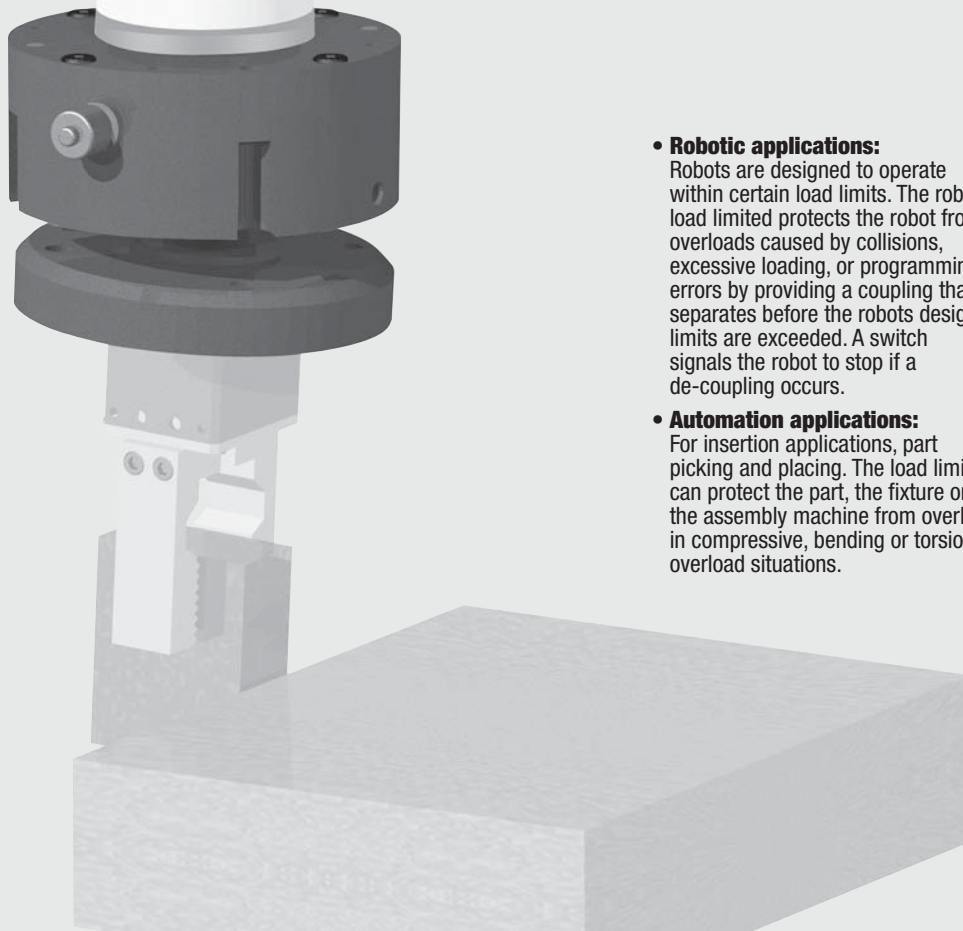


# Robot Load Limiters



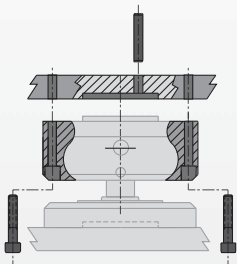
• **Robotic applications:**

Robots are designed to operate within certain load limits. The robot load limited protects the robot from overloads caused by collisions, excessive loading, or programming errors by providing a coupling that separates before the robots design limits are exceeded. A switch signals the robot to stop if a de-coupling occurs.

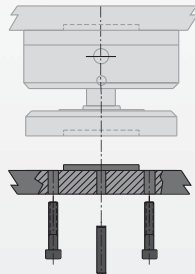
• **Automation applications:**

For insertion applications, part picking and placing. The load limiter can protect the part, the fixture or the assembly machine from overload in compressive, bending or torsional overload situations.

## Mounting Information:



Robot side has counter bored holes for mounting with a dowel hole and raised boss for location



The tool side has tapped holes for mounting and a pilot hole and dowel hole for positioning

## Technical Specifications:

**Pneumatic Specifications**

	<b>Imperial</b>	<b>Metric</b>
Pressure Operating Range	40-100 psi	3-7 bar
Cylinder Type	Non-Conventional	
Valve Required to Operate	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**

-20°~180° F	30°~80° C
-------------	-----------

**Maintenance Specifications<sup>†</sup>**

Expected Life	
Normal Application	5 million cycles
w/ Preventative Maintenance	10+ million cycles
Field Repairable	Yes
Seal Repair Kits Available	Yes

**Application Restrictions**

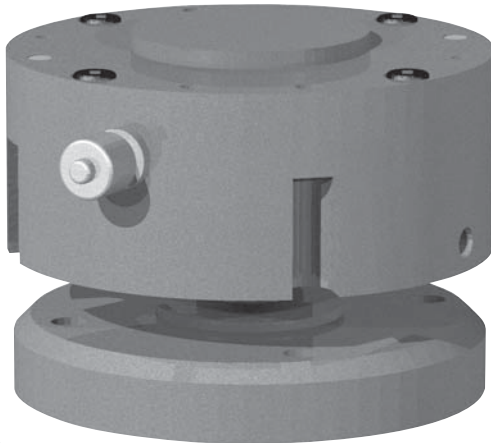
- Dirty or gritty environments
- Machining operations generating chips
- Environments with loose particulate

<sup>†</sup> See Maintenance Section

## Product Features

### Quality Components

Anodized aluminum components



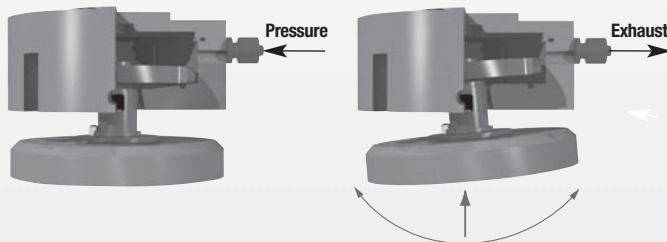
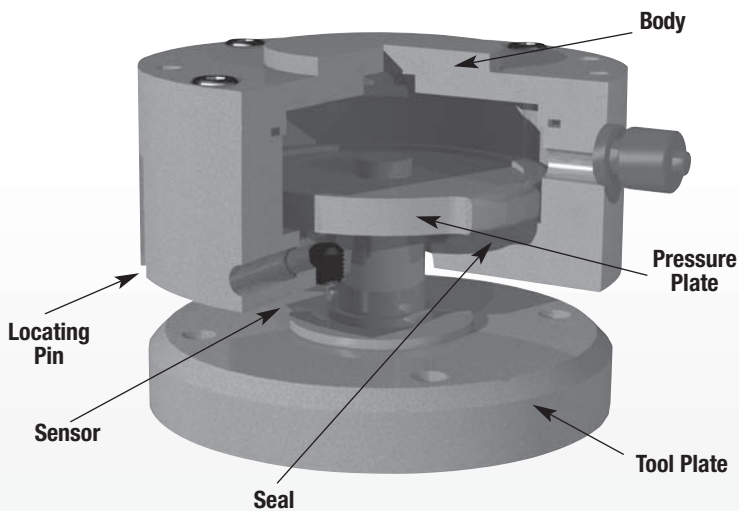
### Built-in Sensor

Built in proximity sensor for detecting de-coupling

### Pressure Plate

Accurate pressure plate locating for repeatable re-coupling.

## Operating Principle



- The robot limiter is comprised of two halves, the robot side and the tool side, which can be separated from one another but not detached.
- The two halves are held together by compressed air forcing the pressure plate to seal on the inside surface of the robot half.
- The force required to breakaway the unit is proportional to the air pressure.
- In the event of an overload the sensor detects the motion of the pressure plate and can signal the robot or assembly machine and the valve supplying pressure to the load limiter to shut down.
- When the collision is cleared and the tool is manually returned to the normal orientation the sensor can reactivate the valve to re-pressurize the device.

### Style-ULS Load Limiter

#### Size -80

Style:	ULS-80
Axial Breakaway:	240 lbs. 1068 N
Weight:	1.3 lbs. 0.59 Kg



See Page **6.92**

### Style-ULS Load Limiter

#### Size -100

Style:	ULS-100
Axial Breakaway:	330 lbs. 1468 N
Weight:	1.87 lbs. 0.85 Kg



See Page **6.93**

### Style-ULS Load Limiter

#### Size -125

Style:	ULS-125
Axial Breakaway:	620 lbs. 2750 N
Weight:	3.52 lbs. 1.6 Kg



See Page **6.94**

### Style-ULS Load Limiter

#### Size -160

Style:	ULS-160
Axial Breakaway:	1125 lbs. 5000 N
Weight:	7.1 lbs. 3.2 Kg

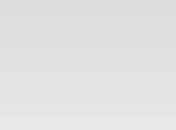


See Page **6.95**

### Style-ULS Load Limiter

#### Size -200

Style:	ULS-200
Axial Breakaway:	1750 lbs. 7784 N
Weight:	21.56 lbs. 9.8 Kg

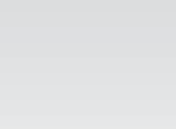


See Page **6.96**

### Style-ULS Load Limiter

#### Size -250

Style:	ULS-250
Axial Breakaway:	2025 lbs. 9000 N
Weight:	35 lbs. 16 Kg

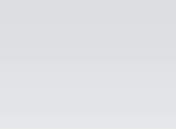


See Page **6.97**

### Style-ULS Load Limiter

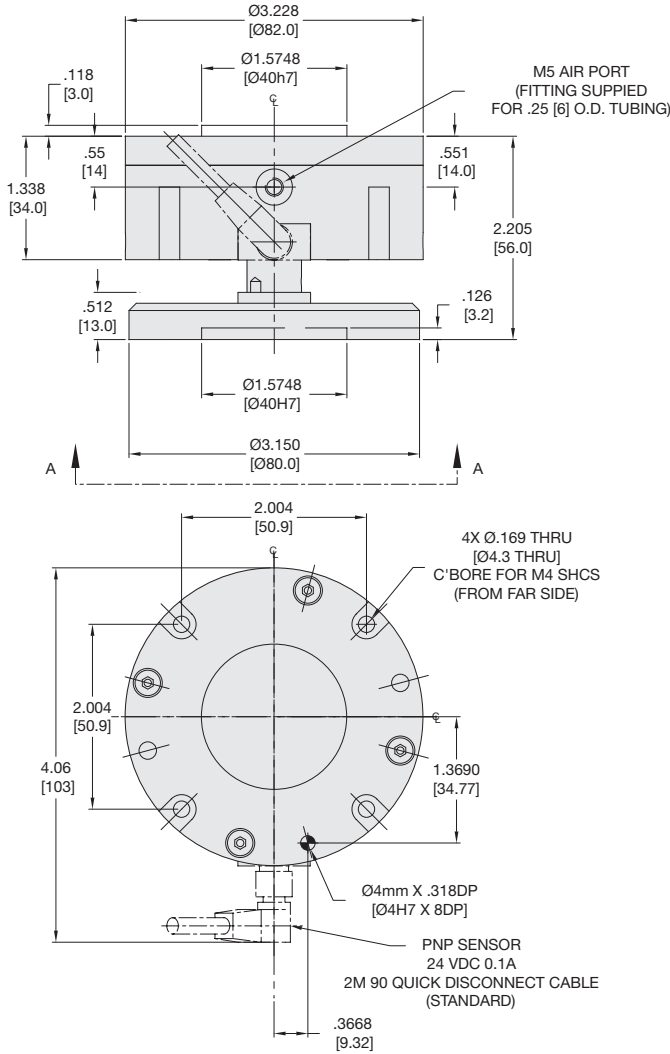
#### Size -300

Style:	ULS-300
Axial Breakaway:	2475 lbs. 11,000 N
Weight:	53 lbs. 24 Kg



See Page **6.98**

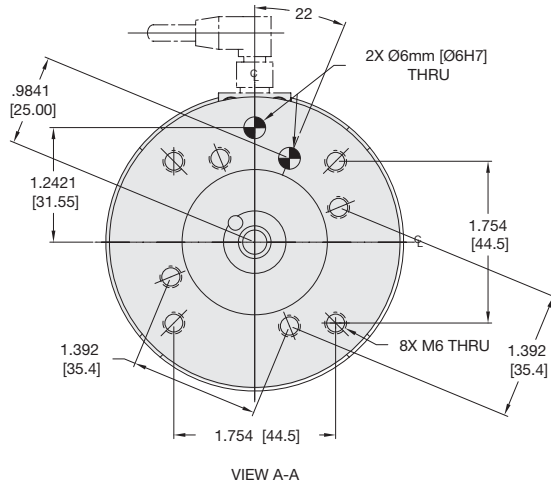
# ULS-80 ROBOT LOAD LIMITER SERIES



### Specifications

### ULS-80

Maximum Payload .....	8.8 lbs.	4.0 Kg
Rotational Compliance (X and Y axis) .....	10°	10°
Rotational Compliance (Z axis) .....	360°	360°
Axial Compliance (Z axis) .....	0.47 in.	12 mm
Weight .....	1.3 lbs.	0.59 Kg
Pressure Range (locked cylinder) .....	15-100 psi	1-7 bar
Temperature Range .....	-5°~160° F	-20°~70° C
Repeatability .....	±0.001 in.	±0.03 mm
Valve required to actuate .....	3-way, 2-position	



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

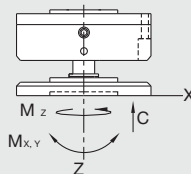
				<b>Imperial in.</b>	<b>Metric [mm]</b>
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.0005" or [±.013mm]	Metric Threads Course Pitch	0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	[0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]

## Loading Information

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

### BASIC MODEL

## ULS-80



### Loading Capacity at 90 psi 6 bar

	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	240 lbs.	1068 N
Maximum Breakaway Moment <b>Mx</b>	210 in.-lbs.	24 Nm
Maximum Breakaway Moment <b>My</b>	210 in.-lbs.	24 Nm
Maximum Breakaway Moment <b>Mz</b>	210 in.-lbs.	24 Nm

### PNEUMATIC ACCESSORIES

Standard Seal Repair Kit

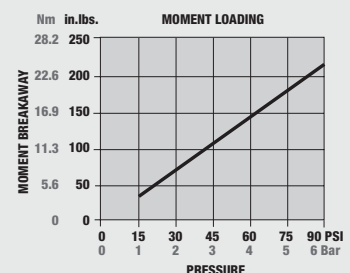
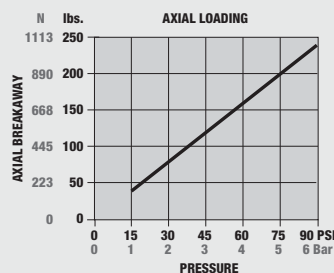
### ORDER #

SLKT-137

### QTY/UNIT

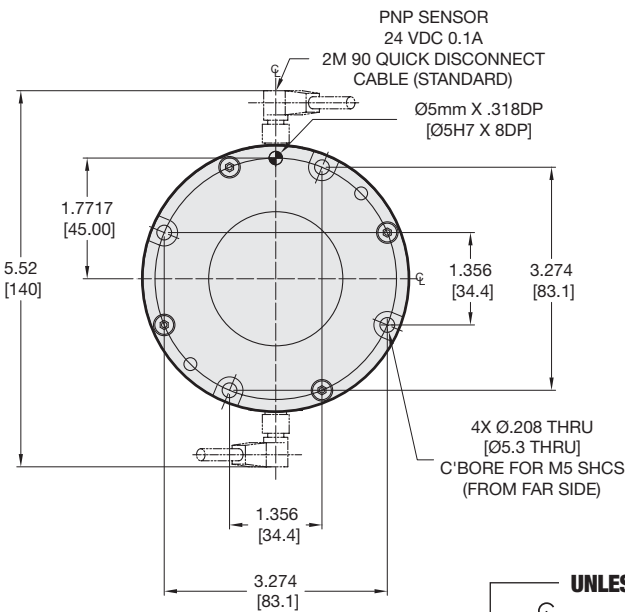
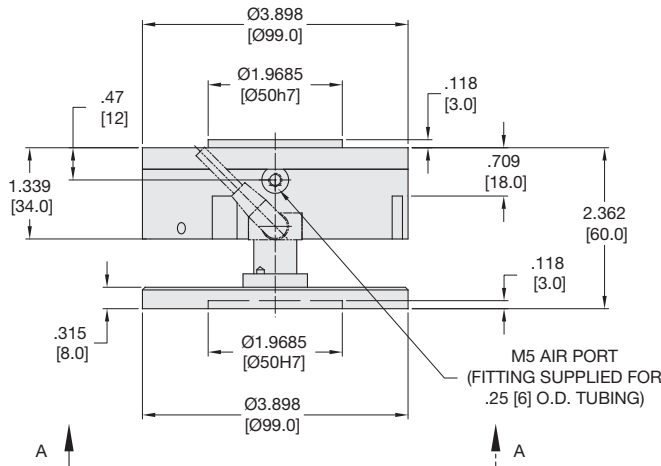
1

## Maximum Overload



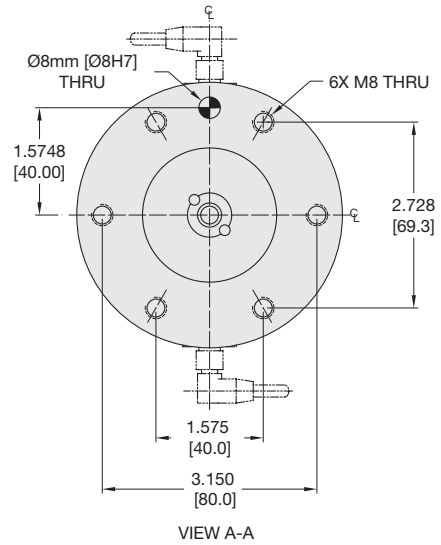


# ULS-100 ROBOT LOAD LIMITER SERIES



### Specifications

	ULS-100	
Maximum Payload	17.6 lbs.	8.0 Kg
Rotational Compliance (X and Y axis)	12°	12°
Rotational Compliance (Z axis)	360°	360°
Axial Compliance (Z axis)	0.56 in.	14 mm
Weight	1.87 lbs.	0.85 Kg
Pressure Range (locked cylinder)	15-100 psi	1-7 bar
Temperature Range	-5°~160° F	-20°~70° C
Repeatability	±0.001 in.	±0.03 mm
Valve required to actuate	3-way, 2-position	



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

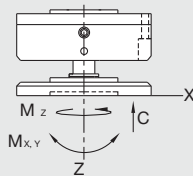
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.0005" or [±.013mm]	Metric Threads Course Pitch	<b>Imperial in.</b> 0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	<b>Metric [mm]</b> [0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]
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##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

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

BASIC MODEL

**ULS-100**



Loading Capacity at 90 psi 6 bar	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	330 lbs.	1468 N
Maximum Breakaway Moment <b>Mx</b>	350 in.-lbs.	40 Nm
Maximum Breakaway Moment <b>My</b>	350 in.-lbs.	40 Nm
Maximum Breakaway Moment <b>Mz</b>	350 in.-lbs.	40 Nm

### PNEUMATIC ACCESSORIES

Standard Seal Repair Kit

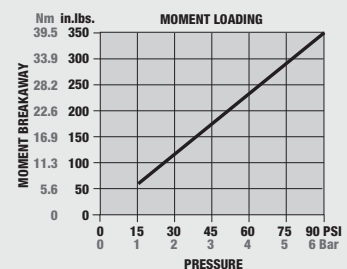
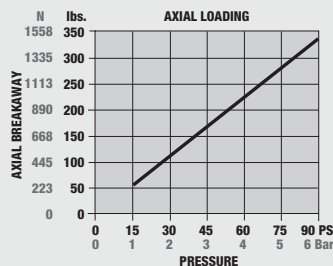
### ORDER #

**SLKT-138**

### QTY/UNIT

**1**

## Maximum Overload



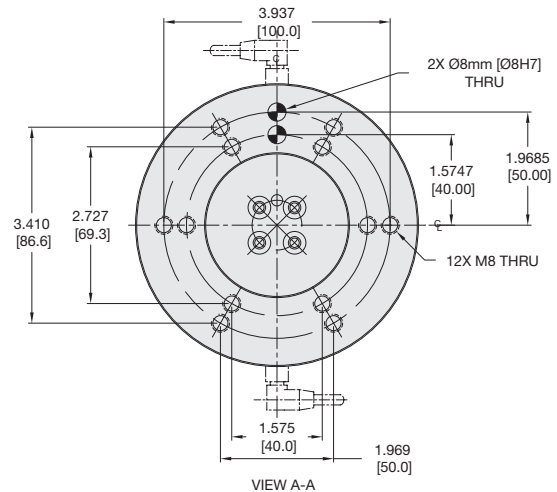
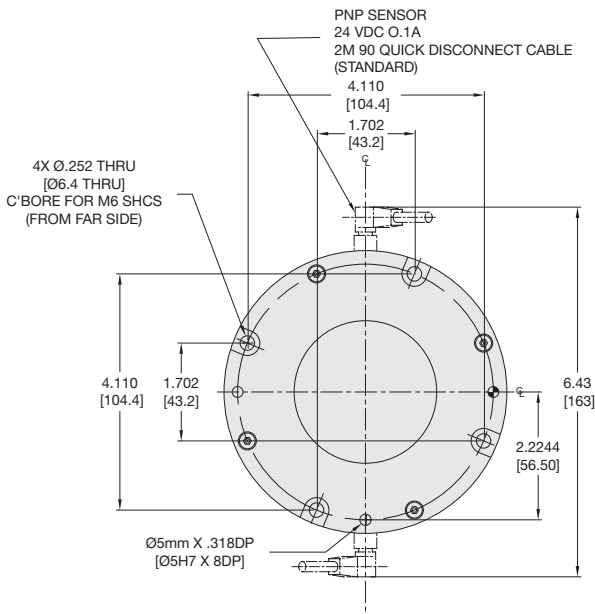
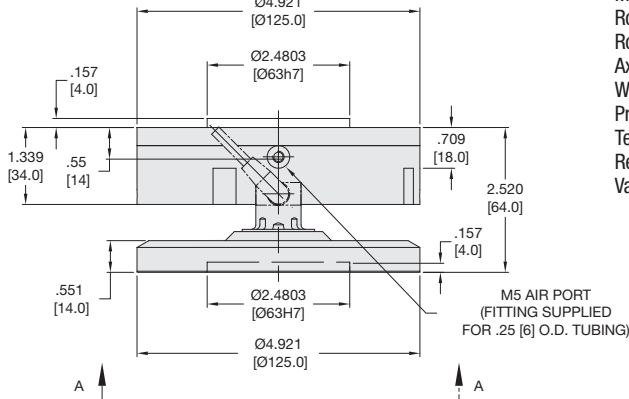
# ULS-125 ROBOT LOAD LIMITER SERIES



### Specifications

### ULS-125

Maximum Payload	26.5 lbs.	12.0 Kg
Rotational Compliance (X and Y axis)	10°	10°
Rotational Compliance (Z axis)	360°	360°
Axial Compliance (Z axis)	0.47 in.	12 mm
Weight	3.52 lbs.	1.60 Kg
Pressure Range (locked cylinder)	15-100 psi	1-7 bar
Temperature Range	-5°~160° F	-20°~70° C
Repeatability	±0.001 in.	±0.03 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 $\pm .0005"$ or $\pm .013\text{mm}$	Metric Threads Course Pitch	<b>Imperial in.</b> 0.00 = $\pm .01$ 0.000 = $\pm .005$ 0.0000 = $\pm .0005$	<b>Metric [mm]</b> [0.] = $\pm .25$ [0.0] = $\pm .13$ [0.00] = $\pm .013$
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ULS SERIES

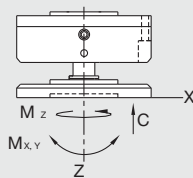
6.94

## Loading Information

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

BASIC MODEL

**ULS-125**



### Loading Capacity at 90 psi 6 bar

	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	620 lbs.	2750 N
Maximum Breakaway Moment <b>M<sub>x</sub></b>	960 in.-lbs.	109 Nm
Maximum Breakaway Moment <b>M<sub>y</sub></b>	960 in.-lbs.	109 Nm
Maximum Breakaway Moment <b>M<sub>z</sub></b>	960 in.-lbs.	109 Nm

### PNEUMATIC ACCESSORIES

Standard Seal Repair Kit

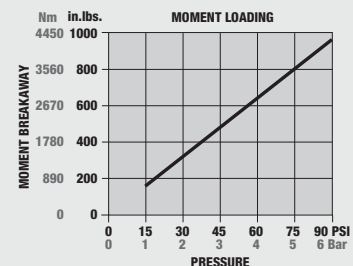
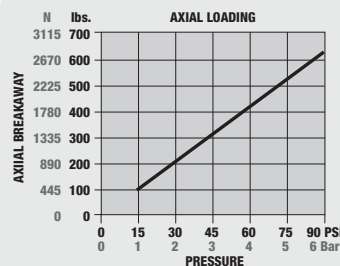
### ORDER #

SLKT-139

### QTY/UNIT

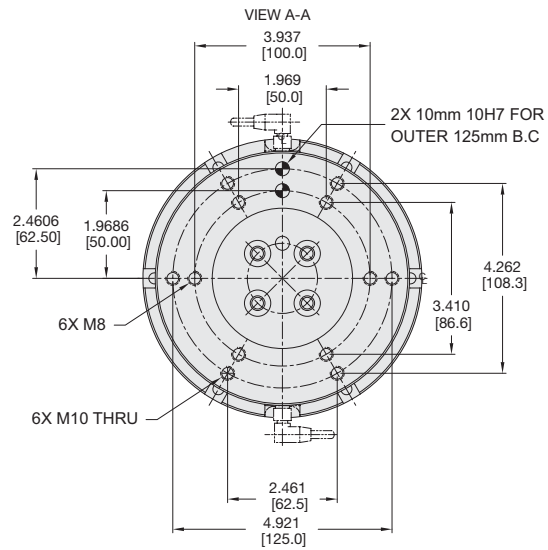
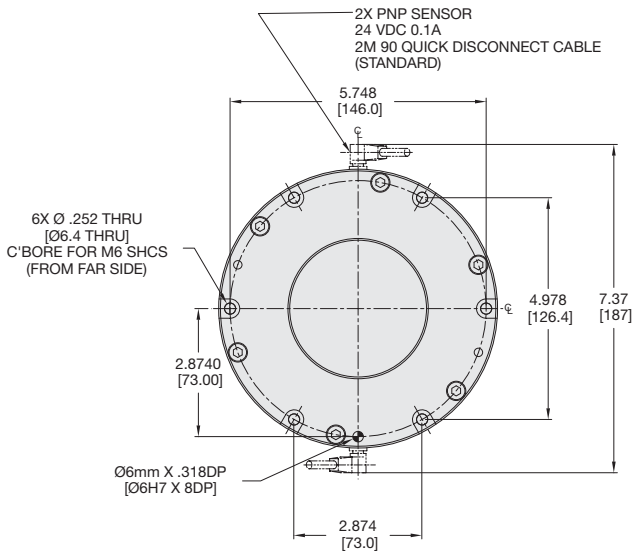
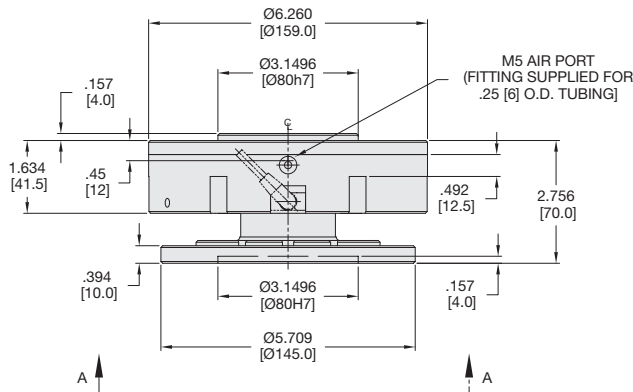
1

## Maximum Overload





# ULS-160 ROBOT LOAD LIMITER SERIES



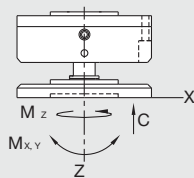
Specifications	ULS-160	
Maximum Payload .....	44.1 lbs.	20 Kg
Rotational Compliance (X and Y axis).....	7°	7°
Rotational Compliance (Z axis) .....	360°	360°
Axial Compliance (Z axis).....	0.57 in.	14.5 mm
Weight .....	7.1 lbs.	3.2 Kg
Pressure Range (locked cylinder) .....	15-100 psi	1-7 bar
Temperature Range .....	-5°~160° F	-20°~70° C
Repeatability .....	± 0.002in.	± 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]
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## Loading Information

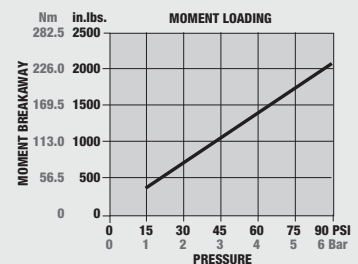
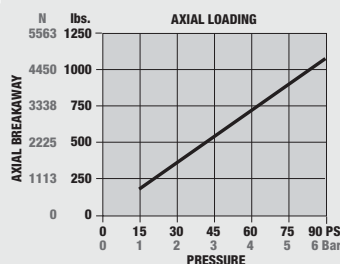
## How to Order: (Order Accessories separately from Basic Model)



### Loading Capacity at 90 psi 6 bar

	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	1125 lbs.	5000 N
Maximum Breakaway Moment <b>M<sub>x</sub></b>	2100 in.-lbs.	237 Nm
Maximum Breakaway Moment <b>M<sub>y</sub></b>	2100 in.-lbs.	237 Nm
Maximum Breakaway Moment <b>M<sub>z</sub></b>	2100 in.-lbs.	237 Nm

## Maximum Overload



### PNEUMATIC ACCESSORIES

Standard Seal Repair Kit

### ORDER #

SLKT-140

### QTY/UNIT

1

## ULS-160

ULS SERIES

6.95



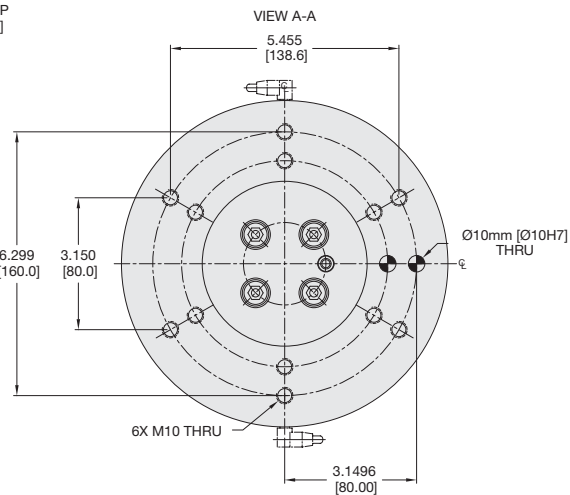
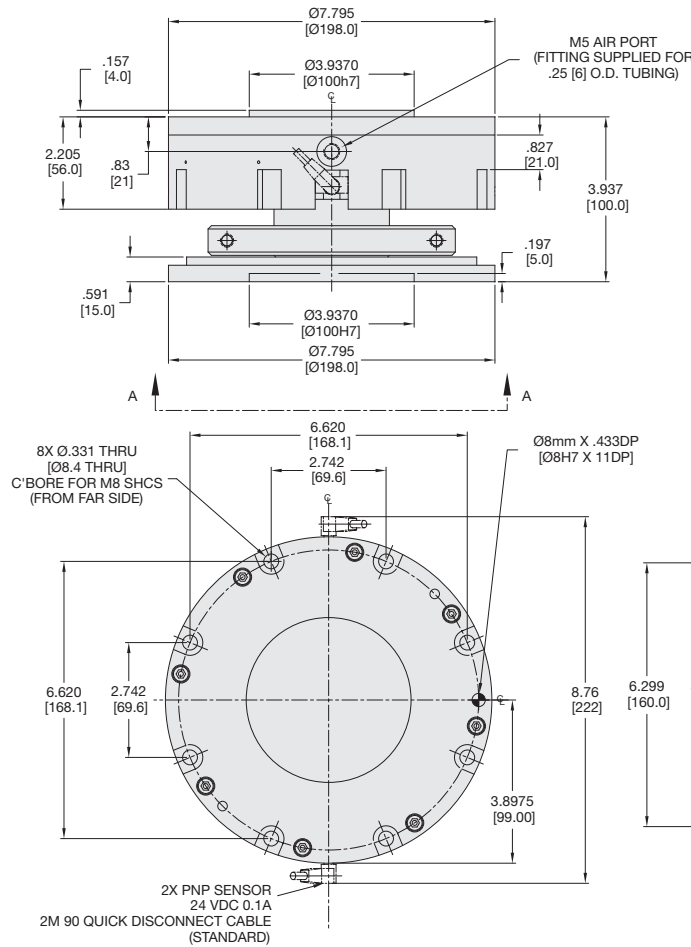
# ULS-200 ROBOT LOAD LIMITER SERIES



## Specifications

## ULS-200

Maximum Payload .....	121.3 lbs.	55.0 Kg
Rotational Compliance (X and Y axis) .....	4°	4°
Rotational Compliance (Z axis) .....	360°	360°
Axial Compliance (Z axis) .....	0.38 in.	9.50 mm
Weight .....	21.56 lbs.	9.8 Kg
Pressure Range (locked cylinder) .....	15-100 psi	1-7 bar
Temperature Range .....	-5°~160° F	-20°~70° C
Repeatability .....	±0.004 in.	±0.10 mm
Valve required to actuate .....	3-way, 2-position	



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

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

ULS SERIES

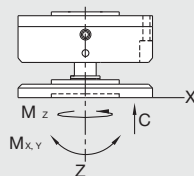
6.96

## Loading Information

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

### BASIC MODEL

## ULS-200



Loading Capacity at 90 psi 6 bar	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	1750 lbs.	7784 N
Maximum Breakaway Moment <b>Mx</b>	4500 in.-lbs.	509 Nm
Maximum Breakaway Moment <b>My</b>	4500 in.-lbs.	509 Nm
Maximum Breakaway Moment <b>Mz</b>	4500 in.-lbs.	509 Nm

### PNEUMATIC ACCESSORIES

Standard Seal Repair Kit

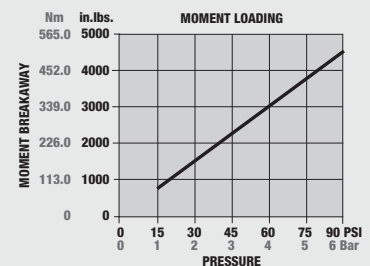
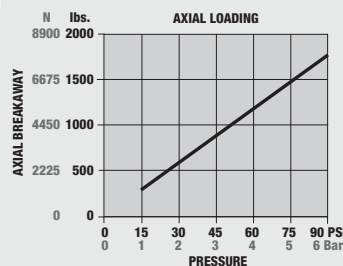
### ORDER #

SLKT-141

### QTY/UNIT

1

## Maximum Overload



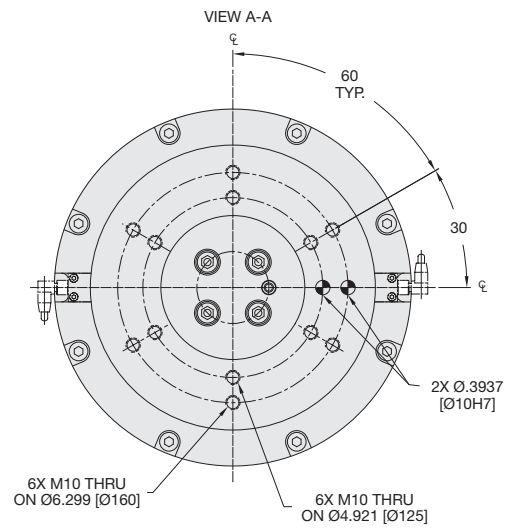
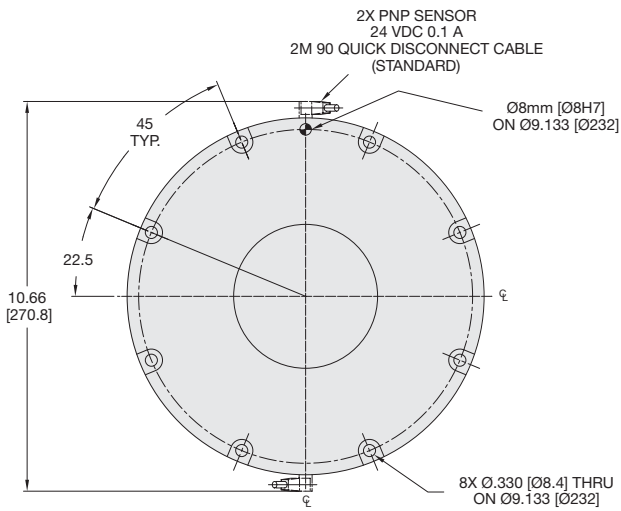
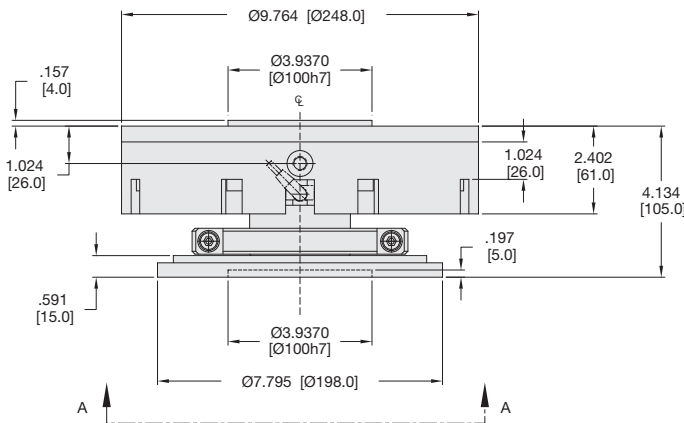


# ULS-250 ROBOT LOAD LIMITER SERIES

## Specifications

## ULS-250

Maximum Payload .....	176.4 lbs.	80.0 Kg
Rotational Compliance (X and Y axis) .....	5°	5°
Rotational Compliance (Z axis) .....	360°	360°
Axial Compliance (Z axis) .....	0.63 in.	16 mm
Weight .....	35 lbs.	16 Kg
Pressure Range (locked cylinder) .....	15-100 psi	1-7 bar
Temperature Range .....	-5°~160° F	-20°~70° C
Repeatability .....	±0.004 in.	±0.10 mm
Valve required to actuate .....	3-way, 2-position	



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

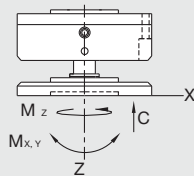
				<b>Imperial in.</b>	<b>Metric [mm]</b>
Dimensions are symmetrical about centerline	Third Angle Projection	All Dowel Holes are SF (Slip Fit). Locational Tolerance ±.0005" or [±.013mm]	Metric Threads Course Pitch	0.00 = ±.01 0.000 = ±.005 0.0000 = ±.0005	[0.] = [±.25] [0.0] = [±.13] [0.00] = [±.013]

## Loading Information

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

### BASIC MODEL

## ULS-250



Loading Capacity at 90 psi 6 bar	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	2025 lbs.	9000 N
Maximum Breakaway Moment <b>Mx</b>	5400 in.-lbs.	610 Nm
Maximum Breakaway Moment <b>My</b>	5400 in.-lbs.	610 Nm
Maximum Breakaway Moment <b>Mz</b>	5400 in.-lbs.	610 Nm

### PNEUMATIC ACCESSORIES

Standard Seal Repair Kit

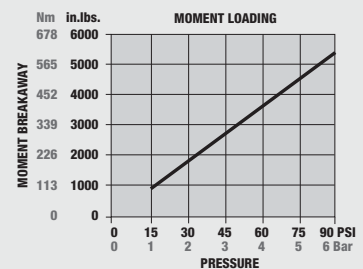
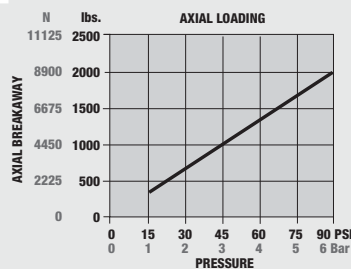
### ORDER #

SLKT-434

### QTY/UNIT

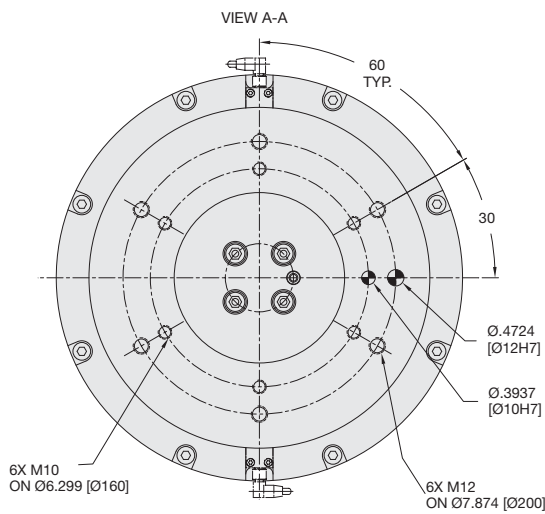
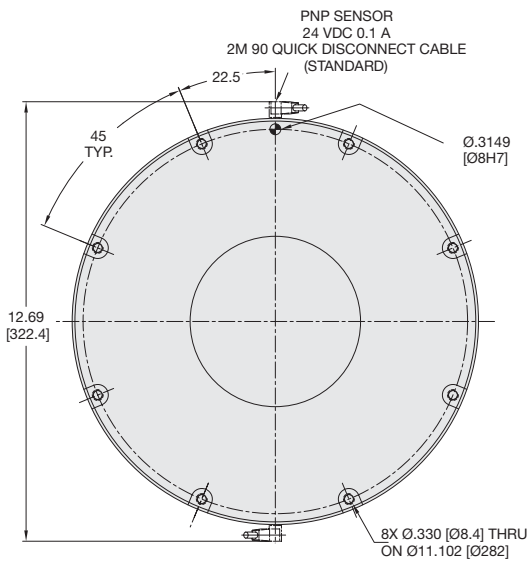
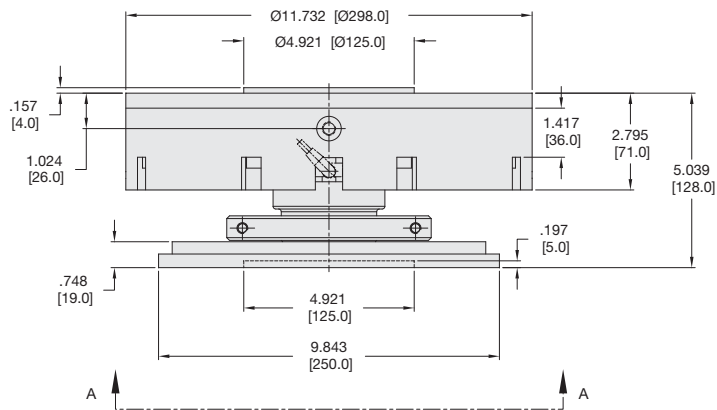
1

## Maximum Overload





# ULS-300 ROBOT LOAD LIMITER SERIES



Specifications	ULS-300	
Maximum Payload	264.6 lbs.	120.0 Kg
Rotational Compliance (X and Y axis)	6°	6°
Rotational Compliance (Z axis)	360°	360°
Axial Compliance (Z axis)	0.98 in.	25 mm
Weight	52.8 lbs.	24.0 Kg
Pressure Range (locked cylinder)	15-100 psi	1-7 bar
Temperature Range	-5°~160° F	-20°~70° C
Repeatability	±0.008 in.	±0.20 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]
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ULS SERIES

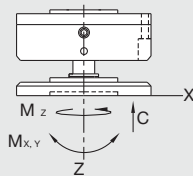
6.98

## Loading Information

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

BASIC MODEL

**ULS-300**



### Loading Capacity at 90 psi 6 bar

	Imperial	Metric
Maximum Breakaway Compressive <b>C</b>	2475 lbs.	11,000 N
Maximum Breakaway Moment <b>Mx</b>	6195 in.-lbs.	700 Nm
Maximum Breakaway Moment <b>My</b>	6195 in.-lbs.	700 Nm
Maximum Breakaway Moment <b>Mz</b>	6195 in.-lbs.	700 Nm

### PNEUMATIC ACCESSORIES

Standard Seal Repair Kit

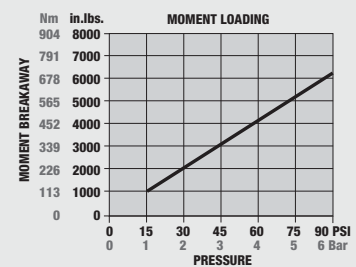
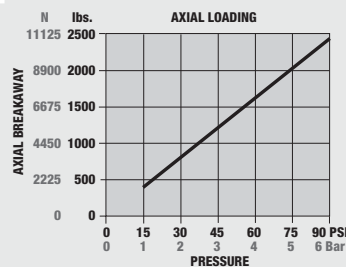
ORDER #

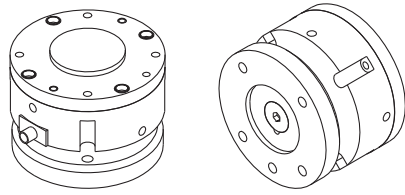
**SLKT-433**

QTY/UNIT

**1**

## Maximum Overload

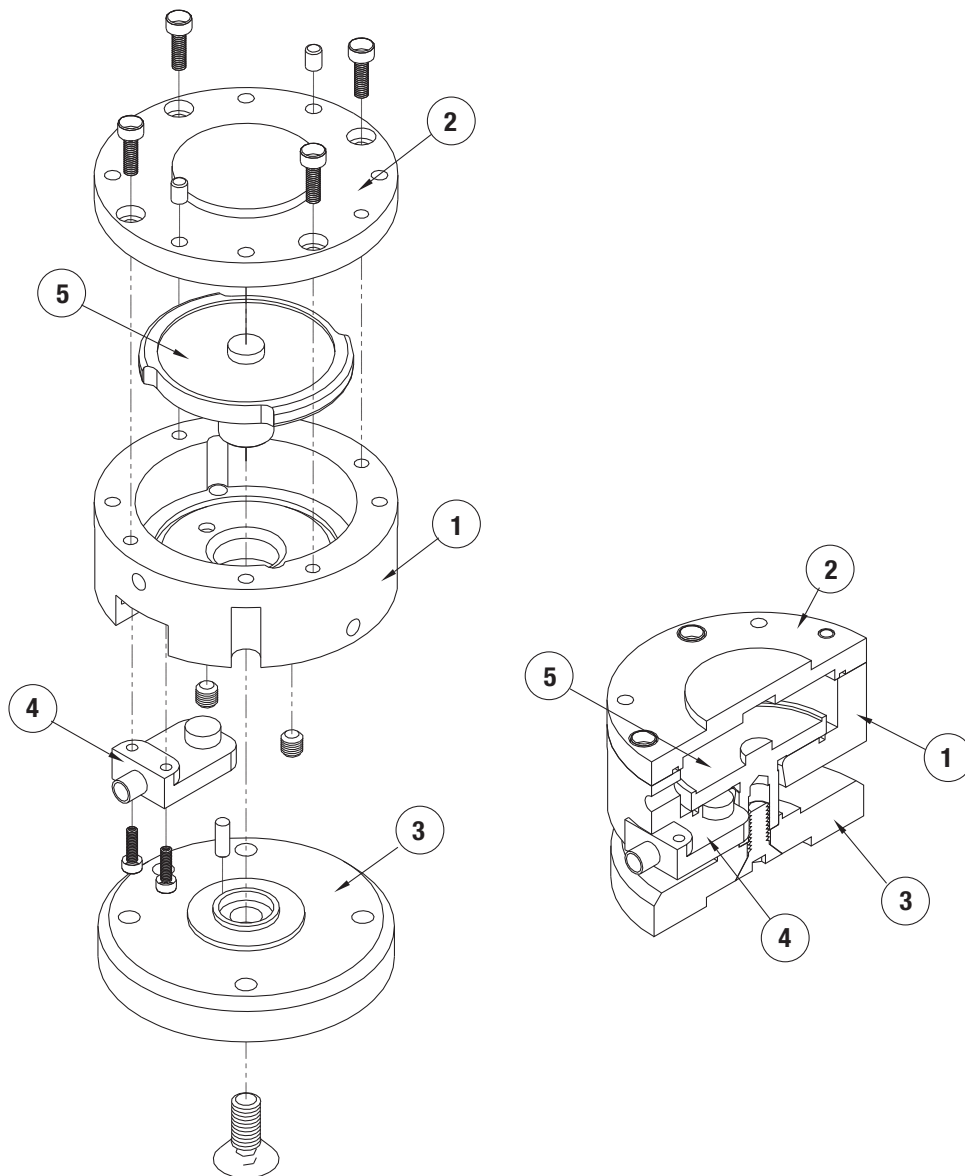




Item	Qty	Name
01	1	Body
02	1	Top Plate
03	1	Bottom Plate
04	1	Sensor
05	1	Pressure Plate

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

**SK Seal Repair Kit Order #'s See Product Data Sheets**



ULS SERIES  
6.99

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