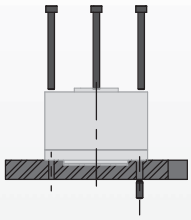
Cylindrical Horizontal Compliance Devices

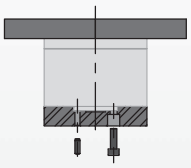
- **Flexibility of the tool:** Cylindrical Horizontal compliance devices are used for inserting components that may be misaligned with the tool. They allow a horizontal displacement that compensates for part placing inaccuracies.
- **For precision applications:** The use of high quality components allow to get centering repeatability from 0.02mm and angular repeatability from +/- 10°.
- **Harsh environments:** The enclosed design of this series allows them to be used in harsh environments.
- **Spring assist:** Due to the optional spring assist, compliance may be used in single acting mode.

Mounting Information:

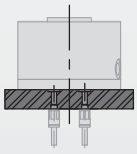
It is recommended to use the compliance in the vertical axis only



The compliance is located using a pilot boss and a dowel pin and assembled using 4 or 6 through body screws



Tooling is located using a centering and a dowel pin and assembled using 4 screws



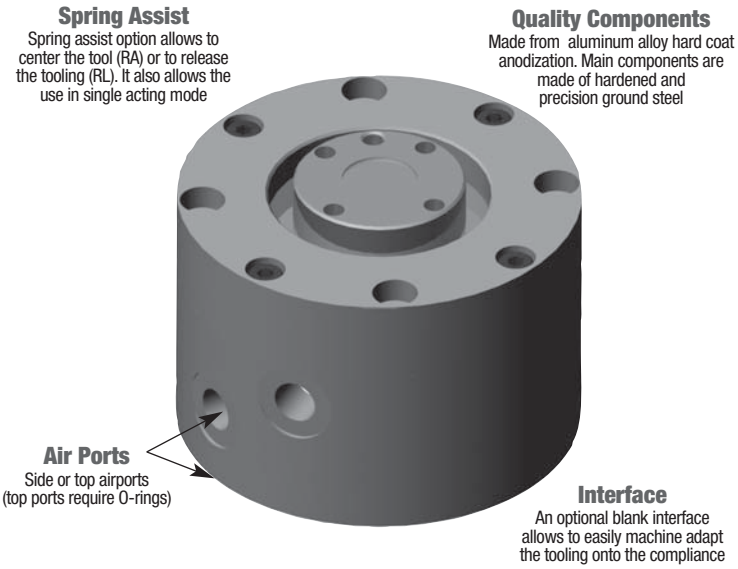
Compliance can be operated using top manifold airport

Technical Specifications:

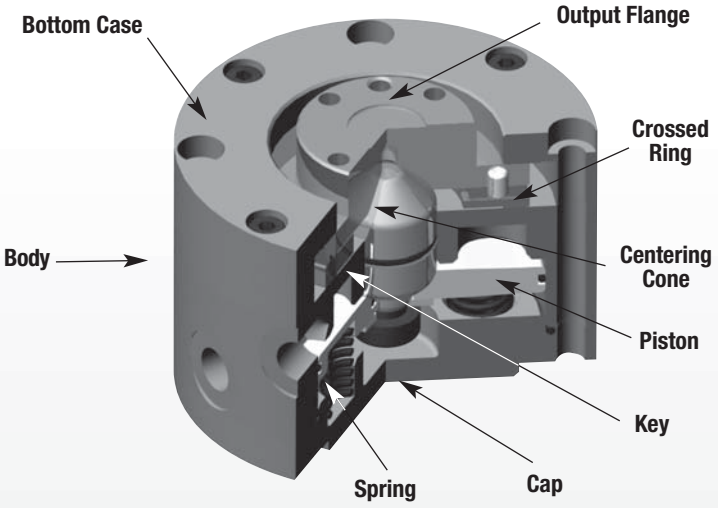
Pneumatic Specifications	**Imperial**	**Metric**
Pressure Operating Range	**30-100 psi**	**2-7 bar**
Cylinder Type	**Double acting or double acting spring assist or single acting spring return**	
Dynamic seals	**Internally lubricated Buna-N seals**	
Valves Required to Operate		
Double Acting	**4-way, 2 position**	
Single Acting (-RL or -RA option)	**3 way, 2 position**	
Air Quality Requirements		
Air Filtration	**40 Micron or Better**	
Air Lubrication	**Not Necessary***	
Air Humidity	**Low Moisture Content (dry)**	
Temperature Operating Range		
Joints Nitrile (standard)	**-10°~180° F**	**-25°~80° C**
Maintenance Specifications**		
Expected Life		
Normal Application	**3 million cycles**	
w/ Preventative Maintenance	**6+ million cycles**	
Field Repairable	**Yes**	
Seal Repair Kits Available	**Yes**	

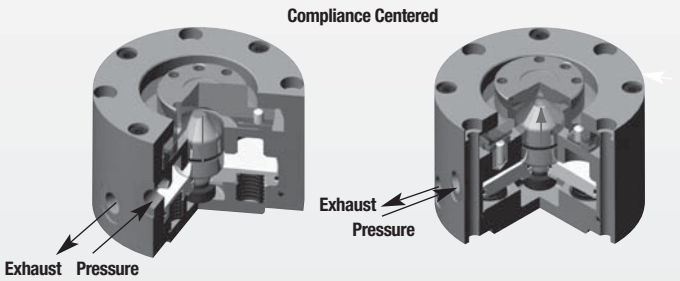
*Addition of lubrication will greatly increase service life
**See Maintenance Section

Product Features



Operating Principle

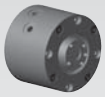




- A double acting piston is linked to a centering cone with a male cone at its end.
- When actuated, the male cone goes into the female cone of the output flange.
- The two perpendicular slots of the crossed ring enables the tooling to keep its orientation.
- The spring assist option allows to center (RA) or to release (RL) the output flange in case of air failure. It also allows the use in single acting mode.

Style -Cylindrical Horizontal Compliance Devices

Size-50

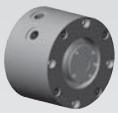


Style:	CH-50	
Misalignment Capability:	± 0.118 in.	± 3 mm
Maximum Payload:	4.4 lbs.	2 Kg
Weight:	0.43 lbs.	0.195 Kg

See Page 6.82

Style -Cylindrical Horizontal Compliance Devices

Size-80

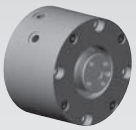


Style:	CH-80	
Misalignment Capability:	± 0.197 in.	± 5 mm
Maximum Payload:	17.6 lbs.	8 Kg
Weight:	1.65 lbs.	0.750 Kg

See Page 6.83

Style -Cylindrical Horizontal Compliance Devices

Size-110



Style:	CH-110	
Misalignment Capability:	± 0.256 in.	± 6.5 mm
Maximum Payload:	30.8 lbs.	14 Kg
Weight:	4.63 lbs.	2.10 Kg

See Page 6.84

Style -Cylindrical Horizontal Compliance Devices

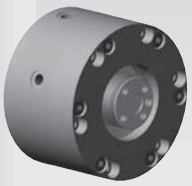
Size-140

Style:	CH-140	
Misalignment Capability:	± 0.315 in.	± 8 mm
Maximum Payload:	66.12 lbs.	30 Kg
Weight:	9.50 lbs.	4.310 Kg

See Page 6.85

Style -Cylindrical Horizontal Compliance Devices

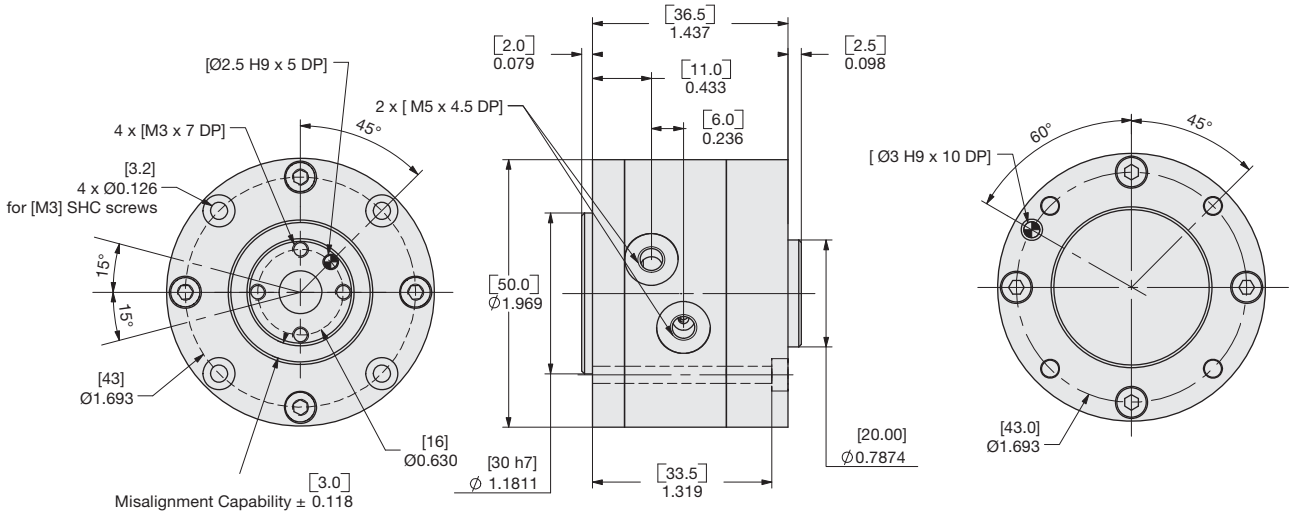
Size-165



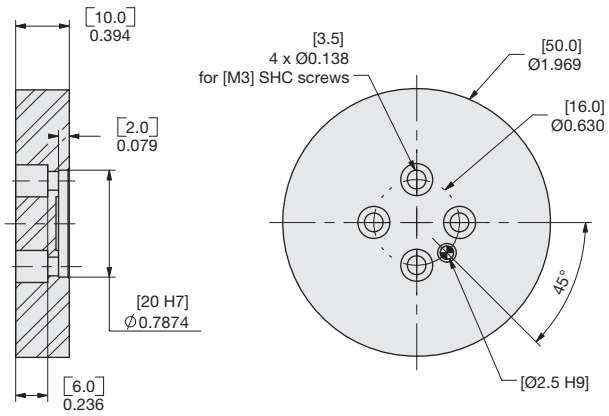
Style:	CH-165	
Misalignment Capability:	± 0.472 in.	± 12 mm
Maximum Payload:	88.18 lbs.	40 Kg
Weight:	19.18 lbs.	8.7 Kg

See Page 6.86

CH-50
CYLINDRICAL HORIZONTAL COMPLIANCE DEVICES



- I: Tool Plate Option



Specifications	**CH-50**	
Centering force @100psi [7 bar]	74 lbs.	332 N
Maximum payload	4.4 lbs.	2 Kg
Misalignment Capability	±0.12 in.	±3 mm
Weight	0.43 lbs.	0.195 Kg
Pressure Range (without springs)	30-100 psi	2-7 bar
Pressure Range (with springs)	43-100 psi	3-7 bar
Cylinder bore	1.34 in.	34 mm
Displacement	0.32 in^3	5.2 cm^3
Actuation	0.07 sec. /0.07 sec	
Repeatability	±0.0008 in.	±0.02 mm
Angular repeatability	±10mn	

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 ±.0005" or [±.013mm]	Metric Threads Course Pitch	**Imperial in.**	**Metric [mm]**
				0.00 = ± .01 0.000 = ± .005 0.0000 = ± .0005	[0.] = [± .25] [0.0] = [± .13] [0.00] = [± .013]

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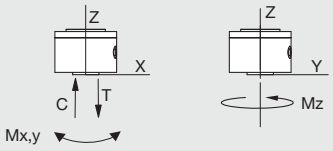


Loading Capacity	Imperial	Metric
Maximum Tensile **T**	17 lbs.	75 N
Maximum Breakaway Compressive **C**	17 lbs.	75 N
Maximum Breakaway Moment **Mx**	17.7 in.-lbs.	2 Nm
Maximum Breakaway Moment **My**	17.7 in.-lbs.	2 Nm
Maximum Breakaway Moment **Mz**	8.8 in.-lbs.	1 Nm

How to Order: (Order Accessories separately from Basic Model)

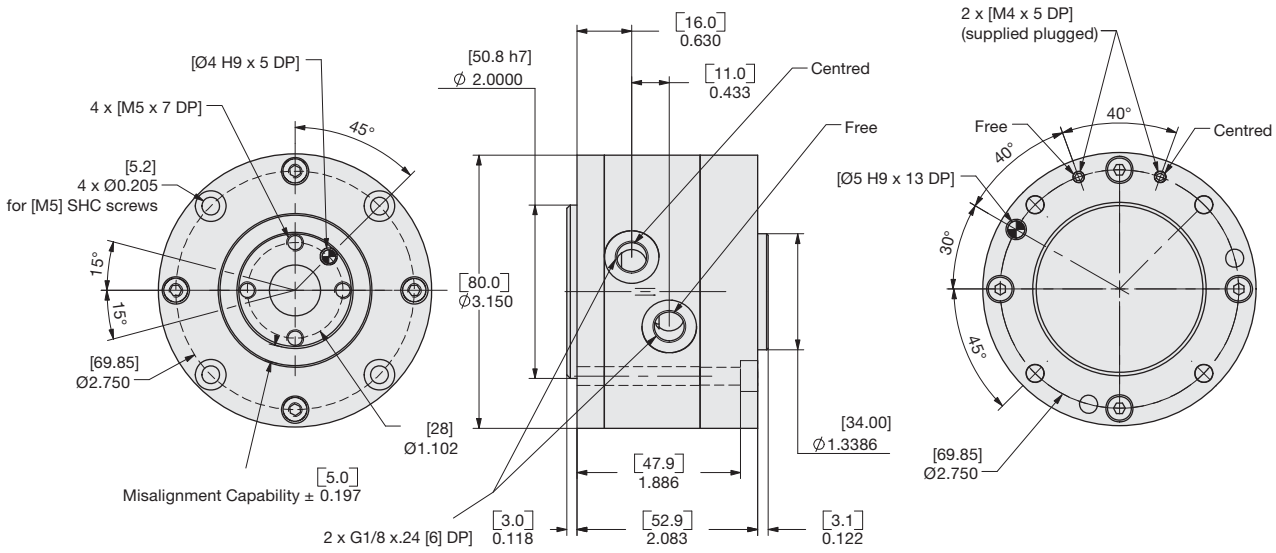
BASIC MODEL — TOOL PLATE

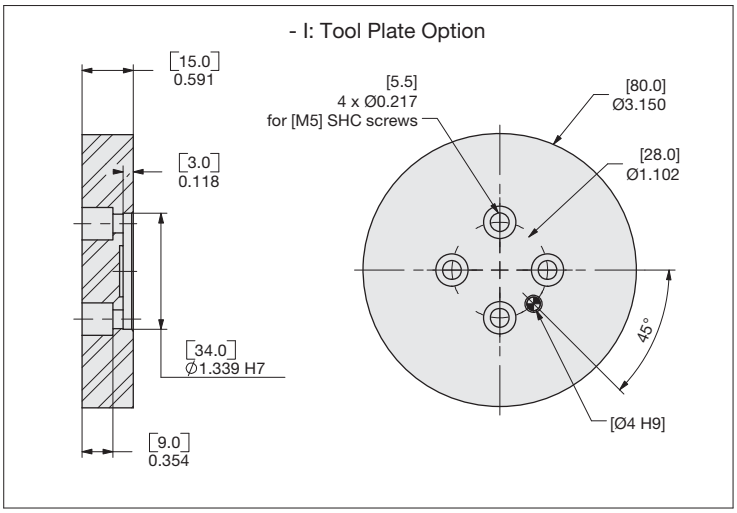
CH-50P - ___ - I - ___

SPRING ASSIST — MISALIGNMENT

SPRING
RA Tool Recentering
RL Tool Release
__ Leave Blank. No Spring Option (standard)

MISALIGNMENT
XX Special Misalignment x 10 (ie: 15 is for +/- 1.5mm)
__ Leave Blank. Standard Capability





Specifications	CH-80	
Centering force @100psi [7 bar]	232 lbs.	1035 N
Maximum payload	17.6 lbs.	8 Kg
Misalignment Capability	±0.20 in.	±5 mm
Weight	1.65 lbs.	0.750 Kg
Pressure Range (without springs)	30-100 psi	2-7 bar
Pressure Range (with springs)	60-100 psi	4-7 bar
Cylinder bore	2.37 in.	60 mm
Displacement	1.64 in^3	26.8 cm^3
Actuation	0.08 sec. /0.08 sec.	
Repeatability	±0.0008 in.	±0.02 mm
Angular repeatability	±10mn	

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

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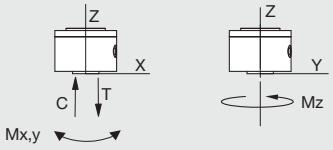


Loading Capacity	Imperial	Metric
Maximum Tensile **T**	36 lbs.	160 N
Maximum Breakaway Compressive **C**	36 lbs.	160 N
Maximum Breakaway Moment **Mx**	71 in.-lbs.	8 Nm
Maximum Breakaway Moment **My**	71 in.-lbs.	8 Nm
Maximum Breakaway Moment **Mz**	53 in.-lbs.	6 Nm

How to Order: (Order Accessories separately from Basic Model)

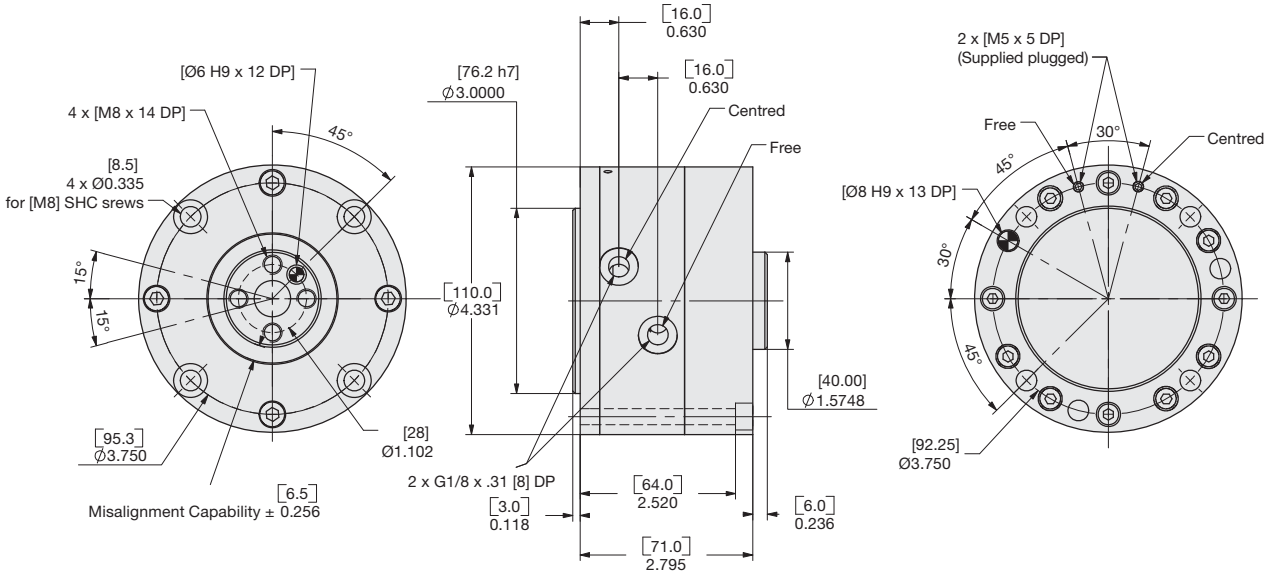
BASIC MODEL — TOOL PLATE

CH-80P - ___ - I - ___

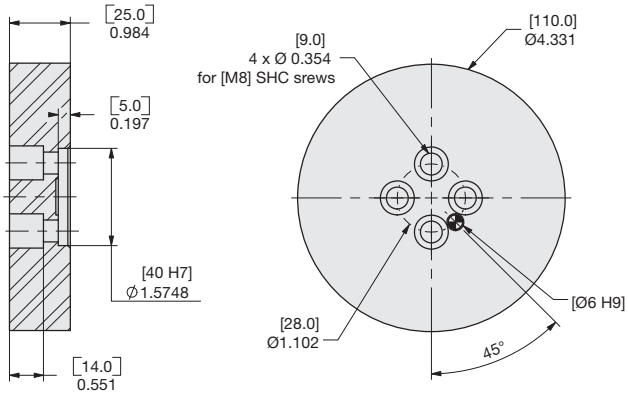
SPRING ASSIST — MISALIGNMENT

SPRING
RA Tool Recentering
RL Tool Release
__ Leave Blank. No Spring Option (standard)

MISALIGNMENT
XX Special Misalignment x 10 (ie: 15 is for +/- 1.5mm)
__ Leave Blank. Standard Capability



- I: Tool Plate Option

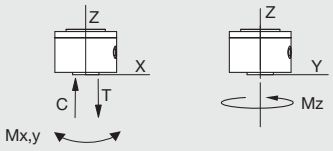


Specifications	CH-110	
Centering force @100psi [7 bar]	373 lbs.	1660 N
Maximum payload	30.8 lbs.	14 Kg
Misalignment Capability	±0.25 in.	±6.5 mm
Weight	4.6 lbs.	2.10 Kg
Pressure Range (without springs)	30-100 psi	2-7 bar
Pressure Range (with springs)	60-100 psi	4-7 bar
Cylinder bore	3.0 in.	76 mm
Displacement	3.42 in^3	56 cm^3
Actuation	0.1 sec. /0.1 sec.	
Repeatability	±0.0016 in.	±0.04 mm
Angular repeatability	±15mn	

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

Loading Information



Loading Capacity	Imperial	Metric
Maximum Tensile **T**	43 lbs.	190 N
Maximum Breakaway Compressive **C**	43 lbs.	190 N
Maximum Breakaway Moment **Mx**	106 in.-lbs.	12 Nm
Maximum Breakaway Moment **My**	106 in.-lbs.	12 Nm
Maximum Breakaway Moment **Mz**	159 in.-lbs.	18 Nm

How to Order: (Order Accessories separately from Basic Model)

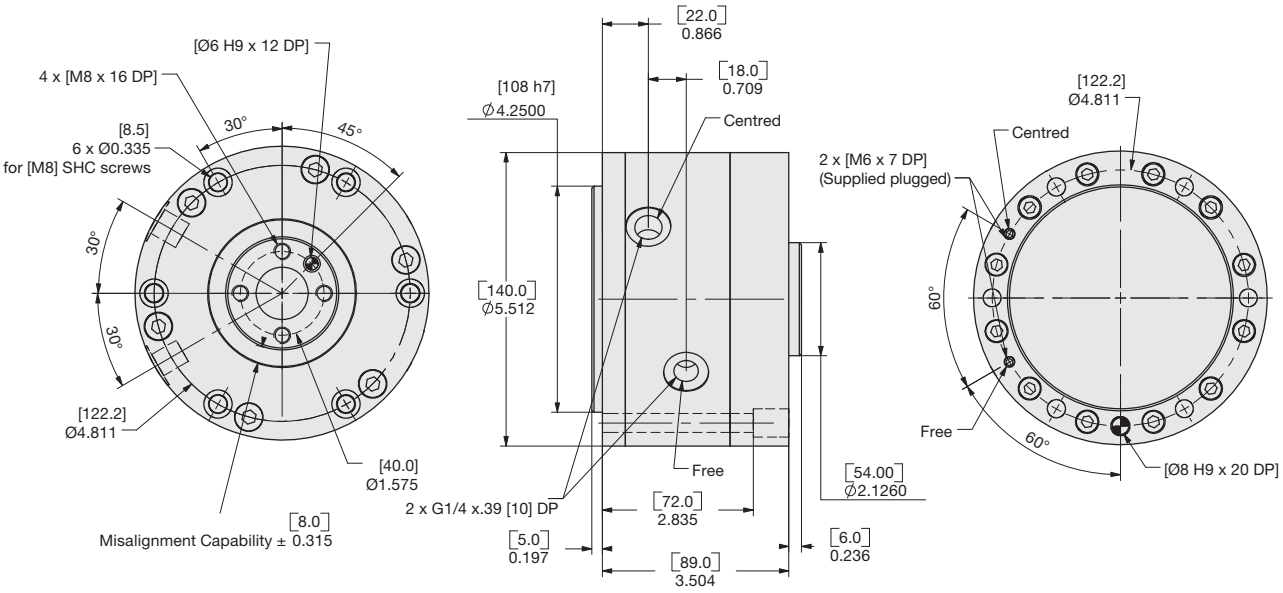
BASIC MODEL — TOOL PLATE

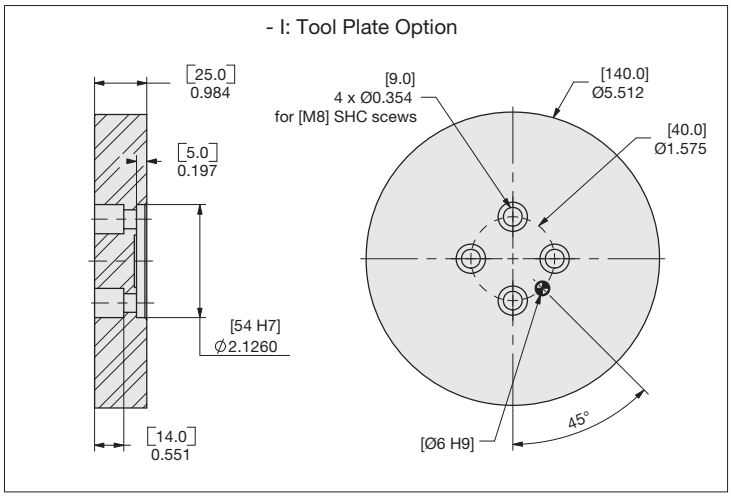
CH-110P - ___ - I - ___

SPRING ASSIST — MISALIGNMENT

SPRING
RA Tool Recentering
RL Tool Release
__ Leave Blank. No Spring Option (standard)

MISALIGNMENT
XX Special Misalignment x 10 (ie: 15 is for +/- 1.5mm)
__ Leave Blank. Standard Capability





Specifications	CH-140	
Centering force @100psi [7 bar]	712 lbs.	3170 N
Maximum payload	66.1 lbs.	30 Kg
Misalignment Capability	±0.31 in.	±8 mm
Weight	9.5 lbs.	4.31 Kg
Pressure Range (without springs)	30-100 psi	2-7 bar
Pressure Range (with springs)	60-100 psi	4-7 bar
Cylinder bore	4.13 in.	105 mm
Displacement	9.03 in^3	148 cm3
Actuation	0.2 sec. /0.2 sec.	
Repeatability	±0.0024 in.	±0.06 mm
Angular repeatability	±20mn	

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

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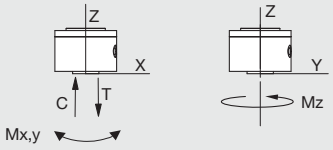


Loading Capacity	Imperial	Metric
Maximum Tensile **T**	50 lbs.	225 N
Maximum Breakaway Compressive **C**	50 lbs.	225 N
Maximum Breakaway Moment **Mx**	168 in.-lbs.	19 Nm
Maximum Breakaway Moment **My**	168 in.-lbs.	19 Nm
Maximum Breakaway Moment **Mz**	177 in.-lbs.	20 Nm

How to Order: (Order Accessories separately from Basic Model)

BASIC MODEL — TOOL PLATE

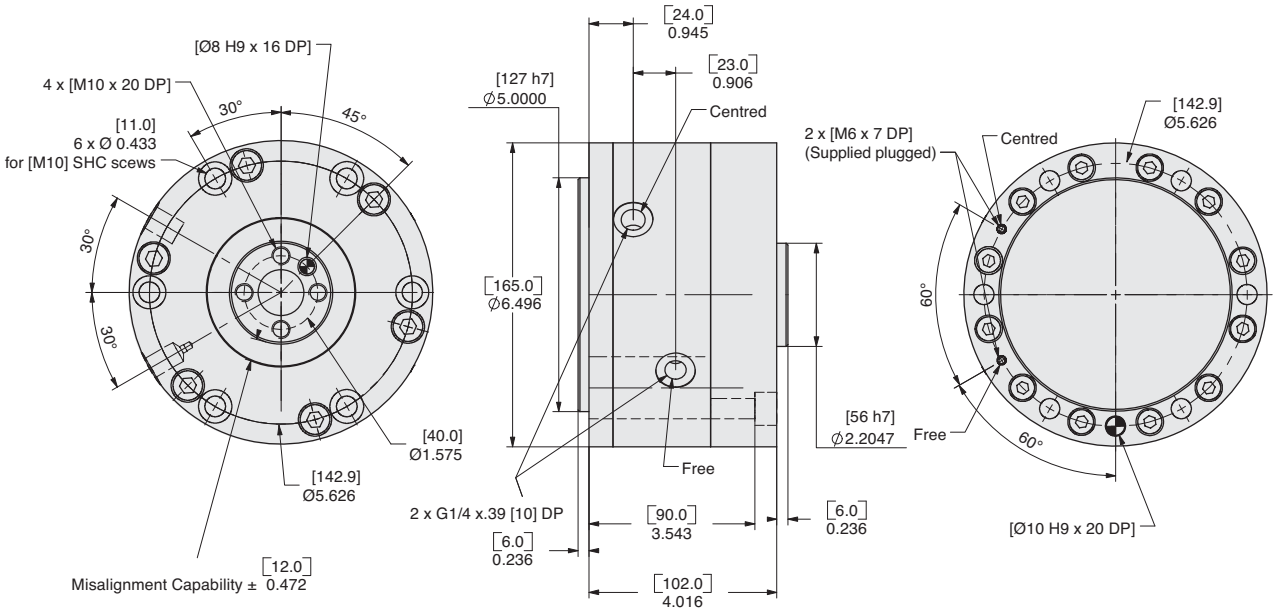
CH-140P - ___ - I - ___

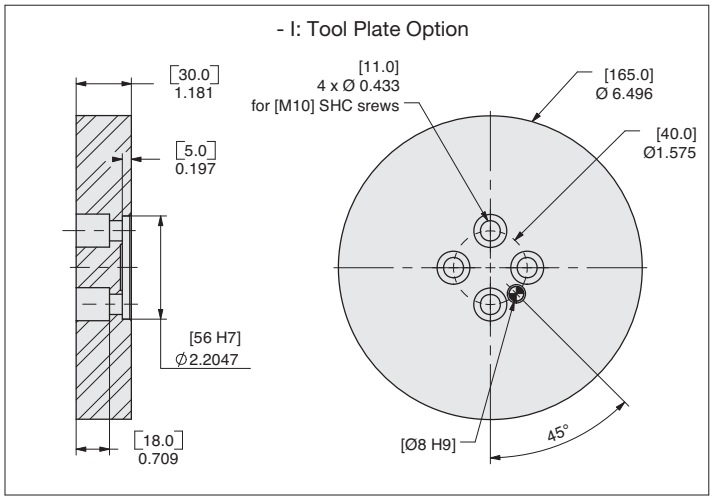
SPRING ASSIST — MISALIGNMENT

SPRING
RA Tool Recentering
RL Tool Release
__ Leave Blank. No Spring Option (standard)

MISALIGNMENT
XX Special Misalignment x 10 (ie: 15 is for +/- 1.5mm)
__ Leave Blank. Standard Capability

CH-165
CYLINDRICAL HORIZONTAL COMPLIANCE DEVICES





Specifications	CH-165	
Centering force @100psi [7 bar]	931 lbs.	4140 N
Maximum payload	88.2 lbs.	40 Kg
Misalignment Capability	±0.47 in.	±12 mm
Weight	19.2 lbs.	8.7 Kg
Pressure Range (without springs)	30-100 psi	2-7 bar
Pressure Range (with springs)	60-100 psi	4-7 bar
Cylinder bore	4.72 in.	120 mm
Displacement	14.40 in^3	236 cm^3
Actuation	0.36 sec. /0.36 sec.	
Repeatability	±0.0024 in.	±0.06 mm
Angular repeatability	±20mn	

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

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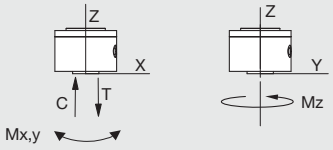


Loading Capacity	Imperial	Metric
Maximum Tensile **T**	52 lbs.	230 N
Maximum Breakaway Compressive **C**	52 lbs.	230 N
Maximum Breakaway Moment **Mx**	203 in.-lbs.	23 Nm
Maximum Breakaway Moment **My**	203 in.-lbs.	23 Nm
Maximum Breakaway Moment **Mz**	248 in.-lbs.	28 Nm

How to Order: (Order Accessories separately from Basic Model)

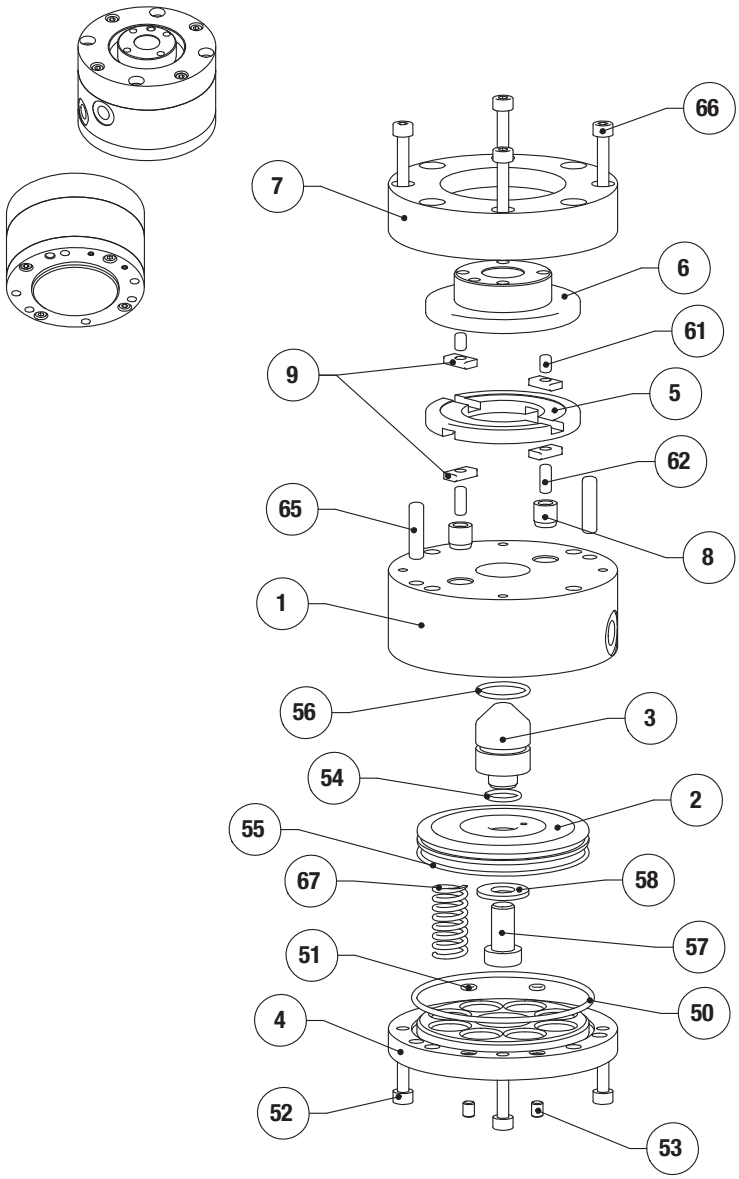
BASIC MODEL — TOOL PLATE

CH-165P - __ - I - __

SPRING ASSIST — MISALIGNMENT

SPRING
RA Tool Recentering
RL Tool Release
__ Leave Blank. No Spring Option (standard)

MISALIGNMENT
XX Special Misalignment x 10 (ie: 15 is for +/- 1.5mm)
__ Leave Blank. Standard Capability



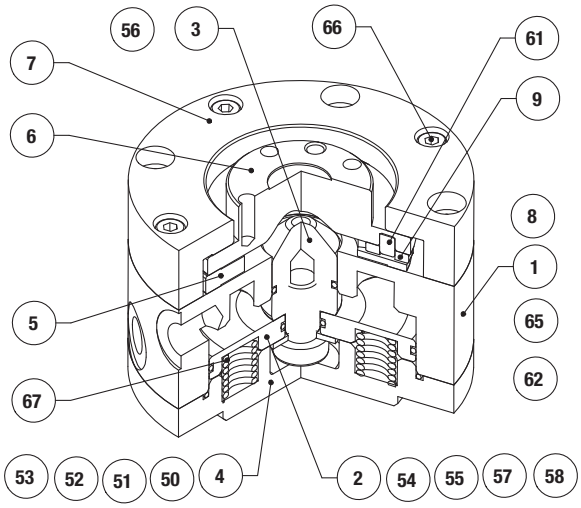
Item	Qty	Name
1	1	Body
2	1	Piston
3	1	Centering cone
4	1	Cap
5	1	Crossed ring
6	1	Output flange
7	1	Bottom case
8	2	Sleeve
9	4	Key
50	1	O-ring, Cap
51	2	O-ring, Cap
52	4	SS screw, Cap
53	2	SHC screw, Cap
54	1	O-ring, Piston
55	1	O-ring, Piston
56	1	O-ring, Centering cone
57	1	LHC screw, Piston
58	1	Washer, Piston
61	2	Pin, Key
62	2	Pin, Sleeve
65	2	Pin, Body
66	4	SHC screw, Flask
67	6	Spring

NOTE: Contact the Robohand Sales Department for a complete spare parts list with order numbers and prices.

Assembly Procedures

1) Press-in the bushing (#8) into the body (#1)
2) Insert the pins (#65) into the body (#1)
3) Lubricate and insert the pins (#62) into the bushings (#8)
4) Lubricate and insert the keys (#9) into the pins (#62)
5) Lubricate and assemble the crossed ring (#5) onto the body (#1). The keys (#9) have to be positioned into the slots of the crossed ring
6) Insert the pins (#61) into the output flange (#6)
7) Lubricate and insert the keys (#9) into the pins (#61)
8) Assemble the sub assembly output flange and keys on the crossed ring (#5). The keys (#9) have to be positioned into the slots of the crossed ring
9) Mount the bottom case (#7) onto the body, positioning with the pins (#65).
10) Fasten the bottom case (#7) using the screws (#66) with thread locker
11) Insert the O-Ring (#56) into the centering cone (#3)
12) Insert the O-Ring (#54) into the inside groove of the piston (#2)
13) Insert the O-Ring (#55) into the outside groove of the piston (#2)
14) Assemble the piston (#2) with the centering cone (#3). For -RL option, the piston counterbore holes have to face the body counterbore holes. Opposite mounting for -RA option.
15) Fasten the centering cone (#3) with the piston (#2) using the washer (#58) and the screw (#57) with thread locker
16) For –RL option, insert the springs (#67) into the body and piston counterbore holes.
17) Insert the piston + centering cone sub assembly into the body
18) For –RA option, insert the springs (#67) into the cap and piston counterbore holes.
19) Insert the O-Ring (#50) into cap groove (#4)
20) Insert the O-Ring (#51) into counterbore holes of the cap (#4)
21) Screw the SS screws into the cap (#4) with thread locker
22) Locate and insert the cap (#4) into the body (#1) using the screws (52) with thread locker.

SK Seal Kit Items | THREAD LOCK Thread Locker | KRYTOX Krytox™ Lubricant | O Lightweight Machine Oil | G Teflon™ Based Grease | GLUE Super Bonder | Third Angle Projection



Item	Qty	Name
1	1	Body
2	1	Piston
3	1	Centering cone
4	1	Cap
5	1	Crossed ring
6	1	Output flange
7	1	Bottom case
8	2	Sleeve
9	4	Key
50	1	O-ring, Cap
51	2	O-ring, Cap
52	4	SS screw, Cap
53	2	SHC screw, Cap
54	1	O-ring, Piston
55	1	O-ring, Piston
56	1	O-ring, Centering cone
57	1	LHC screw, Piston
58	1	Washer, Piston
61	2	Pin, Key
62	2	Pin, Sleeve
65	2	Pin, Body
66	4	SHC screw, Flask
67	6	Spring

NOTE: Contact the Robohand Sales Department for a complete spare parts list with order numbers and prices.

SK Seal Kit Items
THREAD LOCK Thread Locker
KRYTOX Krytox™ Lubricant
O Lightweight Machine Oil
G Teflon™ Based Grease
GLUE Super Bonder
Third Angle Projection

DESIGN NOTES