



**Robotic Rotary Joint**  
*Unlimited rotation of robotic tooling*

# ROBOTIC ROTARY JOINT

## Product Description

The Rotary Joint device allows electrical and pneumatic lines from the robot to feed through to the tool keeping air and electrical lines on the robot from twisting. The Rotary Joint has two components: Fixed and rotating. The rotating component consists of the robot interface plate, tool interface plate, and a central connecting core. The fixed component is a central ring, which is held stationary by a torque rod attached to a fixed part of the robot arm.

Lines are attached between the fixed component and your robot controller. As the robot moves, the fixed lines do not twist. Advanced slip ring technology is used to pass fixed lines to the rotating component and then to your tool—so as your robot moves, electrical signals and pneumatic pressure pass from the robot to the tool preventing the lines from twisting. With many different sizes, this device can be easily integrated onto almost any robot.



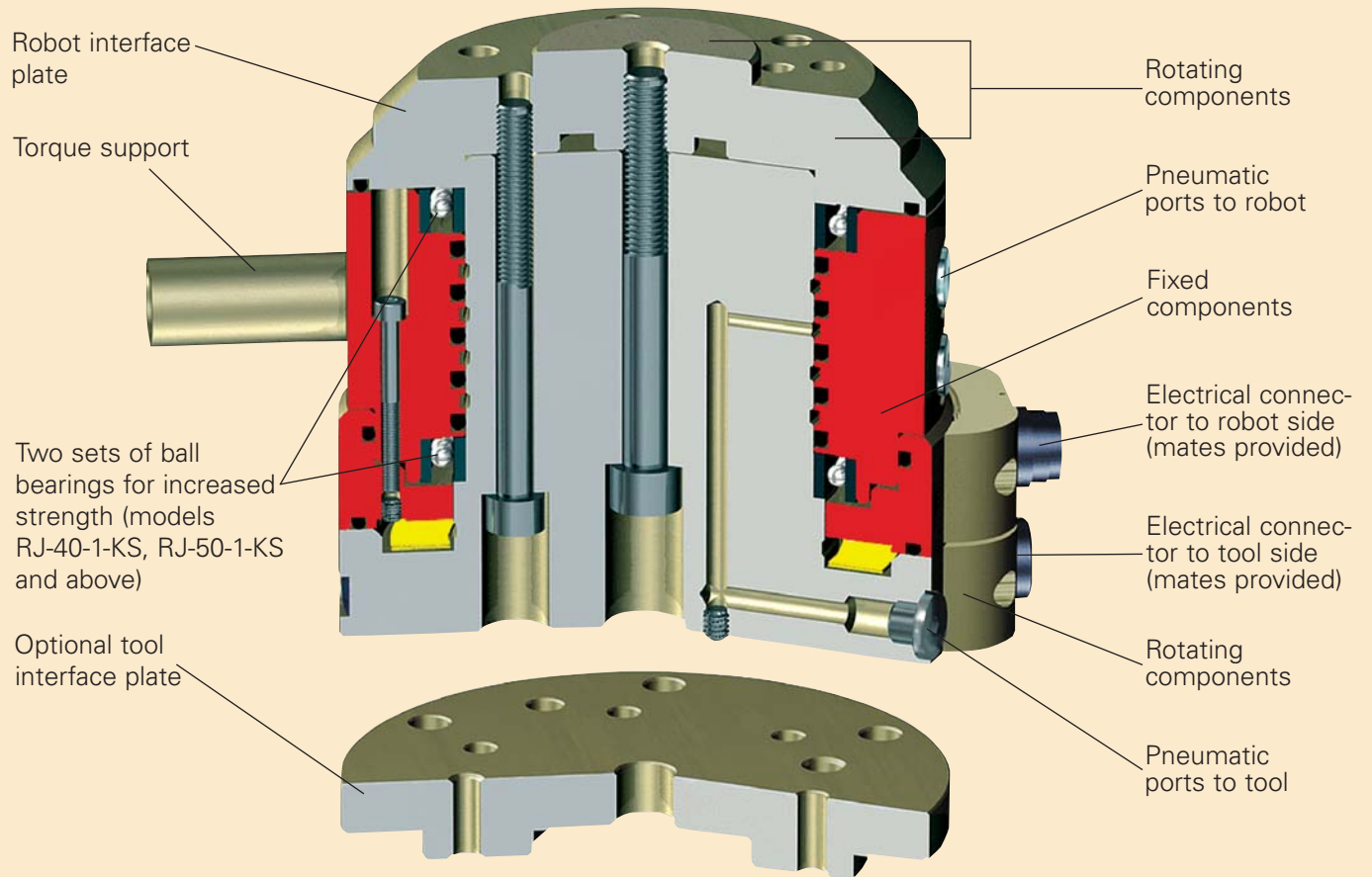
### A wide selection of Rotary Joints are available.

(left to right), RJ-63-KS, RJ-100-KS, RJ-40-S, RJ-125-KS & RJ-160-KS

## Benefits and Features

- Prevents damage and increases life of robot electrical and pneumatic lines. Normal twisting action can fatigue electrical lines or damage pneumatic lines.
- Compact, light-weight design with a high load capacity.
- Constructed of anodized high-strength aluminum alloy with easy-to-use electrical and pneumatic interface.
- Angle of traverse is unlimited (360°+).
- Suitable for speeds of up to 120 rpm and for payloads of 4,050 lb (18,000 N) and 7,260 lb-in (820 N-m). Larger models are available on request.
- Allows passage of pneumatic and electrical lines.
- Suitable for BUS signal transmission.
- Tested to operate beyond one million rotations.
- New design includes two sets of ball bearings for increased strength (models RJ-40-1-KS, RJ-50-1-KS and above).

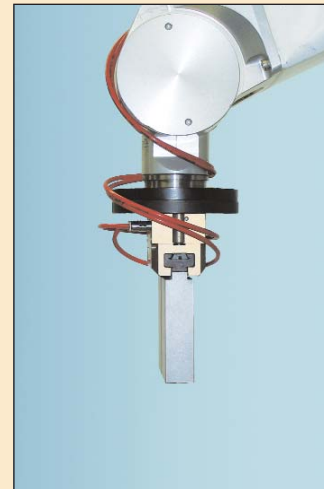




**Before Tooling Rotation.**

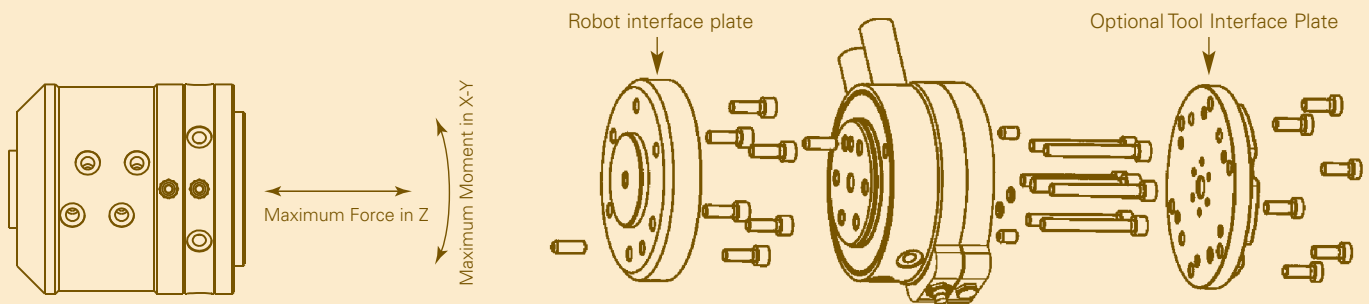


**After Tooling Rotation.**  
Note that lines to robot stay straight and lines to tool stay with the tool.



**After Tooling Rotation. (without Rotary Joint).**  
Lines are twisted around tooling.

# MODEL SPECIFICATIONS



Maximum permissible forces and torques indicated in table below.

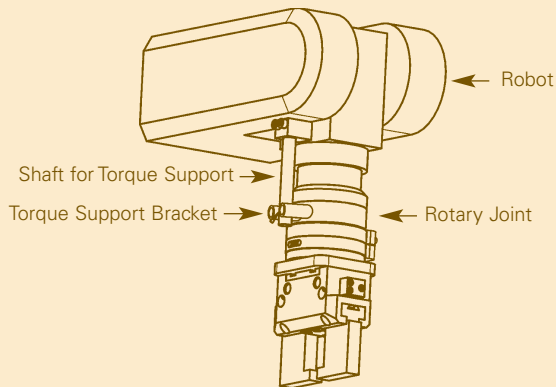
Each rotary joint has a robot and optional tool interface plate. Detailed drawings are presented on the following pages.

All models allow for unlimited rotation of tooling.  
Contact ATI if used around solvents.

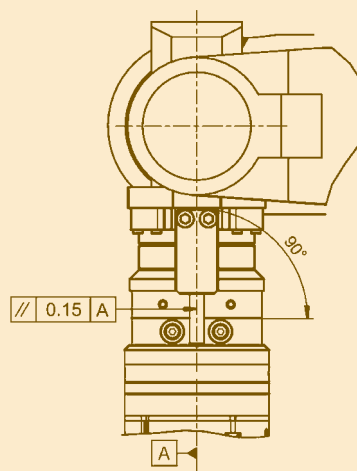
Specification Description	RJ-31-S	RJ-40-S	RJ-40-1-KS	RJ-50-S	RJ-50-1-KS	RJ-63-KS	RJ-80-KS	RJ-80-1-KS
Max Fz	450 lb (2000 N)	900 lb (4000 N)	900 lb (4000 N)	900 lb (4000 N)	900 lb (4000 N)	1350 lb (6000 N)	2700 lb (12000 N)	2700 lb (12000N)
Max Mxy	177 lb-in (20 N-m)	620 lb-in (70 N-m)	975 lb-in (110 N-m)	620 lb-in (70 N-m)	975 lb-in (110 N-m)	1062 lb-in (120 N-m)	2570 lb-in (290 N-m)	4530 lb-in (500 N-m)
Weight†	1.1 lb (0.5 kg)	1.9 lb (0.9 kg)	4.4 lb (2.0 kg)	2.1 lb (0.95 kg)	4.6 lb (2.1 kg)	4.9 lb (2.2 kg)	11.9 lb (5.4 kg)	24.3 lb (11 kg)
Max speed	120 rpm (720 deg/s)	120 rpm (720 deg/s)	110 rpm (660 deg/s)	120 rpm (720 deg/s)	110 rpm (660 deg/s)	110 rpm (660 deg/s)	100 rpm (600 deg/s)	90 rpm (540 deg/s)
Constant torque	8.9 lb-in (1.0 N-m)	13.3 lb-in (1.5 N-m)	53.1 lb-in (6.0 N-m)	13.3 lb-in (1.5 N-m)	53.1 lb-in (6.0 N-m)	53.1 lb-in (6.0 N-m)	177 lb-in (20.0 N-m)	371.7 lb-in (42.0 N-m)
Start torque	13.3 lb-in (1.5 N-m)	22.1 lb-in (2.5 N-m)	70.8 lb-in (8.0 N-m)	22.1 lb-in (2.5 N-m)	70.8 lb-in (8.0 N-m)	70.8 lb-in (8.0 N-m)	283.2 lb-in (32.0 N-m)	531.0 lb-in (60.0 N-m)
# pass-thru air	2@145 psi (10 bar)	2@145 psi (10 bar)	4@145 psi (10 bar)	2@145 psi (10 bar)	4@145 psi (10 bar)	4@145 psi (10 bar)	4@145 psi (10 bar)	4@145 psi (10 bar)
Air port size	M5	M5	M5	M5	M5	M5	G1/8	G1/8
# elec. signals	4@60 volts 1 amp	4@60 volts 1 amp	6@60 volts 1 amp	4@60 volts 1 amp	6@60 volts 1 amp	6@60 volts 1 amp	6@60 volts 1 amp	10@60 volts 1 amp
Torque support diameter†	0.35 in (9 mm)	0.43 in (11 mm)	0.43 in (11 mm)	0.43 in (11 mm)	0.43 in (11 mm)	0.43 in (11 mm)	0.67 in (17 mm)	0.91 in (23 mm)
Tool Interface Plate Part #	9180-323220	9180-323221	9180-323221	9180-323222	9180-323222	9180-323223	9180-323224	9180-323224
Seal kit Part #	9180-371032	9180-371033	9180-371034	9180-371033	9180-371034	9180-371035	9180-5516845	9180-5516847
Connector Part #								
Robot Side	9180-9940785	9180-9940785	9180-9940788	9180-9940785	9180-9940788	9180-9940788	9180-9940788	9180-9940790
Tool Side	9180-9940786	9180-9940786	9180-9940787	9180-9940786	9180-9940787	9180-9940787	9180-9940787	9180-9940789
Cable Part # <sup>%</sup>								
Side and length	9180-C-0307768-10 Robot Side, 10m Tool Side N/A	9180-C-0307768-10 Robot Side, 10m Tool Side N/A	9180-C-0323003-5 Robot Side, 5m 9180-C-0323004-5 Tool Side, 5m	9180-C-0307768-10 Robot Side, 10m Tool Side N/A	9180-C-0323003-5 Robot Side, 5m 9180-C-0323004-5 Tool Side, 5m	9180-C-0323003-5 Robot Side, 5m 9180-C-0323004-5 Tool Side, 5m	9180-C-0323003-5 Robot Side, 5m 9180-C-0323004-5 Tool Side, 5m	9180-C-0323005-5 Robot Side, 5m 9180-C-0323006-5 Tool Side, 5m

† Specifications include standard interface plates.

<sup>%</sup> For additional cable lengths, contact ATI.



Torque Support Shaft to be provided by customer. Must be mounted on robot arm and not on rotating flange.



The shaft for torque support (secured against twisting) should be positioned parallel with the middle axis of the Rotary Joint and “right angular” (90°) to the bracket. This is to prevent a moment being applied to the unit.

Specification Description	RJ-100-KS	RJ-100-1-KS	RJ-125-KS	RJ-125-1-KS	RJ-160-KS	RJ-160-1-KS	RJ-200-KS
Max Fz	2700 lb (12000 N)	2700 lb (12000 N)	4050 lb (18000 N)	4050 lb (18000 N)	4050 lb (18000 N)	4050 lb (18000 N)	4050 lb (18000 N)
Max Mxy	2570 lb-in (290 N-m)	4430 lb-in (500 N-m)	4870 lb-in (550 N-m)	7260 lb-in (820 N-m)	4870 lb-in (550 N-m)	7260 lb-in (820 N-m)	7260 lb-in (820 N-m)
Weight†	12.3 lb (5.6 kg)	24.9 lb (11.3 kg)	29.8 lb (13.5 kg)	46.3 lb (21.0 kg)	30.9 lb (14.0 kg)	48.5 lb (22.0 kg)	48.9 lb (22.2 kg)
Max speed	100 rpm (600 deg/s)	90 rpm (540 deg/s)	90 rpm (540 deg/s)	70 rpm (420 deg/s)	90 rpm (540 deg/s)	70 rpm (420 deg/s)	70 rpm (420 deg/s)
Constant torque	177.0 lb-in (20.0 N-m)	371.7 lb-in (42.0 N-m)	371.7 lb-in (42.0 N-m)	575.3 lb-in (65.0 N-m)	371.7 lb-in (42.0 N-m)	575.3 lb-in (65.0 N-m)	575.3 lb-in (65.0 N-m)
Start torque	283.2 lb-in (32.0 N-m)	531.0 lb-in (60.0 N-m)	531.0 lb-in (60.0 N-m)	840.8 lb-in (95.0 N-m)	531.0 lb-in (60.0 N-m)	840.8 lb-in (95.0 N-m)	840.8 lb-in (95.0 N-m)
# pass-thru air	4@145 psi (10 bar)	4@145 psi (10 bar)	4@145 psi (10 bar)	4@145 psi (10 bar)	4@145 psi (10 bar)	4@145 psi (10 bar)	4@145 psi (10 bar)
Air port size	G1/8	G1/8	G1/8	G1/8	G 1/8	G 1/8	G 1/8
# elec. signals	6@60 volts 1 amp	10@60 volts 1 amp	10@60 volts 1 amp	10@60 volts 1 amp	10@60 volts 1 amp	10@60 volts 1 amp	10@60 volts 1 amp
Torque support diameter†	0.67 in (17 mm)	0.91 in (23 mm)	0.91 in (23 mm)	1.14 in (29 mm)	0.91 in (23 mm)	1.14 in (29 mm)	1.14 in (29 mm)
Tool Interface Plate Part #	9180-323225	9180-323225	9180-323226	9180-323226	9180-323227	9180-323227	9180-323228
Seal kit Part #	9180-5516846	9180-5516848	9180-5516849	9180-5516851	9180-5516850	9180-5516852	9180-5516854
Connector Part #							
Robot Side	9180-9940788	9180-9940790	9180-9940790	9180-9940790	9180-9940790	9180-9940790	9180-9940790
Tool Side	9180-9940787	9180-9940789	9180-9940789	9180-9940789	9180-9940789	9180-9940789	9180-9940789
Cable Part # %							
Side and length	9180-C-0323003-5 Robot Side, 5m	9180-C-0323005-5 Robot Side, 5m	9180-C-0323005-5 Robot Side, 5m	9180-C-0323005-5 Robot Side, 5m	9180-C-0323005-5 Robot Side, 5m	9180-C-0323005-5 Robot Side, 5m	9180-C-0323005-5 Robot Side, 5m
	9180-C-0323004-5 Tool Side, 5m	9180-C-0323006-5 Tool Side, 5m	9180-C-0323006-5 Tool Side, 5m	9180-C-0323006-5 Tool Side, 5m	9180-C-0323006-5 Tool Side, 5m	9180-C-0323006-5 Tool Side, 5m	9180-C-0323006-5 Tool Side, 5m

† Specifications include standard interface plates.

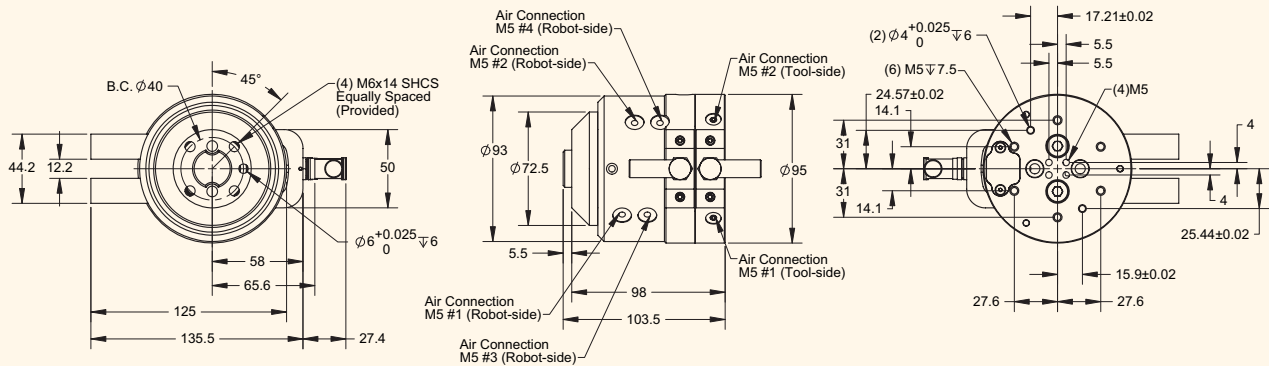
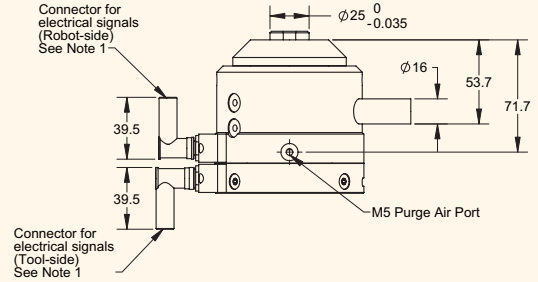
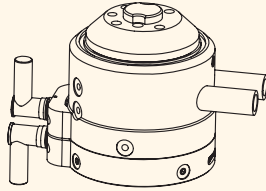
% For additional cable lengths, contact ATI.



Customer Drawing # 9230-80-1032-05

Notes:

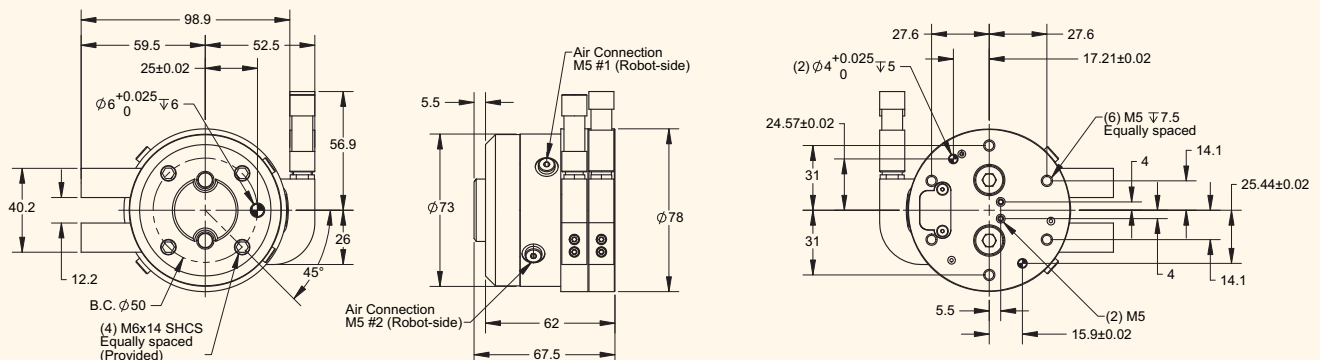
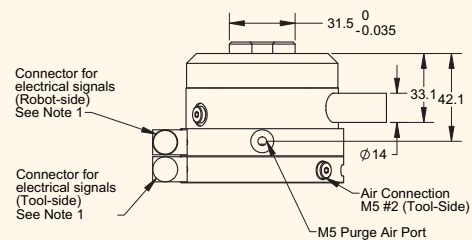
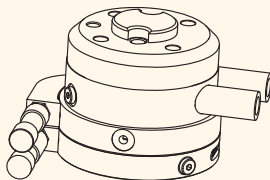
- Connector Mates (Provided):  
Mfg.: Binder  
Binder P/N: 712 99-0421-70-07 / ATI P/N 9180-9940787 (Male, Tool Side)  
Binder P/N: 712 99-0422-70-07 / ATI P/N 9180-9940788 (Female, Robot Side)
- Optional ISO Tool Side Adapter Plate: 9180-323221



Customer Drawing # 9230-80-1033-05

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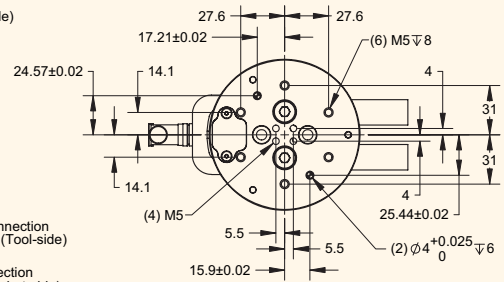
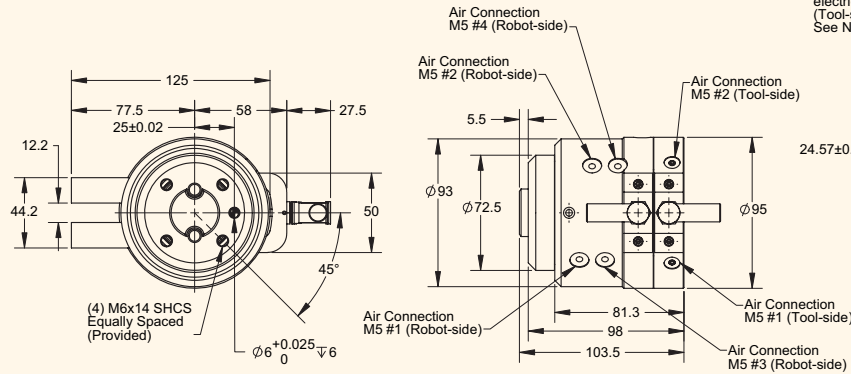
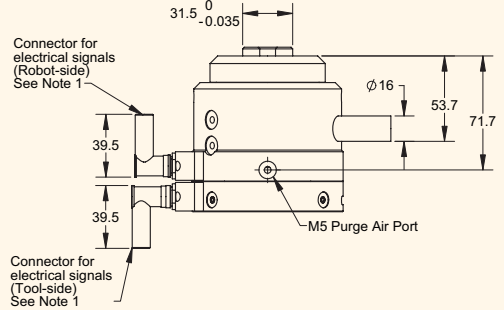
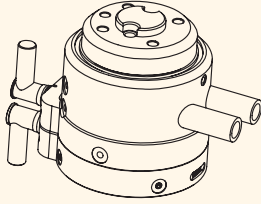
- Connector Mates (Provided):  
Mfg.: Brad Harrison  
Brad Harrison P/N: N04FA03124 / ATI P/N 9180-9940785 (Female, Robot Side)  
Brad Harrison P/N: N04MA03124 / ATI P/N 9180-9940786 (Male, Tool Side)
- Optional ISO Tool Side Adapter Plate: ATI P/N 9180-323222



Customer Drawing # 9230-80-1034-05

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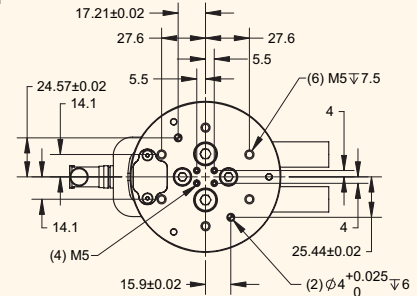
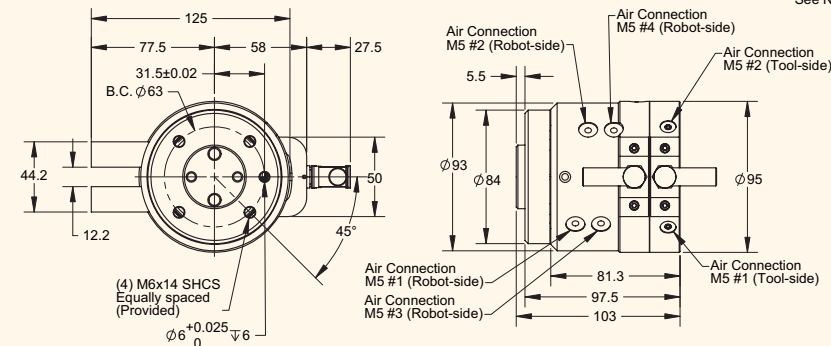
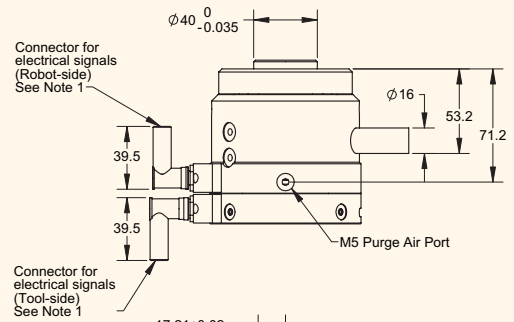
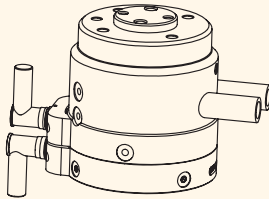
- Connector Mates (Provided):  
Mfg: Binder  
Binder P/N: 712 99-0421-70-07 / ATI P/N 9180-9940787 (Male, Tool Side)  
Binder P/N: 712 99-0422-70-07 / ATI P/N 9180-9940788 (Female, Robot Side)
- Optional ISO Tool Side Adapter Plate: ATI P/N 9180-323222



Customer Drawing # 9230-80-1035-05

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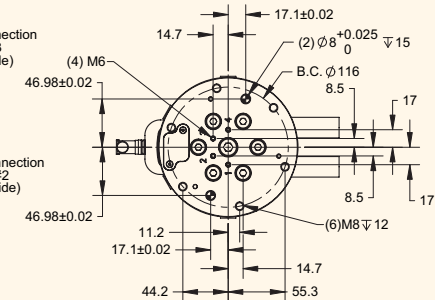
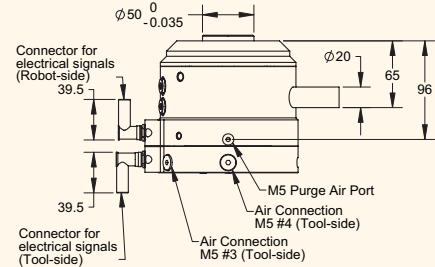
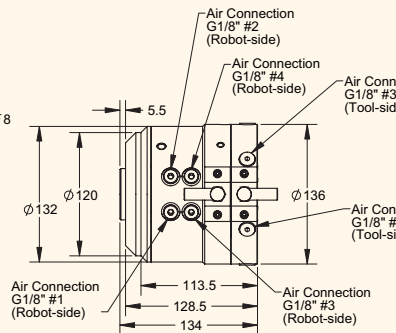
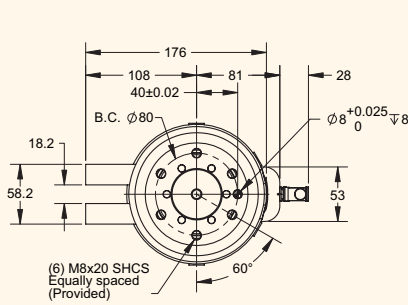
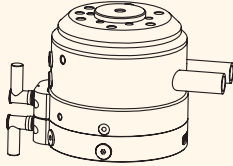
- Connector Mates (Provided):  
Mfg: Binder  
Binder P/N: 712 99-0421-70-07 / ATI P/N 9180-9940787 (Male, Tool Side)  
Binder P/N: 712 99-0422-70-07 / ATI P/N 9180-9940788 (Female, Robot Side)
- Optional ISO Tool Side Adapter Plate: ATI P/N 9180-323223



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Customer Drawing # 9230-80-1036-05

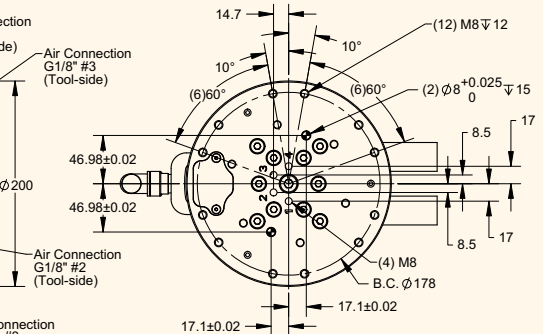
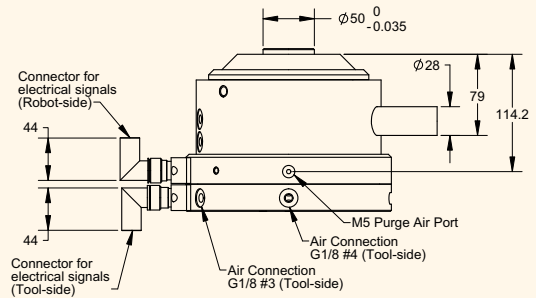
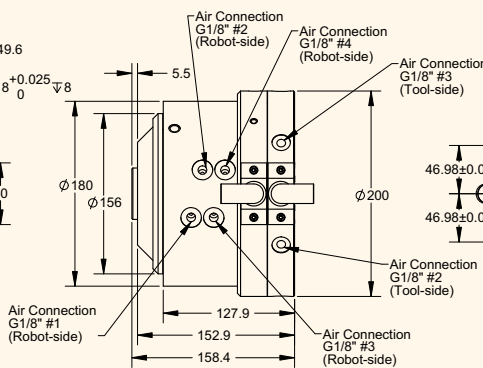
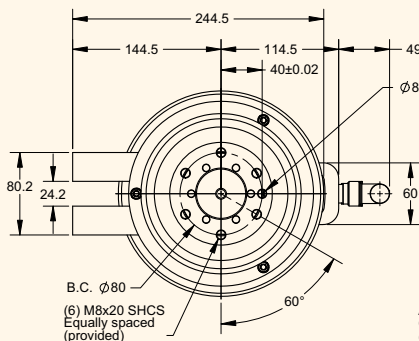
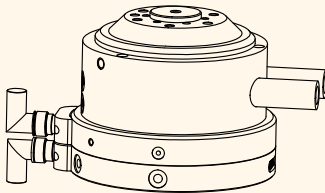
- Notes:  
 1. Connector Mates (Provided): Mfg.: Binder  
 Binder P/N: 712 99-0421-70-07 / ATI P/N 9180-9940787 (Male, Tool Side)  
 Binder P/N: 712 99-0422-70-07 / ATI P/N 9180-9940788 (Female, Robot Side)  
 2. Optional ISO Tool Side Adapter Plate: 9180-323224



ATI INDUSTRIAL AUTOMATION      www.ati-ia.com      Rotary Joint      9180-RJ-80-1-KS

Customer Drawing # 9230-80-1037-06

- Notes:  
 1. Connector Mates (Provided): Mfg.: Binder  
 Binder P/N: 712 99-0421-70-07 / ATI P/N 9180-9940789 (Male, Tool Side)  
 Binder P/N: 712 99-0422-70-07 / ATI P/N 9180-9940790 (Female, Robot Side)  
 2. Optional ISO Tool Side Adapter Plate: 9180-323224

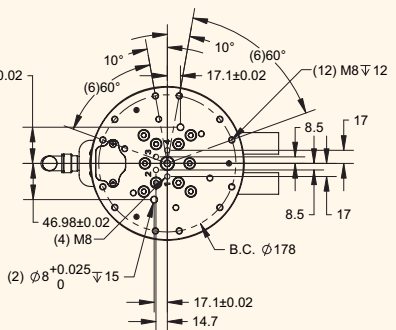
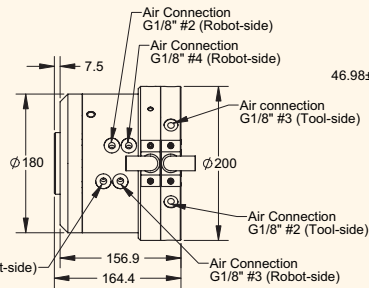
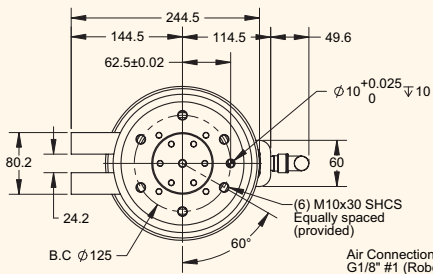
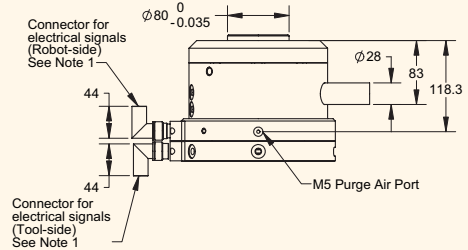
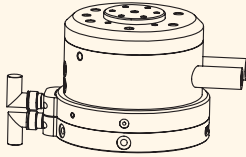




Customer Drawing # 9230-80-1040-07

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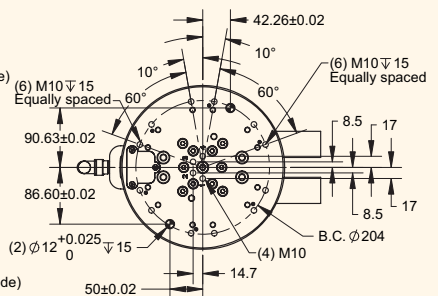
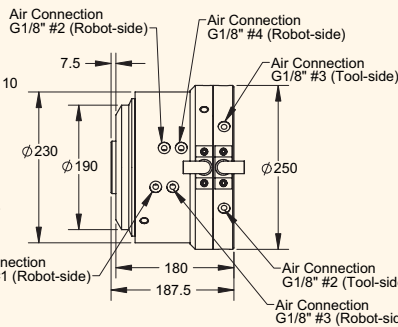
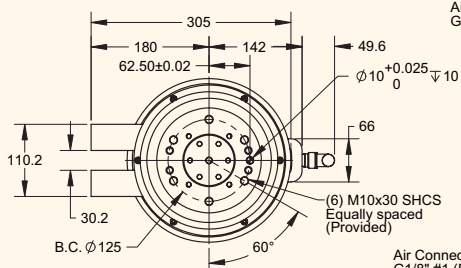
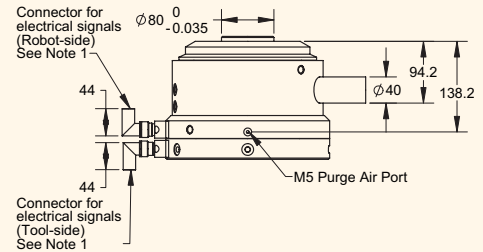
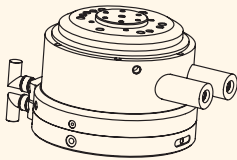
- Connector Mates (Provided):  
Mfg: Binder  
Binder P/N: 723 99-0129-75-12 / ATI P/N 9180-9940789 (Male, Tool Side)  
Binder P/N: 723 99-0130-75-12 / ATI P/N 9180-9940790 (Female, Robot Side)
- Optional ISO Tool Side Adapter Plate: ATI P/N 9180-323226



Customer Drawing # 9230-80-1041-05

Notes:

- Connector Mates (Provided):  
Mfg: Binder  
Binder P/N: 723 99-0129-75-12 / ATI P/N: 9180-9940789 (Male, Tool Side)  
Binder P/N: 723 99-0130-75-12 / ATI P/N: 9180-9940790 (Female, Robot Side)
- Optional ISO Tool Side Adapter Plate: ATI P/N: 9180-323226



## Other ATI Products

### Robotic/Automatic Tool Changer

A high-precision rugged device that automatically changes tooling. Patented fail-safe locking mechanism uses No-Touch Locking™ technology, allowing plate separation when locking.

### Robotic/Automatic Tool Changers for Heavy Automation

This series of modular tool changers is designed specifically for high-payload and high-moment applications. **Utility Modules** to pass air, fluid, and electrical signals are also available for use in non-tool changer applications. Useful for processes requiring repeated connection/disconnection of utilities.

### Multi-Axis Force/Torque Sensor

Measures the full six components of force and torque. High overload protection and high signal-to-noise ratio. Used in robotic and research applications.

### Robotic Collision Sensor

Designed to prevent damage to robotic end-effectors resulting from robot crashes. Features include: Automatic reset, high-repeatability, and large moment rotation.

### Robotic & CNC Deburring Tools

These air-driven robotic tools cover a wide variety of automated deburring and finishing applications with fast cycle times and clean, accurate cuts. The Radially-Compliant Deburring Tool is designed for removal of parting lines and flash. The Axially-Compliant Deburring Tool is specially designed for edge deburring and chamfering. The Axially-Compliant Finishing Tool is designed for material finishing operations on aluminum, plastic, steel, and more.

### Automated Assembly Alignment Device

An insertion device using Remote Center Compliance technology, that helps assembly machines automatically align close-fitting parts, preventing jamming and galling.

## Company Profile

ATI Industrial Automation is a world-leading developer of Automatic Tool Changers, Multi-Axis Force/Torque Sensing Systems, Compliance Devices, Robotic Collision Sensors, Robotic Deburring Tools, and Robotic Rotary Joints. Our products are found in thousands of successful applications around the world.

For over 20 years, our engineers have been developing cost-effective, state-of-the-art products and solutions to improve manufacturing productivity.

Our Mission is to provide customers around the world with high-quality robotic peripheral devices, tooling and sensors that enhance customer profitability by increasing the effectiveness, flexibility, safety and productivity of their automation applications. We accomplish this through continuous improvement of existing products, product customization and new product innovation.

Our engineering-centric staff focuses on providing customer solutions to robotic, automation and sensing applications.

## Our Quality Policy

ATI Industrial Automation strives to provide customer satisfaction through continual improvement of on-time delivery, quality and reliability, and a constant focus on innovation and profitability.



*Over 20 Years of Robotic End-Effector Innovation*

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