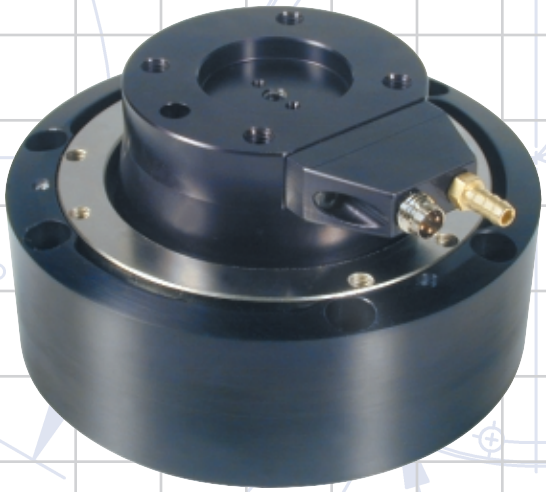
RAD
The Robotic Accessories Leader

ULTIMATIC™
Pneumatic Collision Sensor

Pneumatic Collision Sensor



High-Angle Pneumatic Collision Sensor

Count on RAD for…

Performance: Products with superior functionality, reliability, and durability.
Reassurance: Standard 12-month warranty on all products – 36 months for tool changers.
Assistance: Technically qualified customer service reps simplify sizing and ordering.
Convenience: Quick turnaround and shipment – 1 to 5 days for standard orders.

Since our invention of the very first collision sensor in 1984, RAD has delighted our customers with quality end-of-arm tooling products. As an engineering-centric firm RAD designs, manufactures, and markets a variety of robotic and hard-tooled accessories including:

- ***collision sensors***
- ***compliance (alignment) devices***
- ***deburring tools***
- ***grippers***
- ***tool changers***

Quality Standards

Registered to:

- ISO-9001
- ISO-14001 Environmental Management System Standard

RAD
The Robotic Accessories Leader

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HASSLE-FREE PERFORMANCE FOR MAXIMUM UPTIME

Ultimatic™ and High-Angle Ultimatic™ Pneumatic Collision Sensors

Product Description

The Ultimatic™ is a mechanical Collision Sensor (U.S. Patent #6,214,057) that utilizes pneumatics for dynamic variability.

Benefits

RAD's Ultimatic™ and High-Angle Ultimatic™ Collision Sensors **minimize** the potential for **costly damage** to the robot or tooling in the event of a crash and **maximize uptime** by automatically returning to within 0.0005" (0.013mm) of its starting position once it has been separated from the source of the crash.

The Ultimatic™ Collision Sensors are RAD's patented mechanical collision sensors that:

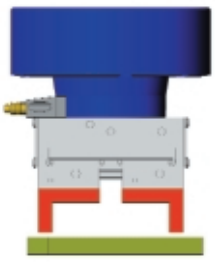
- ***Stop*** the robot* within 2 to 10ms of a collision to minimize costly damage to the robot and/or tooling. RAD's collision sensors provide protection even if the robot itself is not moving.
- ***Absorb*** the crash energy without releasing the air pressure in the unit. Keeping the air in the unit prevents tooling 'sag' and eliminates the effects of compressed air being released into the environment.
- ***Automatically reset*** to within ± 0.0005" (0.013mm) in x, y, and z dimensions and to within ± 0.017 degrees rotationally to maximize uptime and eliminate the need for human intervention.
- ***Offer*** 8 degrees (standard Ultimatic™) or 13 degrees (High-Angle Ultimatic™) of angular compliance
- Allow pneumatic adjustment so the user can easily change the amount of resistance the unit must encounter before signaling a collision.
- Have a compliance adjustment feature that lets the user determine the amount of deflection allowed before a signal is sent to your robot's E-stop or controller.

*can also be used on linear actuators, pick & place machines, and other automated equipment

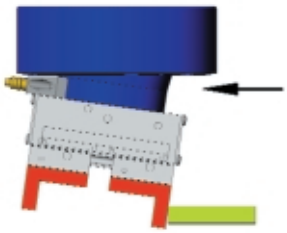
Operating Principle

RAD's Ultimatic™ and High-Angle Ultimatic™ Collision Sensors work by establishing the minimal points of contact required to restrain all degrees of freedom (movement) in normal operation. When a collision occurs, external forces upset this balance thereby allowing angular, rotational, or compressive compliance. This motion opens a normally closed switch and sends a signal to your robot's E-stop or controller.

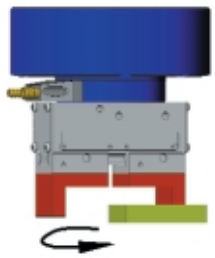
Note: The Ultimatic™ Collision Sensors can be used as compliance (alignment) devices rather than collision sensors by simply mounting the unit without wiring it to the robot.



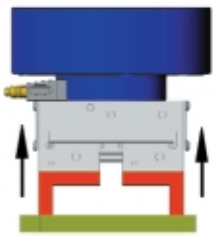
NORMAL STATE



ANGULAR COMPLIANCE



ROTATIONAL COMPLIANCE



COMPRESSIVE COMPLIANCE

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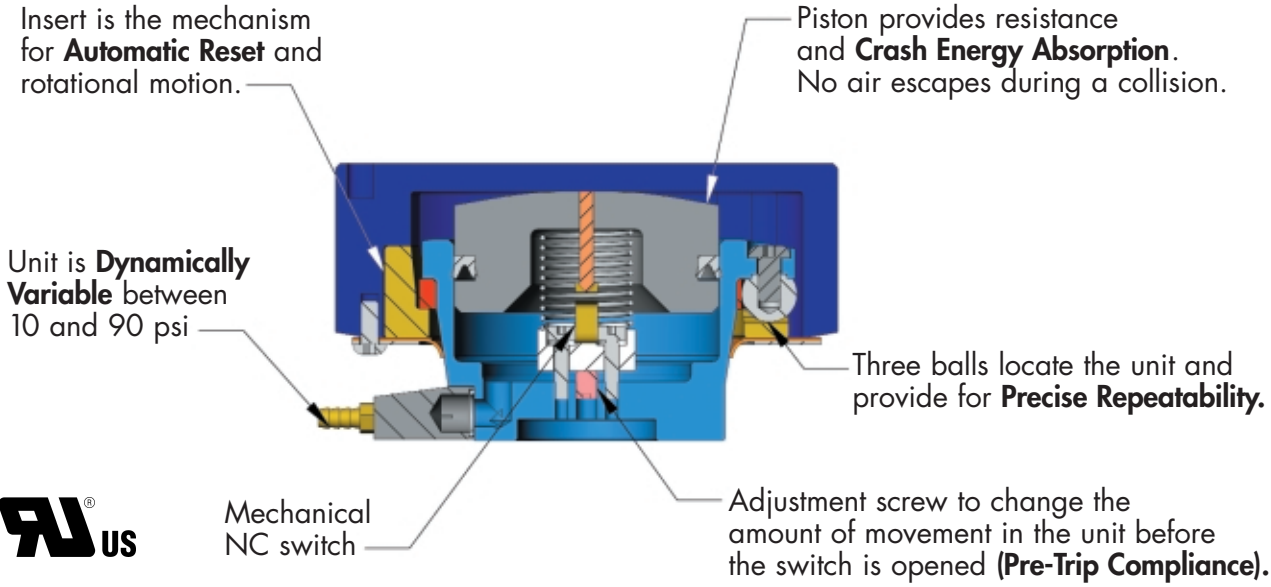


Features

Note: The Features of the Ultimatic™ and High-Angle Ultimatic™ are the same unless otherwise stated.

Automatic Reset

RAD's Ultimatic™ Collision Sensor automatically returns to its starting position once it has been separated from the source of the collision. The mechanical piston within the collision sensor absorbs the crash energy without releasing the air pressure. Since the air pressure is not released there is no need for someone to manually reset the unit.

Precise Repeatability

Following a collision, the Ultimatic™ Collision Sensor consistently returns to within ±0.0005"/ 0.013mm (x, y & z) and ±0.017° (rotationally) of its original position.

Compliance

RAD's Ultimatic™ Collision Sensors provide angular (x), rotational (y), and compressive (z) compliance to minimize potential damage to the robot or tooling should a collision occur. The High-Angle Ultimatic™ provides an additional 5° of angular compliance over the standard Ultimatic™. See product specification sheets for more detail.

Dynamically Variable

The force, moment, and torque resistance of the Ultimatic™ Collision Sensor is pneumatically controlled using a regulator and the robot's logic and valve system. By using a programmable air regulator, the collision sensor can be easily adjusted to respond to as many interim load levels as the user chooses to install.

Adjustable Pre-Trip Compliance (Switch Sensitivity)

RAD's Ultimatic™ Collision Sensor has a compliance adjustment feature that allows the user to determine the amount of deflection allowed before a signal is sent to stop the robot. The switch sensitivity is factory set at 0.025" (0.64mm) axial compliance and can be adjusted up to 0.100" (2.5mm).

Quick Response Time

The Ultimatic™ will detect a collision within 2 to 10ms and send a signal to the robot's E-stop or controller. The speed of impact, air pressure, and compliance adjustment will affect the response time.

Crash Energy Absorption
RAD's Ultimatic™ Collision Sensor uses a mechanical piston that absorbs the crash energy without releasing air from the unit. The use of a mechanical piston prevents tooling sag caused by loss of air pressure and also prevents compressed air from being released into the environment.

UL Approved
RAD's Ultimatic™ Collision Sensor is an Underwriters Laboratory certified component under 'robotic and robotic equipment' standard UL 1740.

Durable
The Ultimatic™ Collision Sensor was designed with durability in mind. The body is constructed of anodized aluminum and internal contact surfaces are made of hardened tool steel.

Easy to Connect
Ultimatic™ Collision Sensors have quick disconnect electrical connections with the exception of RAD's smallest unit, the U-4618, which is only available in hard wire due to its size.

Versatile
The Ultimatic™ Collision Sensor can be mounted in any orientation. RAD recommends the small diameter be mounted to the robot to minimize wear on the cables.

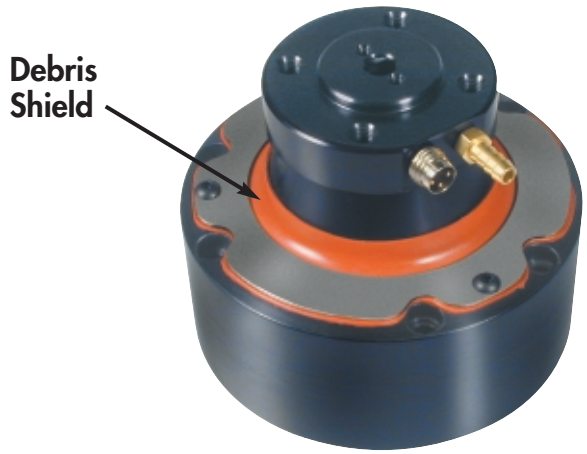
Maintenance Free
The Ultimatic™ Collision Sensor is pre-adjusted at the factory and requires no maintenance.

Field Repairable
Should a repair be necessary, most components of the Ultimatic™ Collision Sensor can be replaced or repaired in the field, minimizing downtime.

Options
Note: The Options of the Ultimatic™ and High-Angle Ultimatic™ are the same unless otherwise stated.

Adapter Plates
Plates used to mount the Ultimatic™ Collision Sensor to the robot or end-effector are available to help you easily install your new collision sensor.

Debris Shields
Debris shields, used in harsh environments such as welding, grinding, painting, or machining applications, are available to protect the collision sensor from potential contaminants.



Viton Seals
Viton seals are available when the collision sensor is to be used in a harsh environment. Viton seals are designed for high temperature environments (up to 400° F/204° C) and are resistant to many hostile fluids.

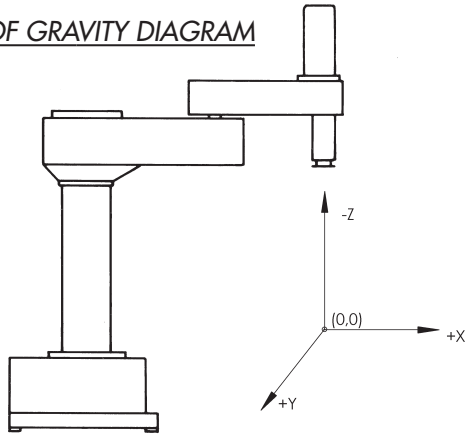
High-Flex Cables
High-flex cables are available for applications involving constant twisting and flexing motions.

Sizing

RAD would be pleased to assist you in sizing your application to determine the most effective Ultimatic™ Collision Sensor to meet your needs. Once you have the following information, please call us at 937.667.5705 or e-mail us at **info@rad-ra.com**:

- Total payload (include weight of tooling, adapter plates, and part)
- Center of gravity in each direction – x, y, and z – in inches or millimeters
- Acceleration of robot (inches/second^2 or millimeter/second^2)
- Environmental factors that apply (high heat, dirty or contaminated environment, etc.)
- Additional insertion forces
- Available air pressure

CENTER OF GRAVITY DIAGRAM



NOTE: Dimensions are taken from robot flange face (ref 0,0)

Warranty

RAD warrants our Ultimatic™ Collision Sensors against manufacturing defects for a full 12 months from product shipment. If you ever have a concern with your Ultimatic™, please call us at 937.667.5705 or e-mail us at **info@rad-ra.com** with the model number, serial number, date purchased, and description of the issue you are experiencing for quick, efficient problem resolution.

Placing An Order

New Customers

If you wish to place an order for a RAD Ultimatic™ Collision Sensor (or other end-effector product), please contact us at 937.667.5705 or e-mail us at **info@rad-ra.com** to have a customer service representative contact you ASAP. If you choose to e-mail RAD, please include your name, title, company, city, state, and telephone number.

Current Customers

As an established RAD customer you may:

1) Phone in your order by calling us at 937.667.5705 (EST)
2) E-mail your order to **info@rad-ra.com**
3) Fax your order to 937.667.7602

Please be sure to include all the information below so that we may quickly process and ship your order:

- Your Name
- Your Title
- Company Name
- Street Address
- City, State, Zip
- Telephone Number
- Your E-mail Address
- Ship To Address (or confirm that you wish to have the product shipped to the address already provided)
- Quantity and Part Number for each product you wish to order (please be sure to include the RAD part number if different from your product number to ensure efficient order placement)
- Purchase Order Number

If you have any questions, please call us at 937.667.5705 – we are here to assist you!

ULTIMATIC™ Collision Sensors – Specifications

Model Number	U-4618 Page 6	U-4619 Page 7	U-4619-HA Page 8	U-4620 Page 9	U-4621 Page 10	U-4622 Page 11	U-4623 Page 12
Moment Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	15-62 in-lb 2-7 Nm	29-274 in-lb 3-31 Nm	29-274 in-lb 3-31 Nm	129-704 in-lb 15-80 Nm	260-1,736 in-lb 29-196 Nm	409-3,982 in-lb 46-450 Nm	1,240-11,159 in-lb 140-1,261 Nm
Torque Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	12-66 in-lb 1-7 Nm	56-362 in-lb 6-41 Nm	56-362 in-lb 6-41 Nm	96-784 in-lb 11-89 Nm	231-1,766 in-lb 26-200 Nm	681-4,660 in-lb 77-527 Nm	1,426-12,833 in-lb 161-1,450 Nm
Force Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	18-91 lbf 80-405 N	25-229 lbf 111-1,019 N	25-229 lbf 111-1,019 N	67-425 lbf 298-1,891 N	97-762 lbf 432-3,390 N	142-1,353 lbf 631-6,021 N	300-2,697 lbf 1,334-11,997 N
Angular Compliance	±8 deg (0.14 rad)	±8 deg (0.14 rad)	±13 deg (0.23 rad)	±8 deg (0.14 rad)	±8 deg (0.14 rad)	±8 deg (0.14 rad)	±8 deg (0.14 rad)
Rotary Compliance	±24 deg (0.42 rad)	±24 deg (0.42 rad)	±24 deg (0.42 rad)	±24 deg (0.42 rad)	±24 deg (0.42 rad)	±28 deg (0.49 rad)	±24 deg (0.42 rad)
Axial Compliance Compression	0.18 in 4.6 mm	0.31 in 7.9 mm	0.31 in 7.9 mm	0.42 in 10.7 mm	0.55 in 14.0 mm	0.75 in 19.1 mm	1.06 in 26.9 mm
Repeatability (x, y & z) Measured at center and O.D. of tool plate	±0.0005 in ±0.0127 mm	±0.0005 in ±0.0127 mm	±0.0005 in ±0.0127 mm	±0.0005 in ±0.0127 mm	±0.0005 in ±0.0127 mm	±0.0005 in ±0.0127 mm	±0.0005 in ±0.0127 mm
Repeatability (about z axis) Measured at center and O.D. of tool plate	±0.017 deg	±0.017 deg	±0.017 deg	±0.017 deg	±0.017 deg	±0.017 deg	±0.017 deg
Mass	0.2 lb (0.09 kg)	1 lb (0.45 kg)	1 lb (0.45 kg)	2.25 lb (1.02 kg)	5 lb (2.27 kg)	12.25 lb (5.56 kg)	32 lb (14.52 kg)
Height	1.12 in (28.5 mm)	2.03 in (51.6 mm)	2.67 in (67.8 mm)	2.49 in (63.3 mm)	3.10 in (78.7 mm)	4.14 in (105.2 mm)	5.61 in (142.6 mm)
Diameter	1.95 in (49.5 mm)	3.40 in (86.4 mm)	3.40 in (86.4 mm)	4.50 in (114.3 mm)	5.91 in (150.2 mm)	8.00 in (203.2 mm)	10.93 in (277.6 mm)
Pre-Trip Compliance Range of Adjustability	Factory adjustable from 0 to 0.080 in. 0 to 2.03 mm	0 to 0.100 in 0 to 2.54 mm	0 to 0.100 in 0 to 2.54 mm	0 to 0.100 in 0 to 2.54 mm	0 to 0.100 in 0 to 2.54 mm	0 to 0.100 in 0 to 2.54 mm	0 to 0.100 in 0 to 2.54 mm
Temperature Rating	–30° to 185°F –34° to 85°C	–30° to 210°F –34° to 99°C	–30° to 210°F –34° to 99°C	–30° to 210°F –34° to 99°C	–30° to 210°F –34° to 99°C	–30° to 210°F –34° to 99°C	–30° to 210°F –34° to 99°C
Sensor	10-30 VDC 200mA normally closed switch						
Response Time	2-6 ms	2-6 ms	2-6 ms	2-6 ms	4-10 ms	4-10 ms	4-10 ms

NOTE: Collision sensor must be electrically isolated from the robot when the tooling below it has a voltage potential.

†Resistance at the factory setting of 0.025" (0.64 mm) compliance. Resistance increases slightly as the pre-trip compliance is increased.

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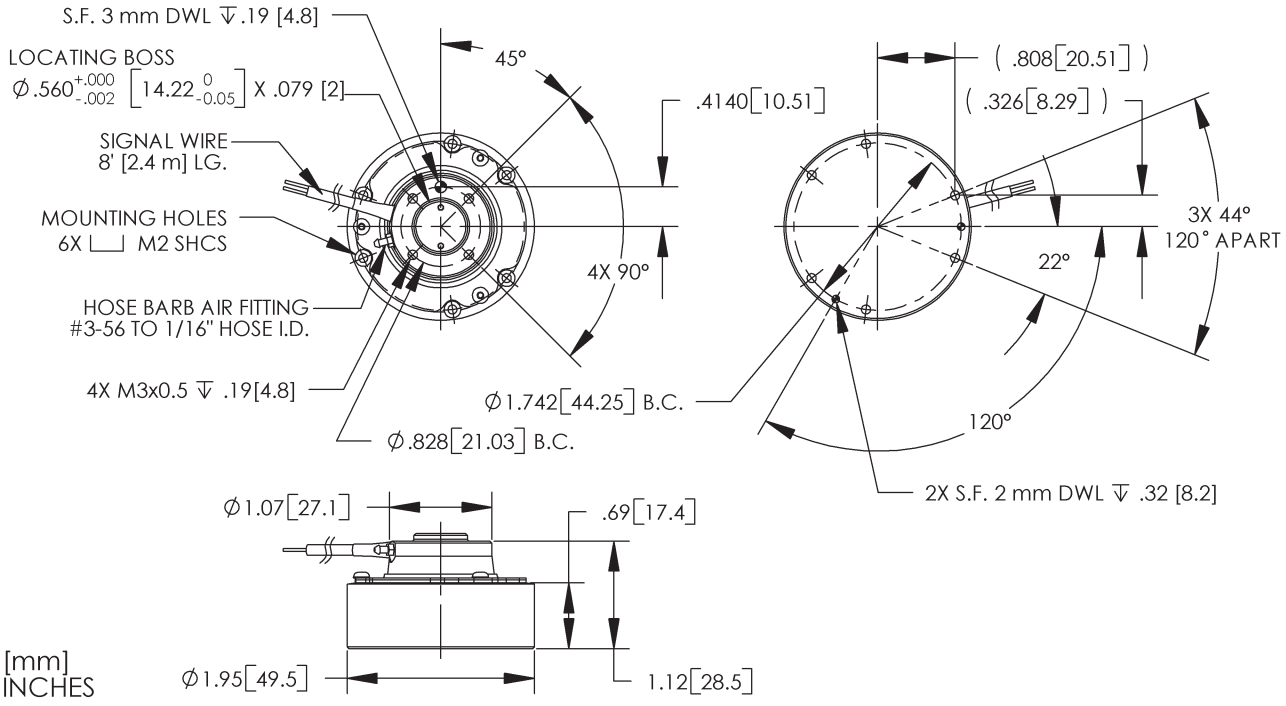
MODEL U-4618

Moment Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	15 - 62 in-lb 2 - 7 Nm	Repeatability (about z axis) Measured at center and O.D. of tool plate	±0.017 deg
Torque Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	12 - 66 in-lb 1 - 7 Nm	Mass	0.2 lb 0.09 kg
Force Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	18 - 91 lbf 80 - 405 N	Height	1.12 in 28.5 mm
Angular Compliance	±8 deg ±0.14 rad	Diameter	1.95 in 49.5 mm
Rotary Compliance	±24 deg ±0.42 rad	Pre-Trip Compliance Range of Adjustability	Factory adjustable from 0 to 0.080 in. (0 to 2.03 mm)
Axial Compliance Compression	0.18 in 4.6 mm	Temperature Rating	–30° to185°F –34° to 85°C
Repeatability (x, y & z) Measured at center and O.D. of tool plate	±0.0005 in ±0.0127 mm	Sensor	10 - 30 VDC 200mA normally closed switch
		Response Time	2 - 6 ms

†Resistance at the factory setting of 0.025" (0.64 mm) compliance. Resistance increases slightly as the pre-trip compliance is increased.

NOTE: The U-4618 model size is only available hard-wired.
The U-4618 must be electrically isolated from the robot when the tooling below it has a voltage potential.



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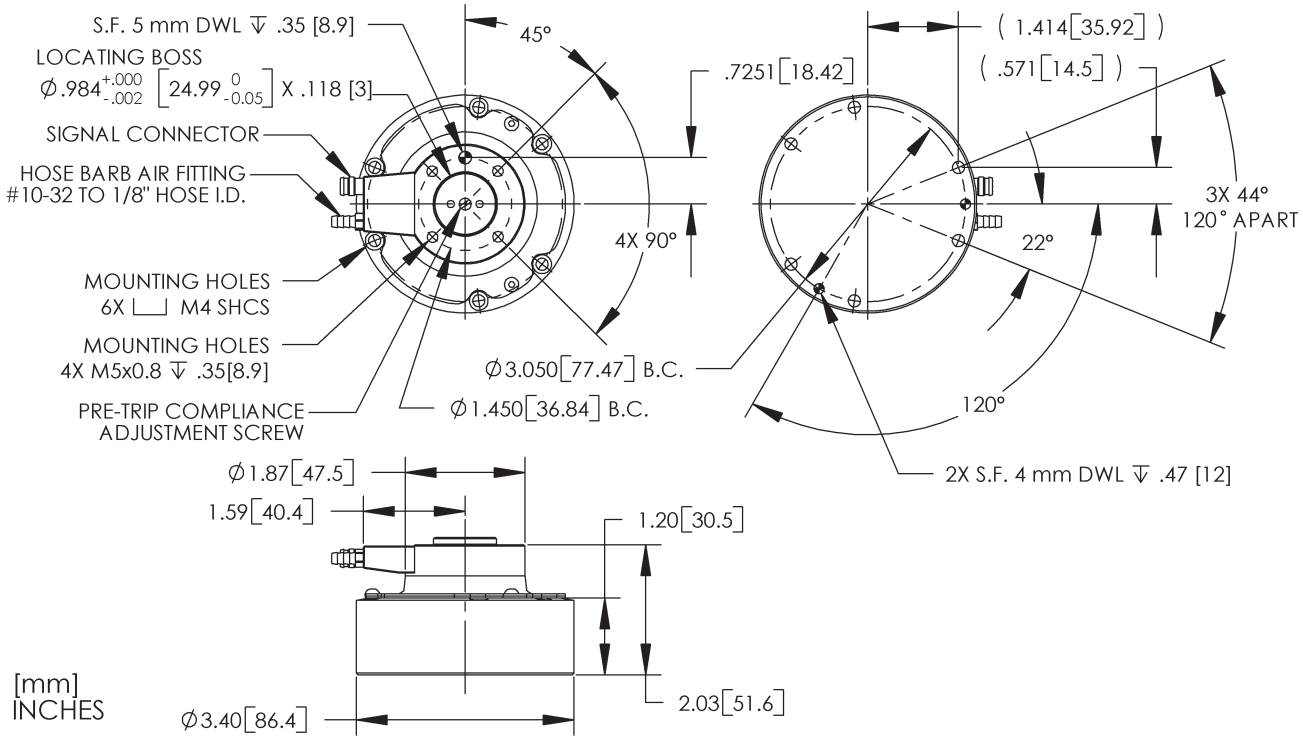
MODEL U-4619

Moment Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	29 - 274 in-lb 3 - 31 Nm	Repeatability (about z axis) Measured at center and O.D. of tool plate	±0.017 deg
Torque Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	56 - 362 in-lb 6 - 41 Nm	Mass	1 lb 0.45 kg
Force Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	25 - 229 lbf 111 - 1,019 N	Height	2.03 in 51.6 mm
Angular Compliance	±8 deg ±0.14 rad	Diameter	3.40 in 86.4 mm
Rotary Compliance	±24 deg ±0.42 rad	Pre-Trip Compliance Range of Adjustability	0 to 0.100 in 0 to 2.54 mm
Axial Compliance Compression	0.31 in 7.9 mm	Temperature Rating	–30° to 210°F –34° to 99°C
Repeatability (x, y & z) Measured at center and O.D. of tool plate	±0.0005 in ±0.0127 mm	Sensor	10 - 30 VDC 200mA normally closed switch
		Response Time	2 - 6 ms

†Resistance at the factory setting of 0.025" (0.64 mm) compliance. Resistance increases slightly as the pre-trip compliance is increased.

NOTE: The U-4619 must be electrically isolated from the robot when the tooling below it has a voltage potential.



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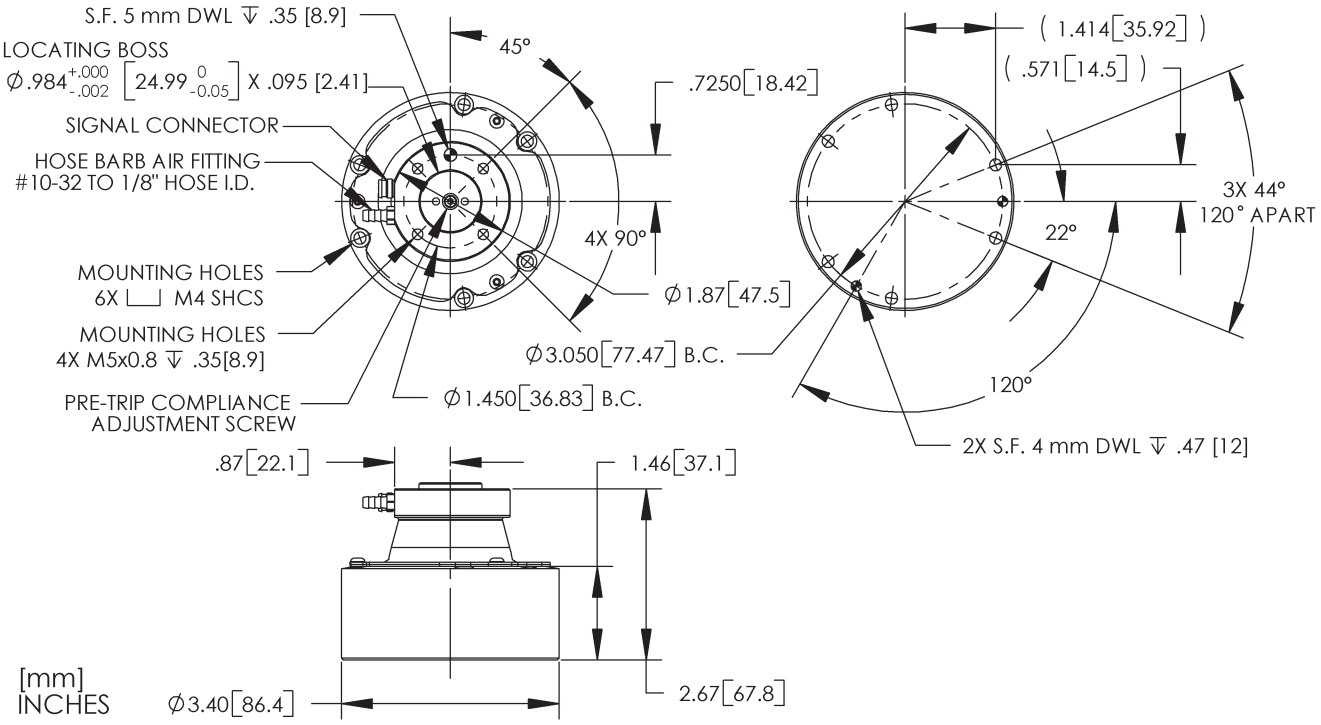
MODEL U-4619-HA (High Angle)

Moment Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	29 - 274 in-lb 3 - 31 Nm	Repeatability (about z axis) Measured at center and O.D. of tool plate	±0.017 deg
Torque Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	56 - 362 in-lb 6 - 41 Nm	Mass	1 lb 0.45 kg
Force Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	25 - 229 lbf 111 - 1,019 N	Height	2.67 in 67.8 mm
Angular Compliance	±13 deg ±0.23 rad	Diameter	3.40 in 86.4 mm
Rotary Compliance	±24 deg ±0.42 rad	Pre-Trip Compliance Range of Adjustability	0 to 0.100 in 0 to 2.54 mm
Axial Compliance Compression	0.31 in 7.9 mm	Temperature Rating	–30° to 210°F –34° to 99°C
Repeatability (x, y & z) Measured at center and O.D. of tool plate	±0.0005 in ±0.0127 mm	Sensor	10 - 30 VDC 200mA normally closed switch
		Response Time	2 - 6 ms

†Resistance at the factory setting of 0.025" (0.64 mm) compliance. Resistance increases slightly as the pre-trip compliance is increased.

NOTE: The U-4619-HA must be electrically isolated from the robot when the tooling below it has a voltage potential.



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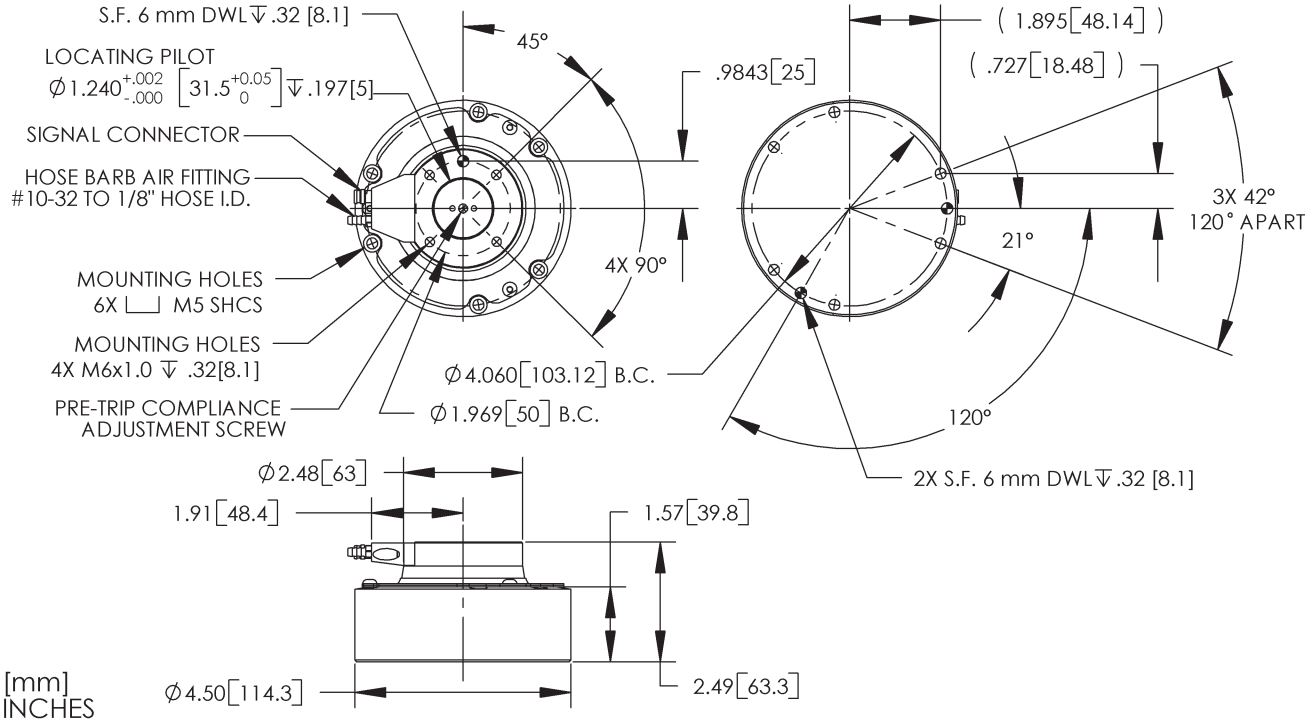
MODEL U-4620

Moment Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	129 - 704 in-lb 15 - 80 Nm	Repeatability (about z axis) Measured at center and O.D. of tool plate	±0.017 deg
Torque Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	96 - 784 in-lb 11 - 89 Nm	Mass	2.25 lb 1.02 kg
Force Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	67 - 425 lbf 298 - 1,891 N	Height	2.49 in 63.3 mm
Angular Compliance	±8 deg ±0.14 rad	Diameter	4.50 in 114.3 mm
Rotary Compliance	±24 deg ±0.42 rad	Pre-Trip Compliance Range of Adjustability	0 to 0.100 in 0 to 2.54 mm
Axial Compliance Compression	0.42 in 10.7 mm	Temperature Rating	–30° to 210°F –34° to 99°C
Repeatability (x, y & z) Measured at center and O.D. of tool plate	±0.0005 in ±0.0127 mm	Sensor	10 - 30 VDC 200mA normally closed switch
		Response Time	2 - 6 ms

†Resistance at the factory setting of 0.025" (0.64 mm) compliance. Resistance increases slightly as the pre-trip compliance is increased.

NOTE: The U-4620 must be electrically isolated from the robot when the tooling below it has a voltage potential.



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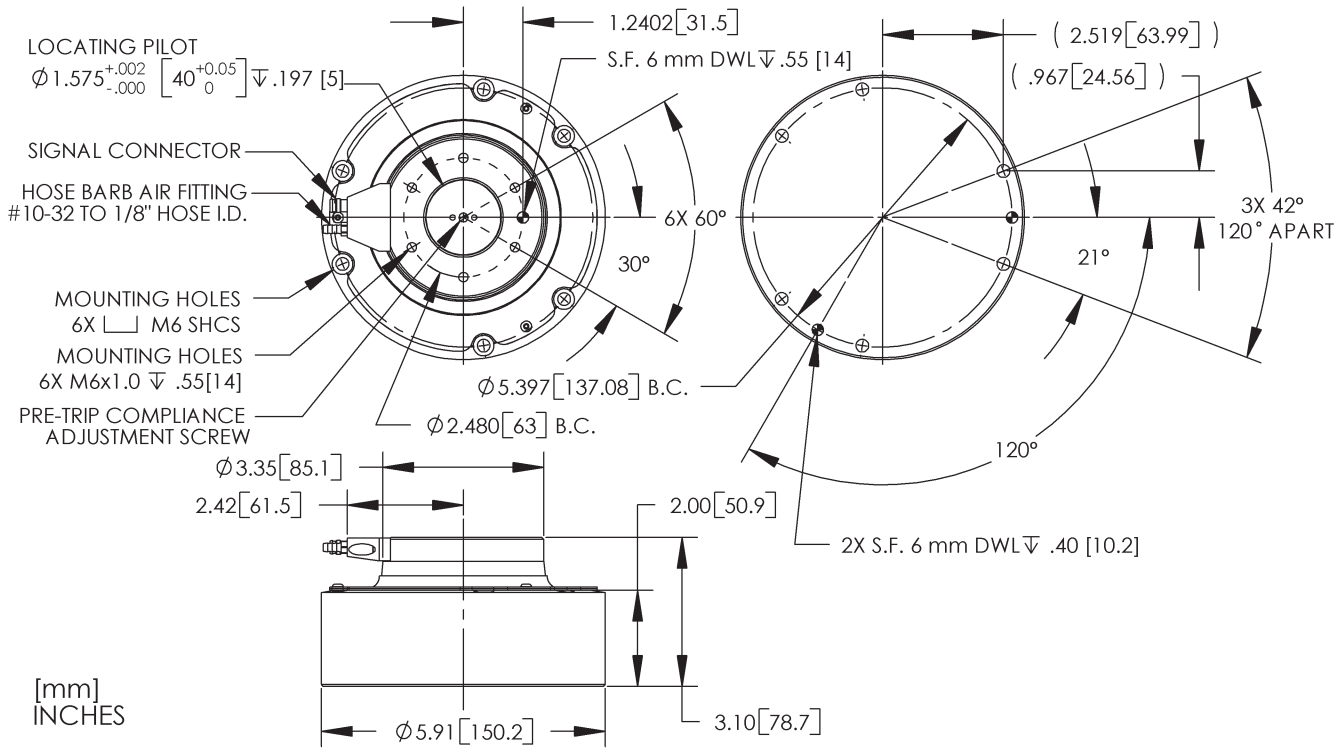
MODEL U-4621

Moment Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	260 - 1,736 in-lb 29 - 196 Nm	Repeatability (about z axis) Measured at center and O.D. of tool plate	±0.017 deg
Torque Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	231 - 1,766 in-lb 26 - 200 Nm	Mass	5 lb 2.27 kg
Force Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	97 - 762 lbf 432 - 3,390 N	Height	3.10 in 78.7 mm
Angular Compliance	±8 deg ±0.14 rad	Diameter	5.91 in 150.2 mm
Rotary Compliance	±24 deg ±0.42 rad	Pre-Trip Compliance Range of Adjustability	0 to 0.100 in 0 to 2.54 mm
Axial Compliance Compression	0.55 in 14.0 mm	Temperature Rating	–30° to 210°F –34° to 99°C
Repeatability (x, y & z) Measured at center and O.D. of tool plate	±0.0005 in ±0.0127 mm	Sensor	10 - 30 VDC 200mA normally closed switch
		Response Time	4 - 10 ms

†Resistance at the factory setting of 0.025" (0.64 mm) compliance. Resistance increases slightly as the pre-trip compliance is increased.

NOTE: The U-4621 must be electrically isolated from the robot when the tooling below it has a voltage potential.



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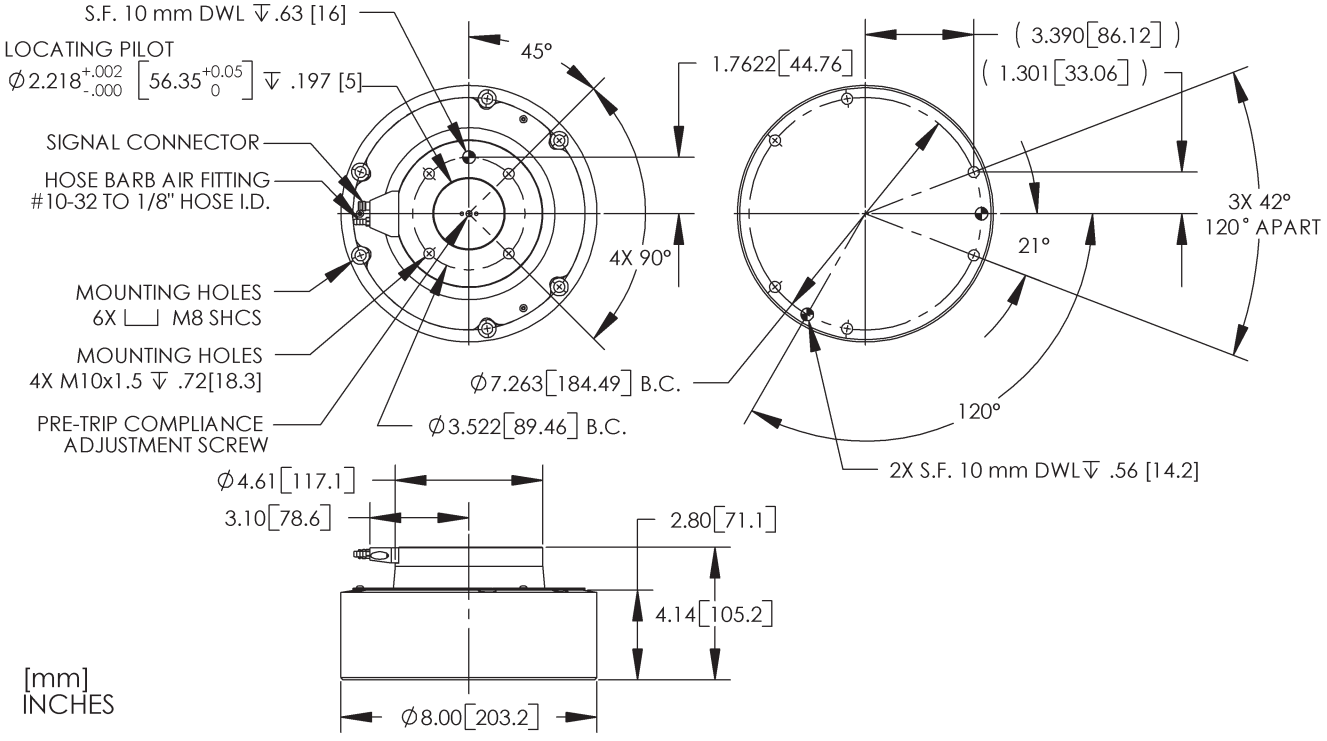
MODEL U-4622

Moment Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	409 - 3,982 in-lb 46 - 450 Nm	Repeatability (about z axis) Measured at center and O.D. of tool plate	±0.017 deg
Torque Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	681 - 4,660 in-lb 77 - 527 Nm	Mass	12.25 lb 5.56 kg
Force Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	142 - 1,353 lbf 631 - 6,021 N	Height	4.14 in 105.2 mm
Angular Compliance	±8 deg ±0.14 rad	Diameter	8.00 in 203.2 mm
Rotary Compliance	±28 deg ±0.49 rad	Pre-Trip Compliance Range of Adjustability	0 to 0.100 in 0 to 2.54 mm
Axial Compliance Compression	0.75 in 19.1 mm	Temperature Rating	–30° to 210°F –34° to 99°C
Repeatability (x, y & z) Measured at center and O.D. of tool plate	±0.0005 in ±0.0127 mm	Sensor	10 - 30 VDC 200mA normally closed switch
		Response Time	4 - 10 ms

†Resistance at the factory setting of 0.025" (0.64 mm) compliance. Resistance increases slightly as the pre-trip compliance is increased.

NOTE: The U-4622 must be electrically isolated from the robot when the tooling below it has a voltage potential.



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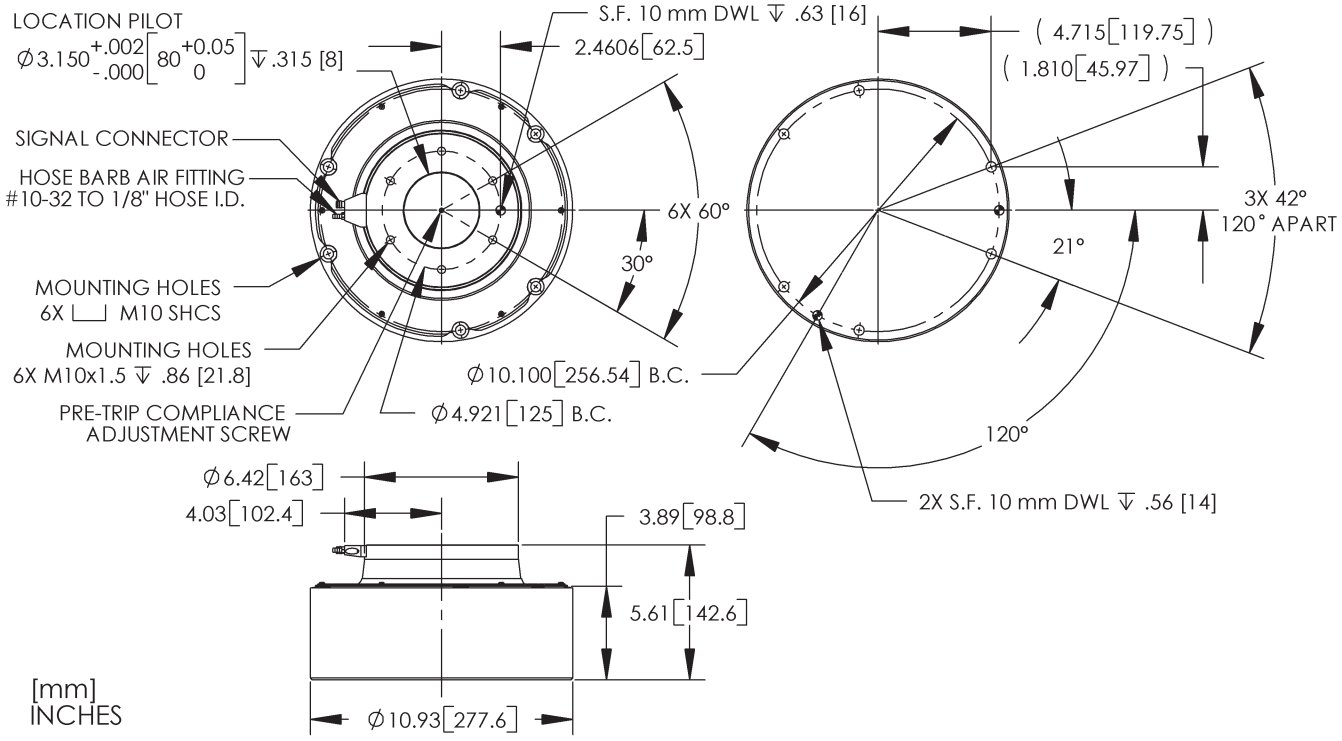
MODEL U-4623

Moment Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	1,240 - 11,159 in-lb 140 - 1,261 Nm	Repeatability (about z axis) Measured at center and O.D. of tool plate	±0.017 deg
Torque Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	1,426 - 12,833 in-lb 161 - 1,450 Nm	Mass	32 lb 14.52 kg
Force Resistance† Variable from 10 to 90 psi (0.68 to 6.2 bar)	300 - 2,697 lbf 1,334 - 11,997 N	Height	5.61 in 142.6 mm
Angular Compliance	±8 deg ±0.14 rad	Diameter	10.93 in 277.6 mm
Rotary Compliance	±24 deg ±0.42 rad	Pre-Trip Compliance Range of Adjustability	0 to 0.100 in 0 to 2.54 mm
Axial Compliance Compression	1.06 in 26.9 mm	Temperature Rating	–30° to 210°F –34° to 99°C
Repeatability (x, y & z) Measured at center and O.D. of tool plate	±0.0005 in ±0.0127 mm	Sensor	10 - 30 VDC 200mA normally closed switch
		Response Time	4 - 10 ms

†Resistance at the factory setting of 0.025" (0.64 mm) compliance. Resistance increases slightly as the pre-trip compliance is increased.

NOTE: The U-4623 must be electrically isolated from the robot when the tooling below it has a voltage potential.



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Count on RAD for...

Performance: Products with superior functionality, reliability, and durability.

Reassurance: Standard 12-month warranty on all products—36 months for tool changers.

Assistance: Technically qualified customer service reps simplify sizing and ordering.

Convenience: Quick turnaround and shipment—1 to 5 days for standard orders.

RAD Collision Sensors

Protect your investment in robots, tooling, and end-effectors with RAD Collision Sensors. RAD's Ultimatic™ and High-Angle Ultimatic™ Collision Sensors:

- ✔ Absorb the crash energy - protecting your products and tooling
- ✔ Stop the system - within 2 to10ms!
- ✔ Reset automatically - no operator intervention required
- ✔ Return to within +/- 0.0005" of the original position

Protect your investment with RAD Collision Sensors!

RAD Parallel Grippers

Realize the flexibility to handle any object - in a wide range of environments - with RAD Parallel Grippers. RAD offers Grippers for:

- ✔ Clean room or food handling environments
- ✔ Harsh, dirty or explosive environments
- ✔ Everyday applications
- ✔ Applications with special requirements:
  - • Miniature • High Moment • Long Stroke • 3-Jaw • Collet

Grasp the possibilities with RAD Parallel Grippers!

RAD Compliance Devices

Save time and money with RAD Compliance (Alignment) Devices. By compensating for fixture misalignments, positioning errors, shifting parts, and variances in parts tolerances RAD Compliance Devices:

- ✔ Decrease scrap caused by forcing misaligned parts
- ✔ Minimize damage to parts and tools
- ✔ Reduce time spent programming the robot
- ✔ Increase your assembly speed

Decrease scrap and parts damage with RAD Compliance Devices!

RAD Automatic Tool Changers

Obtain the maximum from your robotic investment with RAD Tool Changers. RAD Automatic Tool Changers:

- ✔ Enable your robot to use multiple end-effectors
- ✔ Prevent the release of the robotic tool if air pressure is lost
- ✔ Keep your production line up and running by enabling rapid change out
- ✔ Protect your employees - no operator intervention required

Maximize your production time with RAD Automatic Tool Changers!

RAD Compliant Deburring Tools

Increase uptime, reduce scrap, and shorten robot programming time with RAD Compliant Deburring Tools. RAD's UltiBurr™ Compliant Deburring Tools:

- ✔ Enable the cutting bit to adjust to surface irregularities - without gouging the part or leaving unwanted burrs
- ✔ Accommodate for part and path variation by providing compliance in x, y, & z axes
- ✔ Run quietly at a low 67 dba
- ✔ Allow high feed rates while maintaining consistent material removal

Economically deflash, finish, or deburr your parts with RAD Deburring Tools!

The Robotic Accessories Leader

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