

AGC Series

Gear-Drive Goniometers

±45° rotary positioning with unobstructed 360° view of customer load

Precision worm gear drive for outstanding accuracy and repeatability

Direct encoder options available

Horizontal or vertical mounting orientation



AGC motorized mechanical goniometers are used in applications where 90 degrees of angular travel is needed with the payload at the center of rotation, or where two axes of rotation are needed about a common point. AGC goniometers are designed to be mounted to standard optical tables, as well as standard Aerotech rotary stages, to provide roll, pitch, and yaw about a common 3-axis intersection. This flexible stage series is ideal for optical alignment, payload tip/tilt, beam steering, sensor calibration, laser applications, automated manufacturing and/or testing, and multi-axis diffractometer systems.

Construction Features

The sizes within the AGC family are designed to be mounted on one another to form a three-axis rotary system with all three axes of rotation sharing a common intersection point. This allows compact pitch/roll/yaw systems to be created easily from a standard stage platform and without special adapter plates or mating fixtures. The drive mechanism for AGC stages is a precision gear and matched worm that are preloaded to reduce backlash. All AGC stages include optical limit switches and hard stops to define a ±45 degree range of travel.

Innovative linear feedback technology yields stable performance and negligible performance drift over the life of the stage. This is in stark contrast to inferior designs that must be continually adjusted to compensate for worm wear. All stage tabletops feature hardcoated aluminum, with stainless-steel Heli-Coil® inserts to prevent thread wear.

Flexible Options

Options include flexible motor selections as well as a direct encoder mounted along the stage travel to offer outstanding repeatability and to minimize hysteresis and backlash. Vacuum-compatible versions, for use in pressures as low as 10⁻⁶ torr, are also available.

Motor and Drives

Standard AGC stage configurations feature Aerotech's brushless servomotors. However, all AGC goniometers can be outfitted with stepper or brushed motors, as well. A full range of matching drives and controls are available for a complete single-source solution.

AGC SPECIFICATIONS

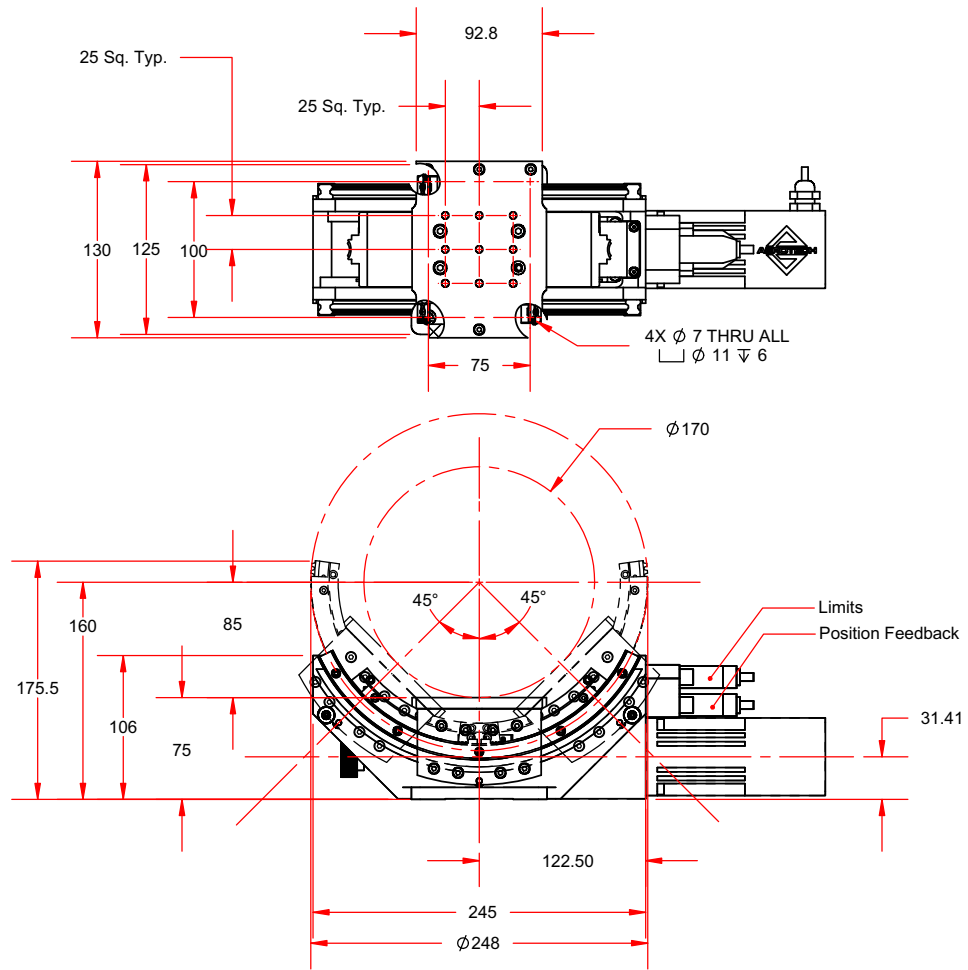
AGC Series		AGC-85	AGC-160	AGC-245
Travel Range		±45°		
Bus Voltage		up to 320 VDC		
Motor Type		BMS60	BMS100	BMS100
Continuous Current, Stall	A _{pk}	2.3	2.1	2.1
	A _{rms}	1.6	1.5	1.5
Accuracy ⁽¹⁾		±12 arc sec		
Repeatability ⁽¹⁾		±10 arc sec		
Axial Runout		±4 µm		
Radial Runout		±4 µm		
Wobble		15 arc seconds		
Radius of Curvature		85 mm	160 mm	245 mm
Resolution ⁽²⁾		8.8 arc sec	5.3 arc sec	3.5 arc sec
Moment Load ⁽³⁾		20 Nm	30 Nm	50 Nm
Load		20 kg	30 kg	50 kg
Maximum Speed		78°/s	60°/s	42°/s
Mass		5.6 kg	12.5 kg	24.3 kg

Notes:

1. Accuracy/repeatability values listed are for stages outfitted with direct encoder feedback, with HALAR option, used with Aerotech controls.
2. Resolution with direct encoder, before encoder interpolation or quadrature.
3. Customer C.G. not to exceed bounding volume of 160 mm in diameter by 80 mm above pivot point.

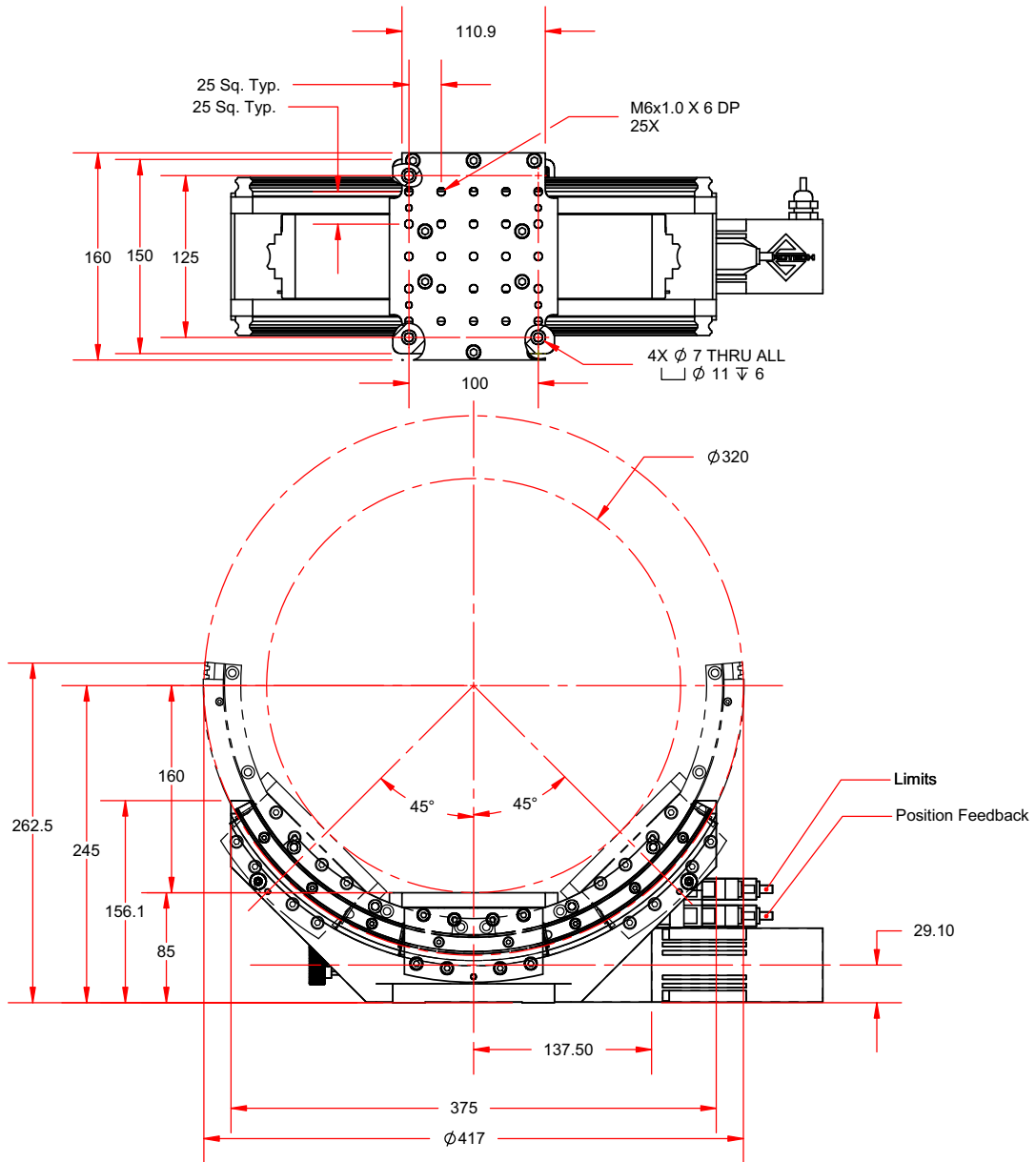
AGC DIMENSIONS

AGC-85



Feedback Option Shown

AGC-160



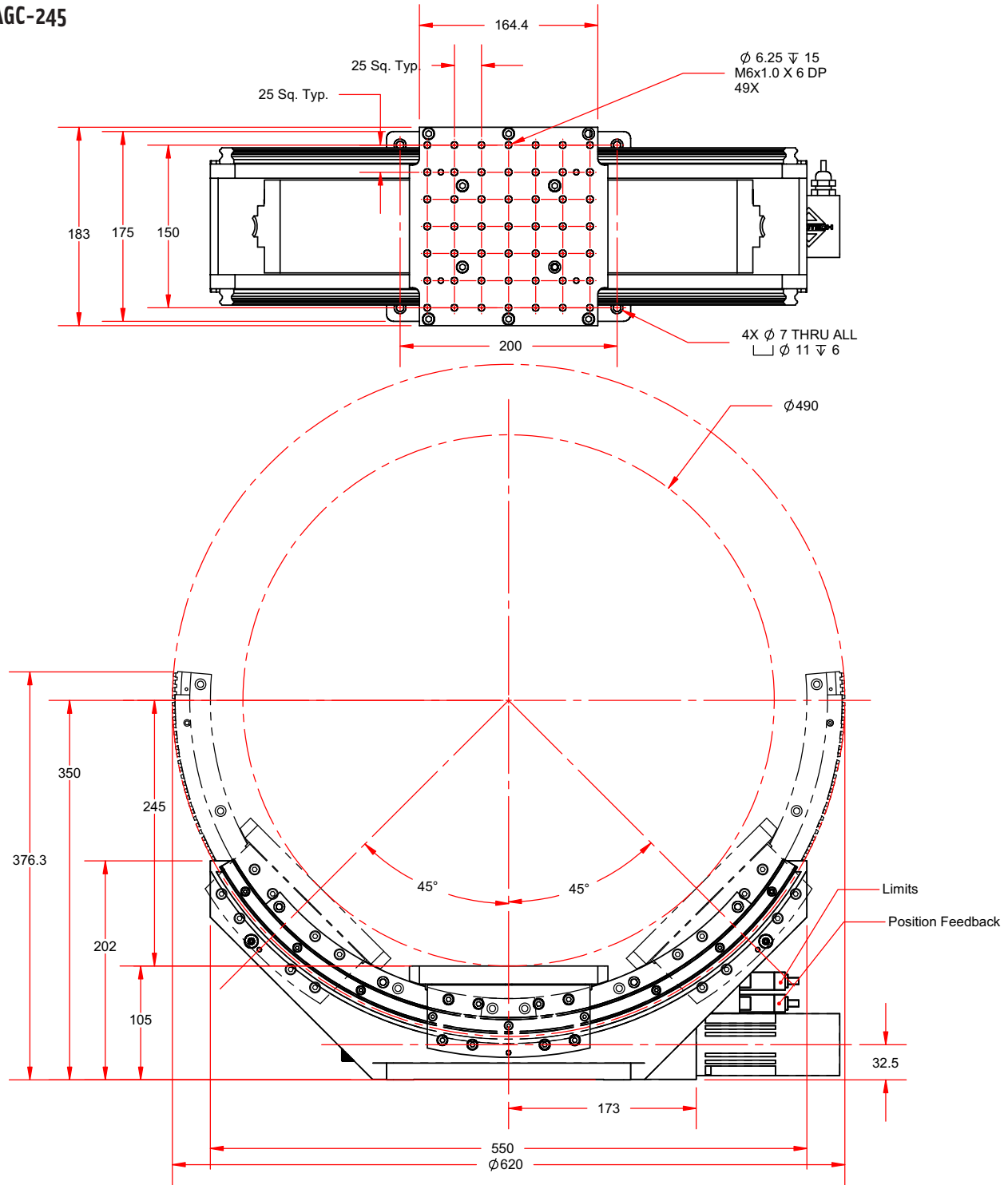
Feedback Option Shown

AGC DIMENSIONS

Goniometers

AGC Series

AGC-245



Feedback Option Shown

AGC Series ORDERING INFORMATION

Ordering Example

AGC	-85	-BMS	-AS
Series	Effective Radius of Curvature (mm)	Motor	Optional Position Transducer
	-85	-BMS	-AS
	-160	-SM	-X50
	-245	-NM	

AGC Series Gear-Driven Goniometric Cradles

AGC-85	Gear-driven goniometric cradle with ± 45 degrees travel and 85 mm radius of curvature.
AGC-160	Gear-driven goniometric cradle with ± 45 degrees travel and 160 mm radius of curvature.
AGC-245	Gear-driven goniometric cradle with ± 45 degrees travel and 245 mm radius of curvature.

Motor

-BMS	Brushless servomotor with connectors and 1000-line encoder; requires motor-to-controller cable; AGC-85 (BMS60-A-D25-E1000H), AGC-160 and AGC-245 (BMS100-A-D25-E1000H)
-SM	Stepping motor with 4.6 m (15 ft) integral cable and home marker pulse (one per rev); AGC-85 (50SMB2-HM), AGC-160 and AGC-245 (55SMB2-HM)
-NM	No motor

Optional Position Transducer

-AS	Direct encoder option, sine wave output; resolution (before encoder multiplication) of 6.6 arc seconds for AGC-85; 4.0 arc seconds for AGC-160; 2.8 arc seconds for AGC-245
-X50	Direct encoder option, square wave output; resolution of 0.033 arc seconds for AGC-85; 0.020 arc seconds for AGC-160; and 0.014 arc seconds for AGC-245

Note that using AGC stages with dual feedback loops will necessitate that the drive motor is outfitted with an amplified sine encoder and appropriate encoder interpolation (MXH, MXU, or MXR).