

2P Parallel Gripper- 2-Jaw Precision Series

Precision Gripper

Two centering jaws and very good repeatability [0.02mm] allow loading and unloading accurate cylindrical parts.

Harsh Environments

Shielded design (-E) repels chips and other particulate from internal drive mechanism depending on the chosen material of the shield.

Compact and Powerful

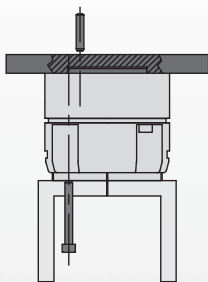
This gripper is designed for use in confined spaces, combining long strokes with a high grip force. Optional safety springs retain the components, should the air supply fail or to increase grip force.

Multipurpose Gripper

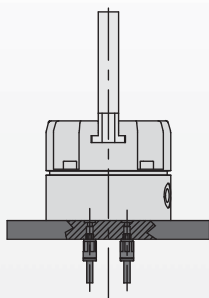
A wide range of options and accessories (extended stroke, hydraulic power, safety springs for internal or external gripping, inductive sensors, tandem cylinder, Viton® seals, and protective boot) allow these grippers to be used in a number of applications.

Mounting Information:

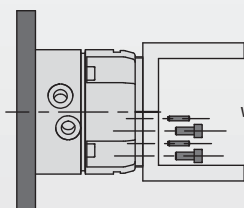
Gripper can be mounted and operated in any orientation



Gripper is located using pilot boss and a dowel pin and assembled with 4 or 6 through body screws.



Gripper can be operated utilizing top manifold air ports.



Fingers are located on jaw with 2 dowel pins and assembled with 1 or 2 screws.

Technical Specifications:

Pneumatic Specifications

Pressure Operating Range
Cylinder Type

Imperial

30-100 psi

Double or double acting
spring-assisted or single
acting with spring
Buna-N

Metric

2-7 bar

Dynamic Seals

Valve Required to Operate:

Double Acting

Single acting (Option RE or RI)

4-way, 2-position
3-way, 2-position

Air Quality Requirements

Filtration
Lubrication

40 Micron or Better
Not Necessary*

Temperature Operating Range

Buna-N Seals (standard)

-30°~180° F

-35°~80° C

Viton® Seals (optional)

-20°~300° F

-30°~150° C

Application Restrictions

Expected Life

Normal Application

w/ Preventative Maintenance

Field Repairable

Seal Repair Kits Available

5 million cycles

10+ million cycles*

Yes

Yes

*Addition of lubrication will greatly increase service life

Product Features

Quality Components

Body made from aluminum alloy with Teflon™ impregnated hardcoat anodize. Other essential parts of the gripper are made of hardened and precision ground steel

Versatile Finger Mounting
2 finger mounting surfaces on each jaw

Viton® Seals
Optional Viton® seals for high temperatures

Protective Gripper Boot
Optional Gripper Boot (-E) to protect the mechanism of the clamp are liquid and large external impurities.

Optional Spring Assist
Optional spring assist retains the component should the air supply fail, to assist the gripper for internal (-RE) or external (-RI) gripping, or in single acting mode

Standard and Extended Stroke (-C)
Each model of gripper is available in two stroke lengths

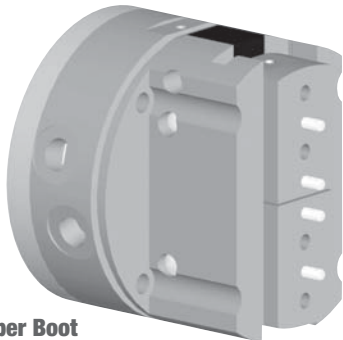
Sensor Target
Option (-T) to control the jaw position at the rear of the clamp

Sensor Unit
Option (-K) to benefit from integrated detection

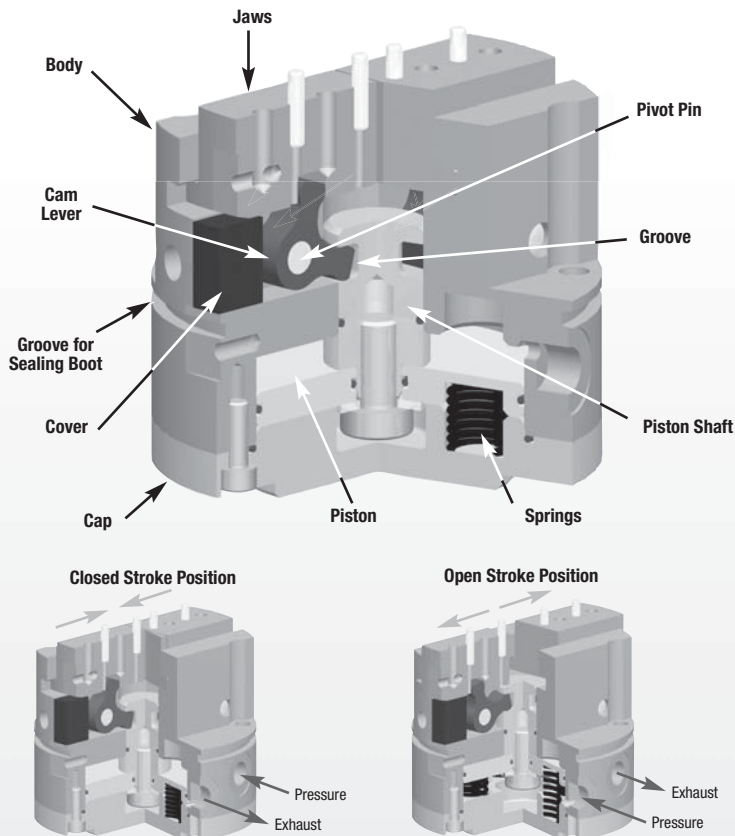
Pneumatic Power
Side or top ports (sealing face / face)

Hydraulic Power
Option (-H) up to 20 bar max, (-H80) up to 80 bar max.

Tandem Cylinder
Option (-M) doubles the grip force

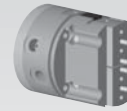


Operating Principle



- A large double-acting piston is connected to the piston shaft at its end with a driving groove.
- Levers pivot in the body about an axis of articulation. Their two heads agree precisely on one side in the groove of the small piston, the other in a groove cut in each jaw holder.
- The rotation of the levers converts the vertical movement of the piston in a horizontal motion and synchronized two-bit gates, which are guided in grooves in «T» fitting body.
- This gripper is suitable for internal or external gripping and can be mounted in any orientation
- Optional failsafe spring can be used to maintain gripping force if gripper loses air pressure or as a single acting return gripper.

Style: 2P Precision Parallel Gripper



	6002P	6002P-C
Total Stroke:	10 mm	16 mm
Force at 6bar: ¹	694 N	432 N
Force w/o air: ²	176 N	109 N
Weight:	0.51 kg	0.51 kg

See Page **1.42 & 1.43**

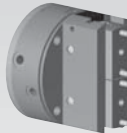
Style: 2P Precision Parallel Gripper



	8002P	8002P-C
Total Stroke:	13 mm	20 mm
Force at 6bar: ¹	1946 N	1256 N
Force w/o air: ²	635 N	410 N
Weight:	0.84 kg	0.84 kg

See Page **1.44 & 1.45**

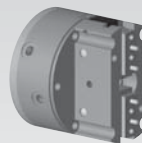
Style: 2P Precision Parallel Gripper



	11002P	11002P-C
Total Stroke:	20 mm	30 mm
Force at 6bar: ¹	3043 N	2030 N
Force w/o air: ²	965 N	644 N
Weight:	2.04 kg	2.04 kg

See Page **1.46 & 1.47**

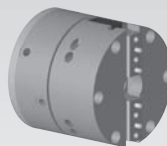
Style: 2P Precision Parallel Gripper



	14002P	14002P-C
Total Stroke:	26 mm	40 mm
Force at 6bar: ¹	6232 N	4031 N
Force w/o air: ²	2305 N	1490 N
Weight:	4.20 kg	4.20 kg

See Page **1.48 & 1.49**

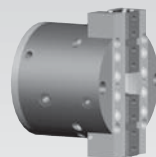
Style: 2P Precision Parallel Gripper



	16502P	16502P-C
Total Stroke:	30 mm	50 mm
Force at 6bar: ¹	11475 N	6878 N
Force w/o air: ²	3825 N	2292 N
Weight:	8.74 kg	8.74 kg

See Page **1.50 & 1.51**

Style: 2P Precision Parallel Gripper



	16502PGR
Total Stroke:	30 mm
Force at 6bar: ¹	11475 N
Force w/o air: ²	3825 N
Weight:	11.5 kg

See Page **1.52**

OPTIONS & ACCESSORIES

See Pages **1.53-1.56**

1. Force with spring and air at 6bar
2. Force with spring without air

PARALLEL GRIPPER 6002P PRECISION 2P GRIPPER SERIES



Specifications

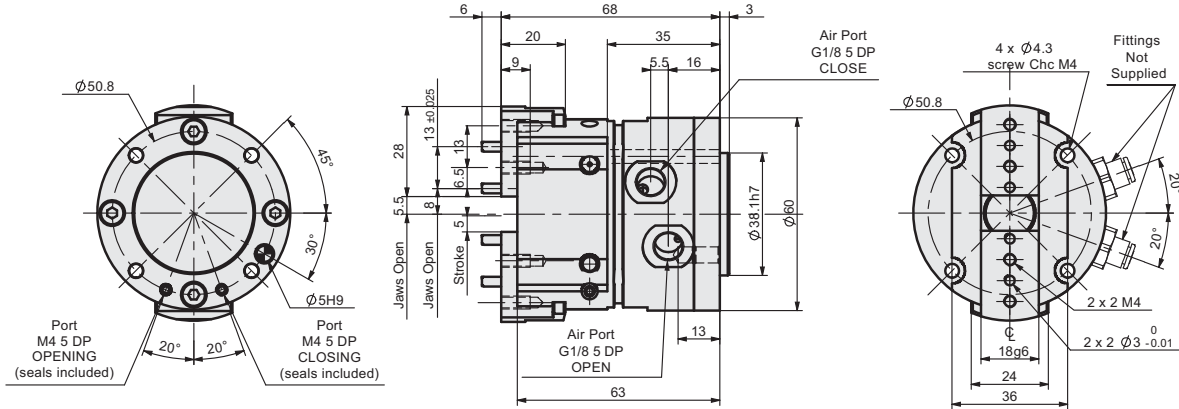
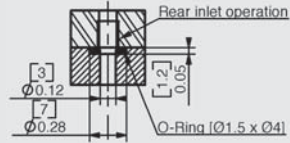
	6002P
Grip Force (F6+R) ¹ , 6 bars, Springs Mid-Way, L=0	694 N
Grip Force (F0+R) ² , 0 bars, Springs Mid-Way, L=0	176 N
Total Stroke	10 mm
Weight	0.51 kg
Pressure Range	2 - 7 bar
Pressure Range with Springs	3 - 7 bar
Ø Cylinder Bore	40 mm
Displacement	12 cm ³
Actuation (open / close)	0.07 s / 0.07 s
Repeatability	± 0.02 mm

1. Force with spring and air at 6bar
2. Force with spring without air

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

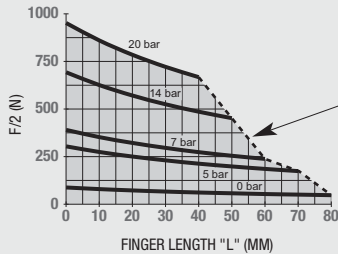
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.005" or [±.013mm]	Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]
---	------------------------	--	--------------------------------	--	---

Grippers are supplied with open side air ports and top manifold air ports plugged. Top manifold sealing dimensions shown.

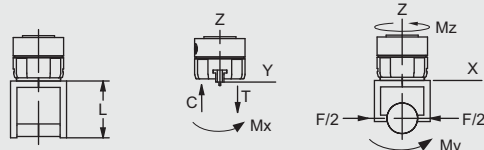


Loading Information:

Sum of forces transmitted by the jaws on the workpiece
(Springs compressed at 50% stroke)



ATTENTION :
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



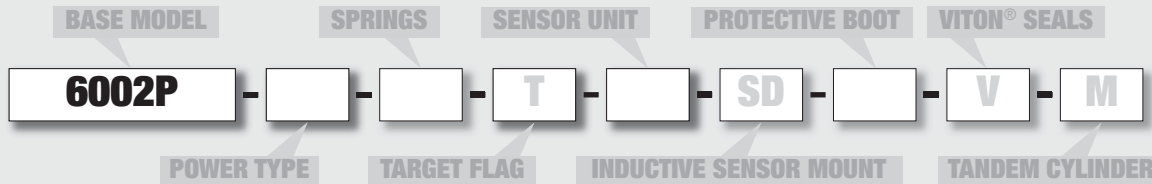
Loading Capacity*

	Static	Dynamic
Maximum Tensile T	546 N	140 N
Maximum Compressive C	1037 N	140 N
Maximum Moment Mx	28 Nm	4 Nm
Maximum Moment My	22 Nm	4 Nm
Maximum Moment Mz	36 Nm	4 Nm

* The Capacities are per set of jaws and are not simultaneous.

How To Order:

See Pages 53-56 for incompatible accessory combinations



POWER TYPE	
P	Pneumatic
H	Hydraulic (page 1.53)
(One of two options is mandatory P or H)	
SPRINGS	
RE	External Gripping
RI	Internal Gripping
SENSOR UNIT	
• KT1	• KT2
• KX1	• KX2
PROTECTIVE BOOT	
• E	• E3

PROTECTIVE BOOT ACCESSORIES

	Model Code	Order #	Qty/Unit
PVC Protective Boot, Brown or Black	E	ER62P	1
Fireproof KEVLAR Protective Boot, Red	E3	E3R62P	1

SENSOR ACCESSORIES

	Model Code	Order #	Qty/Unit
Inductive Sensor Kit (1 holder, 1 flag)	SD	SD60-80P	1 or 2
M8 Inductive Sensor PNP with M8 connector		OISP-011-C	1 or 4
M8 Inductive Sensor NPN with M8 connector		OISN-011-C	1 or 4
Cable (2 meters) with M8 screw right gold		CABL-010	1 or 4

PNEUMATIC ACCESSORIES

Standard Seal Repair Kit		SLKT-156	1
Viton® Seal Repair Kit		SLKT-156V	1
Hydraulic Seal Repair Kit		SLKT-330	1

Options and Accessories:
See Page 1.53-1.56

Specifications

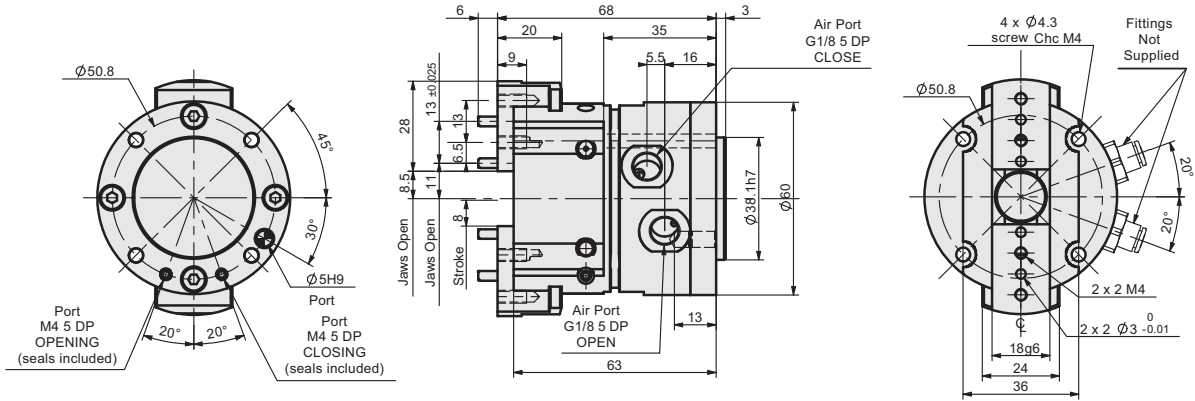
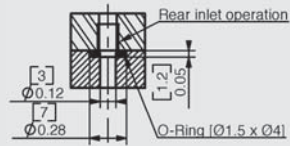
	6002P-C
Grip Force (F6+R) ¹ , 6 bars, Springs Mid-Way, L=0	432 N
Grip Force (F0+R) ² , 0 bars, Springs Mid-Way, L=0	109 N
Total Stroke	16 mm
Weight	0.51 kg
Pressure Range	2 - 7 bar
Pressure Range with Springs	3 - 7 bar
Ø Cylinder Bore	40 mm
Displacement	12 cm ³
Actuation (open / close)	0.07 s / 0.07 s
Repeatability	± 0.02 mm

1. Force with spring and air at 6bar
2. Force with spring without air

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

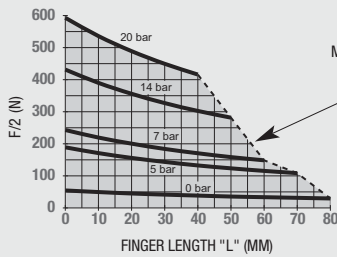
Imperial in.	Metric [mm]
0.00 = ±.01	[0.] = [±.25]
0.000 = ±.005	[0.0] = [±.13]
0.0000 = ±.0005	[0.00] = [±.013]

Grippers are supplied with open side air ports and top manifold air ports plugged. Top manifold sealing dimensions shown.

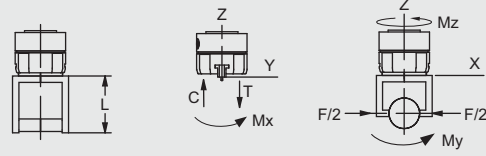


Loading Information:

Sum of forces transmitted by the jaws on the workpiece
(Springs compressed at 50% stroke)



ATTENTION:
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



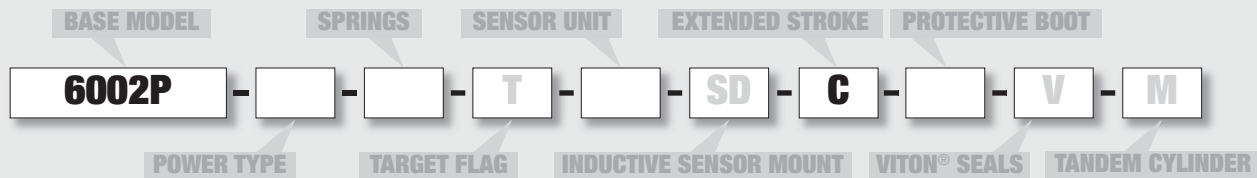
Loading Capacity*

	Static	Dynamic
Maximum Tensile T	410 N	95 N
Maximum Compressive C	780 N	95 N
Maximum Moment Mx	21 Nm	3 Nm
Maximum Moment My	16 Nm	3 Nm
Maximum Moment Mz	27 Nm	3 Nm

* The Capacities are per set of jaws and are not simultaneous.

How To Order:

See Pages 53-56 for incompatible accessory combinations



POWER TYPE	
P	Pneumatic
H	Hydraulic (page 1.53)
(One of two options is mandatory P or H)	
SPRINGS	
RE	External Gripping
RI	Internal Gripping
SENSOR UNIT	
• KT1	• KT2
• KX1	• KX2
PROTECTIVE BOOT	
• E	• E3

PROTECTIVE BOOT ACCESSORIES

	Model Code	Order #	Qty/Unit
PVC Protective Boot, Brown or Black	E	ER62P	1
Fireproof KEVLAR Protective Boot, Red	E3	E3R62P	1

SENSOR ACCESSORIES

	Model Code	Order #	Qty/Unit
Inductive Sensor Kit (1 holder, 1 flag)	SD	SD60-80P	1 or 2
M8 Inductive Sensor PNP with M8 connector		OISP-011-C	1 or 4
M8 Inductive Sensor NPN with M8 connector		OISN-011-C	1 or 4
Cable (2 meters) with M8 screw right gold		CABL-010	1 or 4

PNEUMATIC ACCESSORIES

	Model Code	Order #	Qty/Unit
Standard Seal Repair Kit		SLKT-156	1
Viton® Seal Repair Kit		SLKT-156V	1
Hydraulic Seal Repair Kit		SLKT-330	1

Options and Accessories:
See Page 1.53-1.56

PARALLEL GRIPPER 8002P PRECISION 2P GRIPPER SERIES



Specifications

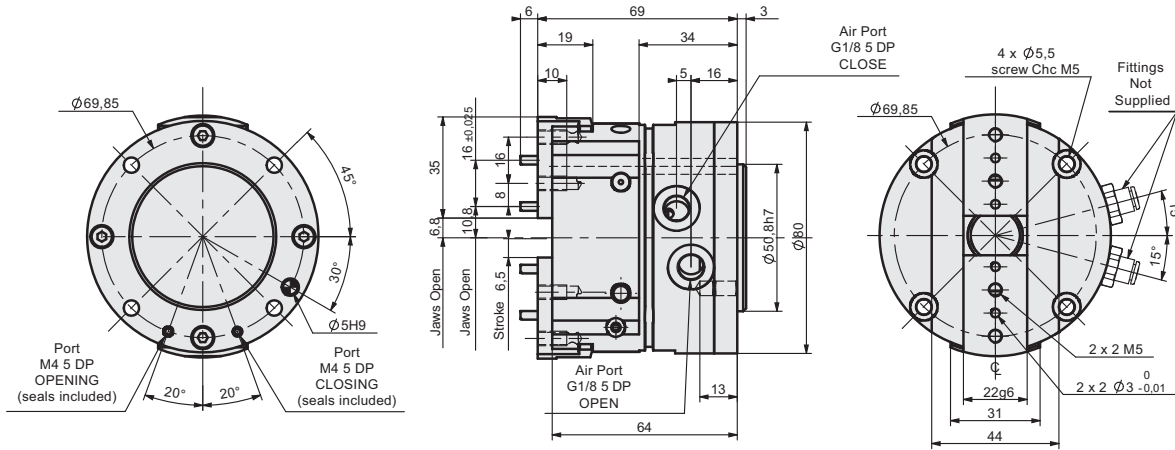
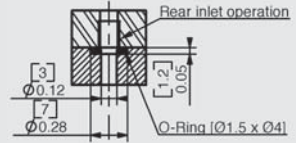
	8002P
Grip Force (F6+R) ¹ , 6 bars, Springs Mid-Way, L=0	1946 N
Grip Force (F0+R) ² , 0 bars, Springs Mid-Way, L=0	635 N
Total Stroke	13 mm
Weight	0.84 kg
Pressure Range	2 -7 bar
Pressure Range with Springs	4 -7 bar
Ø Cylinder Bore	60 mm
Displacement	35 cm ³
Actuation (open / close)	0.08 s / 0.08 s
Repeatability	± 0.02 mm

- Force with spring and air at 6bar
- Force with spring without air

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

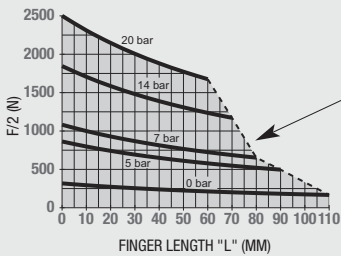
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.005" or [±.013mm]	Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]
---	------------------------	--	--------------------------------	--	---

Grippers are supplied with open side air ports and top manifold air ports plugged. Top manifold sealing dimensions shown.

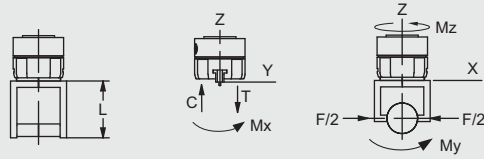


Loading Information:

Sum of forces transmitted by the jaws on the workpiece
(Springs compressed at 50% stroke)



ATTENTION :
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



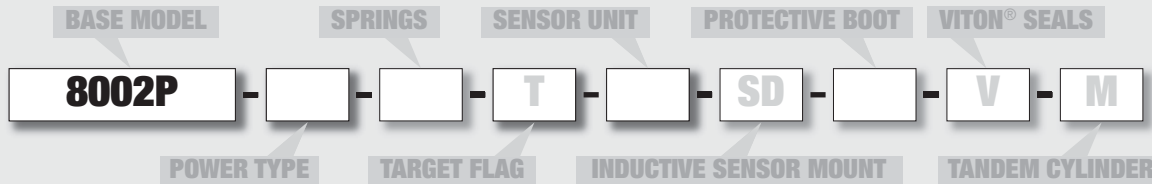
Loading Capacity*

	Static	Dynamic
Maximum Tensile T	819 N	348 N
Maximum Compressive C	1383 N	348 N
Maximum Moment Mx	40 Nm	13 Nm
Maximum Moment My	45 Nm	15 Nm
Maximum Moment Mz	25 Nm	15 Nm

* The Capacities are per set of jaws and are not simultaneous.

How To Order:

See Pages 53-56 for incompatible accessory combinations



POWER TYPE	
P	Pneumatic
H	Hydraulic (page 1.53)
(One of two options is mandatory P or H)	
SPRINGS	
RE	External Gripping
RI	Internal Gripping
SENSOR UNIT	
• KT1	• KT2
• KX1	• KX2
PROTECTIVE BOOT	
• E	• E3

Options and Accessories:
See Page 1.53-1.56

PROTECTIVE BOOT ACCESSORIES

	Model Code	Order #	Qty/Unit
PVC Protective Boot, Brown or Black	E	ER82P	1
Fireproof KEVLAR Protective Boot, Red	E3	E3R82P	1

SENSOR ACCESSORIES

Inductive Sensor Kit (1 holder, 1 flag)	SD	SD60-80P	1 or 2
M8 Inductive Sensor PNP with M8 connector		OISP-011-C	1 or 4
M8 Inductive Sensor NPN with M8 connector		OISN-011-C	1 or 4
Cable (2 meters) with M8 screw right gold		CABL-010	1 or 4

PNEUMATIC ACCESSORIES

Standard Seal Repair Kit		S80	1
Viton® Seal Repair Kit		S80V	1
Hydraulic Seal Repair Kit		S80H	1

Specifications

Grip Force (F6+R) ¹ , 6 bars, Springs Mid-Way, L=0	1256 N
Grip Force (F0+R) ² , 0 bars, Springs Mid-Way, L=0	410 N
Total Stroke	20 mm
Weight	0.84 kg
Pressure Range	2 - 7 bar
Pressure Range with Springs	4 - 7 bar
Ø Cylinder Bore	60 mm
Displacement	35 cm ³
Actuation (open / close)	0.08 s / 0.08 s
Repeatability	± 0.02 mm

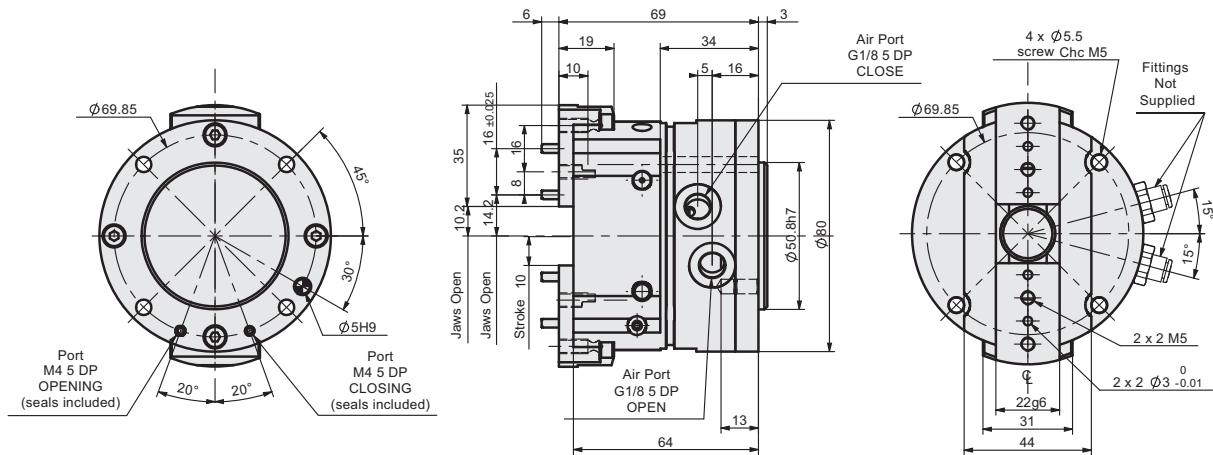
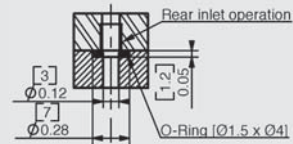
1. Force with spring and air at 6bar
2. Force with spring without air

8002P-C

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

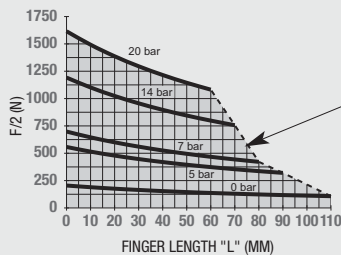
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.005" or [±.013mm]	Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]
---	------------------------	--	--------------------------------	--	---

Grippers are supplied with open side air ports and top manifold air ports plugged. Top manifold sealing dimensions shown.

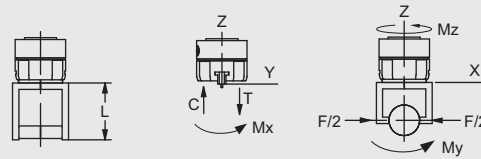


Loading Information:

Sum of forces transmitted by the jaws on the workpiece
(Springs compressed at 50% stroke)



ATTENTION :
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



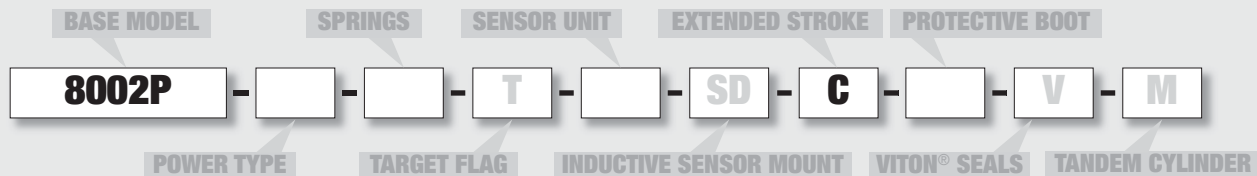
Loading Capacity*

	Static	Dynamic
Maximum Tensile T	615 N	236 N
Maximum Compressive C	1040 N	236 N
Maximum Moment Mx	30 Nm	9 Nm
Maximum Moment My	33 Nm	10 Nm
Maximum Moment Mz	18 Nm	10 Nm

* The Capacities are per set of jaws and are not simultaneous.

How To Order:

See Pages 53-56 for incompatible accessory combinations



POWER TYPE

- P Pneumatic
 - H Hydraulic (page 1.53)
- (One of two options is mandatory **P** or **H**)

SPRINGS

- RE External Gripping
- RI Internal Gripping

SENSOR UNIT

- KT1 • KT2 • KX1 • KX2

PROTECTIVE BOOT

- E • E3

PROTECTIVE BOOT ACCESSORIES

	Model Code	Order #	Qty/Unit
PVC Protective Boot, Brown or Black	E	ER82P	1
Fireproof KEVLAR Protective Boot, Red	E3	E3R82P	1

SENSOR ACCESSORIES

	Model Code	Order #	Qty/Unit
Inductive Sensor Kit (1 holder, 1 flag)	SD	SD60-80P	1 or 2
M8 Inductive Sensor PNP with M8 connector		OISP-011-C	1 or 4
M8 Inductive Sensor NPN with M8 connector		OISN-011-C	1 or 4
Cable (2 meters) with M8 screw right gold		CABL-010	1 or 4

PNEUMATIC ACCESSORIES

	Model Code	Order #	Qty/Unit
Standard Seal Repair Kit		S80	1
Viton® Seal Repair Kit		S80V	1
Hydraulic Seal Repair Kit		S80H	1

Options and Accessories:
See Page 1.53-1.56



PARALLEL GRIPPER 11002P PRECISION 2P GRIPPER SERIES

Specifications

Grip Force (F6+R) ¹ , 6 bars, Springs Mid-Way, L=0	3043 N
Grip Force (F0+R) ² , 0 bars, Springs Mid-Way, L=0	965 N
Total Stroke	20 mm
Weight	2.04 kg
Pressure Range	2 -7 bar
Pressure Range with Springs	4 -7 bar
Ø Cylinder Bore	76 mm
Displacement	87 cm ³
Actuation (open / close)	0.10 s / 0.10 s
Repeatability	± 0.02 mm

- Force with spring and air at 6bar
- Force with spring without air

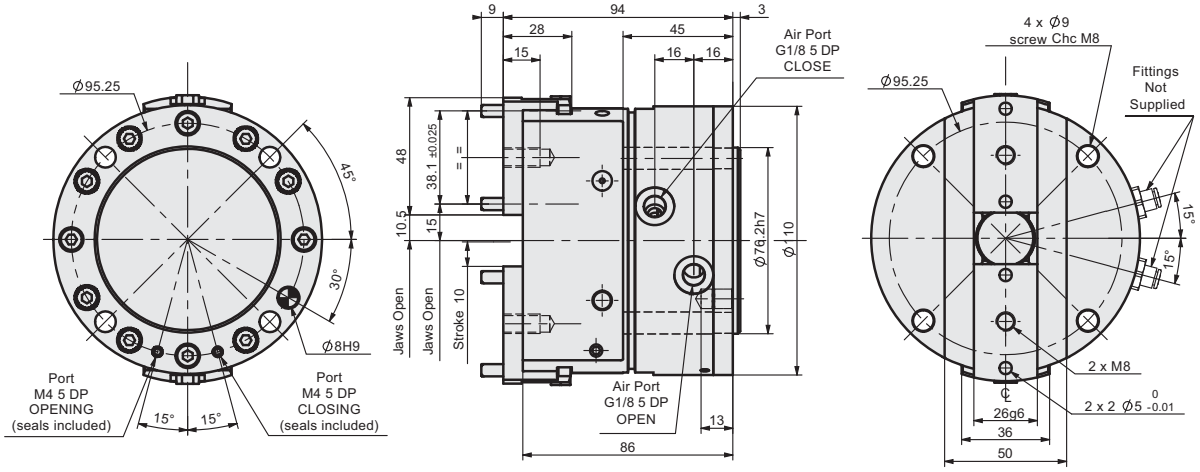
11002P

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.005" or [±.013mm]	Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [.0] = [±.25] [0.0] = [±.13] [0.00] = [±.013]
---	------------------------	--	--------------------------------	--	---

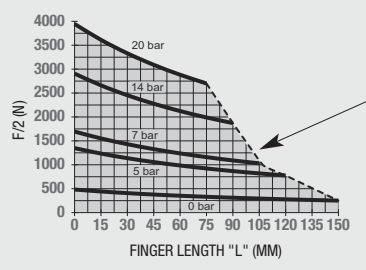
Grippers are supplied with open side air ports and top manifold air ports plugged. Top manifold sealing dimensions shown.

O-Ring [Ø1.5 x Ø5]

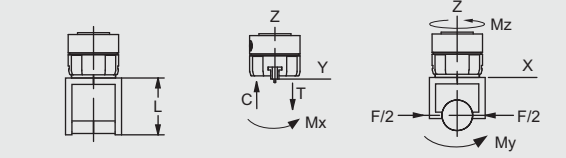


Loading Information:

Sum of forces transmitted by the jaws on the workpiece
(Springs compressed at 50% stroke)



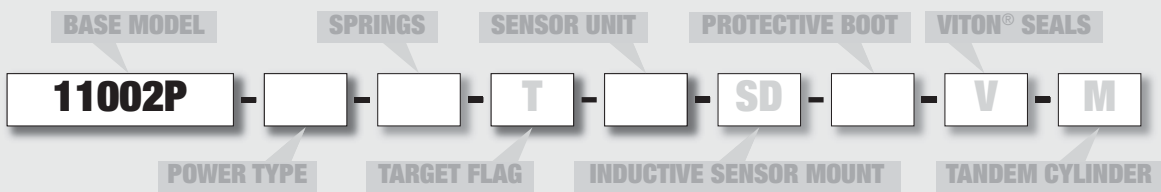
ATTENTION :
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



Loading Capacity*	Static	Dynamic
Maximum Tensile T	1040 N	556 N
Maximum Compressive C	1768 N	556 N
Maximum Moment Mx	39 Nm	25 Nm
Maximum Moment My	53 Nm	33 Nm
Maximum Moment Mz	60 Nm	33 Nm

* The Capacities are per set of jaws and are not simultaneous.

How To Order: See Pages 53-56 for incompatible accessory combinations



POWER TYPE	
P	Pneumatic
H	Hydraulic (page 1.53)
(One of two options is mandatory P or H)	
SPRINGS	
RE	External Gripping
RI	Internal Gripping
SENSOR UNIT	
• KT1	• KT2
• KX1	• KX2
PROTECTIVE BOOT	
• E	• E3

PROTECTIVE BOOT ACCESSORIES

	Model Code	Order #	Qty/Unit
PVC Protective Boot, Brown or Black	E	ER112P	1
Fireproof KEVLAR Protective Boot, Red	E3	E3R112P	1

SENSOR ACCESSORIES

	Model Code	Order #	Qty/Unit
Inductive Sensor Kit (1 holder, 1 flag)	SD	SD110P	1 or 2
M8 Inductive Sensor PNP with M8 connector		OISP-011-C	1 or 4
M8 Inductive Sensor NPN with M8 connector		OISN-011-C	1 or 4
Cable (2 meters) with M8 screw right gold		CABL-010	1 or 4

PNEUMATIC ACCESSORIES

	Model Code	Order #	Qty/Unit
Standard Seal Repair Kit		S110	1
Viton® Seal Repair Kit		S110V	1
Hydraulic Seal Repair Kit		S110H	1

Options and Accessories:
See Page 1.53-1.56

Specifications

Grip Force (F6+R) ¹ , 6 bars, Springs Mid-Way, L=0	2030 N
Grip Force (F0+R) ² , 0 bars, Springs Mid-Way, L=0	644 N
Total Stroke	30 mm
Weight	2.04 kg
Pressure Range	2 - 7 bar
Pressure Range with Springs	4 - 7 bar
Ø Cylinder Bore	76 mm
Displacement	87 cm ³
Actuation (open / close)	0.10 s / 0.10 s
Repeatability	± 0.02 mm

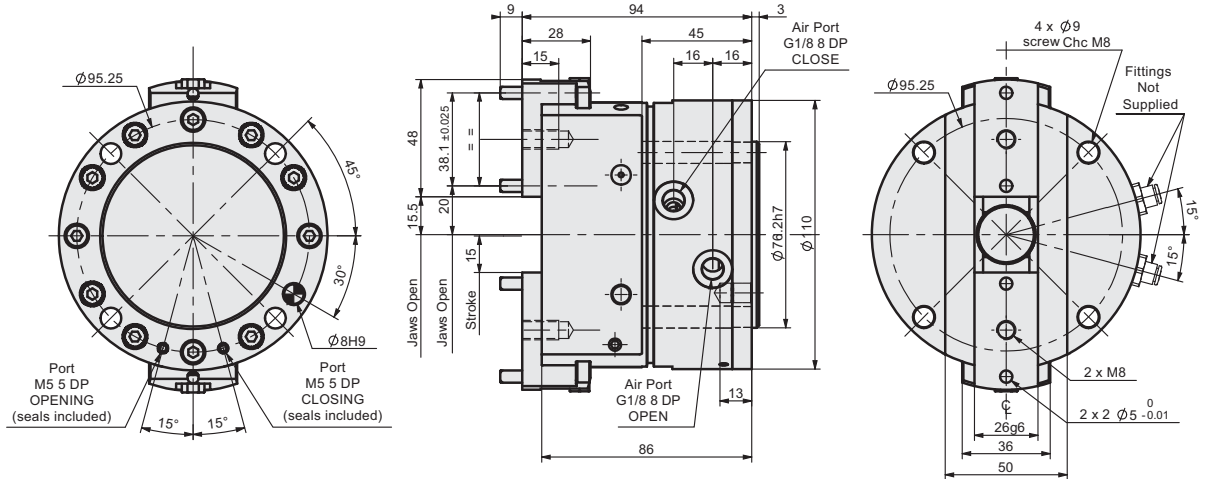
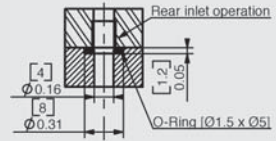
1. Force with spring and air at 6bar
2. Force with spring without air

11002P-C

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

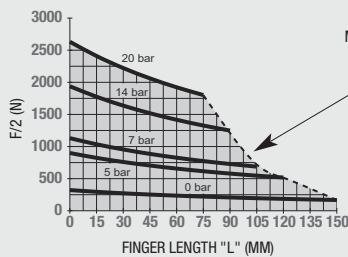
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.005" or [±.013mm]	Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]
---	------------------------	--	--------------------------------	--	---

Grippers are supplied with open side air ports and top manifold air ports plugged. Top manifold sealing dimensions shown.

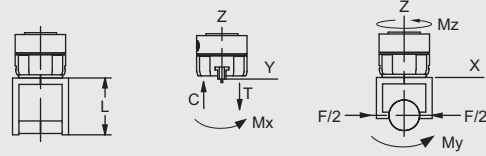


Loading Information:

Sum of forces transmitted by the jaws on the workpiece
(Springs compressed at 50% stroke)



ATTENTION :
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



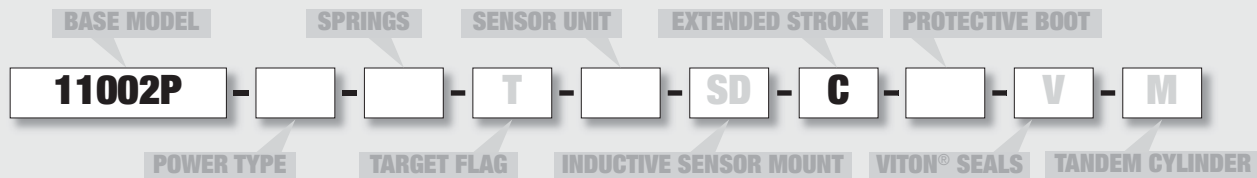
Loading Capacity*

	Static	Dynamic
Maximum Tensile T	945 N	370 N
Maximum Compressive C	1607 N	370 N
Maximum Moment Mx	35 Nm	18 Nm
Maximum Moment My	47 Nm	24 Nm
Maximum Moment Mz	56 Nm	24 Nm

* The Capacities are per set of jaws and are not simultaneous.

How To Order:

See Pages 53-56 for incompatible accessory combinations



POWER TYPE

- P Pneumatic
 - H Hydraulic (page 1.53)
- (One of two options is mandatory P or H)

SPRINGS

- RE External Gripping
- RI Internal Gripping

SENSOR UNIT

- KT1 • KT2 • KX1 • KX2

PROTECTIVE BOOT

- E • E3

PROTECTIVE BOOT ACCESSORIES

	Model Code	Order #	Qty/Unit
PVC Protective Boot, Brown or Black	E	ER112P	1
Fireproof KEVLAR Protective Boot, Red	E3	E3R112P	1

SENSOR ACCESSORIES

	Model Code	Order #	Qty/Unit
Inductive Sensor Kit (1 holder, 1 flag)	SD	SD110P	1 or 2
M8 Inductive Sensor PNP with M8 connector		OISP-011-C	1 or 4
M8 Inductive Sensor NPN with M8 connector		OISN-011-C	1 or 4
Cable (2 meters) with M8 screw right gold		CABL-010	1 or 4

PNEUMATIC ACCESSORIES

	Model Code	Order #	Qty/Unit
Standard Seal Repair Kit		S110	1
Viton® Seal Repair Kit		S110V	1
Hydraulic Seal Repair Kit		S110H	1

Options and Accessories:
See Page 1.53-1.56

PARALLEL GRIPPER 14002P PRECISION 2P GRIPPER SERIES



Specifications

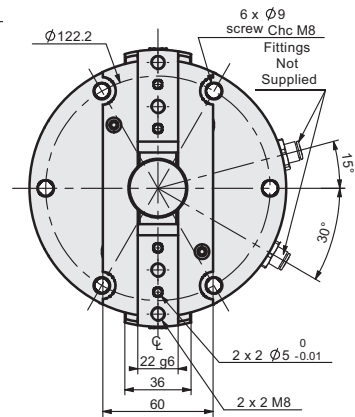
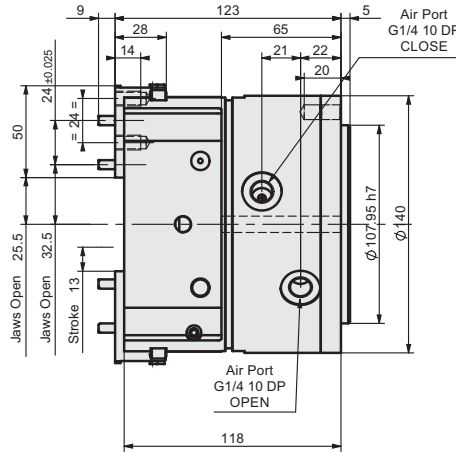
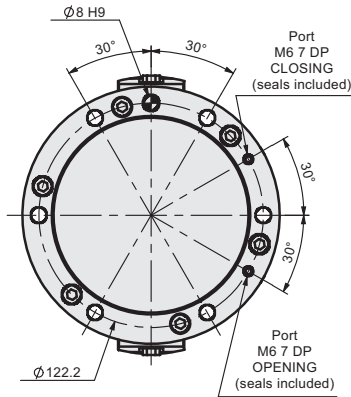
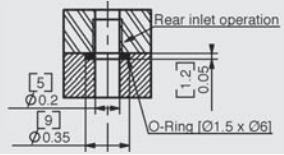
	14002P
Grip Force (F6+R) ¹ , 6 bars, Springs Mid-Way, L=0	6232 N
Grip Force (F0+R) ² , 0 bars, Springs Mid-Way, L=0	2305 N
Total Stroke	26 mm
Weight	4.20 kg
Pressure Range	2 -7 bar
Pressure Range with Springs	4 -7 bar
Ø Cylinder Bore	105 mm
Displacement	220 cm ³
Actuation (open / close)	0.16 s / 0.16 s
Repeatability	± 0.02 mm

- Force with spring and air at 6bar
- Force with spring without air

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

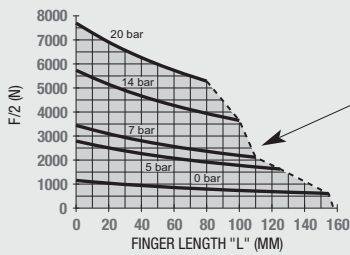
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.005" or [±.013mm]	Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]
---	------------------------	--	--------------------------------	--	---

Grippers are supplied with open side air ports and top manifold air ports plugged. Top manifold sealing dimensions shown.

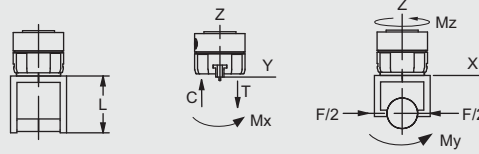


Loading Information:

Sum of forces transmitted by the jaws on the workpiece
(Springs compressed at 50% stroke)



ATTENTION :
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



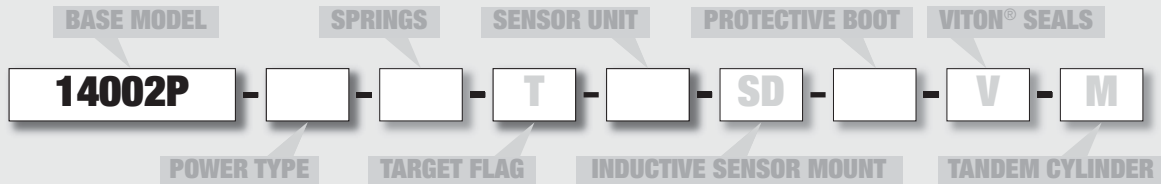
Loading Capacity*

	Static	Dynamic
Maximum Tensile T	1600 N	550 N
Maximum Compressive C	1820 N	550 N
Maximum Moment Mx	55 Nm	18 Nm
Maximum Moment My	90 Nm	30 Nm
Maximum Moment Mz	90 Nm	30 Nm

* The Capacities are per set of jaws and are not simultaneous.

How To Order:

See Pages 53-56 for incompatible accessory combinations



POWER TYPE	
P	Pneumatic
H	Hydraulic (page 1.53)
(One of two options is mandatory P or H)	
SPRINGS	
RE	External Gripping
RI	Internal Gripping
SENSOR UNIT	
• KT1	• KT2
• KX1	• KX2
PROTECTIVE BOOT	
• E	• E3

Options and Accessories:
See Page 1.53-1.56

PROTECTIVE BOOT ACCESSORIES

	Model Code	Order #	Qty/Unit
PVC Protective Boot, Brown or Black	E	KP-311	1
Fireproof KEVLAR Protective Boot, Red	E3	KP-313	1

SENSOR ACCESSORIES

	Model Code	Order #	Qty/Unit
Inductive Sensor Kit (1 holder, 1 flag)	SD	OSMK-114	1 or 2
M8 Inductive Sensor PNP with M12 connector		OISP-017-C	1 or 4
M8 Inductive Sensor NPN with M12 connector		OISN-017-C	1 or 4
Cable (2 meters) with M12 screw right gold		CABL-014	1 or 4

PNEUMATIC ACCESSORIES

	Model Code	Order #	Qty/Unit
Standard Seal Repair Kit		SLKT-333	1
Viton® Seal Repair Kit		SLKT-333V	1
Hydraulic Seal Repair Kit		SLKT-334	1

Specifications

Grip Force (F6+R) ¹ , 6 bars, Springs Mid-Way, L=0	4031 N
Grip Force (F0+R) ² , 0 bars, Springs Mid-Way, L=0	1490 N
Total Stroke	40 mm
Weight	4.20 kg
Pressure Range	2 - 7 bar
Pressure Range with Springs	4 - 7 bar
Ø Cylinder Bore	105 mm
Displacement	220 cm ³
Actuation (open / close)	0.16 s / 0.16 s
Repeatability	± 0.02 mm

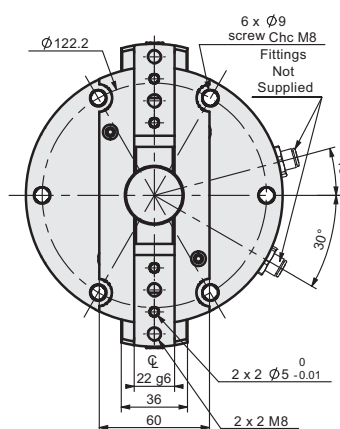
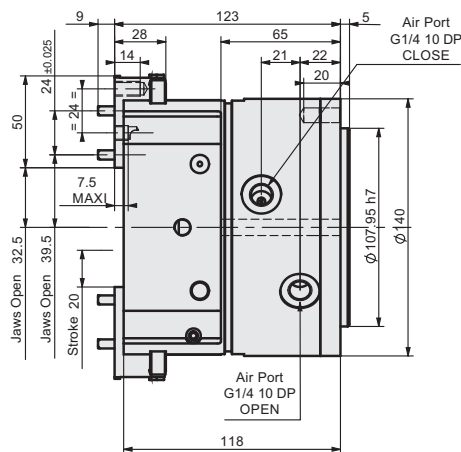
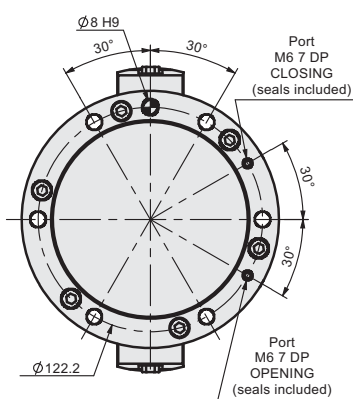
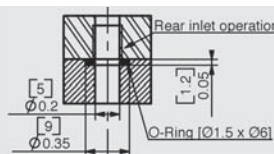
1. Force with spring and air at 6bar
2. Force with spring without air

14002P-C

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

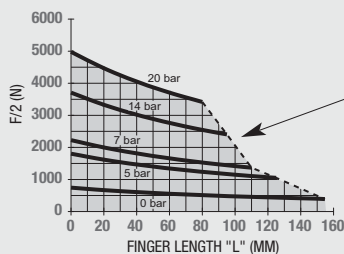
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.005" or [±.013mm]	Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]
---	------------------------	--	--------------------------------	--	---

Grippers are supplied with open side air ports and top manifold air ports plugged. Top manifold sealing dimensions shown.

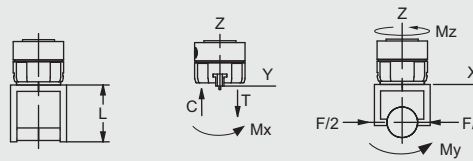


Loading Information:

Sum of forces transmitted by the jaws on the workpiece
(Springs compressed at 50% stroke)



ATTENTION :
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



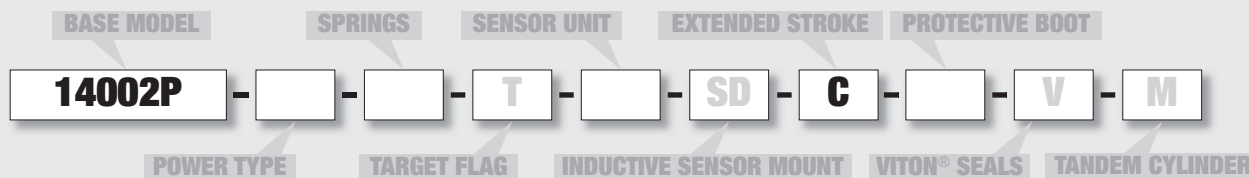
Loading Capacity*

	Static	Dynamic
Maximum Tensile T	1450 N	400 N
Maximum Compressive C	1660 N	400 N
Maximum Moment Mx	50 Nm	15 Nm
Maximum Moment My	75 Nm	25 Nm
Maximum Moment Mz	75 Nm	25 Nm

* The Capacities are per set of jaws and are not simultaneous.

How To Order:

See Pages 53-56 for incompatible accessory combinations



POWER TYPE	
P	Pneumatic
H	Hydraulic (page 1.53)
(One of two options is mandatory P or H)	
SPRINGS	
RE	External Gripping
RI	Internal Gripping
SENSOR UNIT	
• KT1	• KT2
• KX1	• KX2
PROTECTIVE BOOT	
• E	• E3

PROTECTIVE BOOT ACCESSORIES

	Model Code	Order #	Qty/Unit
PVC Protective Boot, Brown or Black	E	KP-311	1
Fireproof KEVLAR Protective Boot, Red	E3	KP-313	1

SENSOR ACCESSORIES

	Model Code	Order #	Qty/Unit
Inductive Sensor Kit (1 holder, 1 flag)	SD	OSMK-114	1 or 2
M8 Inductive Sensor PNP with M12 connector		OISP-017-C	1 or 4
M8 Inductive Sensor NPN with M12 connector		OISN-017-C	1 or 4
Cable (2 meters) with M12 screw right gold		CABL-014	1 or 4

PNEUMATIC ACCESSORIES

	Model Code	Order #	Qty/Unit
Standard Seal Repair Kit		SLKT-333	1
Viton® Seal Repair Kit		SLKT-333V	1
Hydraulic Seal Repair Kit		SLKT-334	1

Options and Accessories:
See Page 1.53-1.56

PARALLEL GRIPPER 16502P PRECISION 2P GRIPPER SERIES

1.50

Specifications

Grip Force (F6+R) ¹ , 6 bars, Springs Mid-Way, L=0	11475 N
Grip Force (F0+R) ² , 0 bars, Springs Mid-Way, L=0	3825 N
Total Stroke	30 mm
Weight	8.74 kg
Pressure Range	2 -7 bar
Pressure Range with Springs	4 -7 bar
Ø Cylinder Bore	120 mm
Displacement	494 cm ³
Actuation (open / close)	0.29 s / 0.29 s
Repeatability	± 0.02 mm

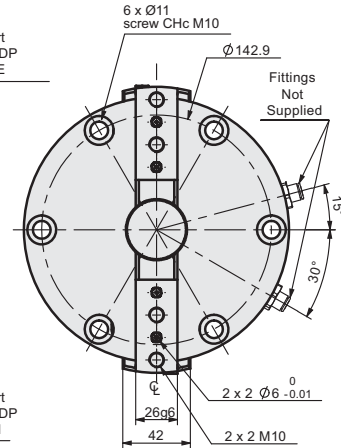
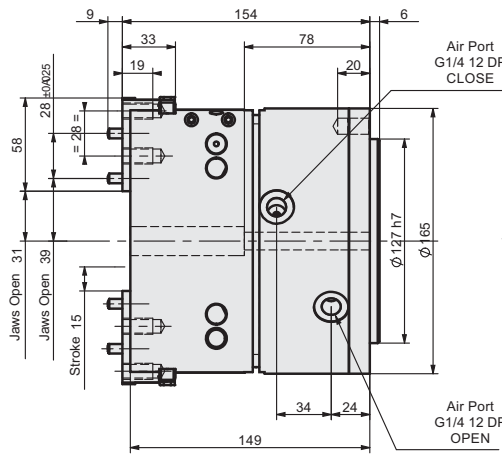
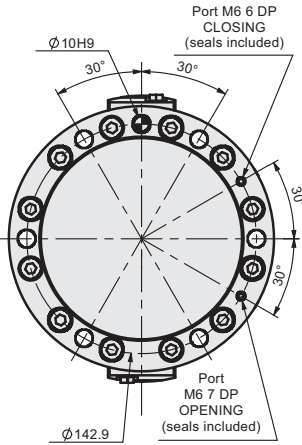
1. Force with spring and air at 6bar
2. Force with spring without air

16502P

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

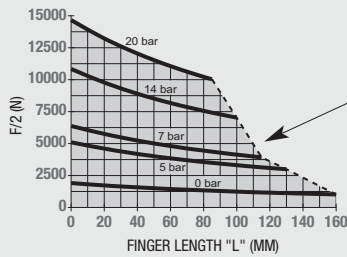
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.005" or [±.013mm]	Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]
---	------------------------	--	--------------------------------	--	---

Grippers are supplied with open side air ports and top manifold air ports plugged. Top manifold sealing dimensions shown.

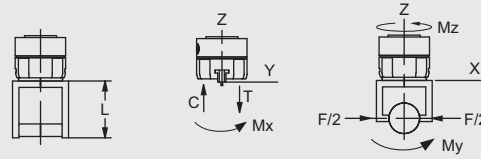


Loading Information:

Sum of forces transmitted by the jaws on the workpiece
(Springs compressed at 50% stroke)



ATTENTION :
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



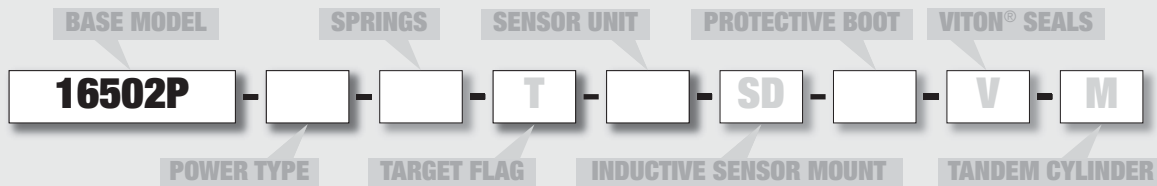
Loading Capacity*

	Static	Dynamic
Maximum Tensile T	1720 N	650 N
Maximum Compressive C	2160 N	650 N
Maximum Moment Mx	70 Nm	17 Nm
Maximum Moment My	100 Nm	30 Nm
Maximum Moment Mz	100 Nm	30 Nm

* The Capacities are per set of jaws and are not simultaneous.

How To Order:

See Pages 53-56 for incompatible accessory combinations



POWER TYPE	
P	Pneumatic
H	Hydraulic (page 1.53)
(One of two options is mandatory P or H)	
SPRINGS	
RE	External Gripping
RI	Internal Gripping
SENSOR UNIT	
• KT1	• KT2
• KX1	• KX2
PROTECTIVE BOOT	
• E	• E3

PROTECTIVE BOOT ACCESSORIES

	Model Code	Order #	Qty/Unit
PVC Protective Boot, Brown or Black	E	KP-314	1
Fireproof KEVLAR Protective Boot, Red	E3	KP-316	1

SENSOR ACCESSORIES

	Model Code	Order #	Qty/Unit
Inductive Sensor Kit (1 holder, 1 flag)	SD	OSMK-115	1 or 2
M8 Inductive Sensor PNP with M12 connector		OISP-017-C	1 or 4
M8 Inductive Sensor NPN with M12 connector		OISN-017-C	1 or 4
Cable (2 meters) with M12 screw right gold		CABL-014	1 or 4

PNEUMATIC ACCESSORIES

	Model Code	Order #	Qty/Unit
Standard Seal Repair Kit		SLKT-335	1
Viton® Seal Repair Kit		SLKT-335V	1
Hydraulic Seal Repair Kit		SLKT-336	1

Options and Accessories:
See Page 1.53-1.56

Specifications

Grip Force (F6+R) ¹ , 6 bars, Springs Mid-Way, L=0	6878 N
Grip Force (F0+R) ² , 0 bars, Springs Mid-Way, L=0	2292 N
Total Stroke	50 mm
Weight	8.74 kg
Pressure Range	2 -7 bar
Pressure Range with Springs	4 -7 bar
Ø Cylinder Bore	120 mm
Displacement	494 cm ³
Actuation (open / close)	0.29 s / 0.29 s
Repeatability	± 0.02 mm

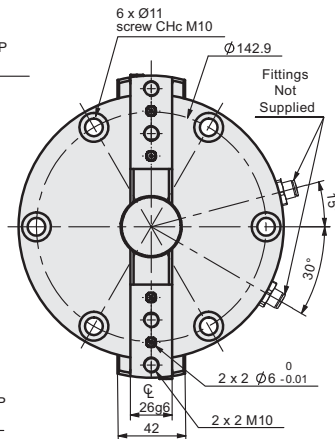
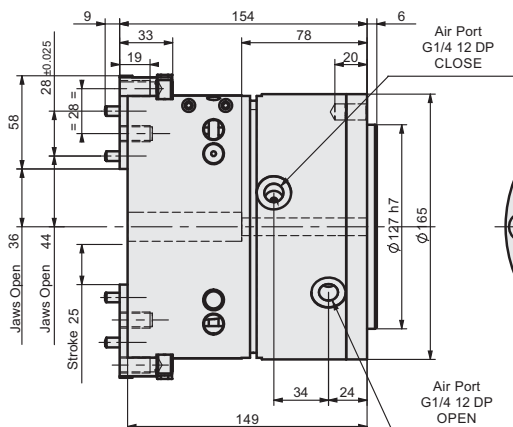
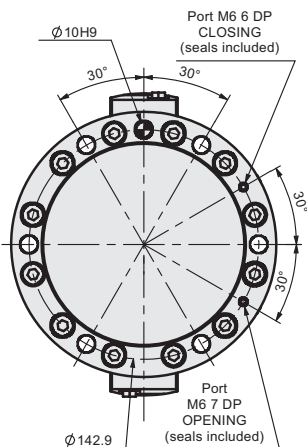
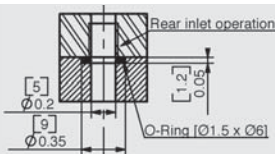
1. Force with spring and air at 6bar
2. Force with spring without air

16502P-C

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

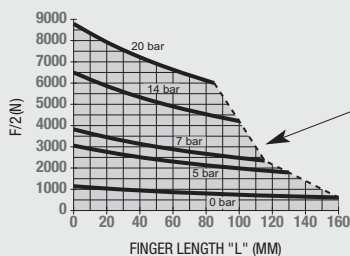
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.005" or [±.013mm]	Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]
---	------------------------	--	--------------------------------	--	---

Grippers are supplied with open side air ports and top manifold air ports plugged. Top manifold sealing dimensions shown.

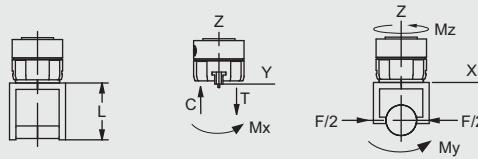


Loading Information:

Sum of forces transmitted by the jaws on the workpiece
(Springs compressed at 50% stroke)



ATTENTION :
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



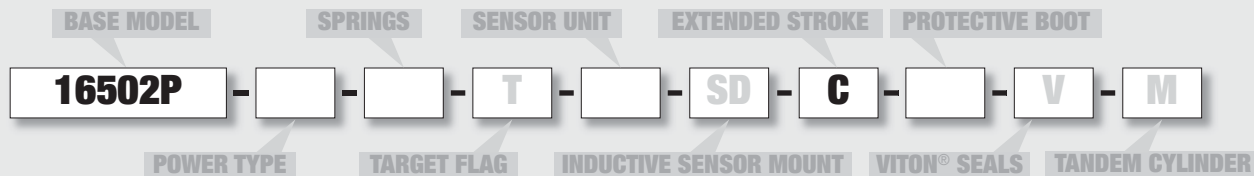
Loading Capacity*

	Static	Dynamic
Maximum Tensile T	1550 N	580 N
Maximum Compressive C	1950 N	580 N
Maximum Moment Mx	60 Nm	20 Nm
Maximum Moment My	80 Nm	25 Nm
Maximum Moment Mz	90 Nm	25 Nm

* The Capacities are per set of jaws and are not simultaneous.

How To Order:

See Pages 53-56 for incompatible accessory combinations



POWER TYPE

- P Pneumatic
 - H Hydraulic (page 1.53)
- (One of two options is mandatory **P** or **H**)

SPRINGS

- RE External Gripping
- RI Internal Gripping

SENSOR UNIT

- KT1 • KT2 • KX1 • KX2

PROTECTIVE BOOT

- E • E3

PROTECTIVE BOOT ACCESSORIES

	Model Code	Order #	Qty/Unit
PVC Protective Boot, Brown or Black	E	KP-314	1
Fireproof KEVLAR Protective Boot, Red	E3	KP-316	1

SENSOR ACCESSORIES

	Model Code	Order #	Qty/Unit
Inductive Sensor Kit (1 holder, 1 flag)	SD	OSMK-115	1 or 2
M8 Inductive Sensor PNP with M12 connector		OISP-017-C	1 or 4
M8 Inductive Sensor NPN with M12 connector		OISN-017-C	1 or 4
Cable (2 meters) with M12 screw right gold		CABL-014	1 or 4

PNEUMATIC ACCESSORIES

	Model Code	Order #	Qty/Unit
Standard Seal Repair Kit		SLKT-335	1
Viton® Seal Repair Kit		SLKT-335V	1
Hydraulic Seal Repair Kit		SLKT-336	1

Options and Accessories:
See Page 1.53-1.56



PARALLEL GRIPPER 16502PGR PRECISION 2P GRIPPER SERIES

Specifications

Grip Force (F6+R) ¹ , 6 bars, Springs Mid-Way, L=0	11475 N
Grip Force (F0+R) ² , 0 bars, Springs Mid-Way, L=0	3825 N
Total Stroke	30 mm
Weight	8.74 kg
Pressure Range	2 -7 bar
Pressure Range with Springs	4 -7 bar
Ø Cylinder Bore	120 mm
Displacement	494 cm3
Actuation (open / close)	0.29 s / 0.29 s
Repeatability	± 0.02 mm

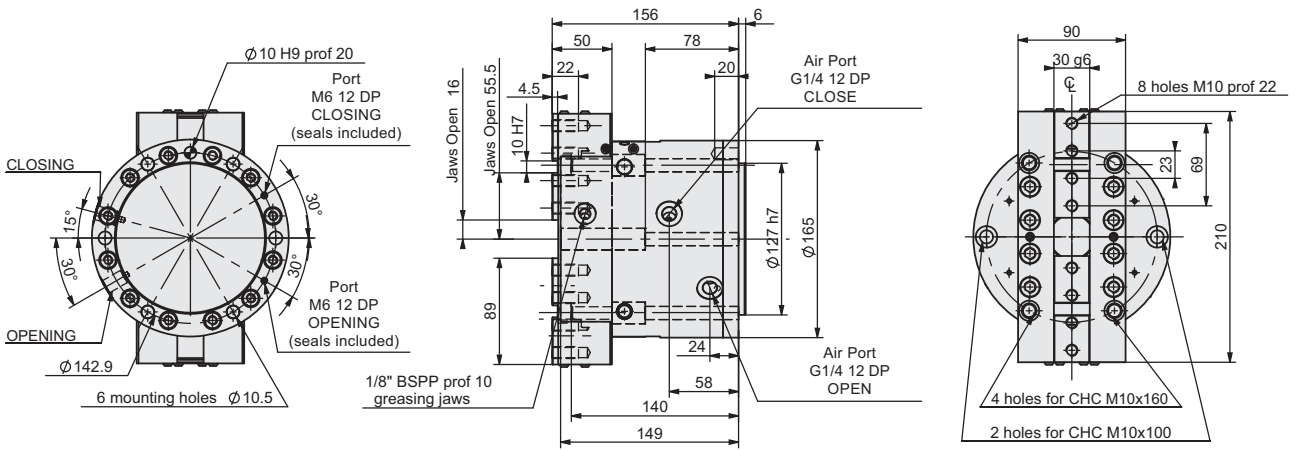
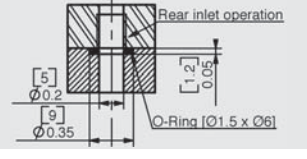
1. Force with spring and air at 6bar
2. Force with spring without air

16502P

UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

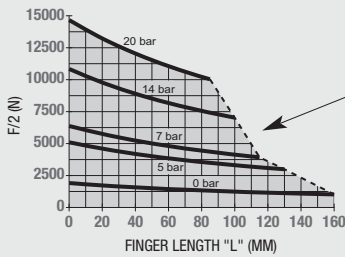
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.005" or [±.013mm]	Metric Threads Course Pitch	Imperial in. 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	Metric [mm] [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]
---	------------------------	--	--------------------------------	--	---

Grippers are supplied with open side air ports and top manifold air ports plugged. Top manifold sealing dimensions shown.

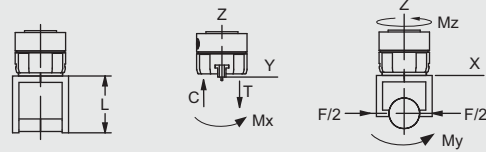


Loading Information:

Sum of forces transmitted by the jaws on the workpiece
(Springs compressed at 50% stroke)



ATTENTION :
DO NOT EXCEED
MAXIMUM EFFECTIVE
FINGER LENGTHS



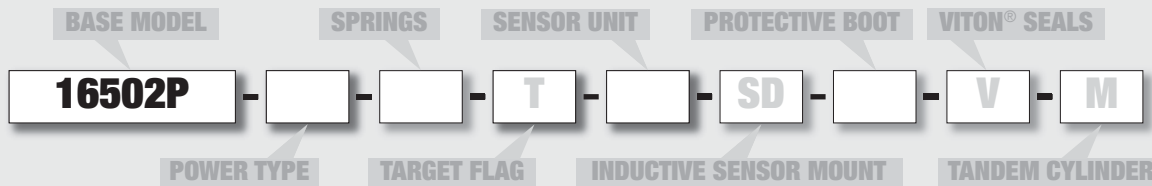
Loading Capacity*

	Static
Maximum Tensile T	5200 N
Maximum Compressive C	6400 N
Maximum Moment Mx	270 Nm
Maximum Moment My	350 Nm
Maximum Moment Mz	300 Nm

* The Capacities are per set of jaws and are not simultaneous.

How To Order:

See Pages 53-56 for incompatible accessory combinations



POWER TYPE
P Pneumatic
H Hydraulic (page 1.53)
(One of two options is mandatory P or H)
SPRINGS
RE External Gripping
RI Internal Gripping
SENSOR UNIT
• KT1 • KT2 • KX1 • KX2
PROTECTIVE BOOT
• E • E3

ACCESSOIRES ENVELOPPE DE PROTECTION

Fireproof KEVLAR Protective Boot, Red	Model Code E	Order # Kenve2-21384	Qty/Unit 1
---------------------------------------	------------------------	--------------------------------	----------------------

PNEUMATIC ACCESSORIES

Standard Seal Repair Kit	SLKT-335	1
Viton® Seal Repair Kit	SLKT-335V	1
Hydraulic Seal Repair Kit	SLKT-336	1

Options and Accessories:
See Page 1.53-1.56

SUPPLY: (P) Pneumatic (H) (H80) Hydraulic

As standard, the clamp is supplied with air to a pressure of 7 bar. The clamp is fitted with Viton O-ring seals for high temperatures.

On request (contact us) the gripper can be supplied with hydraulic fluid. The clamp is fitted with seals Viton Quad-Ring.

– Choice **(H)** allows a hydraulic power to a pressure of 20 bar max. In this case the overall dimensions do not change. For better security the gripper must be fixed on their support before being fired. **CAUTION: Hydraulic cycle times are longer.**

– Choice **(H80)** allows a hydraulic power to a pressure of 80 bar max. In this case the total height of the gripper is increased (contact us).

The hydraulic power is incompatible with the option tandem (M).

Option (RE) or (RI): Spring Assist

The internal springs of the gripper ensures failsafe operation by retaining the component during pressure loss, to increase the gripforce, or allows the usage of the gripper in single acting operation.

Option **(RE)** for external gripping. Option **(RI)** for internal gripping.

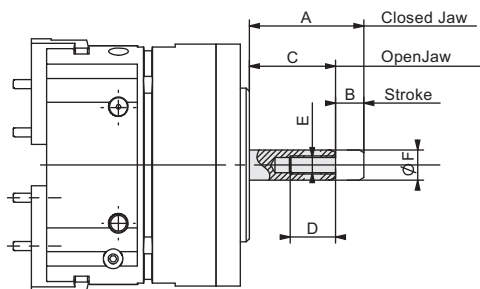
The (RE) is incompatible with the option (RI).

Option (T): Sensor Rod

Option **(T)** is a steel rod which comes out on the rear side of the gripper. The rod is fixed with the piston and has the same stroke movement. The open end of the rod allows for mounting a cam which allows to control the position of the jaws by using inductive sensors, micro switches, etc

WARNING: when screwing on cam rod, make sure the sensor rod does not rotate to prevent twisting of the springs of options **(RE)** or **(RI)**.

Option (T) is incompatible with option (K).



Model	A	B	C	D	E	F
6002P & 6002P-C	35	5	30	15	M6	10
8002P & 8002P-C	35	6.5	28.5	15	M6	10
11002P & 11002P-C	35	10	25	15	M6	15
14002P & 14002P-C	55	13	42	20	M8	15
16502P & 16502P-C	53	23	30	20	M8	15

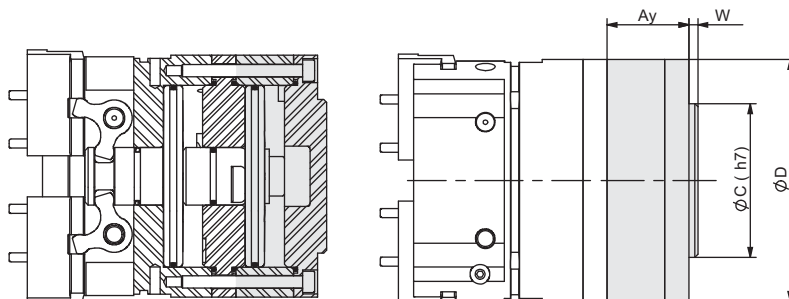
Option (M): Tandem Cylinder

The **(M)** is a cylinder light-alloy that fits behind the bottom plate. This actuator's integral action allows to double the gripforce by using the same pressure.

The combination of tandem option tandem **(M)** and Option **(RE)** or **(RI)** can double the clamping forces of the spring assist option. For cycle times of the tandem option, apply a factor of 3 to the actuation time.

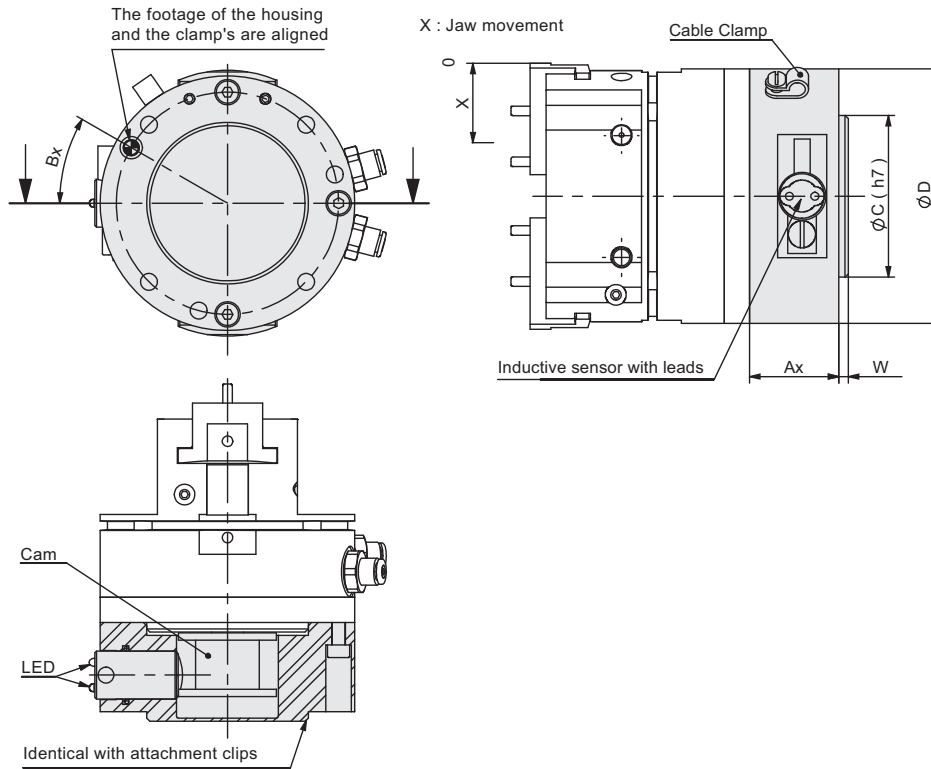
The (M) is incompatible with the option (H).

Model	Ay	ØC	ØD	W	Weight (kg)
6002P & 6002P-C	28.5	38.1	60	3	0.200
8002P & 8002P-C	27	50.8	80	3	0.300
11002P & 11002P-C	34	76.2	110	3	0.750
14002P & 14002P-C	49	107.95	140	5	2.100
16502P & 16502P-C	65	127	165	6	3.600



Option (KT1), (KX1), (KT2), (KX2): Sensor Unit

The (K) is a lightweight alloy housing that fits on the back of the gripper. An integrated shaft follows the movement of the piston to provide information to the sensor attached to the side of the unit. It can control two positions of the grippers jaws. 2 types of inductive sensors (**KT**, **KX**) and 2 detection zones (**1**, **2**) are possible to allow for the combination of 2 to 4 possible positions (**KT1**, **KX1**, **KT2**, **KX2**). For **KT**, **KX** sensor specifications.



Model #	Ax	Bx	ØC	ØD	W	Weight (kg)	No. of Sensing Positions (please specify when ordering)	Information area from the open grip position (green LED)		Area information relative to the closed grip position (yellow LED)	
								X (mm)		X (mm)	
6002P	23	30°	38.1	60	3	0.180	1	0 or 1	+0,5 -0	4	+0 -0,5 or 5
							2	0 or 2	+0,5 -0	3	+0 -0,5 or 5
6002P-C	23	30°	38.1	60	3	0.180	1	0 or 1.6	+0,8 -0	7	+0 -0,8 or 8
							2	0 or 3.2	+0,8 -0	4.8	+0 -0,8 or 8
8002P	28	30°	50.8	80	3	0.400	1	0 or 1	+0,5 -0	5.5	+0 -0,5 or 6,5
							2	0 or 2	+0,5 -0	4.5	+0 -0,5 or 6,5
8002P-C	28	30°	50.8	80	3	0.400	1	0 or 1.5	+0,8 -0	8.5	+0 -0,8 or 10
							2	0 or 3.1	+0,8 -0	6.9	+0 -0,8 or 10
11002P	36	30°	76.2	110	3	0.900	1	0 or 1	+0,5 -0	9	+0 -0,5 or 10
							2	0 or 3	+0,5 -0	7	+0 -0,5 or 10
11002P-C	36	30°	76.2	110	3	0.900	1	0 or 1.5	+0,8 -0	13.5	+0 -0,8 or 15
							2	0 or 4.5	+0,8 -0	10.5	+0 -0,8 or 15
14002P	45.5	165°	107.95	140	5	1.670	1	0 or 2	+0,5 -0	11	+0 -0,5 or 13
							2	0 or 4	+0,5 -0	9	+0 -0,5 or 13
14002P-C	45.5	165°	107.95	140	5	1.670	1	0 or 3	+0,8 -0	17	+0 -0,8 or 20
							2	0 or 6.2	+0,8 -0	13.8	+0 -0,8 or 20
16502P	65.5	165°	127	165	6	2.670	1	0 or 2	+0,5 -0	13	+0 -0,5 or 15
							2	0 or 4	+0,5 -0	11	+0 -0,5 or 15
16502P-C	65.5	165°	127	165	6	2.670	1	0 or 3.3	+0,8 -0	21.7	+0 -0,8 or 25
							2	0 or 7	+0,8 -0	18	+0 -0,8 or 25

Option (V): Viton® Seals

Gripper with Viton® seals allows for use in high temperature environments [-30 ° C or 150 ° C].

Accessory (E): Protective Boot

The accessory (E) is a protective boot that fits over the gripper. It protects the mechanism and thus improves the life of the gripper in hostile environments. The accessory (E) causes a different location of the fingers on the jaws as compared to the standard installation. Before attaching the boot, perform the following steps:

1. Mount gripper to machine.
2. Slip boot over gripper and secure in place.
3. Attached fingers to jaws using finger adapter.

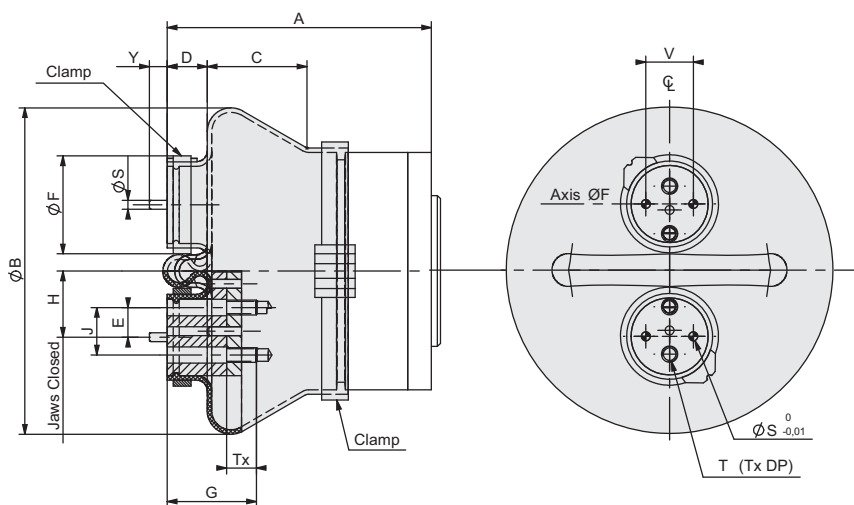
Depending on the environment 2 types of envelopes are available:

- (E) Envelope of black or brown PVC for environmental grinding with emery presence.
- (E3) red envelope containing KEVLAR fireproof silicone environment for hot chips and weld spatter.

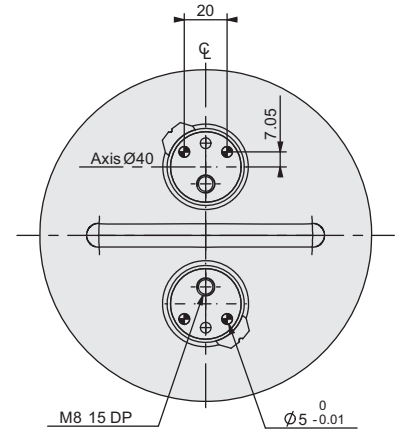
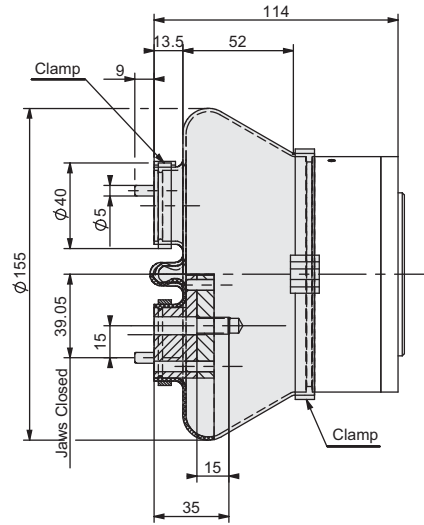
The accessory (E) is incompatible with the accessory (SD)

Model Code	Order #	Model	A	B	C	D	E	F	G	H	J	K	S	T	TX	V	Y
E	ER62P	6002P &	88	98	35	13.5	8	29	29	17.5	13	-	3	M4	9	13	6
E3	E3R62P	6002P-C															
E	ER82P	8002P &	89	110	34	13.5	10	33	30	22.3	16	-	3	M5	10	16	6
E3	E3R82P	8002P-C															
E	ER112P	11002P &	See drawing														
E3	E3R112P	11002P-C															
E	KP-311	14002P &	143	185	50	18	12	55	34	19.5	24	18	5	M8	14	-	8
E3	KP-313	14002P-C															
E	KP-314	16502P &	172	220	70	16	14	67	37	24 19	28	23	6	M10	19	-	8
E3	KP-316	16502P-C															

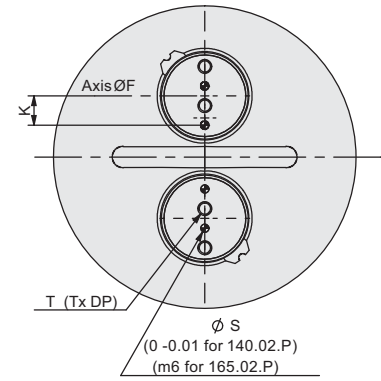
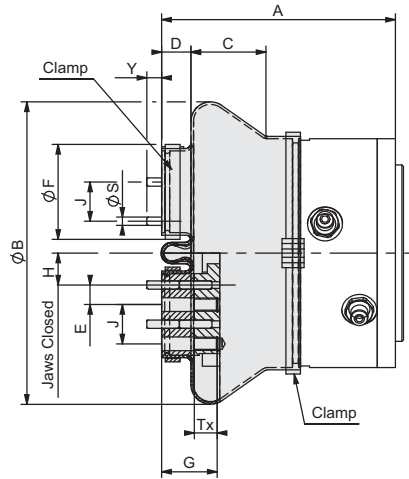
6002P
8002P



11002P



14002P
16502P



Accessory (SD): Inductive Sensor Mounting Kit

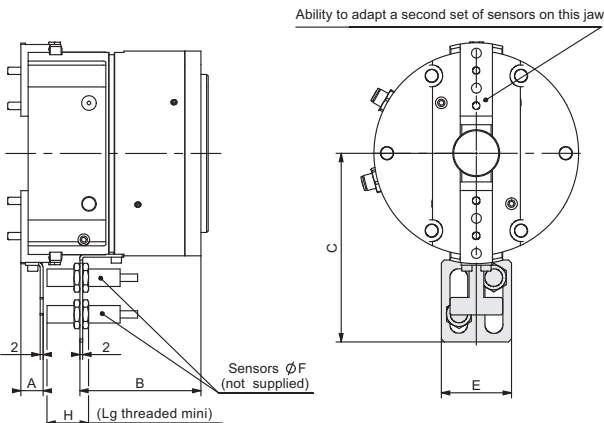
Allows for sensing of two positions: open and closed jaw. The accessory kit (SD) includes: 1 sensor bracket, 1 flag and screws.

Sensors are not provided.

NOTES:

To be usable, the cylindrical inductive sensors selected by the customer must have tapped their bodies to a minimum depth H (see table below).

Depending on their length, the cylindrical inductive sensors can extend below the clamp, requiring provision of suitable housing in the surrounding parts. It is possible to control more than 2 positions using a second attachment (SD).



Order #	Model	A	B	C	E	F	H
SD60-80P	6002P & 6002P-C	20	35	67	32	8	35
SD60-80P	8002P & 8002P-C	19	34	77	32	8	35
SD110P	11002P & 11002P-C	19.5	45	97	32	8	35
OSMK-114	14002P & 14002P-C	15	83	129	48	12	28.5
OSMK-115	16502P & 16502P-C	29	96	147	48	12	33



DESIGN NOTES

A large, empty grid area intended for design notes, occupying most of the page. The grid consists of small, uniform squares.