

DURA-GRIP

Parallel Grippers

PH-SERIES

DURA-GRIP PH Series of Part Placement Devices is designed to provide a low cost gripping unit for use on transfer mechanisms. These air operated units grip parts internally or externally offering the designer a wide latitude in finger tooling arrangements. All units are shipped completely assembled, ready for mounting and attaching tooling.

QUALITY CONSTRUCTION

DURA-GRIP PH Series is ruggedly constructed with a minimum of moving parts. The body is anodized high strength aluminum, fingers are hardened tool steel. A full range of finger strokes and gripping forces are available throughout the series. Both finger opening and closing position can be adjusted on the unit.

MOUNTING INFORMATION

DURA-GRIP PH Series can be mounted in any plane with standard dovetail or mounting holes on top, front and back of unit. These same holes can also be used to mount "stripper" devices. Optional Dowel holes (-D option) provides precision location of the units. Additional flat top cap styles are also available if dovetail is not necessary.

OPTIONAL FEATURES

Single Finger heads are available with either the left or right finger fixed and the other moving (-SFR or -SFL). Optional Magnetic or Inductive sensors are available on all heads. The sensors can be used to indicate finger position.

Use the PH Series of Parallel Grippers wherever you need durable and precise part placement.

TECHINICAL SPECIFICATION

Pneumatic Specifications	ENGLISH	METRIC
Pressure Range	40-100 psi	3-7 bar
Cylinder Type	Double Acting	
Dynamic Seals	Buna-N	
Required Valves	4-way, 2 position	
Temperature Range		
Buna-N Seals (standard)	-30 to 180 F	-35 to 80 C
Viton Seals (-V option)	-20 to 300 F	-30 to 150 C

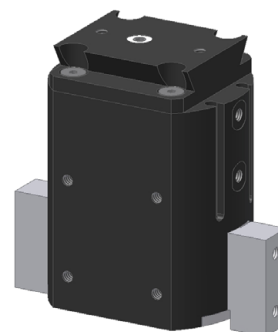
PH-30 / PH-40



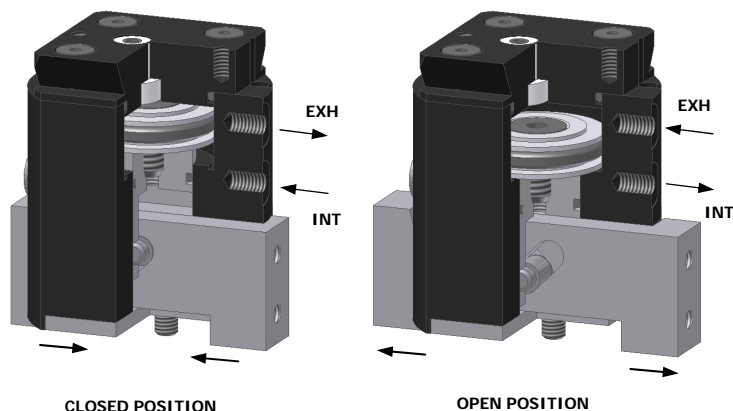
PH-50 / PH-60



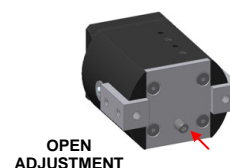
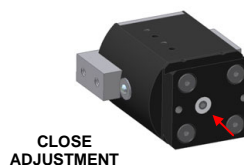
PH-70



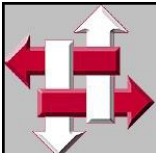
OPERATING PRINCIPLES - STANDARD UNIT



- Air pressure drives double acting piston.
- Piston drives fingers through precision slots producing synchronized parallel motion.
- Gripper is capable of external and internal gripping



Finger closed and open position can be adjusted with set screws located in the bottom and top cap of the unit.



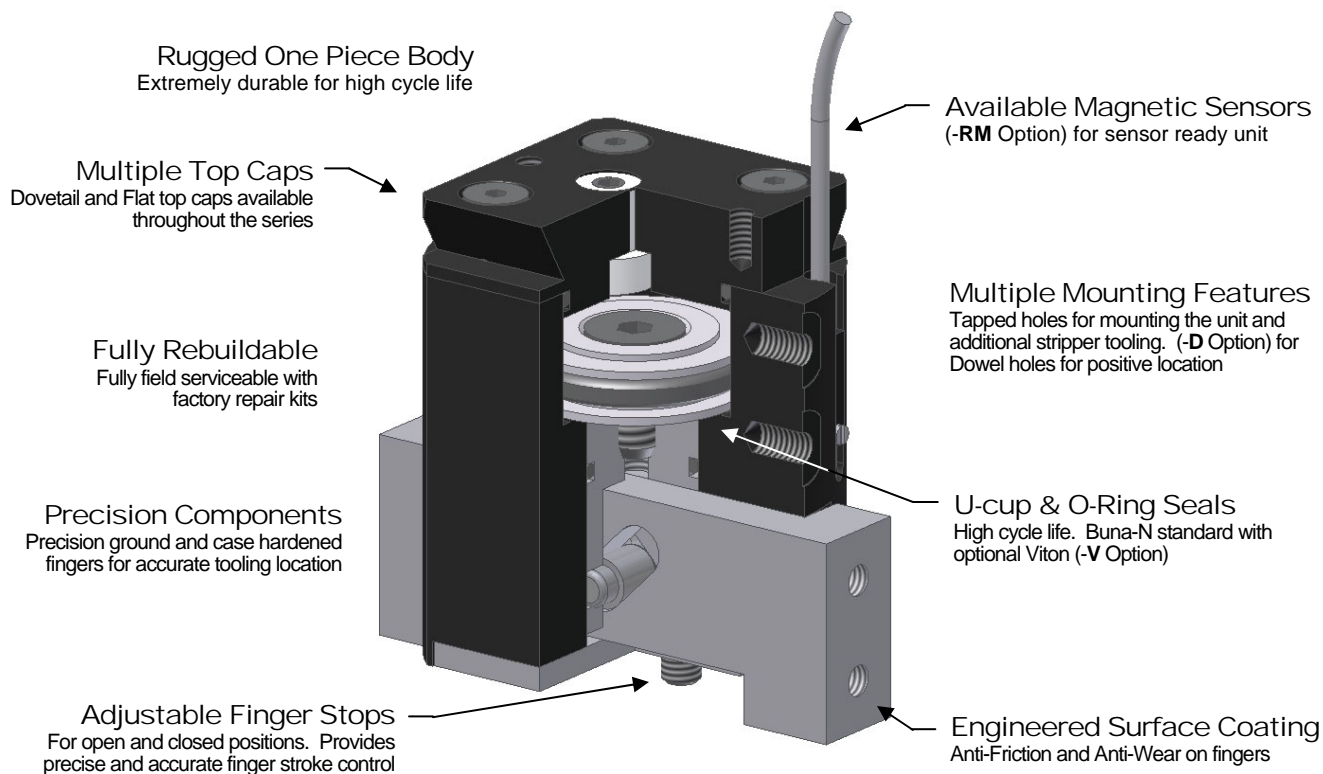
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DURA-GRIP
PARALLEL GRIPPER

PH-SERIES

PRODUCT FEATURES

- Aircraft Grade Aluminum
2024 with black anodize
- Simple and Highly Durable
Time tested, field approved design
- High Grip Force
High gripping force-to-weight ratio

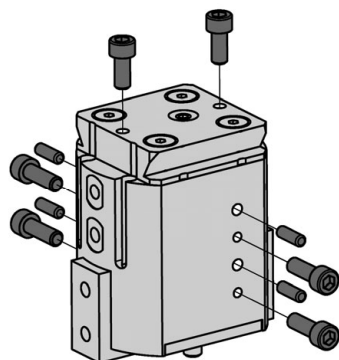


DESIGNED - MANUFACTURED - ASSEMBLED IN THE USA

MOUNTING INFORMATION

Mounts and operates in any orientation

MAIN BODY

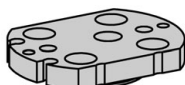


Mount up to Main body utilizing Dovetail or Tapped holes located on back, front, and top.

(-D) Option provides precision Dowel holes on the front and back side of the unit for positive location.

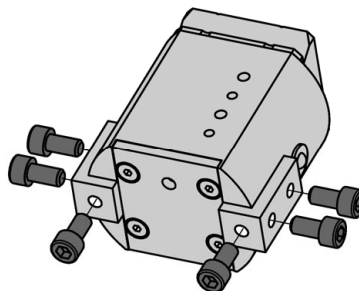
Mounting features vary, see product pages for specific mounting information

Additional Flat top cap available for a variety of mounting styles. See product pages for more information



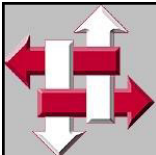
Flat Top Cap

TOOLING



Mount tooling to fingers using Tapped holes located on the bottom and sides of fingers

Key tooling to precision ground fingers for positive location.

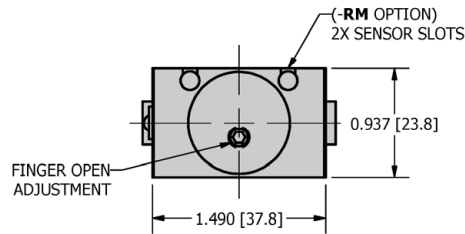


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PH-30

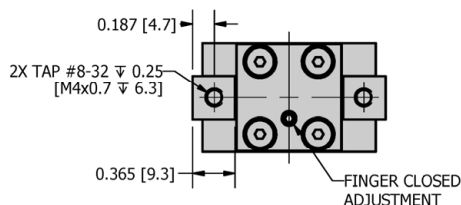
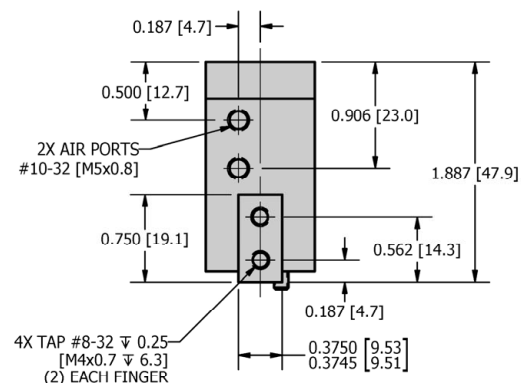
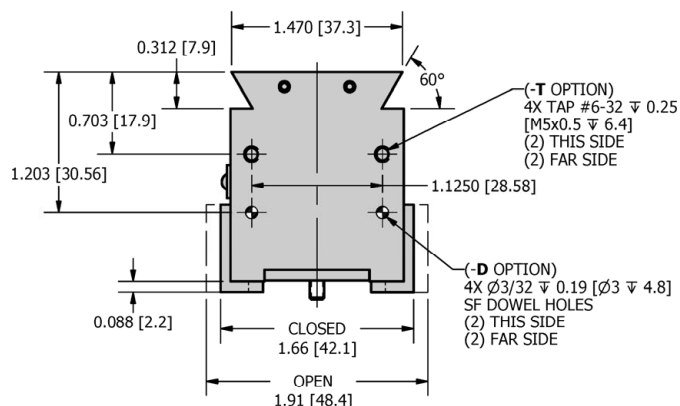
DIMENSIONAL DRAWING



SPECIFICATIONS

	PH-30	MPH-30
Standard Grip Force @ 100 psi [7 bar] *	21 lbf	93 N
Standard Stroke	0.25 in	6.4 mm
Base Weight	0.31 lbs	0.14 kg
Unit Displacement (grip and release)	0.12 in ³	1.9 cm ³
Cylinder Bore Diameter	0.875 in	22.2 mm
Actuation Time (no load)	0.20 sec	

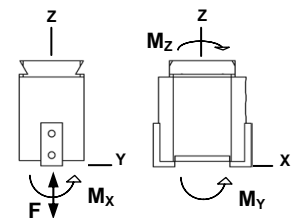
* Loading between lower jaw surface - zero tooling length



LOADING

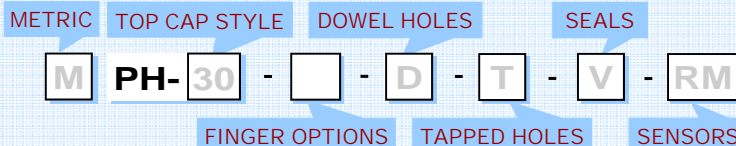
	PH-30		MPH-30	
	Static	Dynamic	Static	Dynamic
Max Force F	100 lbf	20 lbf	444.5 N	88.9 N
Max Moment M_{x,y,z}	75 lbf-in	15 lbf-in	8.5 N-m	1.7 N-m

NOTE: Loading based on utilization of both fingers



HOW TO ORDER : BASIC UNIT

ACCESSORIES (order separately)



METRIC M

TOP CAP 30 - 60° Dovetail (shown above)
31 - Flat (see additional information section)

FINGER OPTIONS SFR - Stationary Right Finger
SFL - Stationary Left Finger (oilier side)

DOWEL HOLES D - Dowel Holes for positive location of unit

TAPPED HOLES T - Tapped Holes in Body

SEALS V - Viton (standard Buna - N)

SENSORS RM - Magnetic Sensor Ready
Includes Sensor slots and Piston Magnet. Sensors sold separately - see Magnetic Sensors

MAGNETIC SENSOR KITS * (Round track mounted)

RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit
RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit
RSK-D - Magnetic Sensor 2-wire output w/ quick disconnect Kit

* Requires sensor ready (-RM). Sensor kits include (2) sensors and (2) 5 meter cables.

MAGNETIC SENSORS * (Round track mounted)

RS-N - Magnetic Sensor NPN w/ quick disconnect
RS-P - Magnetic Sensor PNP w/ quick disconnect
RS-D - Magnetic Sensor 2-wire output w/ quick disconnect

* Requires sensor ready (-RM). Includes (1) sensor.

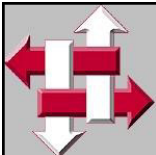
SENSOR CABLE

SENCAB-5 - Quick Disconnect PUR Cable 5M Length

SAMPLE ORDER: PH-31-D-RM

Ex) PH-31 (Flat Top Cap) With Dowel Holes and Sensor Ready

CUSTOM DESIGNS ALWAYS AVAILABLE
PLEASE CONTACT US FOR INFORMATION



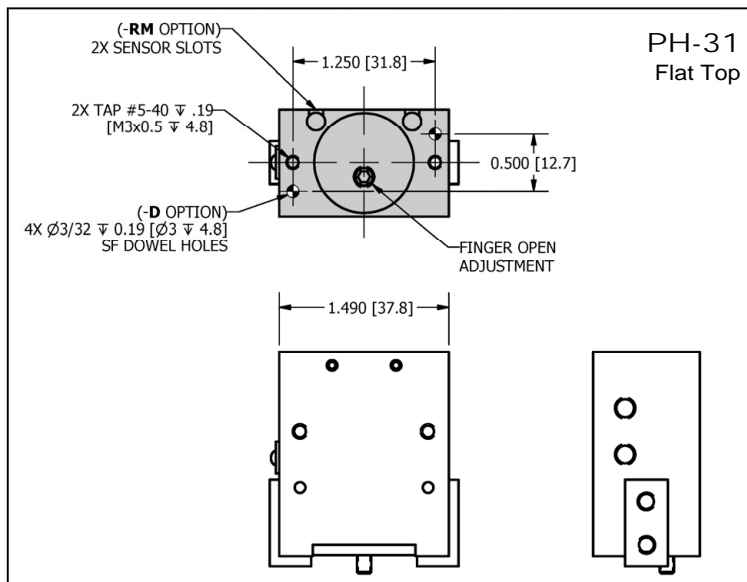
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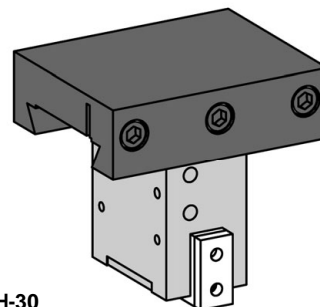
PH-30 

ADDITIONAL MOUNTING INFORMATION

The **DURA-GRIP PH-30** series offers an additional flat top for further flexibility to meet your design requirements.



For further flexibility with the Dovetail, mount the PH-30 with custom dovetail tooling or use the DP-21 Universal receiver. Up to 2 PH-30 grippers can be mounted in the DP-21.



PH-30

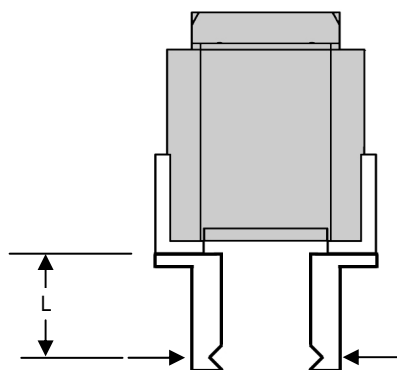
See **DURA-GRIP DP-21** Page
for Universal Dovetail receiver

ADDITIONAL INFORMATION

GRIP FORCE

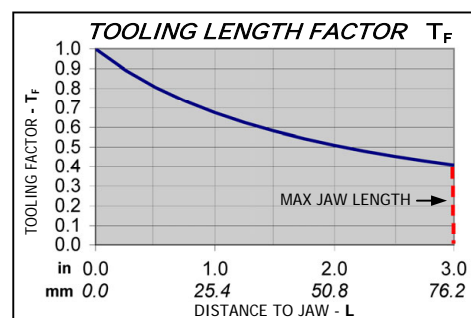
The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below *and* the application variables to determine the proper sizing of the gripper.

The Grip force - **F** is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.



GRIP FORCE

GRIP FACTOR G_F		PH-30	MPH-30
Standard Unit	EXTERNAL	0.214	13.76
	INTERNAL	0.125	8.08



English **GRIP FORCE - F (lbf) = P_{AIR} (psi) \times $G_F \times T_F$**

Metric **GRIP FORCE - F (N) = P_{AIR} (bar) \times $G_F \times T_F$**

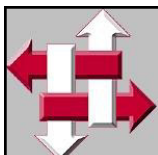
P_{AIR} = Air Pressure

G_F = Grip Factor (see chart)

T_F = Tooling Factor (see graph)



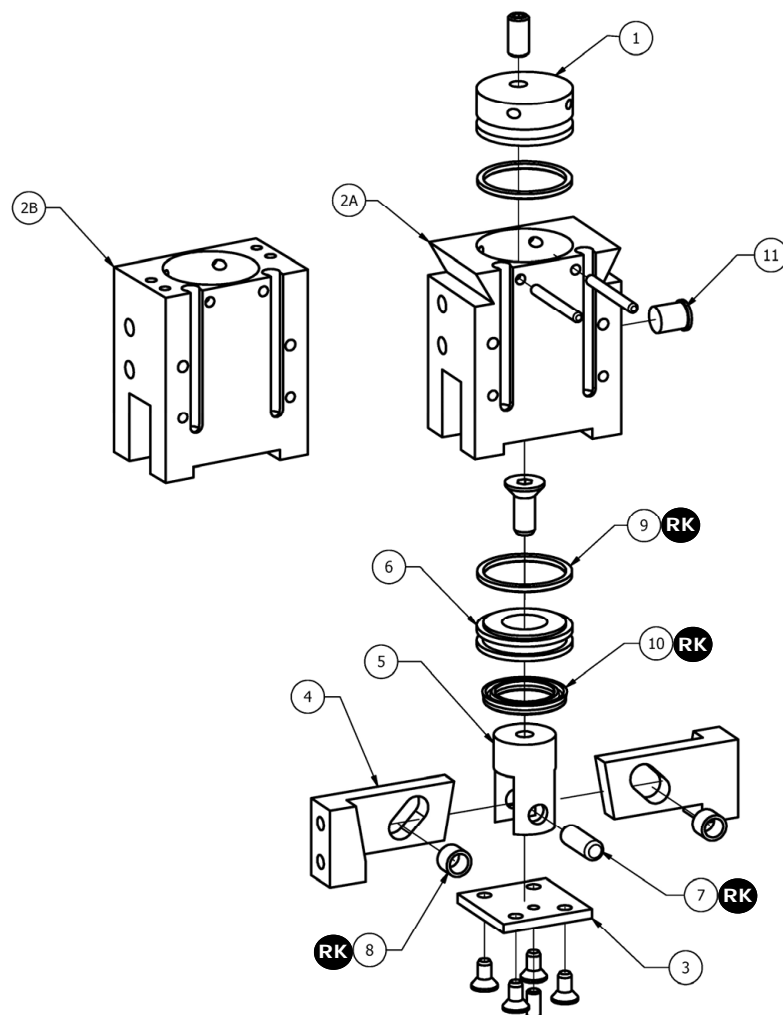
It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.



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PH-30

EXPLODED VIEW



PARTS LIST

HOW TO ORDER PARTS

ITEM	REQ'D	NAME	PH-30	OPTIONS
1	1	Top Cap	PH-30-1	
2A	1	Dovetail Body	PH-30-2	-SFR ² -SFL ² -D ³ -T ⁴ -RM ⁵
2B	1	Flat Body	PH-31-2	-SFR ² -SFL ² -D ³ -T ⁴ -RM ⁵
3	1	Bottom Cap	PH-30-3	
4	2	Finger	PH-40-4	-SFR ² -SFL ²
5	1	Piston Shank	PH-40-5	
6	1	Piston	PH-40-6	-RM ⁵
7	1	Pin *	PH-40-7	
8	2	Roller *	PH-40-8	
9	2	Top Cap & Piston Seal *	ORG-018	-V ¹
10	1	Piston Shank Seal *	UCP-145	-V ¹
11	1	Oiler *	OIL-250	
RK	1	Repair Kit * #	PH-30-RK	-V ¹

METRIC

PART NUMBER



OPTIONS

SAMPLE ORDER: PH-31-2

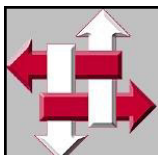
Ex) PH-31 (Flat Top) Body

OPTIONS (see product pages for information)

- 1 - V = Viton
- 2 - SFR / SFL = Stationary Finger Right or Left
- 3 - D = Dowel Pins
- 4 - T = Tapped Holes
- 5 - RM = Magnetic Sensor Ready

NOTES

- * - Metric code not required
- # - Repair Kits include req'd qty of parts marked with RK

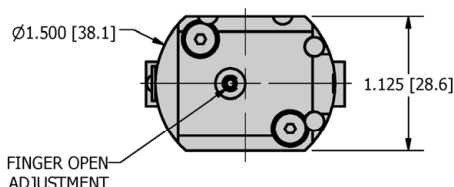


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PH-40

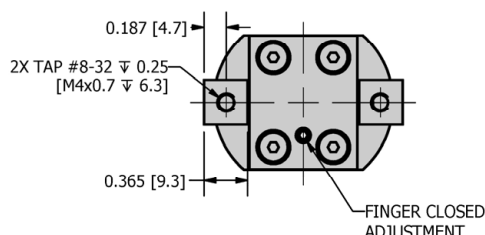
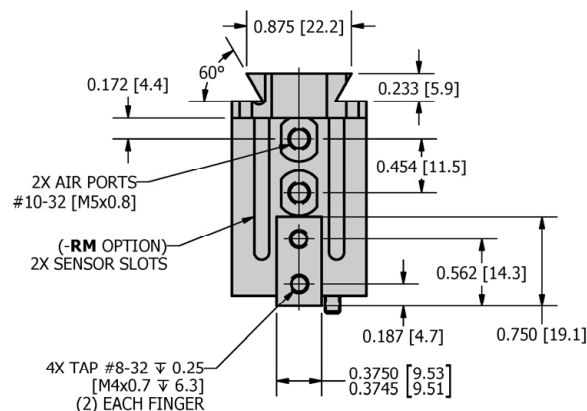
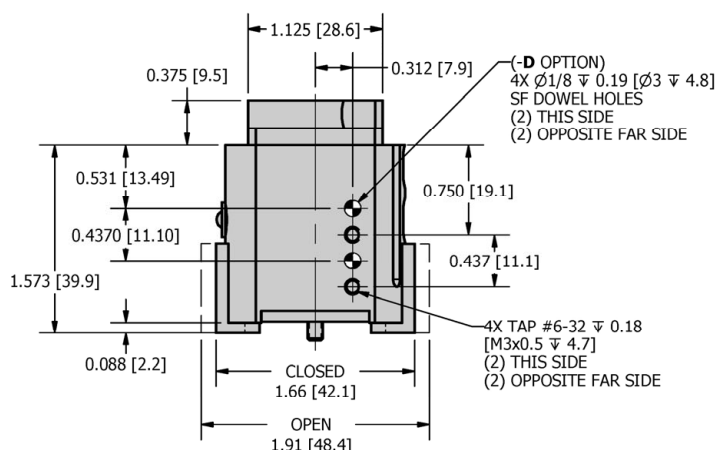
DIMENSIONAL DRAWING



SPECIFICATIONS

	PH-40	MPH-40
Standard Grip Force @ 100 psi [7 bar] *	21 lbf	93 N
Standard Stroke	0.25 in	6.4 mm
Base Weight	0.31 lbs	0.14 kg
Unit Displacement (grip and release)	0.12 in ³	1.9 cm ³
Cylinder Bore Diameter	0.875 in	22.2 mm
Actuation Time (no load)	0.20 sec	

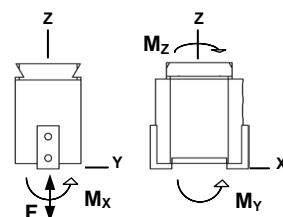
* Loading between lower jaw surface - zero tooling length



LOADING

	PH-40		MPH-40	
	Static	Dynamic	Static	Dynamic
Max Force F	100 lbf	20 lbf	444.5 N	88.9 N
Max Moment M_{x,y,z}	75 lbf-in	15 lbf-in	8.5 N-m	1.7 N-m

NOTE: Loading based on utilization of both fingers



HOW TO ORDER : BASIC UNIT

ACCESSORIES (order separately)

METRIC TOP CAP STYLE DOWEL HOLES



METRIC M

TOP CAP 40 - 60° Dovetail (shown above)
41 - Flat (see additional information section)

FINGER OPTIONS SFR - Stationary Right Finger
SFL - Stationary Left Finger (oiler side)

DOWEL HOLES D - Dowel Holes for positive location of unit

SEALS V - Viton (standard Buna - N)

SENSORS RM - Magnetic Sensor Ready
Includes Sensor slots and Piston Magnet. Sensors sold separately - see Magnetic Sensors

MAGNETIC SENSOR KITS * (Round track mounted)

RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit
RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit
RSK-D - Magnetic Sensor 2-wire output w/ quick disconnect Kit

* Requires sensor ready (-RM). Sensor kits include (2) sensors and (2) 5 meter cables.

MAGNETIC SENSORS * (Round track mounted)

RS-N - Magnetic Sensor NPN w/ quick disconnect
RS-P - Magnetic Sensor PNP w/ quick disconnect
RS-D - Magnetic Sensor 2-wire output w/ quick disconnect

* Requires sensor ready (-RM). Includes (1) sensor.

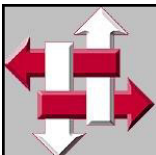
SENSOR CABLE

SENCAB-5 - Quick Disconnect PUR Cable 5M Length

SAMPLE ORDER: PH-40-V

Ex) PH-40 (Dovetail Top Cap) With Viton Seals

CUSTOM DESIGNS ALWAYS AVAILABLE
PLEASE CONTACT US FOR INFORMATION



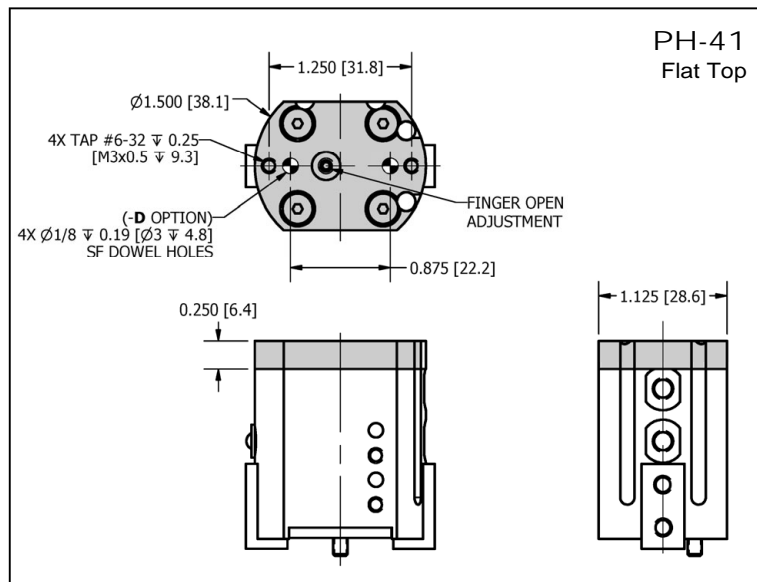
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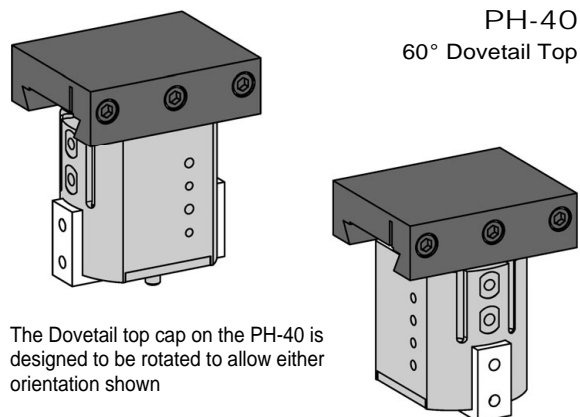
PH-40

ADDITIONAL MOUNTING INFORMATION

The **DURA-GRIP PH-40** series offers an additional flat top for further flexibility to meet your design requirements.



For further flexibility with the Dovetail, mount the PH-40 with custom dovetail tooling or use the DP-21 Universal receiver.



The Dovetail top cap on the PH-40 is designed to be rotated to allow either orientation shown

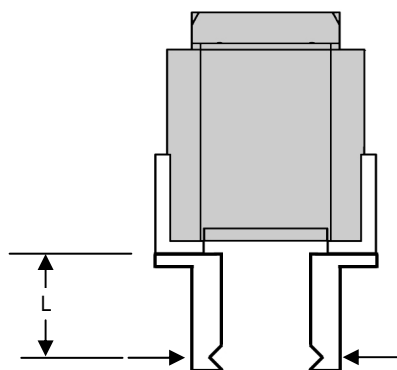
See **DURA-GRIP DP-21** Page for Universal Dovetail receiver

ADDITIONAL INFORMATION

GRIP FORCE

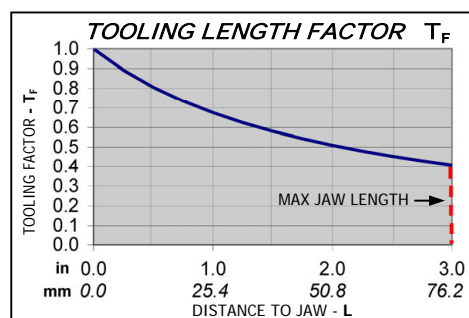
The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below *and* the application variables to determine the proper sizing of the gripper.

The Grip force - **F** is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.



GRIP FORCE

GRIP FACTOR G_F		PH-40	MPH-40
Standard Unit	EXTERNAL	0.214	13.76
	INTERNAL	0.125	8.08



English **GRIP FORCE - F (lbf) = P_{AIR} (psi) x G_F x T_F**

Metric **GRIP FORCE - F (N) = P_{AIR} (bar) x G_F x T_F**

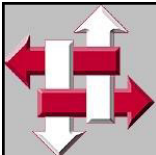
P_{AIR} = Air Pressure

G_F = Grip Factor (see chart)

T_F = Tooling Factor (see graph)



It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.

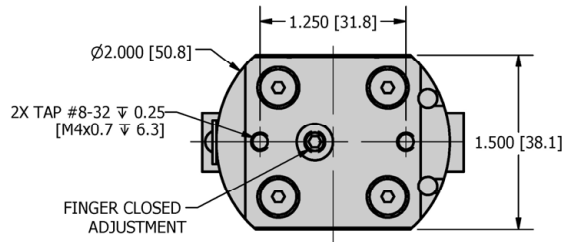


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PH-50

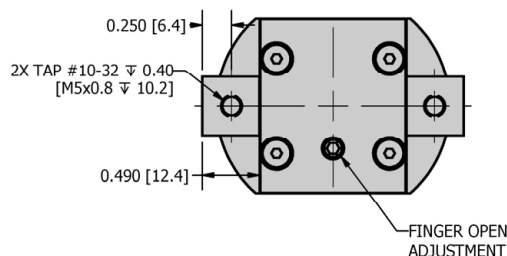
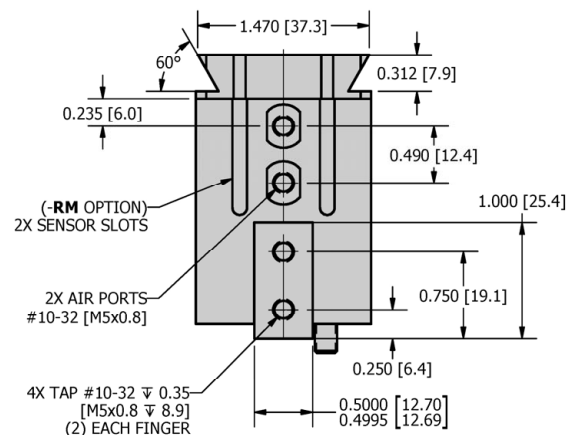
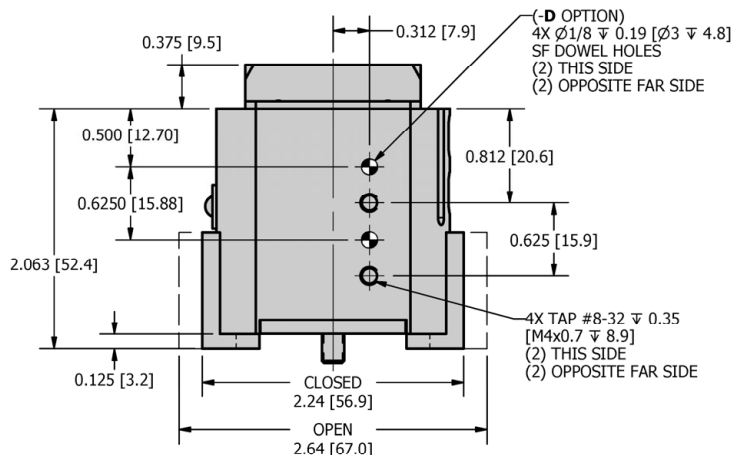
DIMENSIONAL DRAWING



SPECIFICATIONS

	PH-50	MPH-50
Standard Grip Force @ 100 psi [7 bar] *	20 lbf	89 N
Standard Stroke	0.40 in	6.4 mm
Base Weight	0.81 lbs	0.37 kg
Unit Displacement (grip and release)	0.31 in ³	5.1 cm ³
Cylinder Bore Diameter	1.125 in	28.6 mm
Actuation Time (no load)	0.30 sec	

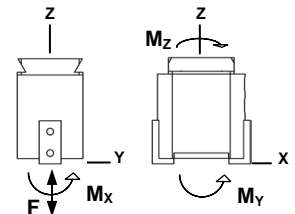
* Loading between lower jaw surface - zero tooling length



LOADING

	PH-50		MPH-50	
	Static	Dynamic	Static	Dynamic
Max Force F	200 lbf	25 lbf	889 N	111 N
Max Moment M_{x,y,z}	125 lbf-in	25 lbf-in	14.1 N-m	2.8 N-m

NOTE: Loading based on utilization of both fingers



HOW TO ORDER : BASIC UNIT

ACCESSORIES (order separately)

METRIC TOP CAP STYLE DOWEL HOLES

M **PH-50** - **D** - **V** - **RM**

FINGER OPTIONS

SEALS

SENSORS

METRIC M

TOP CAP 50 - 60° Dovetail (shown above)
51 - Flat (see additional information section)

FINGER OPTIONS SFR - Stationary Right Finger
SFL - Stationary Left Finger (oiler side)

DOWEL HOLES D - Dowel Holes for positive location of unit

SEALS V - Viton (standard Buna - N)

SENSORS RM - Magnetic Sensor Ready
Includes Sensor slots and Piston Magnet. Sensors sold separately - see Magnetic Sensors

MAGNETIC SENSOR KITS * (Round track mounted)

RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit
RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit
RSK-D - Magnetic Sensor 2-wire output w/ quick disconnect Kit

* Requires sensor ready (-RM). Sensor kits include (2) sensors and (2) 5 meter cables.

MAGNETIC SENSORS * (Round track mounted)

RS-N - Magnetic Sensor NPN w/ quick disconnect
RS-P - Magnetic Sensor PNP w/ quick disconnect
RS-D - Magnetic Sensor 2-wire output w/ quick disconnect

* Requires sensor ready (-RM). Includes (1) sensor.

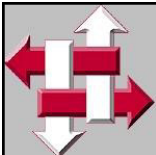
SENSOR CABLE

SENCAB-5 - Quick Disconnect PUR Cable 5M Length

SAMPLE ORDER: PH-51-SFR

Ex) PH-51 (Flat Top Cap) With Stationary Right Finger

CUSTOM DESIGNS ALWAYS AVAILABLE
PLEASE CONTACT US FOR INFORMATION



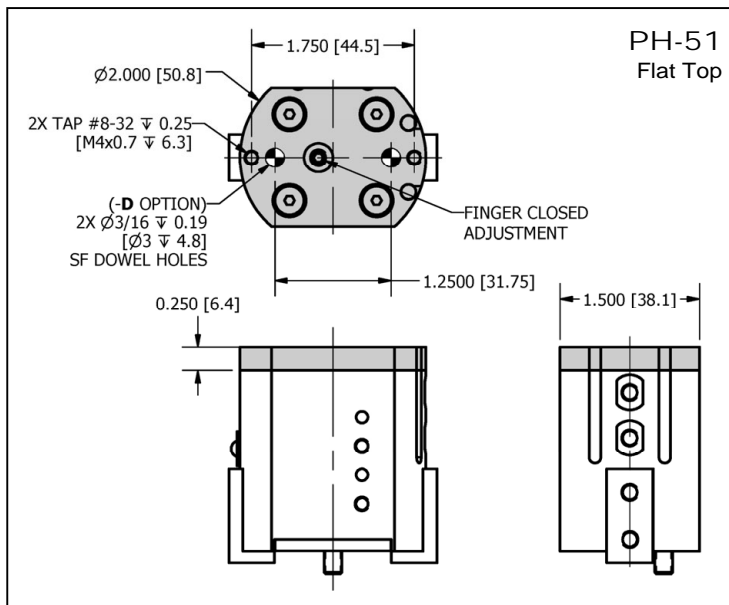
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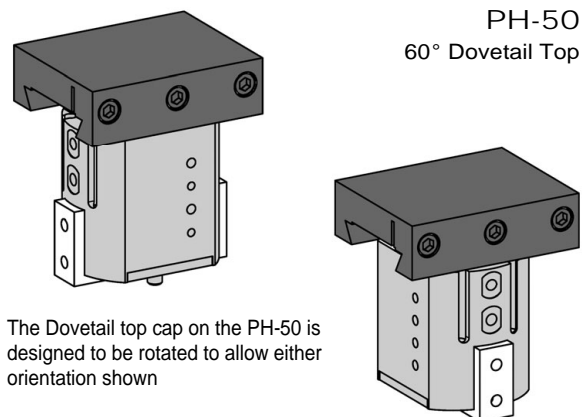
PH-50

ADDITIONAL MOUNTING INFORMATION

The **DURA-GRIP PH-50** series offers an additional flat top for further flexibility to meet your design requirements.



For further flexibility with the Dovetail, mount the PH-50 with custom dovetail tooling or use the DP-21 Universal receiver.



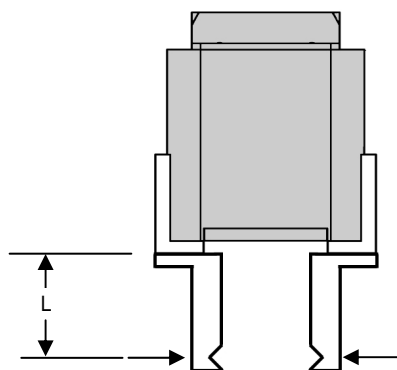
See **DURA-GRIP DP-21** Page for Universal Dovetail receiver

ADDITIONAL INFORMATION

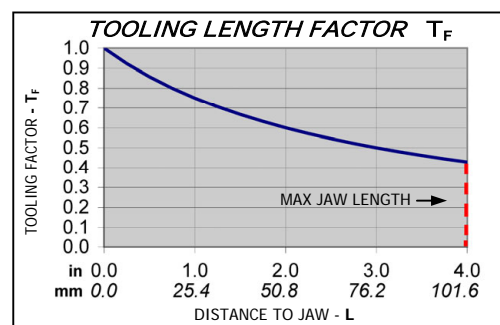
GRIP FORCE

The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below *and* the application variables to determine the proper sizing of the gripper.

The Grip force - **F** is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.



GRIP FACTOR G_F		PH-50	MPH-50
Standard Unit	EXTERNAL	0.201	12.93
	INTERNAL	0.361	23.28



English **GRIP FORCE - F (lbf) = P_{AIR} (psi) x G_F x T_F**

Metric **GRIP FORCE - F (N) = P_{AIR} (bar) x G_F x T_F**

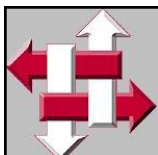
P_{AIR} = Air Pressure

G_F = Grip Factor (see chart)

T_F = Tooling Factor (see graph)



It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.



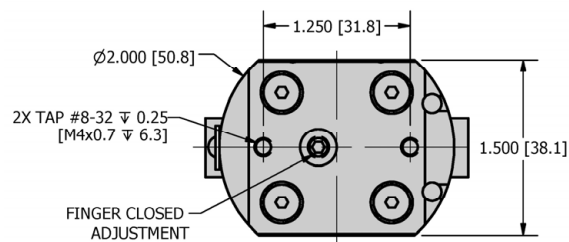
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DURA-GRIP

PARALLEL GRIPPER

PH-60

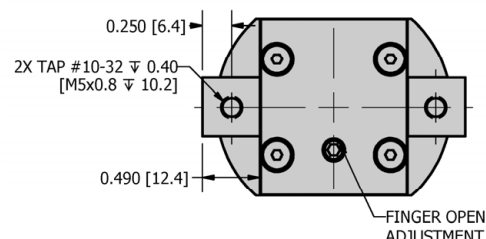
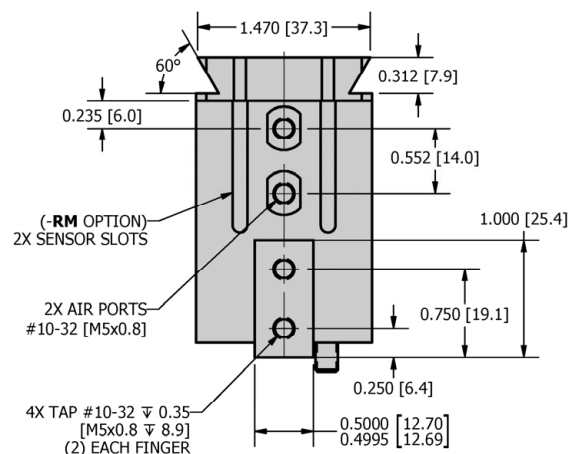
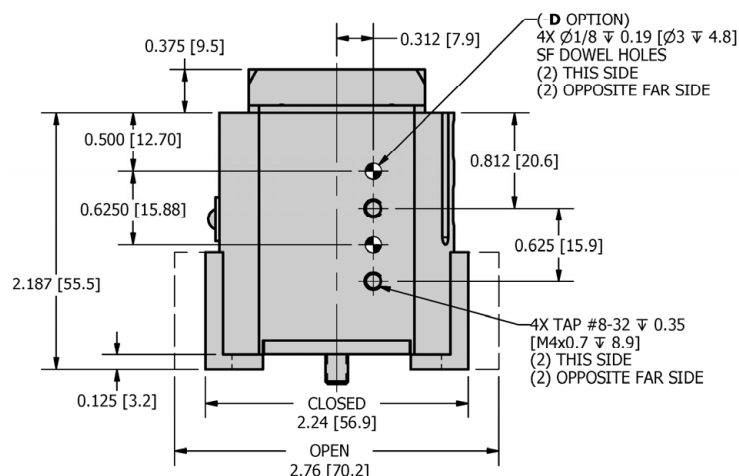
DIMENSIONAL DRAWING



SPECIFICATIONS

	PH-60	MPH-60
Standard Grip Force @ 100 psi [7 bar] *	20 lbf	89 N
Standard Stroke	0.52 in	13.2 mm
Base Weight	0.88 lbs	0.40 kg
Unit Displacement (grip and release)	0.40 in ³	6.6 cm ³
Cylinder Bore Diameter	1.125 in	28.6 mm
Actuation Time (no load)	0.40 sec	

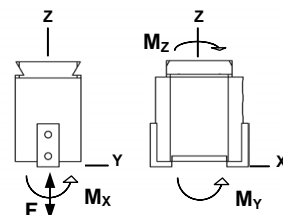
* Loading between lower jaw surface - zero tooling length



LOADING

	PH-60		MPH-60	
	Static	Dynamic	Static	Dynamic
Max Force F	200 lbf	25 lbf	889 N	111 N
Max Moment M_{x,y,z}	125 lbf-in	25 lbf-in	14.1 N-m	2.8 N-m

NOTE: Loading based on utilization of both fingers



HOW TO ORDER : BASIC UNIT

ACCESSORIES (order separately)

METRIC TOP CAP STYLE DOWEL HOLES

M **PH-60** - **V** - **D** - **RM**

SEALS

SENSORS

METRIC M

TOP CAP 60 - 60° Dovetail (shown above)
61 - Flat (see additional information section)

SEALS V - Viton (standard Buna - N)

DOWEL HOLES D - Dowel Holes for positive location of unit

SENSORS RM - Magnetic Sensor Ready
Includes Sensor slots and Piston Magnet. Sensors sold separately - see Magnetic Sensors

SAMPLE ORDER: PH-60-D-RM

Ex) PH-60 (Dovetail Top Cap) With Dowel Holes and Sensor Ready

MAGNETIC SENSOR KITS * (Round track mounted)

RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit
RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit
RSK-D - Magnetic Sensor 2-wire output w/ quick disconnect Kit

* Requires sensor ready (-RM). Sensor kits include (2) sensors and (2) 5 meter cables.

MAGNETIC SENSORS * (Round track mounted)

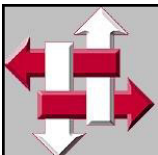
RS-N - Magnetic Sensor NPN w/ quick disconnect
RS-P - Magnetic Sensor PNP w/ quick disconnect
RS-D - Magnetic Sensor 2-wire output w/ quick disconnect

* Requires sensor ready (-RM). Includes (1) sensor.

SENSOR CABLE

SENCAB-5 - Quick Disconnect PUR Cable 5M Length

CUSTOM DESIGNS ALWAYS AVAILABLE
PLEASE CONTACT US FOR INFORMATION



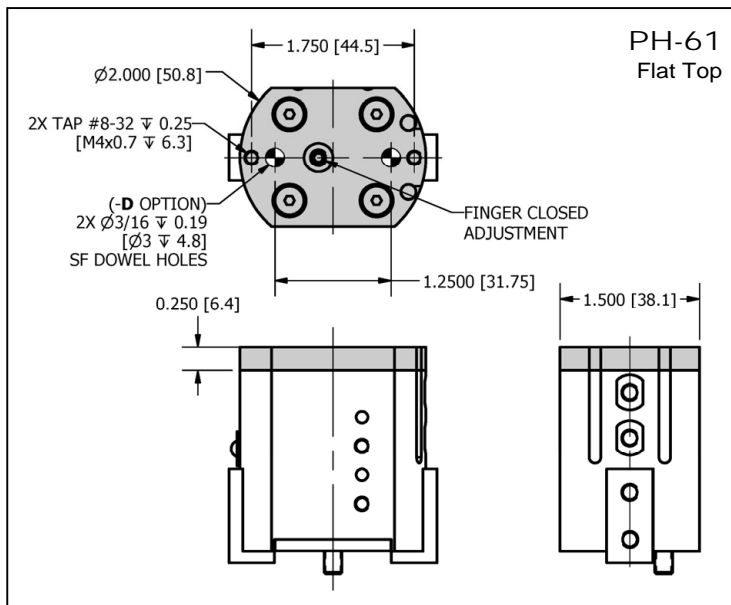
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DURA-GRIP
PARALLEL GRIPPER

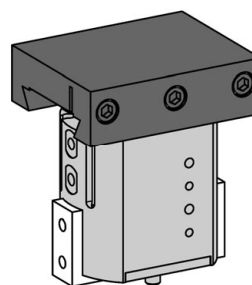
PH-60 

ADDITIONAL MOUNTING INFORMATION

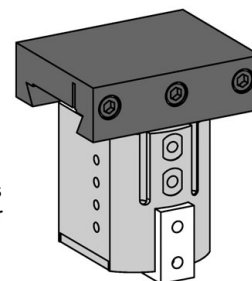
The **DURA-GRIP PH-60** series offers an additional flat top for further flexibility to meet your design requirements.



For further flexibility with the Dovetail, mount the PH-60 with custom dovetail tooling or use the DP-21 Universal receiver.



PH-60
60° Dovetail Top



The Dovetail top cap on the PH-60 is designed to be rotated to allow either orientation shown

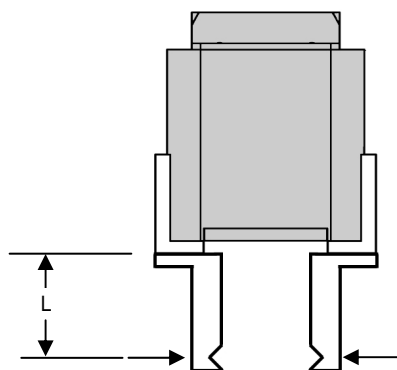
See **DURA-GRIP DP-21** Page for Universal Dovetail receiver

ADDITIONAL INFORMATION

GRIP FORCE

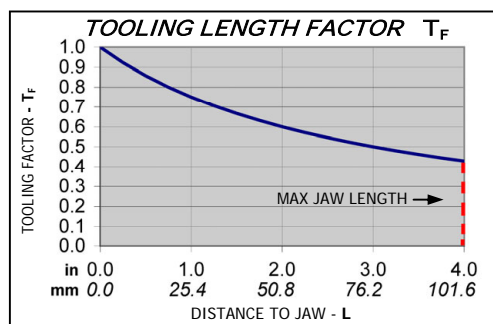
The maximum capacity of the gripper is a function of many variables and will change based on the shape of the part, surface finish, accelerations during transfer, the shape of the finger tooling, and air pressures. Use the Grip force calculated below *and* the application variables to determine the proper sizing of the gripper.

The Grip force - **F** is defined as the maximum force that can be applied to the fingers without moving. The force is analytically determined and will vary slightly with friction.



GRIP FORCE

GRIP FACTOR G_F		PH-60	MPH-60
Standard Unit	EXTERNAL	0.201	12.93
	INTERNAL	0.361	23.28



English **GRIP FORCE - F (lbf) = P_{AIR} (psi) $\times G_F \times T_F$**

Metric **GRIP FORCE - F (N) = P_{AIR} (bar) $\times G_F \times T_F$**

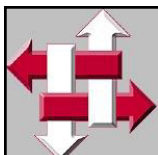
P_{AIR} = Air Pressure

G_F = Grip Factor (see chart)

T_F = Tooling Factor (see graph)



It is recommended that finger tooling be designed to encompass the part as the grip force requirement is lower. If the grip cannot be performed by encompassing the part and a friction grip must be performed, always use a factor of safety of at least 4.



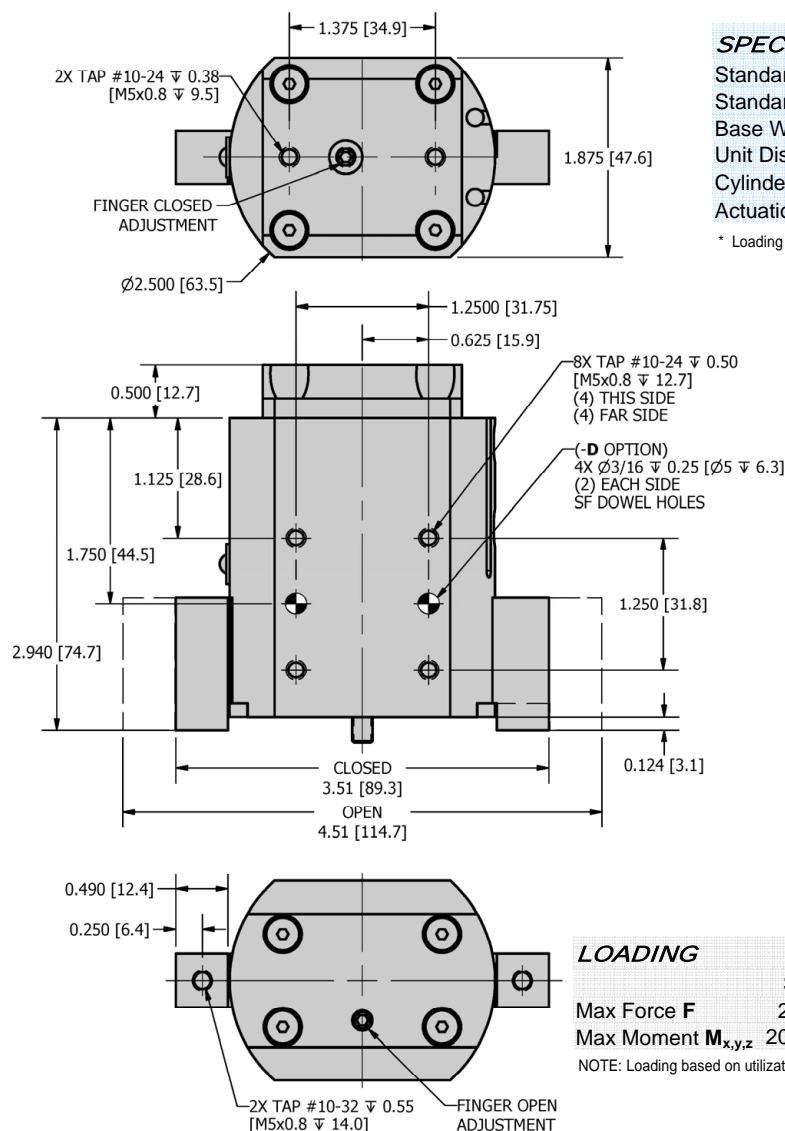
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DURA-GRIP

PARALLEL GRIPPER

PH-70

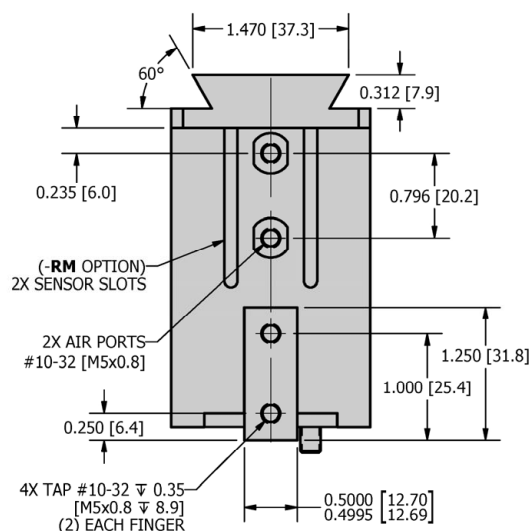
DIMENSIONAL DRAWING



SPECIFICATIONS

	PH-70	MPH-70
Standard Grip Force @ 100 psi [7 bar] *	50 lbf	222 N
Standard Stroke	1.00 in	25.4 mm
Base Weight	1.75 lbs	0.79 kg
Unit Displacement (grip and release)	1.58 in ³	25.3 cm ³
Cylinder Bore Diameter	1.500 in	38.1 mm
Actuation Time (no load)	0.50 sec	

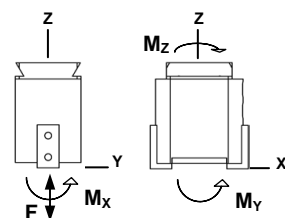
* Loading between lower jaw surface - zero tooling length



LOADING

	PH-70		MPH-70	
	Static	Dynamic	Static	Dynamic
Max Force F	250 lbf	35 lbf	1111 N	155.6 N
Max Moment M_{x,y,z}	200 lbf-in	40 lbf-in	22.6 N-m	4.5 N-m

NOTE: Loading based on utilization of both fingers



HOW TO ORDER : BASIC UNIT

ACCESSORIES (order separately)

METRIC TOP CAP STYLE DOWEL HOLES

M **PH-70** - **V** - **D** - **RM**

SEALS

SENSORS

METRIC M

TOP CAP 70 - 60° Dovetail (shown above)
71 - Flat (see additional information section)

SEALS V - Viton (standard Buna - N)

DOWEL HOLES D - Dowel Holes for positive location of unit

SENSORS RM - Magnetic Sensor Ready
Includes Sensor slots and Piston Magnet. Sensors sold separately - see Magnetic Sensors

SAMPLE ORDER: PH-71-RM

Ex) PH-71 (Flat Top Cap) With Sensor Ready Option

MAGNETIC SENSOR KITS * (Round track mounted)

RSK-N - Magnetic Sensor NPN w/ quick disconnect Kit
RSK-P - Magnetic Sensor PNP w/ quick disconnect Kit
RSK-D - Magnetic Sensor 2-wire output w/ quick disconnect Kit

* Requires sensor ready (-RM). Sensor kits include (2) sensors and (2) 5 meter cables.

MAGNETIC SENSORS * (Round track mounted)

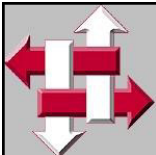
RS-N - Magnetic Sensor NPN w/ quick disconnect
RS-P - Magnetic Sensor PNP w/ quick disconnect
RS-D - Magnetic Sensor 2-wire output w/ quick disconnect

* Requires sensor ready (-RM). Includes (1) sensor.

SENSOR CABLE

SENCAB-5 - Quick Disconnect PUR Cable 5M Length

CUSTOM DESIGNS ALWAYS AVAILABLE
PLEASE CONTACT US FOR INFORMATION



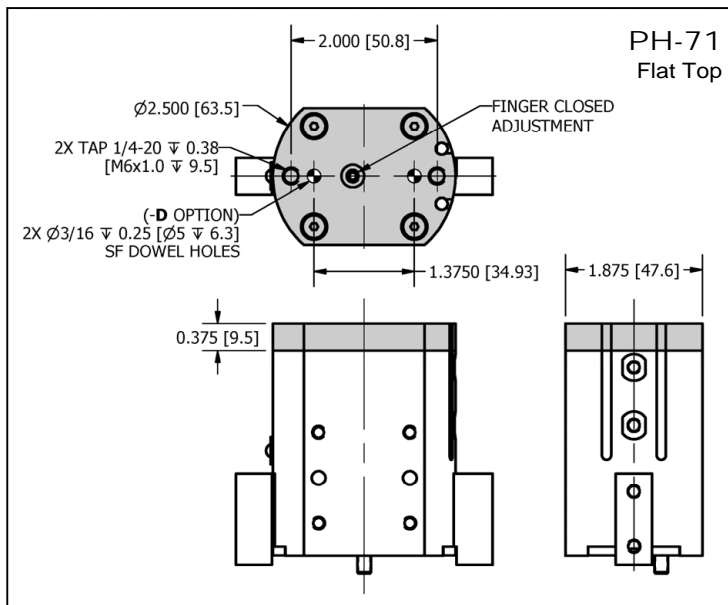
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DURA-GRIP
PARALLEL GRIPPER

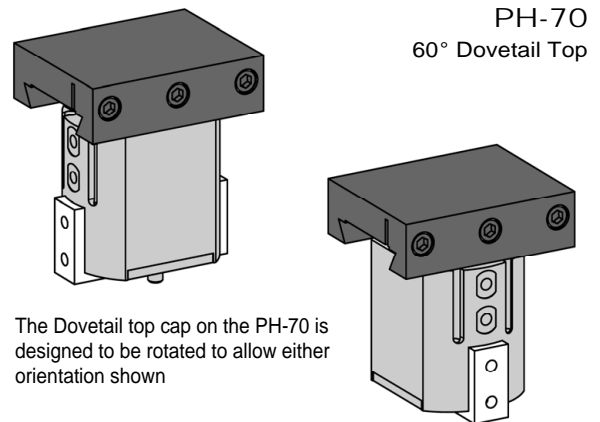
PH-70 

ADDITIONAL MOUNTING INFORMATION

The **DURA-GRIP PH-70** series offers an additional flat top for further flexibility to meet your design requirements.



For further flexibility with the Dovetail, mount the PH-70 with custom dovetail tooling or use the DP-21 Universal receiver.



The Dovetail top cap on the PH-70 is designed to be rotated to allow either orientation shown

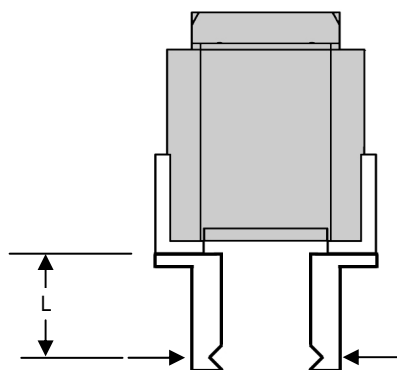
See **DURA-GRIP DP-21** Page for Universal Dovetail receiver

ADDITIONAL INFORMATION

GRIP FORCE

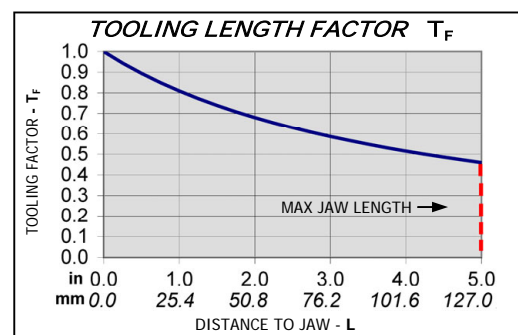
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GRIP FORCE

GRIP FACTOR G_F		PH-70	MPH-70
Standard Unit	EXTERNAL	0.498	32.06
	INTERNAL	0.664	42.76



English **GRIP FORCE - F (lbf) = P_{AIR} (psi) $\times G_F \times T_F$**

Metric **GRIP FORCE - F (N) = P_{AIR} (bar) $\times G_F \times T_F$**

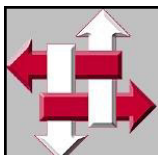
P_{AIR} = Air Pressure

G_F = Grip Factor (see chart)

T_F = Tooling Factor (see graph)



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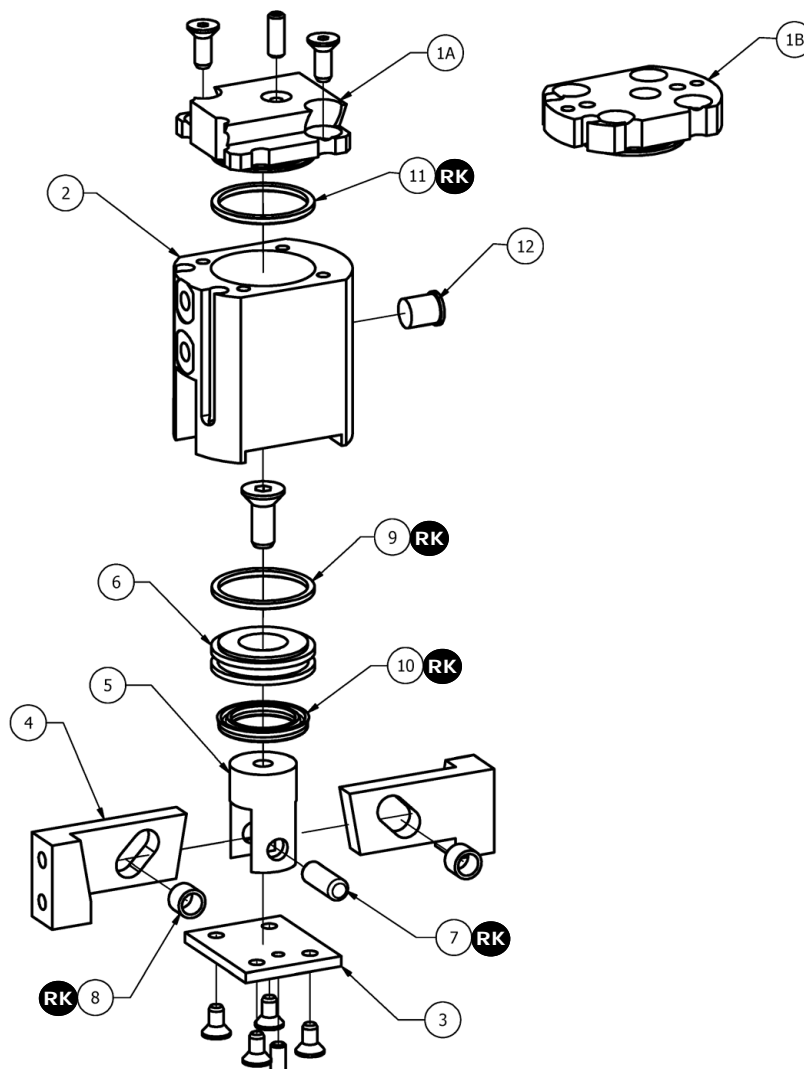


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DURA-GRIP
PARALLEL GRIPPER

PH-SERIES

EXPLODED VIEW



PARTS LIST

HOW TO ORDER PARTS

ITEM	REQ'D	NAME	PH-40	PH-50	PH-60	PH-70	OPTIONS
1A	1	Dovetail Top Cap	PH-40-1	PH-50-1		PH-70-1	-RM ⁴
1B	1	Flat Top Cap	PH-41-1	PH-51-1		PH-71-1	-D ³ -RM ⁴
2	1	Main Body	PH-40-2	PH-50-2	PH-60-2	PH-70-2	-SFR ² -SFL ² -D ³ -RM ⁴
3	1	Bottom Cap	PH-40-3	PH-50-3		PH-70-3	
4	2	Finger	PH-40-4	PH-50-4	PH-60-4	PH-70-4	-SFR ² -SFL ²
5	1	Piston Shank	PH-40-5	PH-50-5	PH-60-6	PH-70-5	
6	1	Piston	PH-40-6	PH-50-6		PH-70-6	-RM ⁵
7	1	Pin *	PH-40-7	PH-50-7			
8	2	Roller *	PH-40-8	PH-50-8			
9	1	Piston Seal *	ORG-018	ORG-212		ORG-218	-V ¹
10	1	Piston Shank Seal *	UCP-145	ORG-016			-V ¹
11	1	Top Cap Seal *	ORG-018	ORG-022		ORG-028	
12	1	Oiler *	OIL-250	OIL-312			
RK	1	Repair Kit * #	PH-40-RK	PH-50-RK		PH-70-RK	-V ¹

METRIC

PART NUMBER



OPTIONS

SAMPLE ORDER: PH-40-4

Ex PH-40 Finger

OPTIONS (see product pages for information)

1 - V = Viton

2 - SFR / SFL = Stationary Finger Right or Left

3 - D = Dowel Holes

4 - RM = Magnetic Sensor Ready

NOTES

* - Metric code not required

- Repair Kits include req'd qty of parts marked with RK