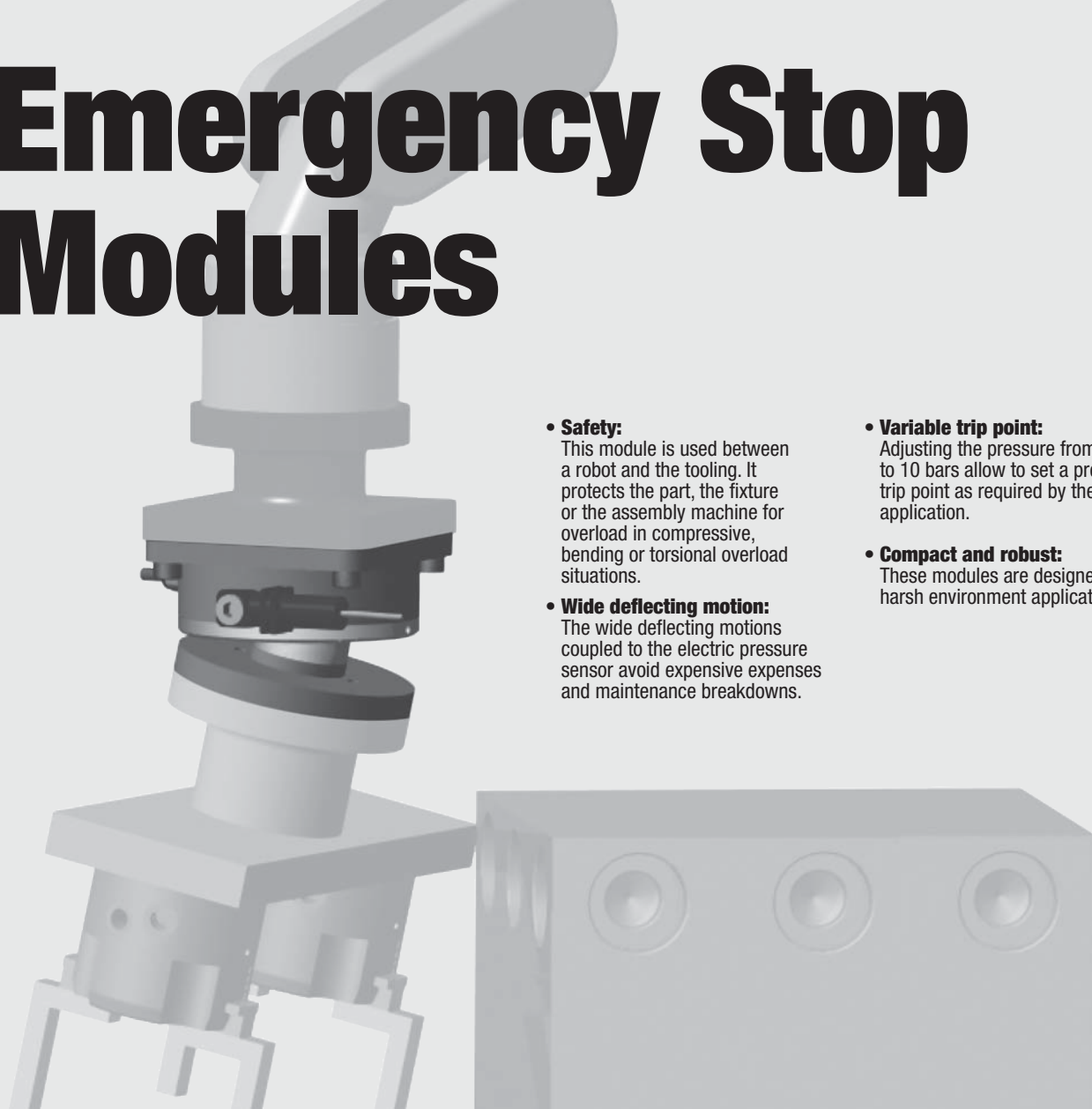


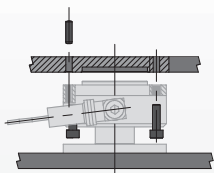
# Emergency Stop Modules



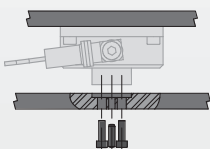
- Safety:**  
 This module is used between a robot and the tooling. It protects the part, the fixture or the assembly machine for overload in compressive, bending or torsional overload situations.
- Wide deflecting motion:**  
 The wide deflecting motions coupled to the electric pressure sensor avoid expensive expenses and maintenance breakdowns.
- Variable trip point:**  
 Adjusting the pressure from 2 to 10 bars allow to set a precise trip point as required by the application.
- Compact and robust:**  
 These modules are designed for harsh environment applications.

## Mounting Information:

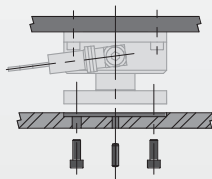
Modules can be mounted & operated in any orientation



The module is located using pilot boss and a dowel pin and assembled with 4 thru body screws



The tooling is located using pilot boss and a dowel pin and assembles with 3 or 4 screws



Using the blank plate allows the customer to locate and assemble its tooling to their convenience

## Technical Specifications:

Pneumatic Specifications	Imperial	Metric
Pressure Operating Range	30-145 psi	2-10 bar
Cylinder Type	Non-Conventional	
Dynamic seals	Internally lubricated	
	Buna-N seals	
Valve Required to Operate	0-145 PSI regulator	
<b>Air Quality Requirements</b>		
Air Filtration	40 Micron or Better	
Air Lubrication	Not Necessary*	
Air Humidity	Low Moisture Content (dry)	
<b>Temperature Operating Range</b>		
	-30°~180° F	-35°~80° C
<b>Maintenance Specifications**</b>		
Expected Life	5 million cycles	
Normal Application w/ Preventative Maintenance	10+ million cycles	
Field Repairable	Yes	
Seal Repair Kits Available	Yes	

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

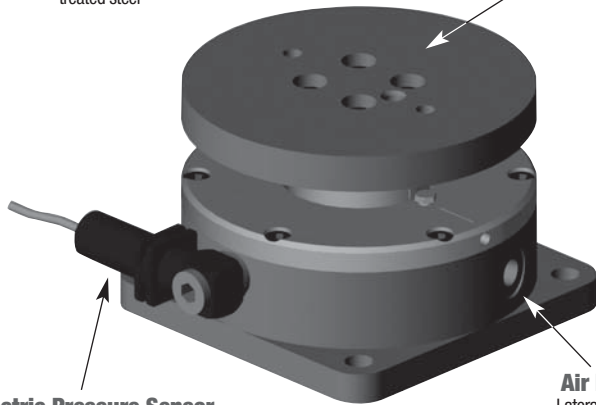
## Product Features

### Quality Components

Made from aluminum alloy with red coat anodization. The modules main components are made of heat treated steel

### Tooling Attachment

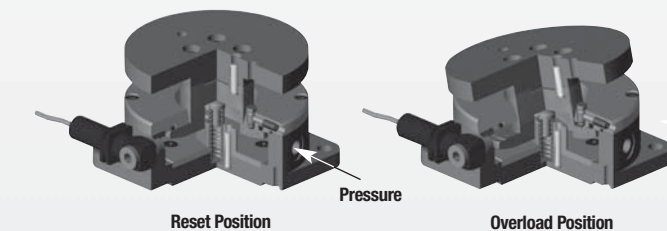
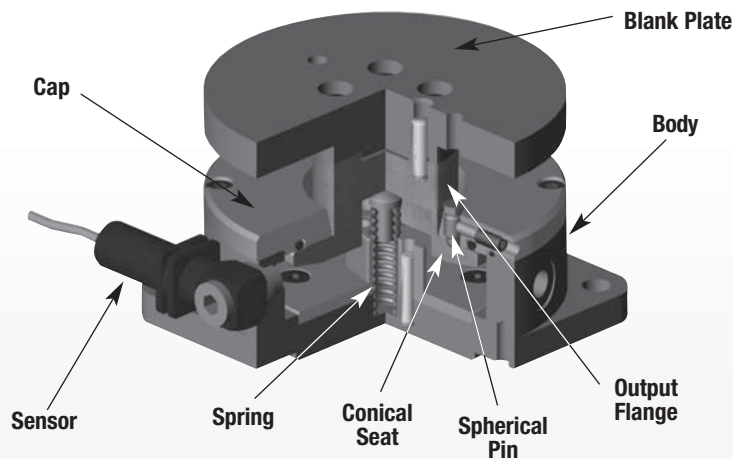
Tooling can be mounted directly on the output flange or using the provided blank flange



**Electric Pressure Sensor**  
Transmits a signal to the PLC in case of and overload or collision

**Air Ports**  
Lateral air port

## Operating Principle



- The conical seat in the output flange and the spherical pin are used to place the module in the home position.
- The pressure inside the chamber applies an effort on the output flange to keep it in the home position.
- When an outside force or moment applied to the output flange is higher than the preset force, the conical seat moves from the spherical pin generating an air leakage.
- The air leakage causes a pressure fall down in the module chamber which is detected by the sensor. The tool reset has to be done manually.

## Style-Emergency Stop Modules

### Size-60

Style:	AU-60	
Axial Compliance:	0.28 in.	7 mm
Rotation:	45°	45°
Angular:	12°	12°
Weight:	0.99 lbs.	0.45 Kg



See Page **6.102**

## Style-Emergency Stop Modules

### Size-80

Style:	AU-80	
Axial Compliance:	0.334 in.	8.5 mm
Rotation:	24°	24°
Angular:	12°	12°
Weight:	1.5 lbs.	0.68 Kg



See Page **6.103**

## Style-Emergency Stop Modules

### Size-110

Style:	AU-110	
Axial Compliance:	0.531 in.	13.5 mm
Rotation:	31°	31°
Angular:	12°	12°
Weight:	4.6 lbs.	2.1 Kg

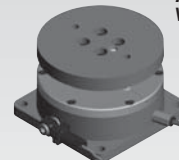


See Page **6.104**

## Style-Emergency Stop Modules

### Size-140

Style:	AU-140	
Axial Compliance:	0.63 in.	16 mm
Rotation:	45°	45°
Angular:	12°	12°
Weight:	8.8 lbs.	4.0 Kg

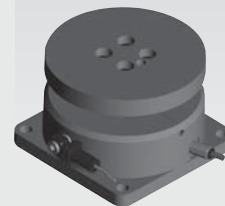


See Page **6.105**

## Style-Emergency Stop Modules

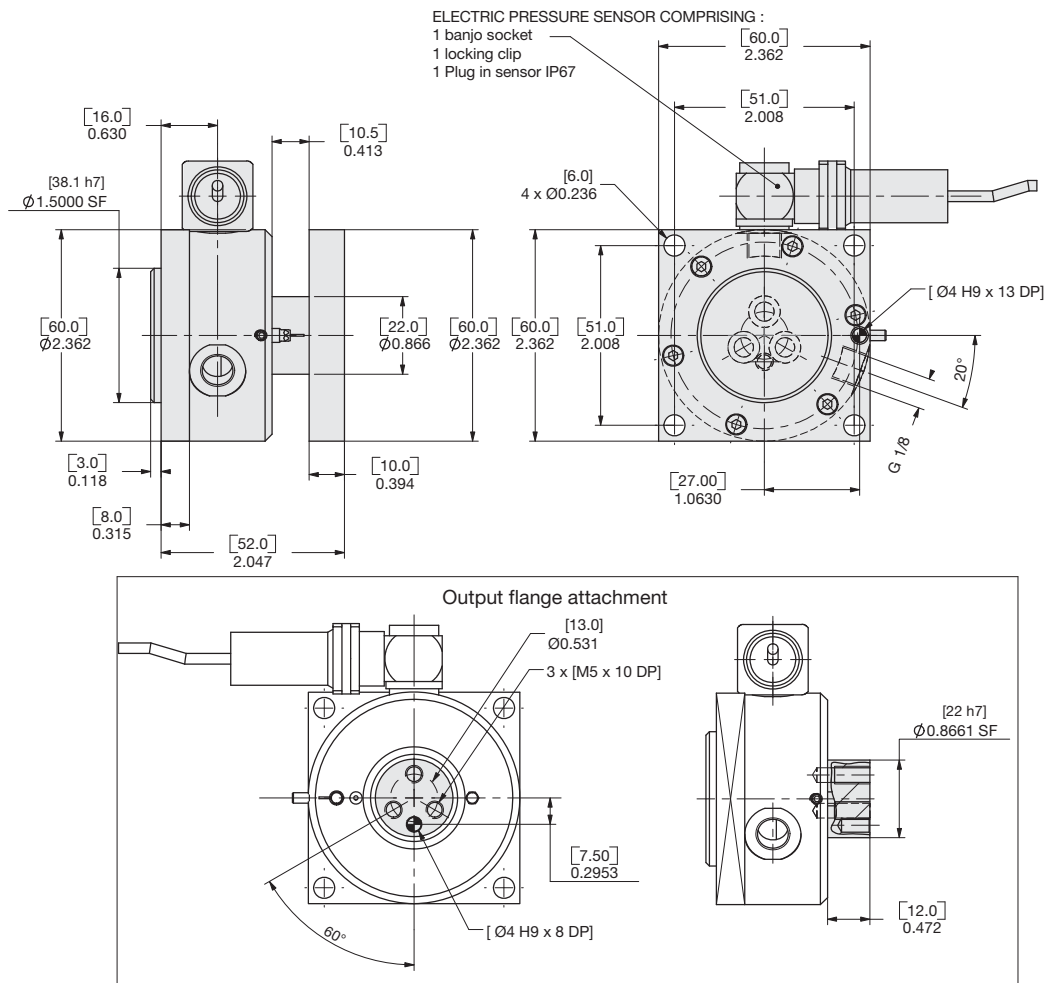
### Size-165

Style:	AU-165	
Axial Compliance:	0.67 in.	17 mm
Rotation:	24°	24°
Angular:	12°	12°
Weight:	12.8 lbs.	5.8 Kg



See Page **6.106**

# AU-60 EMERGENCY STOP MODULES



ELECTRIC PRESSURE SENSOR COMPRISING :  
1 banjo socket  
1 locking clip  
1 Plug in sensor IP67

## Specifications

## AU-60

Maximum Payload .....	4.0 lbs.	1.8 Kg
Rotational Compliance (X and Y axis)...	12°	12°
Rotational Compliance (Z axis).....	45°	45°
Axial Compliance (Z axis) .....	0.28 in.	7 mm
Weight .....	0.99 lbs.	0.45 Kg
Pressure Range (locked cylinder).....	30-145 psi	2-10 bar
Cylinder bore.....	1.77 in.	45 mm
Displacement.....	0.06 in. <sup>3</sup>	1 cm <sup>3</sup>
Temperature Range .....	-30°~180° F	-35°~80° C
Repeatability .....	±0.002 in.	±0.05 mm
Valve required to actuate .....	3-way, 2-position	

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

AU SERIES

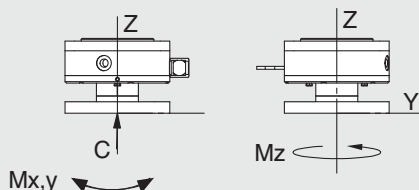
6.102

## Loading Information

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

BASIC MODEL

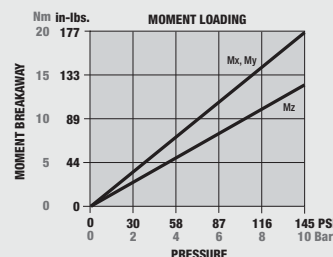
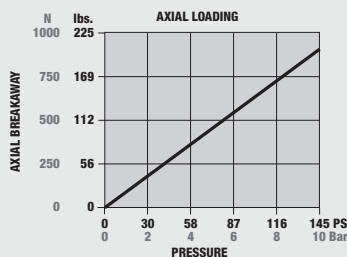
**AU-60**

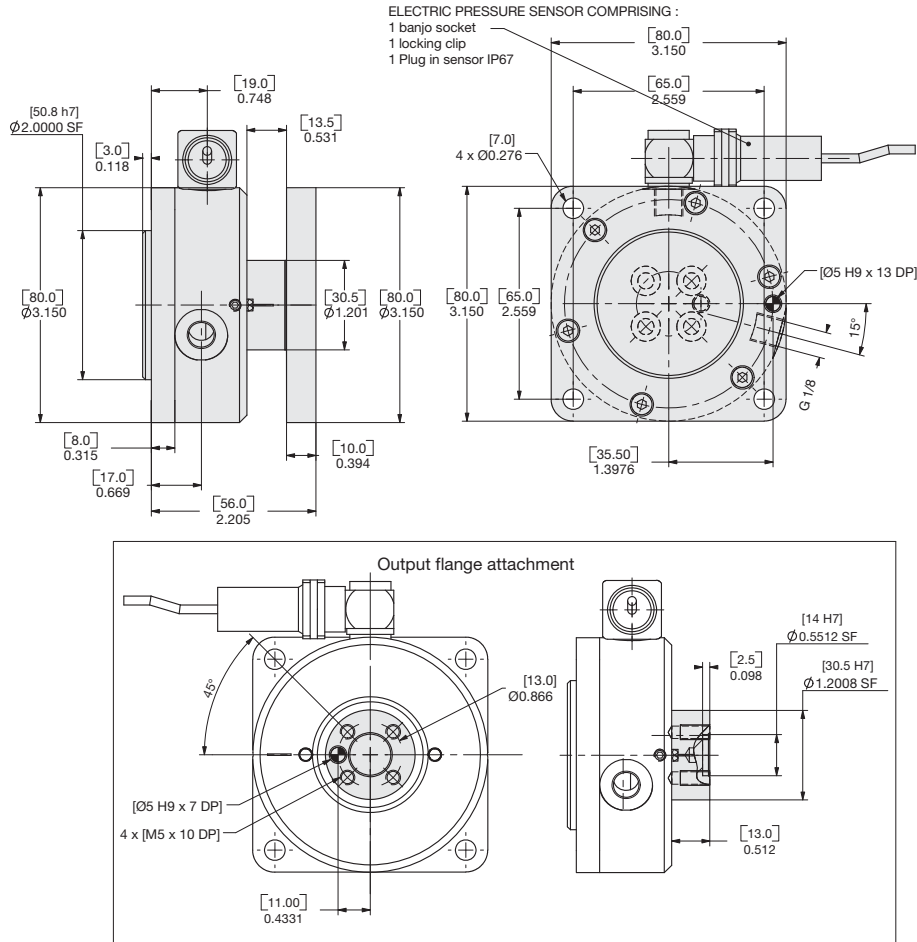


### Loading Capacity at 100 psi 7 bar

	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	139 lbs.	620 N
Maximum Breakaway Moment <b>Mx</b>	124 in.-lbs.	14 Nm
Maximum Breakaway Moment <b>My</b>	89 in.-lbs.	10 Nm
Maximum Breakaway Moment <b>Mz</b>	124 in.-lbs.	14 Nm

## Maximum Overload





### Specifications

### AU-80

Maximum Payload .....	10.0 lbs.	4.5 Kg
Rotational Compliance (X and Y axis)...	12°	12°
Rotational Compliance (Z axis).....	24°	24°
Axial Compliance (Z axis) .....	0.334 in.	8.5 mm
Weight .....	1.5 lbs.	0.68 Kg
Pressure Range (locked cylinder).....	30-145 psi	2-10 bar
Cylinder bore .....	2.4 in.	61 mm
Displacement .....	0.99 in. <sup>3</sup>	16.3 cm <sup>3</sup>
Temperature Range .....	-30°~180° F	-35°~80° C
Repeatability .....	±0.0025 in.	±0.06 mm
Valve required to actuate .....	3-way, 2-position	

### UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

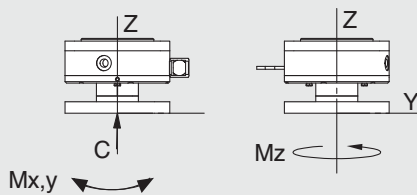
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.0005" or [±.013mm]
Metric Threads	<b>Imperial in.</b>	<b>Metric [mm]</b>
Course Pitch	0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	[.] = [±.25] [0.] = [±.13] [0.00] = [±.013]

## Loading Information

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

### BASIC MODEL

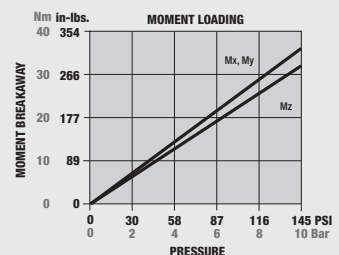
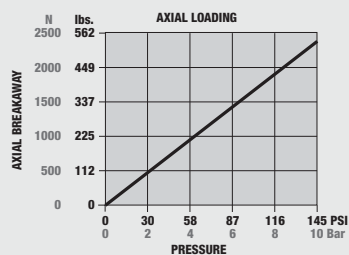
## AU-80



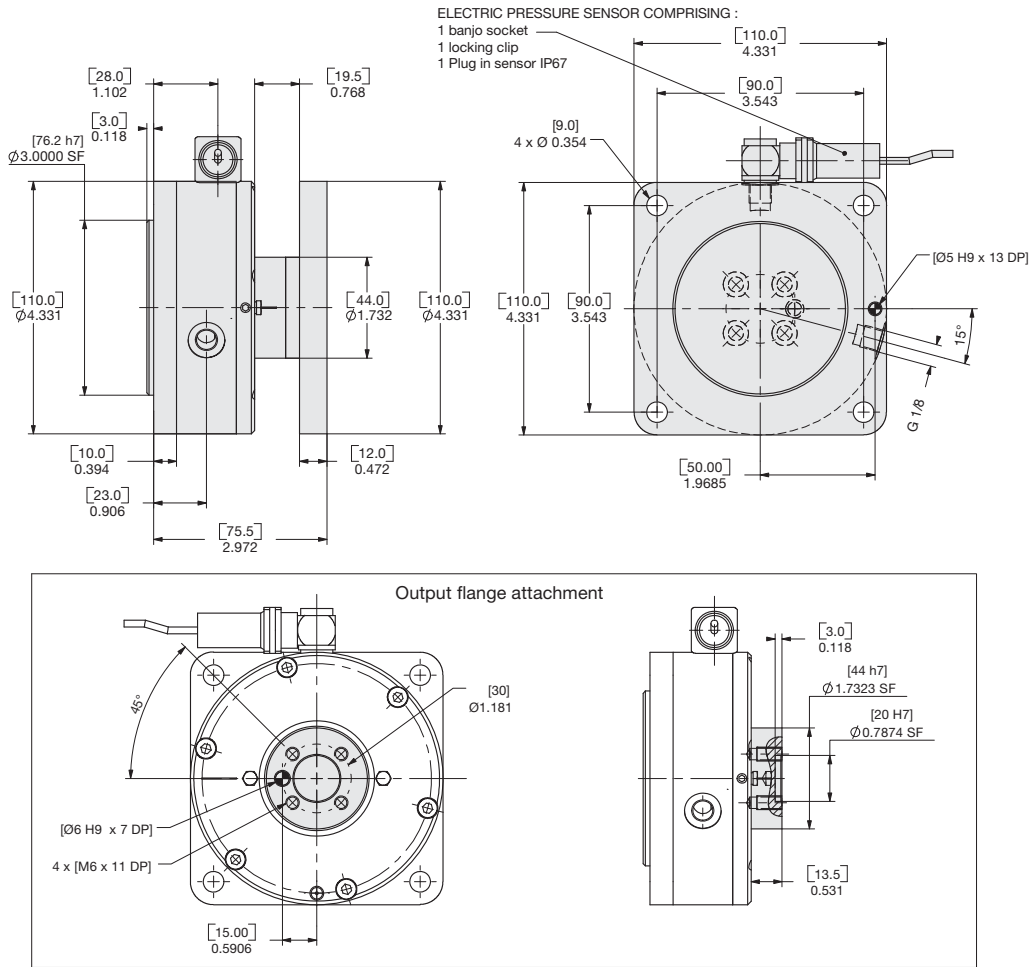
### Loading Capacity at 100 psi 7 bar

	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	372 lbs.	1655 N
Maximum Breakaway Moment <b>Mx</b>	195 in.-lbs.	22 Nm
Maximum Breakaway Moment <b>My</b>	221 in.-lbs.	25 Nm
Maximum Breakaway Moment <b>Mz</b>	195 in.-lbs.	22 Nm

## Maximum Overload



# AU-110 EMERGENCY STOP MODULES



ELECTRIC PRESSURE SENSOR COMPRISING :  
1 banjo socket  
1 locking clip  
1 Plug in sensor IP67

### Specifications

	AU-110	
Maximum Payload .....	18.8 lbs.	8.5 Kg
Rotational Compliance (X and Y axis)...	12°	12°
Rotational Compliance (Z axis).....	31°	31°
Axial Compliance (Z axis) .....	0.531 in.	13.5 mm
Weight .....	4.6 lbs.	2.1 Kg
Pressure Range (locked cylinder).....	30-145 psi	2-10 bar
Cylinder bore.....	3.38 in.	86 mm
Displacement.....	2.22 in. <sup>3</sup>	36.5 cm <sup>3</sup>
Temperature Range .....	-30°~180° F	-35°~80° C
Repeatability .....	±0.003 in.	±0.08 mm
Valve required to actuate .....	3-way, 2-position	

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

AU SERIES

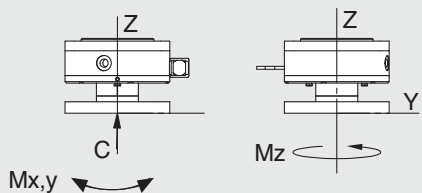
6.104

## Loading Information

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

BASIC MODEL

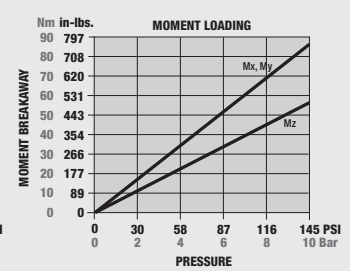
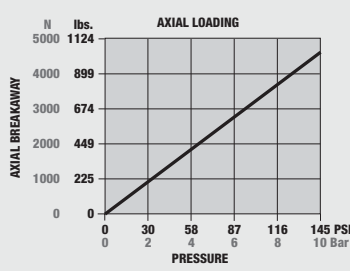
**AU-110**

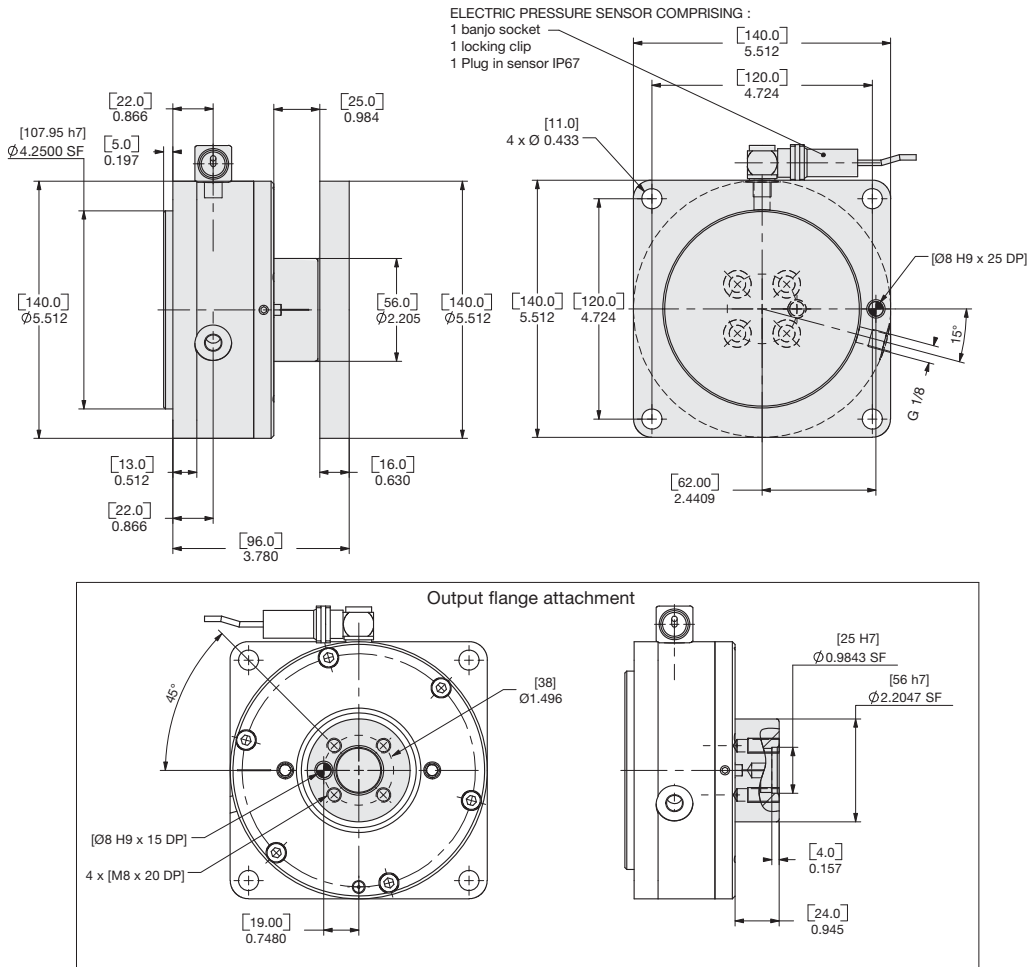


### Loading Capacity at 100 psi 7 bar

	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	712 lbs.	3170 N
Maximum Breakaway Moment <b>Mx</b>	522 in.-lbs	59 Nm
Maximum Breakaway Moment <b>My</b>	345 in.-lbs	39 Nm
Maximum Breakaway Moment <b>Mz</b>	522 in.-lbs	59 Nm

### Maximum Overload





### Specifications

### AU-140

Maximum Payload .....	38.6 lbs.	17.5 Kg
Rotational Compliance (X and Y axis)...	12°	12°
Rotational Compliance (Z axis).....	45°	45°
Axial Compliance (Z axis) .....	0.63 in.	16 mm
Weight .....	8.8 lbs.	4.0 Kg
Pressure Range (locked cylinder).....	30-145 psi	2-10 bar
Cylinder bore.....	4.25 in.	108 mm
Displacement.....	3.31 in. <sup>3</sup>	54.3 cm <sup>3</sup>
Temperature Range .....	-30°~180° F	-35°~80° C
Repeatability .....	±0.004 in.	±0.1 mm
Valve required to actuate .....	3-way, 2-position	

### UNLESS OTHERWISE NOTED ALL TOLERANCES ARE AS SHOWN BELOW

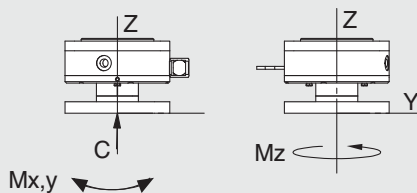
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.0005" or [±.013mm]
Metric Threads Course Pitch	<b>Imperial in.</b> 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	<b>Metric [mm]</b> [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]

## Loading Information

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

### BASIC MODEL

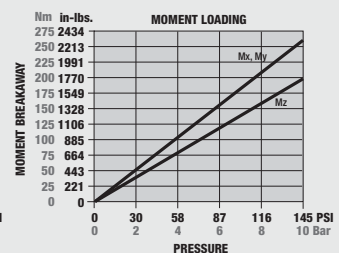
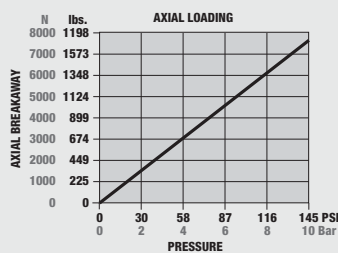
## AU-140



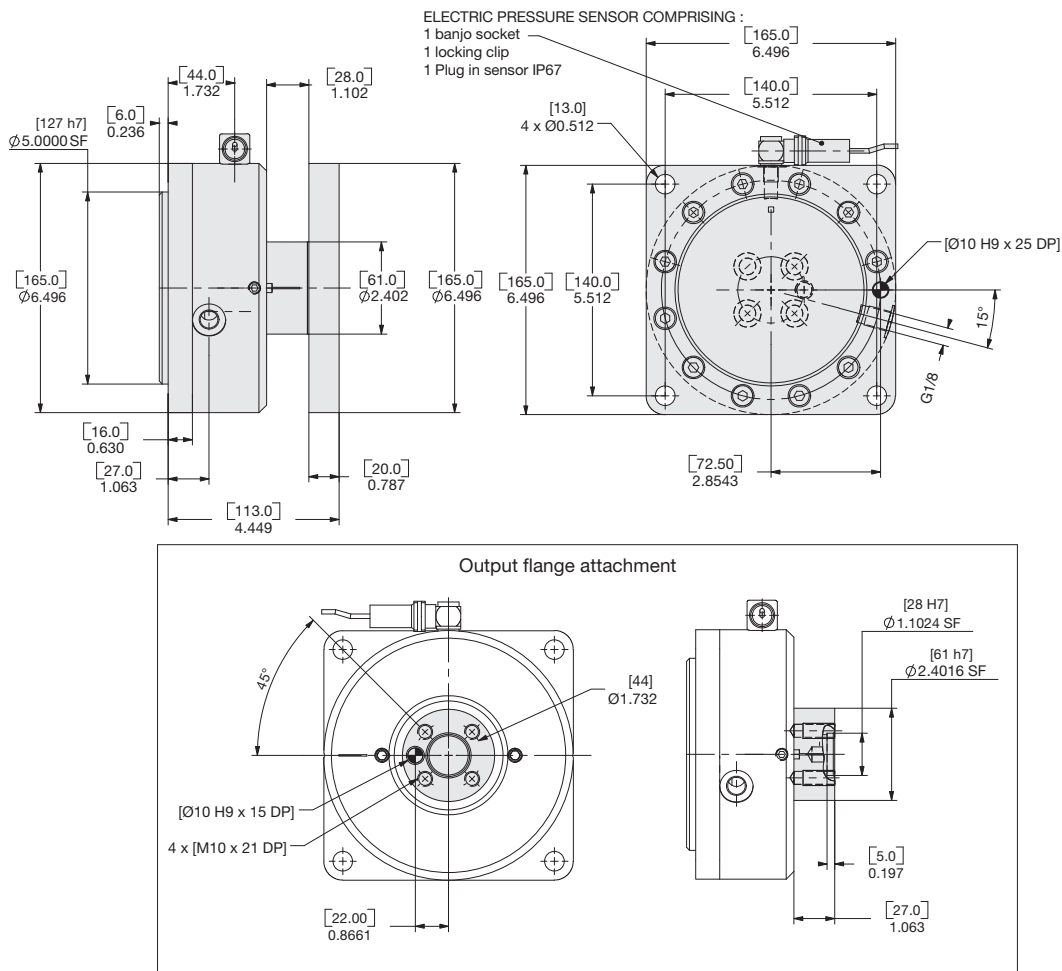
### Loading Capacity at 100 psi 7 bar

	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	1178 lbs.	5240 N
Maximum Breakaway Moment <b>Mx</b>	1584 in.-lbs	179 Nm
Maximum Breakaway Moment <b>My</b>	1221 in.-lbs	138 Nm
Maximum Breakaway Moment <b>Mz</b>	1584 in.-lbs	179 Nm

### Maximum Overload



# AU165 EMERGENCY STOP MODULES



## Specifications

### AU-165

Maximum Payload .....	48.5 lbs.	22.0 Kg
Rotational Compliance (X and Y axis)...	12°	12°
Rotational Compliance (Z axis).....	24°	24°
Axial Compliance (Z axis) .....	0.67 in.	17 mm
Weight .....	12.7 lbs.	5.8 Kg
Pressure Range (locked cylinder).....	30-145 psi	2-10 bar
Cylinder bore.....	4.76 in.	121 mm
Displacement.....	3.94 in.3	64.6 cm3
Temperature Range .....	-30°~180° F	-35°~80° C
Repeatability .....	±0.005 in.	±0.12 mm
Valve required to actuate .....	3-way, 2-position	

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

AU SERIES

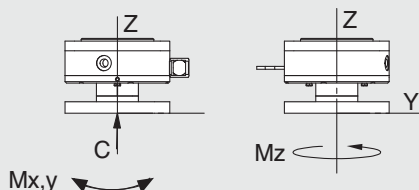
6.106

## Loading Information

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

BASIC MODEL

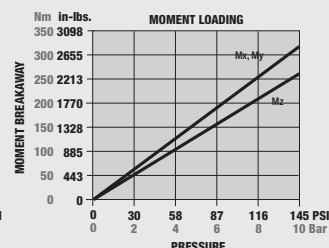
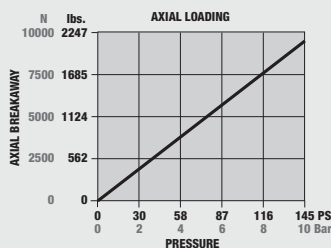
**AU-165**

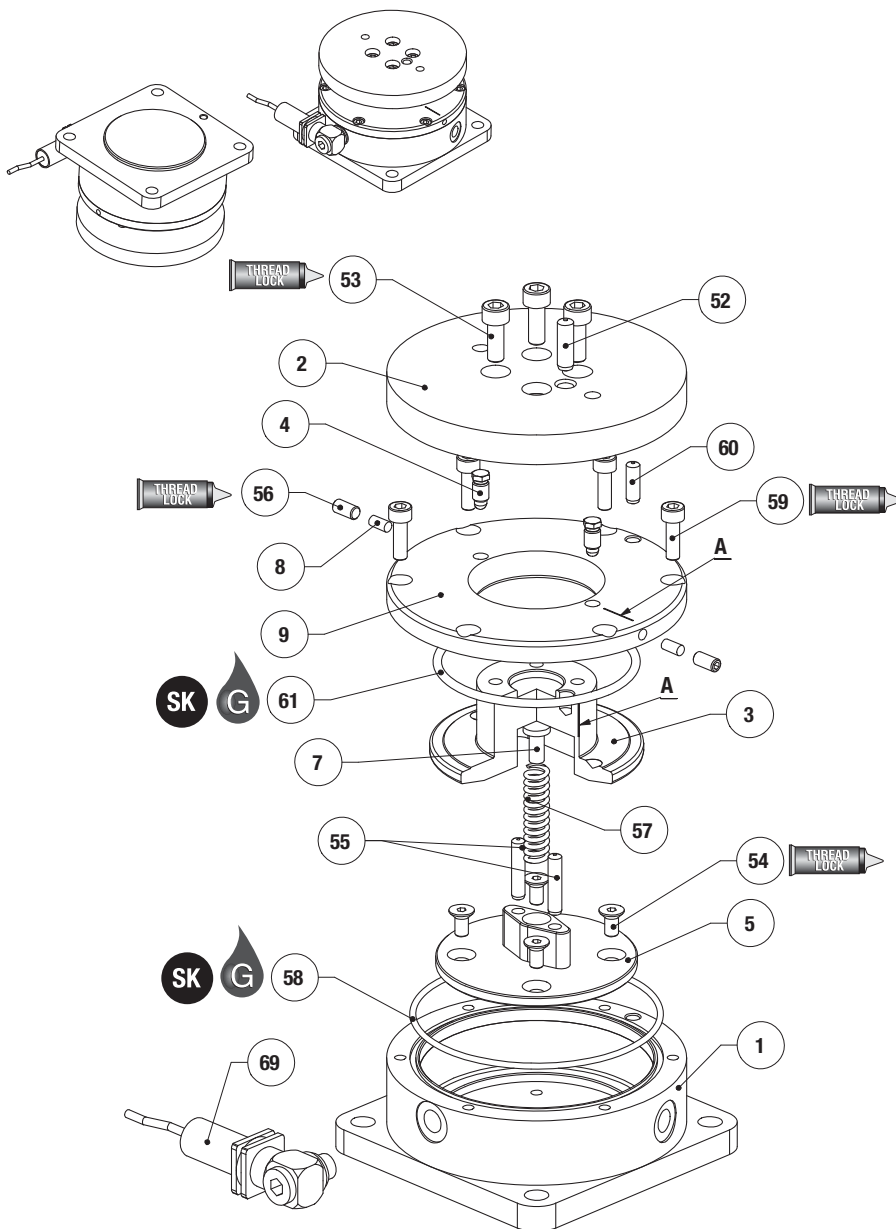


### Loading Capacity at 100 psi 7 bar

	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	1472 lbs.	6550 N
Maximum Breakaway Moment <b>Mx</b>	1956 in.-lbs	221 Nm
Maximum Breakaway Moment <b>My</b>	1584 in.-lbs	179 Nm
Maximum Breakaway Moment <b>Mz</b>	1956 in.-lbs	221 Nm

## Maximum Overload





Item	Qty	Name
1	1	Body
2	1	Blank Plate
3	1	Output Flange
4	2	Spherical pin
5	1	Stop
7	1	Spring cap
8	2	Cylindrical spacer
9	1	Cap
52	1	Pin, Output flange
53	4	SHC screw, Flange
54	4	Hexagon CSKH screw, Stop
55	2	Pin, Stop
56	2	SS screw, Cylindrical pin
57	1	Spring
58	1	O-ring, Cap
59	6	SHC screw, Cap
60	1	Pin, Cap
61	1	O-ring, output flange
69	1	Electric pressure sensor

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

### Assembly Procedures

- 1) Locate the stop (#5) using the two pins (#55) into the body (#1)
- 2) Fasten the stop (#5) with (#54) screws with thread locker
- 3) Install the spring (#57) into the stop hole
- 4) Insert the spring cap (#7) into the spring (#57)
- 5) Insert the O-Ring (#58) into the top groove of the body (#1)
- 6) Screw the spherical pin (#4) into the cap (#9)
- 7) Insert the cylindrical spacer (#8) into the lateral holes of the cap (#9)
- 8) Fasten the SS screws (#56) into the lateral tapped holes of the cap (#9)
- 9) Insert the O-Ring (#61) into the groove of the cap (#9)
- 10) Insert the output flange (#3) into the cap (#9) lining up the engraved signs "A"
- 11) Insert this subassembly into the body (#1) and locate it using (#60) pin
- 12) Fasten the cap (#9) with (#59) SH screws with thread locker
- 13) Locate the blank plate (#2) onto the output flange (#3) using the dowel pin (#52)
- 14) Fasten the blank plate (#2) with (#53) SH screws with thread locker
- 15) Screw the electric pressure sensor (#69) in the body (#1)

### Adjustment Procedures

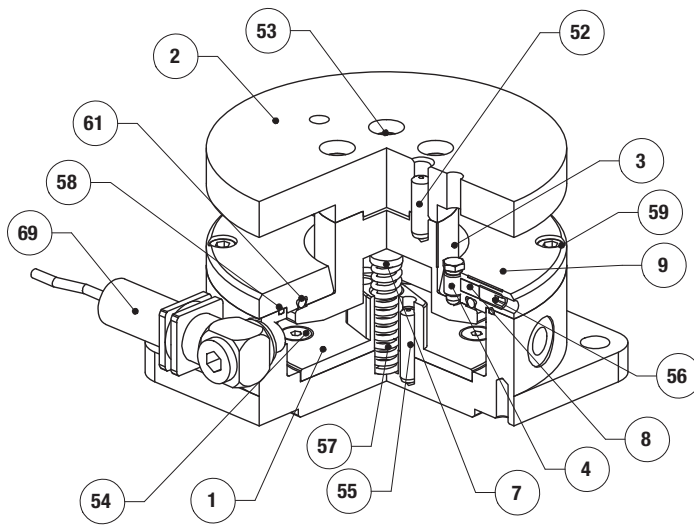
For an easier adjustment, the blank plate (#2) can be disassembled. It is also advised to supply the module with two bar air pressure.

- 1) Unscrew the SS screws (#56) to release the cylindrical spacer (#8)
- 2) Unscrew the spherical pin (#4) to release the contact with the conical seats of the output flange (#3).

- 3) Line up the engraved "A" sign of the body (#1) and the output flange (#3)
- 4) Screw, simultaneously, by successive quarter of turn, the spherical pin (#4) till getting a contact into the conical seats of the output flange (#3). Repeat this operation until getting a minimal angular freedom.
- 5) Fasten the SS screws (#56) into the lateral tapped holes of the cap (#9).








AU SERIES MAINTENANCE 6.107

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Item	Qty	Name
1	1	Body
2	1	Blank Plate
3	1	Output Flange
4	2	Spherical pin
5	1	Stop
7	1	Spring cap
8	2	Cylindrical spacer
9	1	Cap
52	1	Pin, Output flange
53	4	SHC screw, Flange
54	4	Hexagon CSKH screw, Stop
55	2	Pin, Stop
56	2	SS screw, Cylindrical pin
57	1	Spring
58	1	O-ring, Cap
59	6	SHC screw, Cap
60	1	Pin, Cap
61	1	O-ring, output flange
69	1	Electric pressure sensor

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

 Seal Kit Items	 Thread Locker	 Krytox™ Lubricant	 Lightweight Machine Oil	 Teflon™ Based Grease	 Super Bonder	 Third Angle Projection
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