slide back and forth.
- Rotate lever into hole that matches present housing location and snug screw.
- Wiggle housing forward and backward. If switch flickers off and on, rotate the lever into the next hole with higher number (i.e., from 2 to 3). Wiggle housing again. Switch should stay on. If not, continue to higher numbered hole until switch does not flicker.
- Tighten both screws to 85 lb-in [9.6 Nm]. The switch is now set.



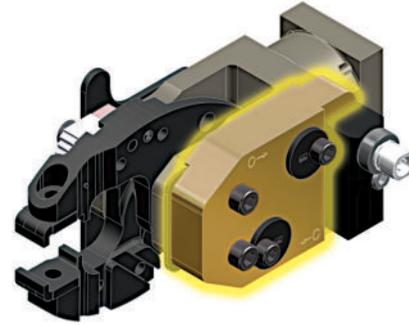
TO TEST SETUP:

- Using pressure, close clamp jaws with one panel between tips. The switch should stay on.
- Close clamp jaws with two panels between tips. The switch should turn off. **NOTE:** With no panel present, the switch will turn on and remain on as the target passes under the switch.

All dimensions are reference only unless specifically tolerated.

PA(B)xxx POSITIONAL SENSING DETECTION

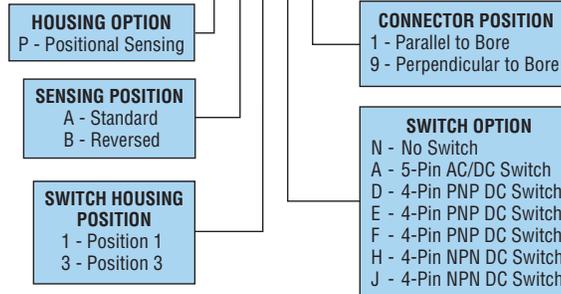
- Option provides switch housing and adjustable switches to detect open and close positions.
- Position of internal target relates directly to jaw position as jaws open and close.
- Switches are weld-field immune.
- For switch option, refer to page 98.
- Available on Sizes 1, 2, 4: Jaw Styles S, C, D, F, G, H, J, K, N, P, R, T, U



See page 99 for Set-Up Procedure

Example Ordering Data:

GRM 2 T S - 2 - 45 DCB - 45 DDB - LAA - PA3D9



- NOTES:**
- 1) Position 1 is port side of clamp.
 - 2) Switch options A, D, F, H, and J are not available on size 1.
 - 3) Connector position is adjustable for all switches except switch option A. Switch option A is available in connector position 1.

JAW REBUILD KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	ACCESSORY CODE	BODY OPTION	JAW OPTION	HOUSING POSITION	CLAMP SIZE & JAW STYLE	ACCS. CODE	KIT NUMBER
1	PA(B)xxx	Standard, B11	S, F, T, U	1 or 3	1xS	PA(B)xxx	81665-002-03
2	PA(B)1xx	B14	S, C, D, F, G, H, J, K, N, P, R, T, U	1	1xF, T, U		81665-002-05
	PA(B)3xx	Standard, B04, B12, B17	S, C, D, F, G, H, J, K, N, P, R, T, U	3	2xS, C, D, G, H, J, N, P, R, T, U		62152-08
	PA(B)1xx or PA(B)3xx	B08, B09, B15, B16, B17	S, C, D, G, H, J, N, P, R, T, U	1 or 3	2xF or 2xK		62152-09
	PA(B)1xx or PA(B)3xx	B15, B16	F, K	1 or 3	2-B12, 2-B14, 2-B15, 2-B16		62152-15
4	PA(B)3xx	Standard	S, F, G, H, J	3	4xS, G, H, J		62152-11
					4xF		62152-12

SPECIFICATIONS

CLAMP SIZE & JAW STYLE	ENVELOPE SIZE ADDER						WEIGHT ADDER	
	LENGTH		WIDTH		HEIGHT		lb	kg
	in	mm	in	mm	in	mm		
1			1.214	30.8			0.33	0.15
2xS, C, D, G, H, J, N, P, R, T, U	0.000	0.0	1.195	30.3	0.000	0.0	0.35	0.16
2xF or 2xK							0.36	0.16
4xS, G, H, J							0.43	0.19
4xF							0.45	0.21

JAW REBUILD KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE & JAW STYLE	ACCS. CODE	KIT NUMBER
1xS	PA(B)xxx and Pxxxx	81665-002-04
1xF, T, U		81665-002-06
2xS, C, D, G, H, J, N, P, R, T, U	or Dxxxx	62152-10
2-B15, 2-B16		62152-15



Urethane tips are not recommended for positional sensing detection.

PAxxx option replaces PSxxx option. PA option positions satellite switch S02 or S2 to sense open (unclamped) and S01 or S1 to sense close (clamped).

PBxxx option replaces PRxxx option. PB option positions satellite switch S01 or S1 to sense open (unclamped) and S02 or S2 to sense close (clamped).

See tables on switch option page for satellite switch to quick disconnect pin number relationships.

Connector Position -PA(B)xA1, -PA(B)xD1, -PA(B)xE1, -PA(B)xF1, -PA(B)xH1, and -PA(B)xJ1 options not recommended for use with the following mounts: C, M21, M39.

Connector position 1 will limit rotation about the clamp body for the following mounts: R, S, W, M01, M07, M22, M23, M25, M27-M30, M36-M38, M42, M46, M47.

FOR SIZES 1, 2, & 4 - POSITIONAL SENSING DETECTION -PA(B)xxx OPTION

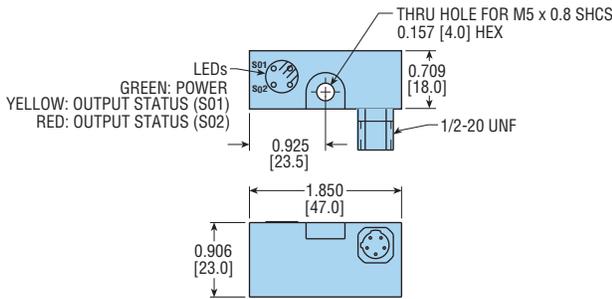
KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE/ JAW STYLE	POSITIONAL SENSING DETECTION		DESCRIPTION
	ACCESSORY	KIT NO.	
1xS	PA(B)xNx	81665-010-01	Housing without switch kit
1xF, 1xT, 1xU	PA(B)xNx	81665-010-02	Housing without switch kit
2xS, 2xC, 2xD, 2xG, 2xH, 2xJ, 2xN, 2xP, 2xR, 2xT, 2xU	PA(B)xNx	72914-03	Housing without switch kit
	PA(B)xA1	72914-07	Housing with 5-pin AC/DC switch kit
	PA(B)xDx	72914-04	Housing with 4-pin DC switch kit
	PA(B)xEx	72914-09	Housing with 4-pin DC switch kit
	PA(B)xFx	72914-22	Housing with 4-pin DC switch kit
	PA(B)xHx	72914-34	Housing with 4-pin DC switch kit
	PA(B)xJx	72914-35	Housing with 4-pin DC switch kit
2xF, 2xK	PA(B)xNx	72914-05	Housing without switch kit
	PA(B)xA1	72914-08	Housing with 5-pin AC/DC switch kit
	PA(B)xDx	72914-06	Housing with 4-pin DC switch kit
	PA(B)xEx	72914-10	Housing with 4-pin DC switch kit
	PA(B)xFx	72914-23	Housing with 4-pin DC switch kit
	PA(B)xHx	72914-36	Housing with 4-pin DC switch kit
2-B12 2-B14 2-B15 2-B16	PA(B)xJx	72914-37	Housing with 4-pin DC switch kit
	PA(B)xNx	72914-51	Housing without switch kit
	PA(B)xA1	72914-52	Housing with 5-pin AC/DC switch kit
	PA(B)xDx	72914-53	Housing with 4-pin DC switch kit
	PA(B)xEx	72914-54	Housing with 4-pin DC switch kit
	PA(B)xFx	72914-55	Housing with 4-pin DC switch kit
4xS, 4xH, 4xJ	PA(B)xHx	72914-56	Housing with 4-pin DC switch kit
	PA(B)xJx	72914-57	Housing with 4-pin DC switch kit
	PA(B)xNx	72914-14	Housing without switch kit
	PA(B)xA1	72914-18	Housing with 5-pin AC/DC switch kit
	PA(B)xDx	72914-15	Housing with 4-pin DC switch kit
	PA(B)xEx	72914-20	Housing with 4-pin DC switch kit
	PA(B)xFx	72914-24	Housing with 4-pin DC switch kit
4xF	PA(B)xHx	72914-38	Housing with 4-pin DC switch kit
	PA(B)xJx	72914-39	Housing with 4-pin DC switch kit
	PA(B)xNx	72914-16	Housing without switch kit
	PA(B)xA1	72914-19	Housing with 5-pin AC/DC switch kit
	PA(B)xDx	72914-17	Housing with 4-pin DC switch kit
	PA(B)xEx	72914-21	Housing with 4-pin DC switch kit
	PA(B)xFx	72914-25	Housing with 4-pin DC switch kit
4xG	PA(B)xHx	72914-40	Housing with 4-pin DC switch kit
	PA(B)xJx	72914-41	Housing with 4-pin DC switch kit
	PA(B)xNx	72914-27	Housing without switch kit
	PA(B)xA1	72914-28	Housing with 5-pin AC/DC switch kit
	PA(B)xDx	72914-29	Housing with 4-pin DC switch kit
	PA(B)xEx	72914-30	Housing with 4-pin DC switch kit
4xG	PA(B)xFx	72914-31	Housing with 4-pin DC switch kit
	PA(B)xHx	72914-42	Housing with 4-pin DC switch kit
	PA(B)xJx	72914-43	Housing with 4-pin DC switch kit

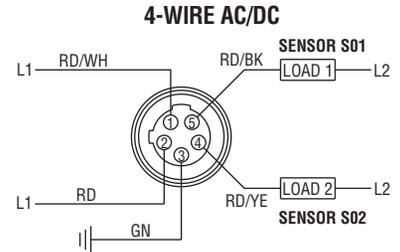
OPTIONS & ACCESSORIES: Switches & Mounting Options

FOR SIZES 1, 2, & 4 - POSITIONAL SENSING DETECTION -PA(B)xxx OPTION

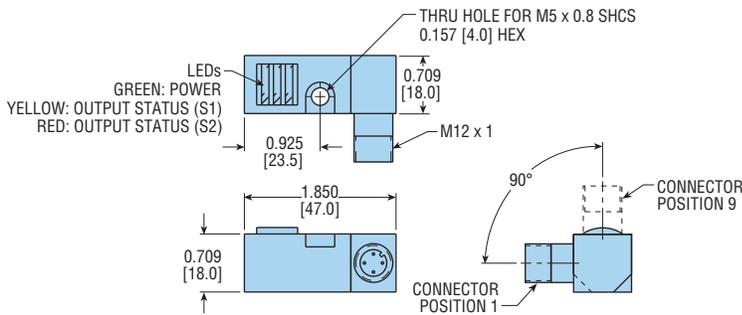
SWITCH OPTION A GRM2, GRM4 72914-11



OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PxA1	S02	S01	S01 = Pin 5
PBxA1	S01	S02	S02 = Pin 4

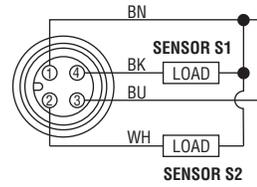


SWITCH OPTION D GRM2, GRM4 72914-12 (PNP) SWITCH OPTION H GRM2, GRM4 72914-32 (NPN)

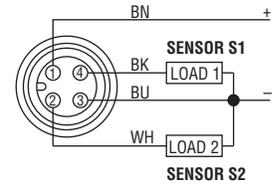


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PAXD or PAXH	S2	S1	S1 = Pin 4
PBXD or PBXH	S1	S2	S2 = Pin 2

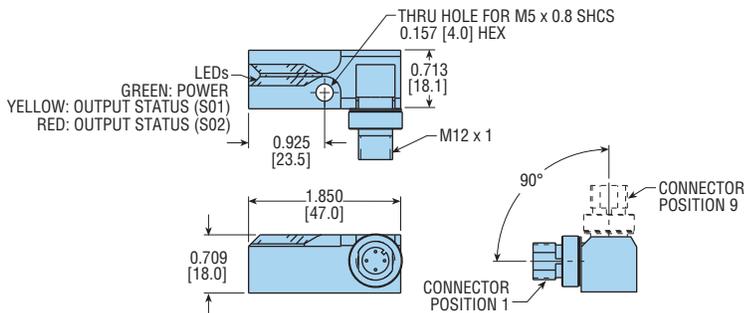
4-WIRE DC (V1 TYPE) NPN DUAL NORMALLY OPEN



4-WIRE DC (V1 TYPE) PNP DUAL NORMALLY OPEN

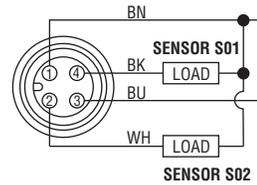


SWITCH OPTION E GRM1 81687-003-GRM1 (PNP) SWITCH OPTION J GRM2, GRM4 72914-13 (PNP) SWITCH OPTION J GRM2, GRM4 72914-33 (NPN)

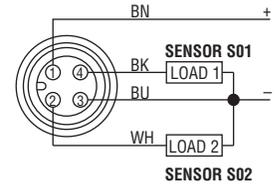


OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PAXE or PAXJ	S02	S01	S01 = Pin 4
PBXE or PBXJ	S01	S02	S02 = Pin 2

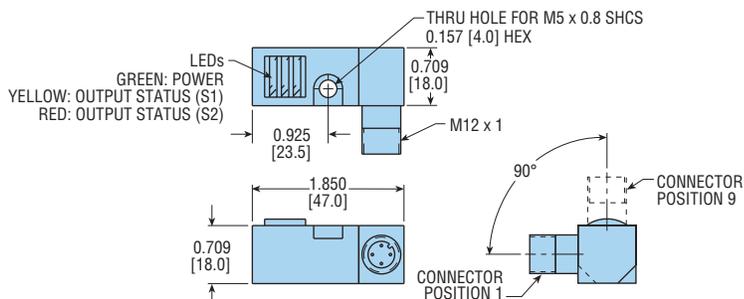
4-WIRE DC NPN DUAL NORMALLY OPEN



4-WIRE DC PNP DUAL NORMALLY OPEN

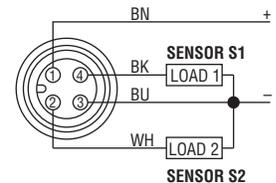


SWITCH OPTION F GRM2, GRM4 72914-26 (PNP)



OPTION CODE	SATELLITE		QUICK DISCONNECT PIN NUMBER
	UNCLAMPED	CLAMPED	
PAXF	S2	S1	S1 = Pin 4
PBXF	S1	S2	S2 = Pin 2

4-WIRE DC PNP DUAL NORMALLY OPEN



All dimensions are reference only unless specifically tolerated.

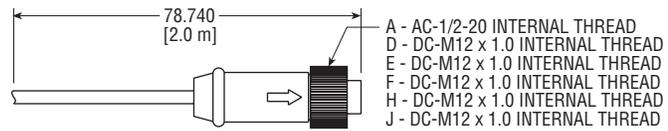
FOR SIZES 1, 2, & 4 - POSITIONAL SENSING DETECTION -PA(B)xxx OPTION

SWITCH KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	SWITCH OPTION	SWITCH TYPE	PHD SWITCH KIT NUMBER	VENDOR	VENDOR PART NUMBER
2, 4	A	5-pin AC/DC - N.O.	72914-11	Turck	Ni 2-Q6.5-ADZ32-0.16-FSB 5.4X4/S304
2, 4	D	4-pin DC - N.O. - PNP	72914-12	Pepperl+Fuchs	NBN2-F581-160S6-E8-V1
1	E	4-pin DC - N.O. - PNP	81687-003-GRM1	Turck	Ni 2-ISI-0.055-BDS-2AP6X3-H1141/S34
2, 4			72914-13		Ni 2-Q6.5-0.16-BDS-2AP6X3-H1141/S34
2, 4	F	4-pin DC - N.O. - PNP	72914-26	IFM Efeactor	IN 5375
2, 4	H	4-pin DC - N.O. - NPN	72914-32	Pepperl+Fuchs	NBN2-F581-160S6-E10-V1
2, 4	J	4-pin DC - N.O. - NPN	72914-33	Turck	Ni 2-Q6.5-AN6-0.16-FS 4.4X3/S304

MATCHING CORDSETS 2 METERS LONG

SWITCH OPTION	PHD PART NUMBER	VENDOR PART NUMBER
A	73317-00-02	KB 5T-2
D	65440-001-02	V1-G-YE2M-PVC
E	78039-00-02	RK 4.4T-2
F	65440-001-02	V1-G-YE2M-PVC
H	65440-001-02	V1-G-YE2M-PVC
J	78039-00-02	RK 4.4T-2



MATING CORDSET



POSITIONAL SENSING DETECTION FIELD SET-UP PROCEDURE

- Using air pressure, close clamp jaws with panel between tips.
- Loosen but do not remove screw adjacent to letter 'C' (close) on switch cover.
- Slide screw in direction opposite to arrow (toward cylinder) until switch turns off.
- Slide screw in direction of arrow (toward jaws) until switch turns on.
- Align washer under head of screw to cover slot on switch cover before tightening.
- Tighten screw to 44 lb-in [5.0 Nm]. Close switch is now set.
- Using air pressure, open clamp jaws.
- Loosen but do not remove screw adjacent to letter 'O' (open) on switch cover.
- Slide screw in direction opposite to arrow (toward jaws) until switch turns off.
- Slide screw in direction of arrow (toward cylinder) until switch turns on.
- Align washer under head of screw to cover slot on switch cover before tightening.
- Tighten screw to 44 lb-in [5.0 Nm]. Open switch is now set.

TO TEST THE SETUP:

- Using air pressure, close clamp jaws with panel between tips. The switch should turn on.
- Using air pressure, open clamp jaws. The switch should turn on.

V2

FLUORO-ELASTOMER SEALS SIZES 1, 2, AND 4

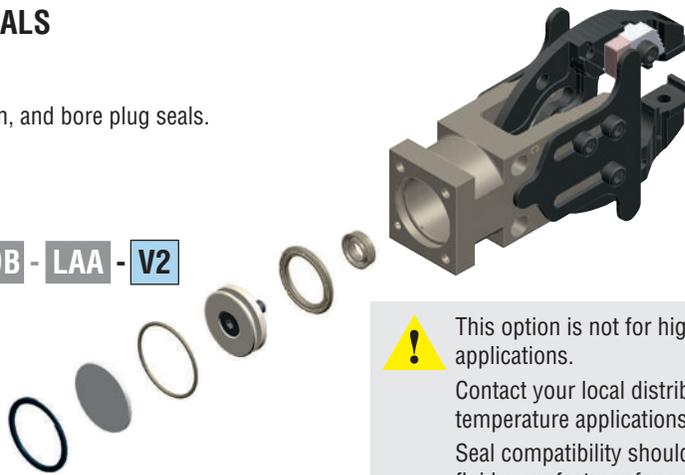
- Option provides Fluoro-elastomer rod, piston, and bore plug seals.
- Seals compatible with certain fluids.
- Available on Sizes 1, 2, and 4: All Jaw Styles

Example Ordering Data:

GRM 2 T S - 2 - 45 DCB - 45 DDB - LAA - V2

SEAL KIT NUMBERS IF ORDERED SEPARATELY

CLAMP SIZE	KIT NUMBER
1	65498-08
2	65498-03
2-B08	65498-04
4	65498-05



This option is not for high temperature applications.

Contact your local distributor or PHD for high temperature applications.

Seal compatibility should be checked with the fluid manufacturer for proper application.

V4

HIGH TEMPERATURE SEAL SIZE 0

- Option includes high temperature seals and lubrication rated to 392°F [200°C]. Please note switches are not recommended for temperatures over 158°F [70°C].
- Available on Size 0: All Jaw Styles
- Seal Kit Number if ordered separately: 91449-02



HOT STAMPING SENSOR HOUSING KITS

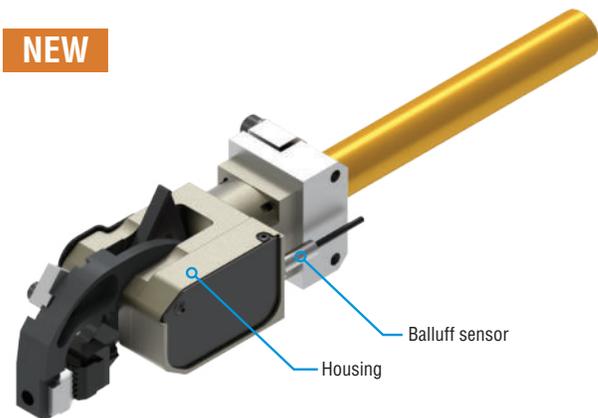
ML319570 - HOUSING KIT FOR GRM SIZE 2 CLAMP ML319151 - HOUSING KIT FOR GRM SIZE 1 CLAMP

- For PHD Series GRM1 or GRM2 Clamps – Standard jaw style ‘S’ and Flange jaw style ‘F’. Other jaw styles are suitable. Consult PHD for jaw styles and tip combinations.
- Panel detection for hostile applications
- Reliable – process safe
- Easy to maintain
- Easy to adjust
- High temperature sensors are required - Balluff part number BES02HM and Secatec part number 25025 are recommended.
- For delicate cold forming applications, Balluff part number BES-R04KC is recommended.
- Sensor housing can be mounted on either side, positions 1 or 3, for application flexibility.

NOTE: Alternative sensor options may be used at the discretion of the customer. Contact PHD to ensure that the optimal sensing and operating temperature range is sufficient for the application.

PHD offers a wide range of Hot Stamping solutions. For more information, please contact your local PHD distributor.

NEW



When set, the sensor housing is designed to provide a signal when exactly one sheet is gripped. Therefore, the sensor can show:

No Part Present = No Signal
Part Present = Signal
Double Sheets = No Signal

For sensor housing dimensions, refer to Custom Solutions flier:
CP319570