



Rotary Motion Simulator

ARMS

Precision Angular Rate Simulation, Dynamic Characterization & Testing

Aerotech's ARMS series direct-drive rotary motion simulators provide superior angular rates, accelerations and positioning for the testing of inertial components and systems such as MEMS, gyroscopes, inertial measurement units (IMU) avionics and accelerometers. The slotless, direct-drive motor and high-resolution rotary encoder provide ultra-smooth motion for superior tracking performance, with rate resolution down to 0.001 deg/s and rate stability to 0.0001%. Integrated slip rings and optional fluid rotary unions help make ARMS easy to integrate, quick to set up and convenient to use.

Key Applications

ARMS is ideal for applications involving simulating rotary motion precisely and repeatably, including:

- ◆ Gyroscope & accelerometer testing
- ◆ Inertial device & inertial navigation sensor characterization
- ◆ Avionics and guidance system testing
- ◆ Electronics and wearable device testing, including VR/AR & other smart devices
- ◆ Pointing and tracking motion systems



KEY FEATURES:

- ◆ Designed for **HIGHLY ACCURATE** motion generation
- ◆ Velocity **STABILITY OF 0.0001%** over 360 degrees
- ◆ **POSITION RESOLUTION** to 0.02 arc sec
- ◆ **PAYLOADS TO 230 KG**
- ◆ Integrated **SLIP RINGS** and **OPTIONAL ROTARY UNIONS**
- ◆ Direct-drive, **SLOTLESS MOTOR OPTIONS** for high speed or high torque

ARMS SERIES SPECIFICATIONS

Mechanical Specifications		ARMS150 -M1	ARMS150 -M2	ARMS200 -M1	ARMS200 -M2	ARMS260 -M1	ARMS260 -M2
Width		146 mm		196 mm		260 mm	
Height ⁽¹⁾		183 mm	246 mm	224 mm	249 mm	229 mm	250 mm
Aperture ⁽²⁾		8 mm				25 mm	
Total Travel		±360° Continuous					
Bus Voltage		Up to 340 VDC					
Maximum Torque (Continuous)		2.36 N·m	7.69 N·m	11.12 N·m	15.93 N·m	19.71 N·m	29.09 N·m
Fundamental Encoder Resolution		16,200 lines/rev		23,600 lines/rev		32,400 lines/rev	
Accuracy ⁽³⁾		±2.5 arc sec					
Repeatability		±0.5 arc sec					
Max Load ⁽⁴⁾	Axial	30 kg		140 kg		230 kg	
Max Load ⁽⁴⁾	Moment	175 N·m		425 N·m		650 N·m	
Tilt Error Motion		±1 arc sec					
Maximum Rate ⁽⁵⁾		1500°/s					
Minimum Rate ⁽⁶⁾		0.002°/s				0.001°/s	
Rate Resolution ⁽⁶⁾		0.002°/s				0.001°/s	
Rate Stability ⁽⁶⁾	Over 360°	0.0001%					
	Over 10°	0.005%					
	Over 1°	0.05%					
Peak Acceleration ⁽⁷⁾		>20,000°/s²					
Inertia (unloaded) ⁽⁷⁾		6,600 kg·mm²	9,700 kg·mm²	33,600 kg·mm²	39,800 kg·mm²	115,200 kg·mm²	139,000 kg·mm²
Total Mass ⁽⁷⁾		9 kg	15 kg	22 kg	26 kg	39 kg	44 kg
Servo Bandwidth ⁽⁸⁾		>70 Hz (-3 dB)					
Material		Aluminum					
Stage Finish		Black Anodize					
Tabletop Finish		Hard Coating (62 Rockwell Hardness)					

Notes:

- Height may vary with certain slip ring and rotary union options. See product dimensional drawings for more details.
- Aperture not available with all slip ring and rotary union options. See ordering information for more details.
- Certified with each stage. Requires the use of an Aerotech controller.
- Maximum loads are mutually exclusive.
- Maximum rate is based on stage capability. Actual rate may depend on encoder resolution, load, amplifier bus voltage and motor. See the S-series rotary motor for more information.
- Minimum rate, rate resolution and rate accuracy are based on stage capability. Actual rate, resolution and accuracy may depend on encoder resolution.
- Peak acceleration, inertia and total mass based on unloaded stage with standard diameter tabletop.
- Servo bandwidth is based on unloaded stage with standard diameter tabletop. Actual bandwidth may depend on mass and inertia of stage payload.



ARMS SERIES ORDERING OPTIONS

ARMS Rotary Motion Simulator

ARMS150 Rotary motion simulator

ARMS200 Rotary motion simulator

ARMS260 Rotary motion simulator

Tabletop (Required)

- TT1** Tabletop, metric dimension mounting, engraved scale
- TT2** Tabletop, English dimension mounting, engraved scale
- TT3** Tabletop, aperture, metric dimension mounting, engraved scale
- TT4** Tabletop, aperture, English dimension mounting, engraved scale
- TT5** Large diameter tabletop, metric dimension mounting
- TT6** Large diameter tabletop with English dimension mounting
- TT7** Large diameter tabletop, aperture, metric dimension mounting
- TT8** Large diameter tabletop, aperture, English dimension mounting

Motor (Required)

- M1** Direct-drive brushless, slotless motor, standard torque
- M2** Direct-drive brushless, slotless motor, high torque

Slip-Ring (Required)

- SR01** Integrated slip ring, 12 lines, 2A max current (ARMS150 and ARMS200 only)
- SR02** Integrated slip ring, 24 lines, 2A max current
- SR03** Integrated slip ring, 36 lines, 2A max current (ARMS200 only)
- SR04** Integrated slip ring, 48 lines, 2A max current (ARMS260 only)
- SR05** Integrated slip ring, 56 lines, 2A max current (ARMS200 only)
- SR06** Integrated slip ring, 72 lines, 2A max current (ARMS260 only)
- SR07** Integrated slip ring, 96 lines, 2A max current (ARMS260 only)

Note: Slip ring options -SR03 and -SR05 are incompatible with all aperture tabletop options (-TT3, -TT4, -TT7, -TT8).

Rotary Union (Optional)

- RU1** One (1) rotary union line for air, vacuum, or non-corrosive gas, 120 psi max
- RU2** Two (2) rotary union lines for air, vacuum, or non-corrosive gas, 120 psi max

Note: -TRxxx limited travel options contain an extra 2 degrees of overtravel between the nominal travel and the electrical limit on each side (Ex: -TR270 contains ± 135 degrees of nominal travel, with ± 137 degrees of travel between electrical limits).

ARMS SERIES ORDERING OPTIONS

Integration (Required)

Aerotech offers both standard and custom integration services to help you get your system fully operational as quickly as possible. The following standard integration options are available for this system. Please consult Aerotech if you are unsure what level of integration is required, or if you desire custom integration support with your system.

-TAS Integration - Test as system

Testing, integration, and documentation of a group of components as a complete system that will be used together (ex: drive, controller, and stage). This includes parameter file generation, system tuning, and documentation of the system configuration.

-TAC Integration - Test as components

Testing and integration of individual items as discrete components that ship together. This is typically used for spare parts, replacement parts, or items that will not be used together. These components may or may not be part of a larger system.

Accessories (to be ordered as separate line item)

MC-D15-F Connector mate, 15-Pin D-sub female

MC-D15-M Connector mate, 15-Pin D-sub male

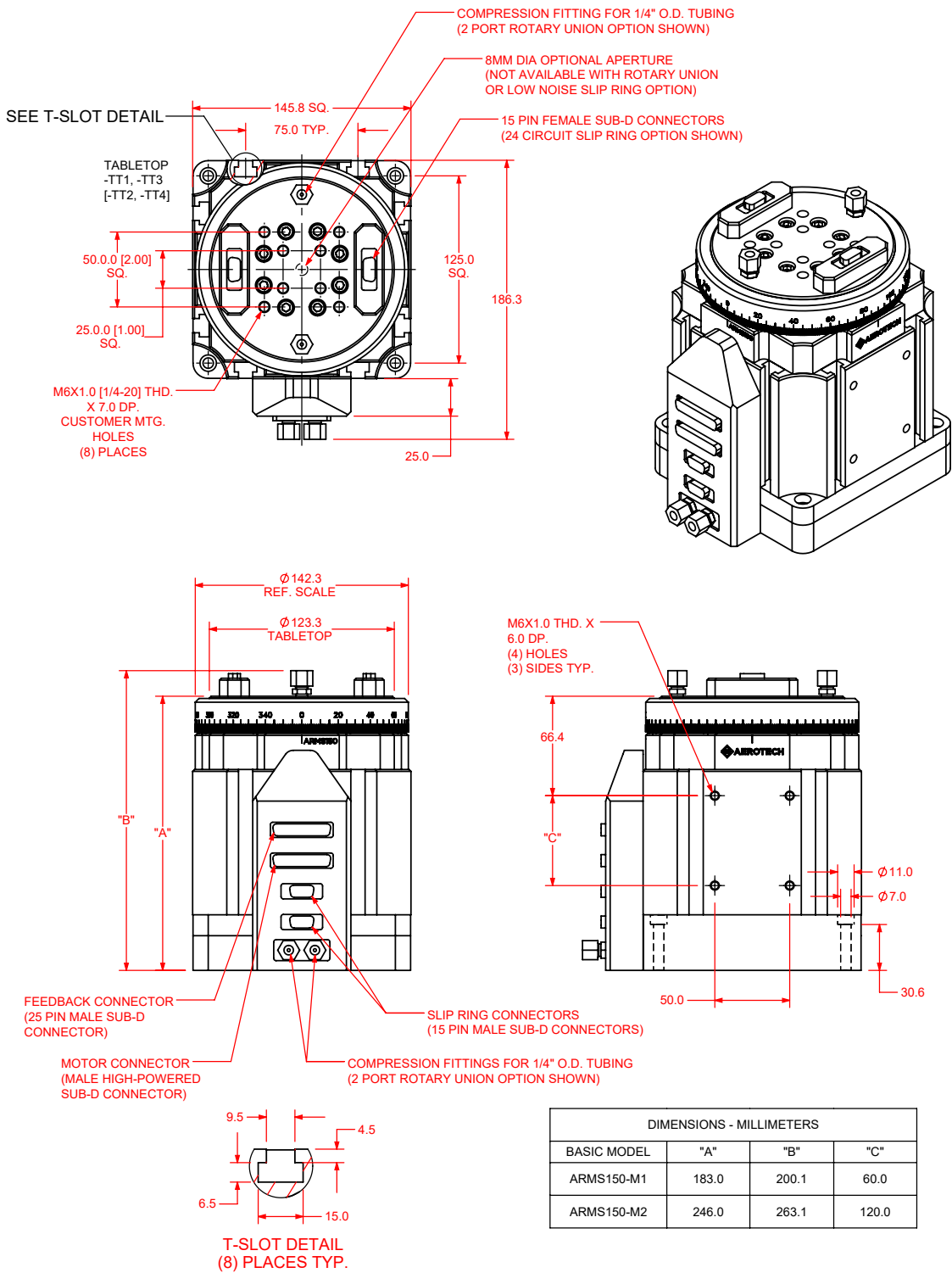
MC-D25-F Connector mate, 25-Pin D-sub female

MC-D25-M Connector mate, 25-Pin D-sub male

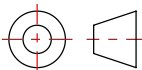


ARMS DIMENSIONS

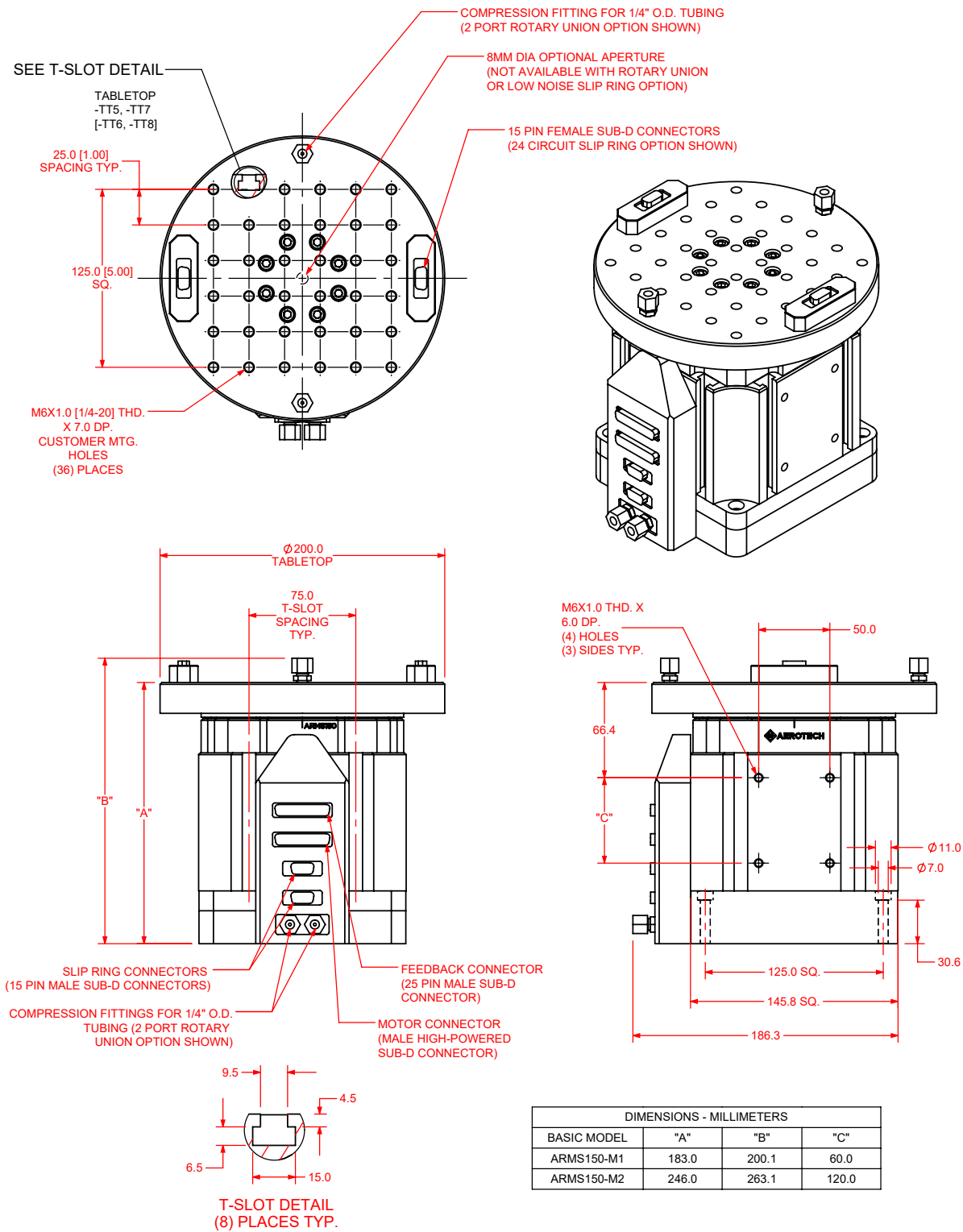
ARMS150



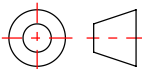
DIMENSIONS: MILLIMETERS



ARMS DIMENSIONS ARMS150

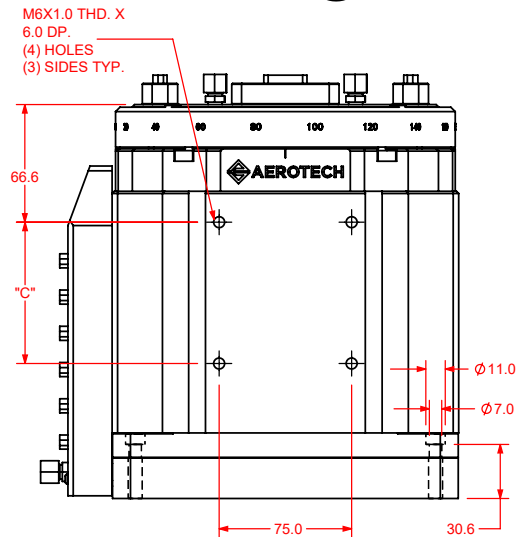
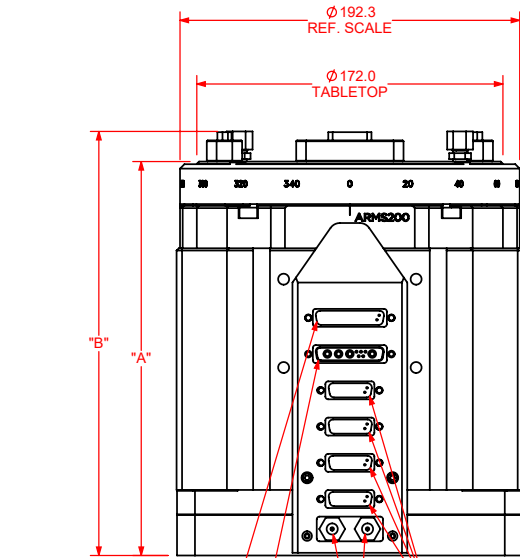
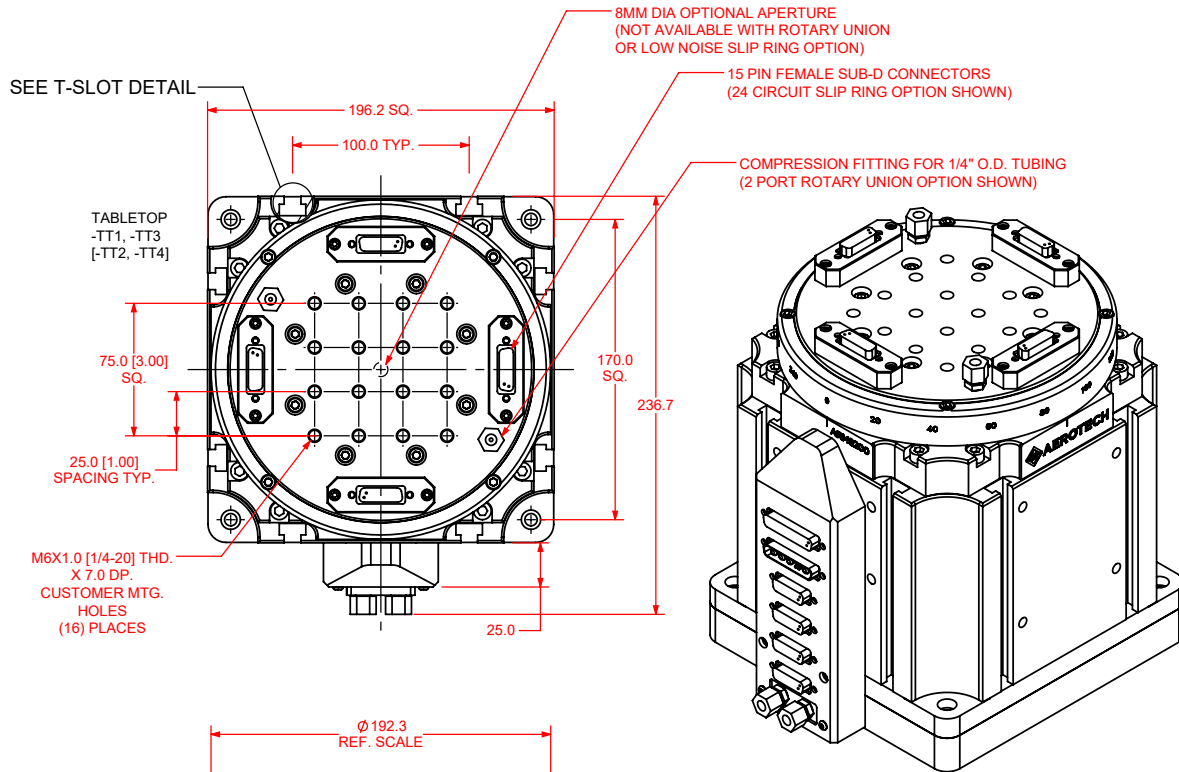


DIMENSIONS: MILLIMETERS



ARMS DIMENSIONS

ARMS200

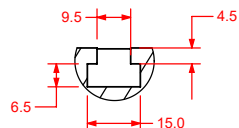


FEEDBACK CONNECTOR
(25 PIN MALE SUB-D
CONNECTOR)

SLIP RING CONNECTORS
(15 PIN MALE SUB-D CONNECTORS)

COMPRESSION FITTINGS FOR 1/4" O.D. TUBING
(2 PORT ROTARY UNION OPTION SHOWN)

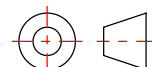
MOTOR CONNECTOR
(MALE HIGH-POWERED
SUB-D CONNECTOR)



T-SLOT DETAIL
(8) PLACES TYP.

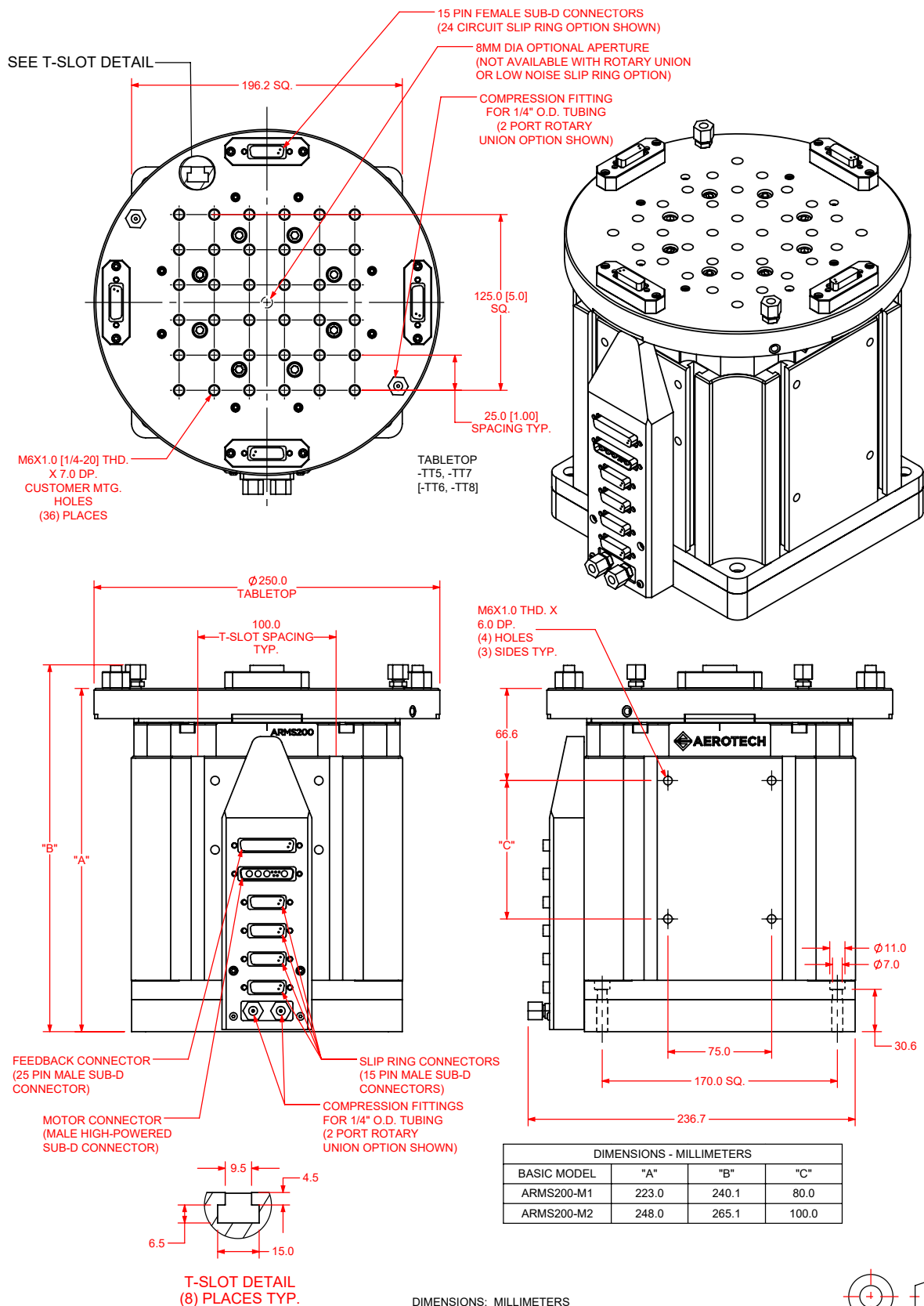
DIMENSIONS - MILLIMETERS			
BASIC MODEL	"A"	"B"	"C"
ARMS200-M1	223.0	240.1	80.0
ARMS200-M2	248.0	265.1	100

DIMENSIONS: MILLIMETERS



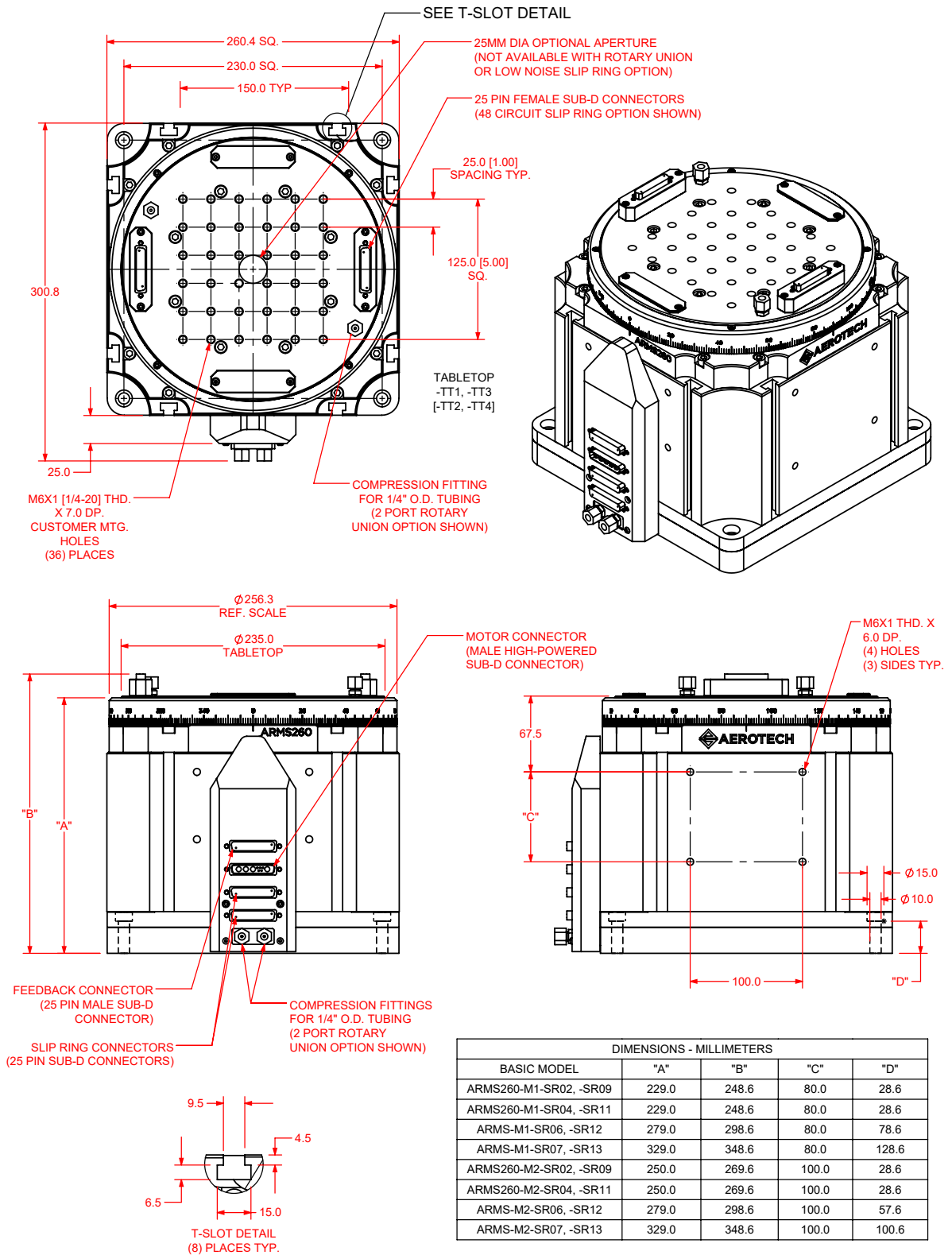
ARMS DIMENSIONS

ARMS200

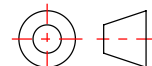


ARMS DIMENSIONS

ARMS260

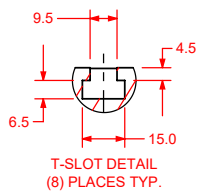
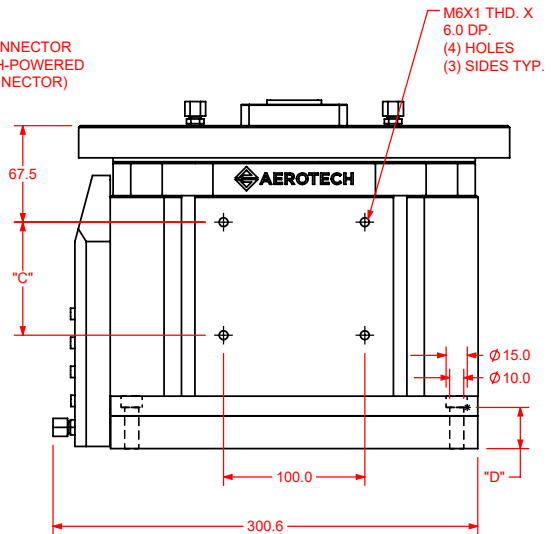
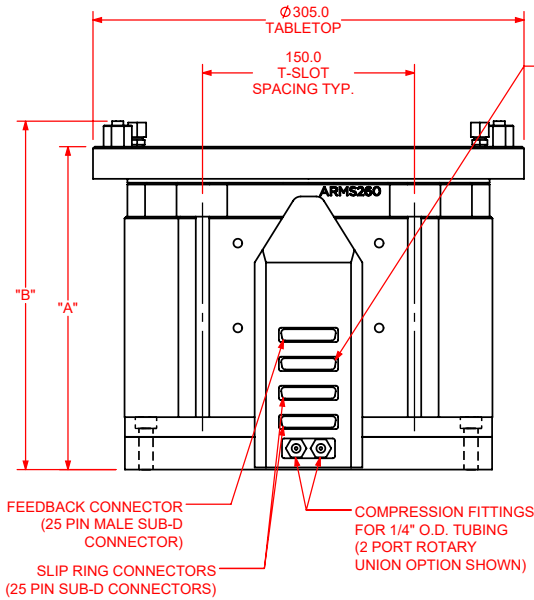
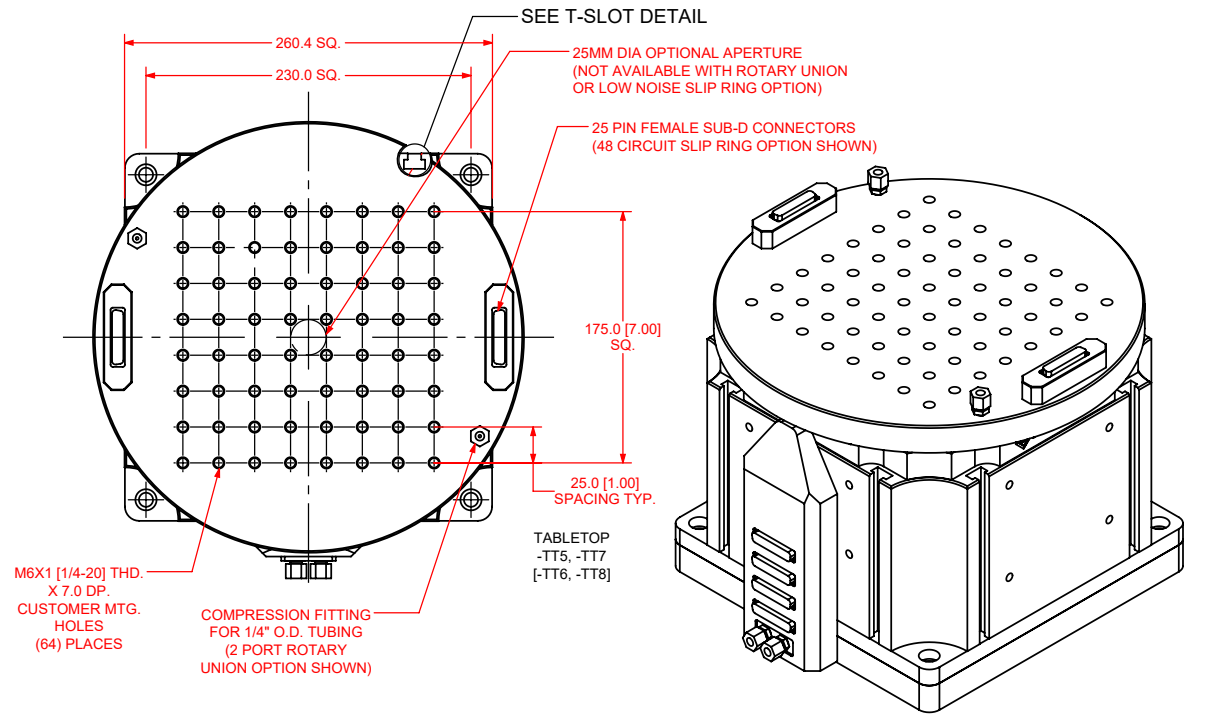


DIMENSIONS: MILLIMETERS



ARMS DIMENSIONS

ARMS260



DIMENSIONS - MILLIMETERS				
BASIC MODEL	"A"	"B"	"C"	"D"
ARMS260-M1-SR02, -SR09	229.0	248.6	80.0	28.6
ARMS260-M1-SR04, -SR11	229.0	248.6	80.0	28.6
ARMS260-M1-SR06, -SR12	279.0	298.6	80.0	78.6
ARMS260-M1-SR07, -SR13	329.0	348.6	80.0	128.6
ARMS260-M2-SR02, -SR09	250.0	269.6	100.0	28.6
ARMS260-M2-SR04, -SR11	250.0	269.6	100.0	28.6
ARMS260-M2-SR06, -SR12	279.0	298.6	100.0	57.6
ARMS260-M2-SR07, -SR13	329.0	348.6	100.0	100.6

DIMENSIONS: MILLIMETERS

