



CORE Performance Two-Axis Laser Scan Heads **AGV-CPO**



CORE Precision & Dynamics

The AGV-CPO laser scan head perfectly balances performance and value for the widest range of laser applications. As the entry point for our high-performance two-axis laser scan heads, the AGV-CPO includes all the CORE performance capabilities of our AGV-HPO and AGV-XPO scanners—plus 22-bit resolution, excellent dynamics and ultra-low thermal drift.

Key Applications

AGV-CPO provides dynamics, precision and superior optical performance to a broad range of laser applications, including:

- ◆ Laser process development & research
- ◆ Ultrafast laser processing
- ◆ High-speed drilling & cutting
- ◆ Micromachining
- ◆ Surface texturing

CORE FEATURES:

- ◆ **100 kHz** trajectory planning & **200 kHz** servo rates ensure perfect motion tracking & minimal jump-and-settle times
- ◆ **POSITION SYNCHRONIZED OUTPUT (PSO)** enables accurate laser triggering regardless of process speed or acceleration
- ◆ **INFINITE FIELD OF VIEW (IFOV)** enables seamless synchronization with linear & rotary servo motion to extend the scanner's field of view to large processing areas
- ◆ Optional **DIRECT MOTOR STATOR WATER COOLING & AIR-COOLED MIRRORS** minimizes process stabilization time & thermal drift
- ◆ Dual digital encoder feedback eliminates velocity error & enables **SINGLE-DIGIT MICROMETER-LEVEL ACCURACY** throughout the scanner's field of view
- ◆ Available in **10 mm**, **14 mm** & **20 mm** input apertures

AGV-CPO SPECIFICATIONS

Specifications		AGV10CPO	AGV14CPO	AGV20CPO
Optical Performance				
Beam Aperture		10 mm	14 mm	20 mm
Maximum Scan Angle		±20°		
Precision				
Feedback Resolution		0.15 μrad (22 bit)		
Accuracy ⁽¹⁾		100 μrad pk-pk		
Repeatability ⁽²⁾		0.6 μrad _{RMS}		
Gain Error		<0.1 mrad		
Non-Linearity		0.015%		
Dither ⁽²⁾		0.6 μrad _{RMS}		
Dynamic Performance				
Tracking Error		0 μsec		
Peak Acceleration ⁽³⁾⁽⁴⁾		260,000 m/s ²	150,000 m/s ²	60,000 m/s ²
Continuous Acceleration ⁽³⁾⁽⁵⁾		52,000 m/s ²	30,000 m/s ²	12,000 m/s ²
Positioning Speed ⁽⁴⁾		75 m/s	70 m/s	45 m/s
Marking Speed ⁽⁹⁾		5 m/s		
Jump & Settle Time (1 mm Move) ⁽³⁾⁽⁶⁾⁽⁷⁾	Standard	540 μs	1100 μs	2100 μs
	with ESC ⁽⁸⁾	310 μs	390 μs	720 μs
Stability				
Long-Term Drift ⁽²⁾	Offset	10 μrad/12 hrs		
		15 μrad/24 hrs		
	Gain	10 ppm/24 hrs		
Thermal Drift	Offset	10 μrad/°C		
	Gain	2 ppm/°C		
Mechanical Specifications				
Mass		2.5 kg	2.6 kg	2.9 kg
Operating Temperature		< 60°C		
Material		Aluminum (Black Anodize), Stainless Steel		
Mean Time Before Failure		20,000 Hours		

Note: All specifications are per axis unless noted. All angles are optical unless otherwise noted.

1. Without mark and measure calibration.

2. Without -AC air cooling option.

3. At constant ambient environment and motor temperature.

4. Typical performance with f = 160 mm F-Theta objective.

5. Based on the maximum rated current of the motor.

6. Based on the rated rms current of the motor with -WC water cooling option; maximum continuous acceleration is 70% of this value without water cooling.

7. Settled to within 1% of move distance.

8. With Enhanced Scanner Control (ESC) enabled.

9. Achievable with <1% velocity error over continuous velocity portion of move.

AGV-CPO ORDERING OPTIONS

AGV-CPO CORE Performance Series Laser Scan Head

AGV10CPO 2-axis galvanometer scanner with 10 mm diameter beam aperture

AGV14CPO 2-axis galvanometer scanner with 14 mm diameter beam aperture

AGV20CPO 2-axis galvanometer scanner with 20 mm diameter beam aperture

Contact factory for additional aperture options.

Beam Entry (Required)

-BE1 Right-side laser beam entry (standard)

-BE2 Left-side laser beam entry

Wavelength of Mirror Coating (Required)

-W011S 1030/515/343 nm Tri-Band

-W013S 9.3-10.6 μm CO₂

Custom coatings available. Contact factory for details.

Air Cooling (Optional)

-AC Air Cooling

Water Cooling (Optional)

-WC Water Cooling

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.

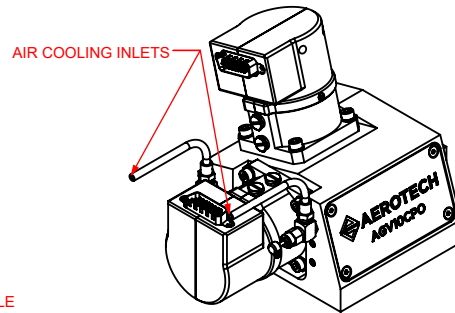
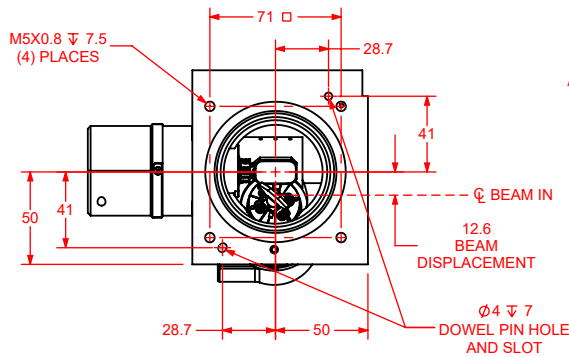
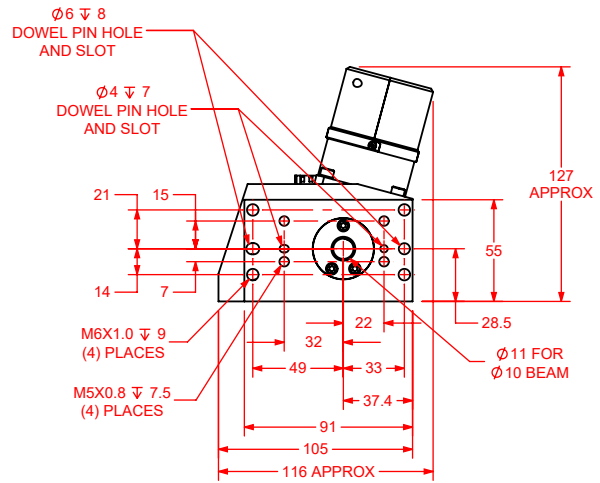
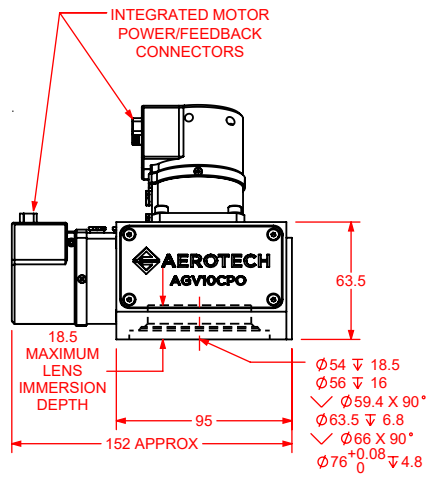
-TAS **Integration - Test as system**

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.

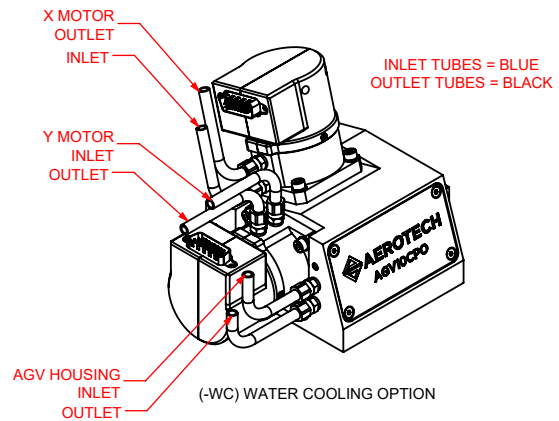
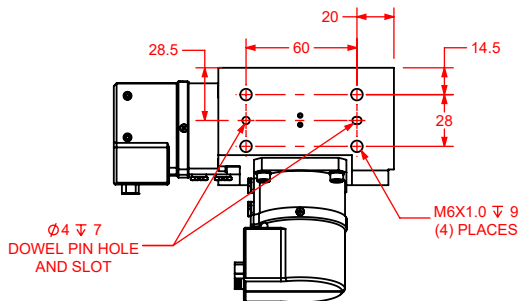


AGV-CPO DIMENSIONS

AGV10CPO-BE1

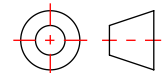


(-AC) AIR COOLING OPTION



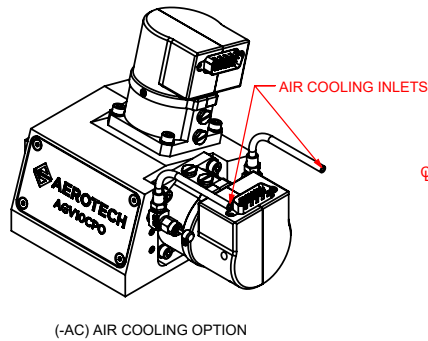
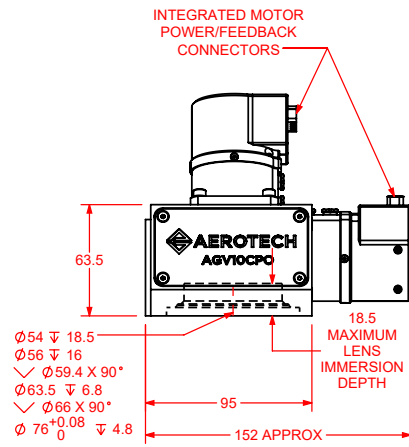
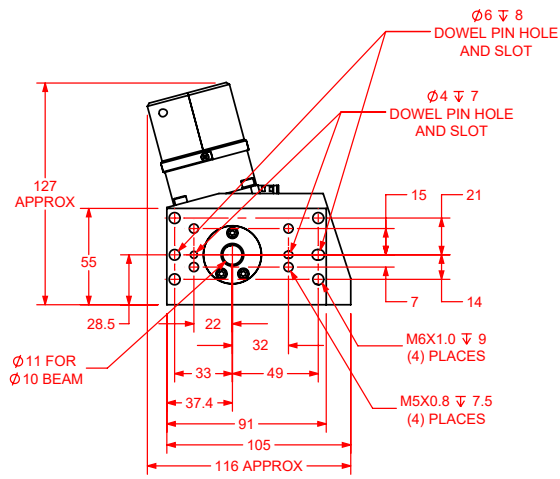
(-WC) WATER COOLING OPTION

DIMENSIONS: MILLIMETERS

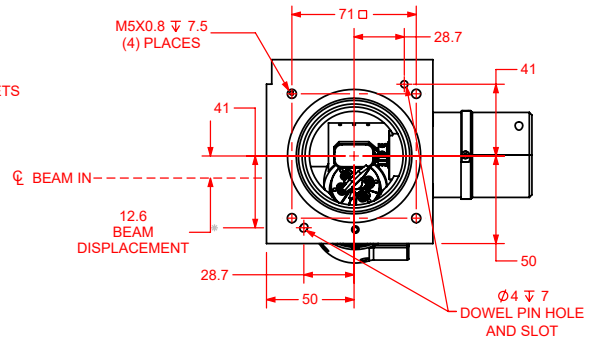


AGV-CPO DIMENSIONS

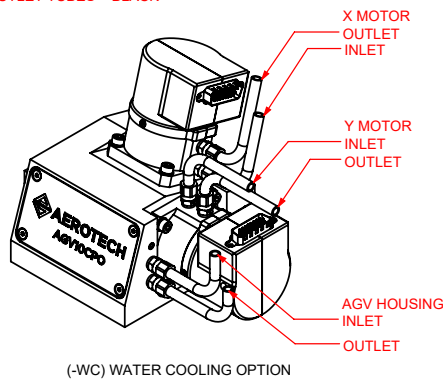
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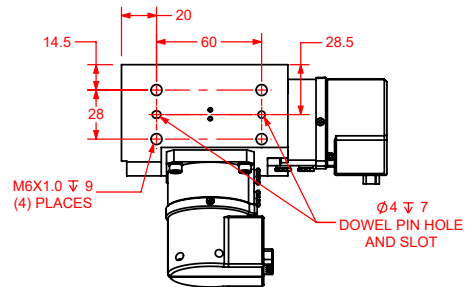
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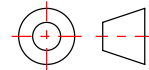
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OUTLET TUBES = BLACK



(-WC) WATER COOLING OPTION

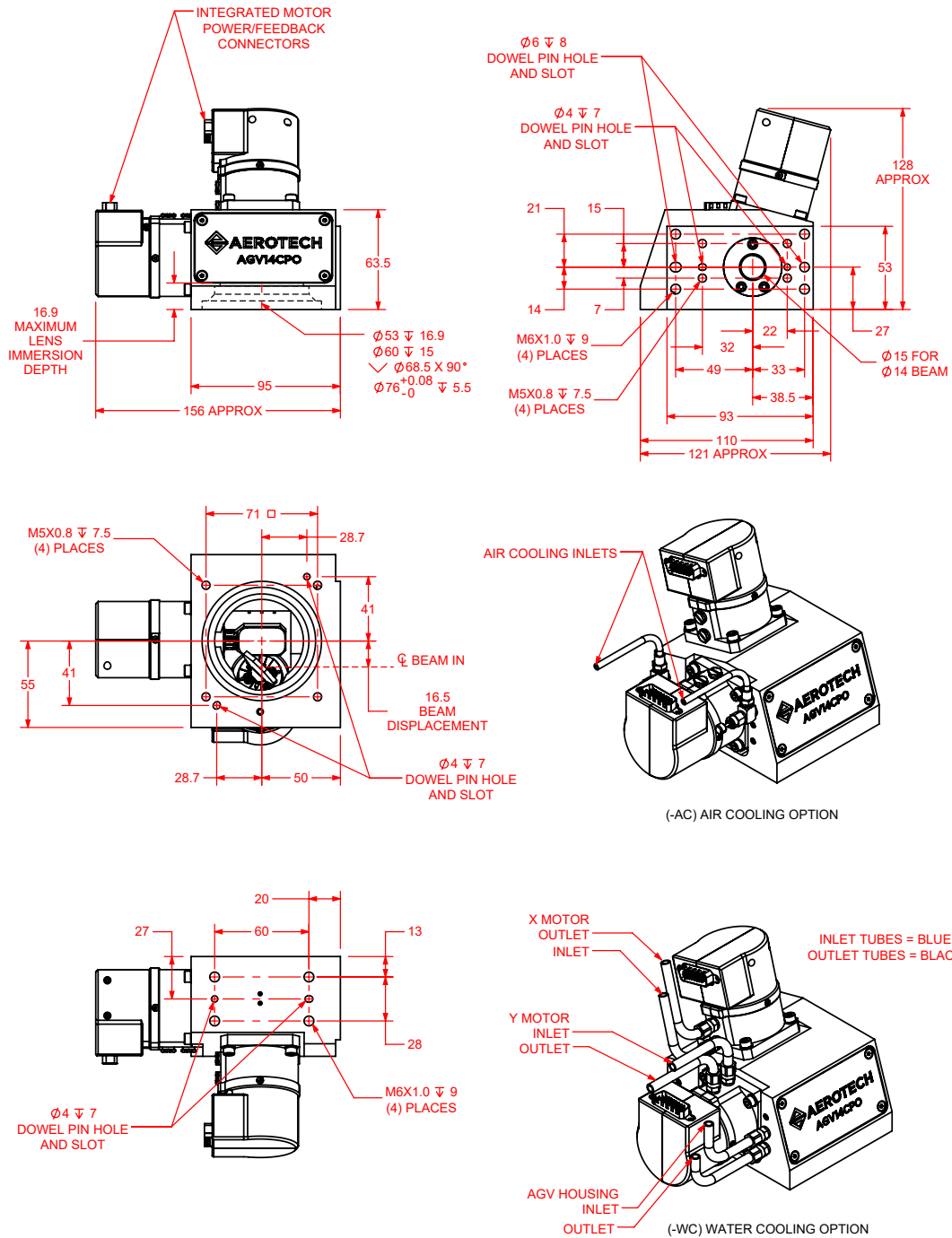


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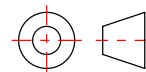


AGV-CPO DIMENSIONS

AGV14CPO-BE1

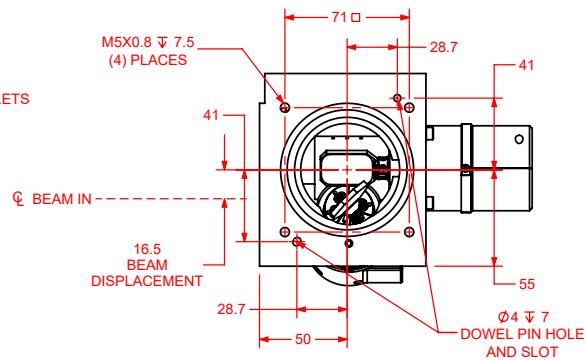
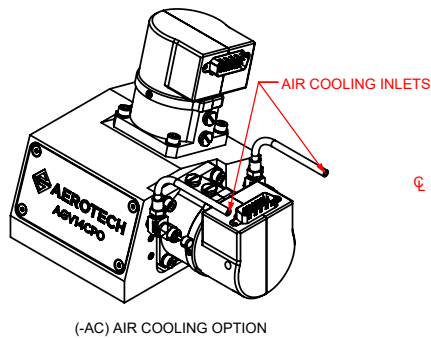
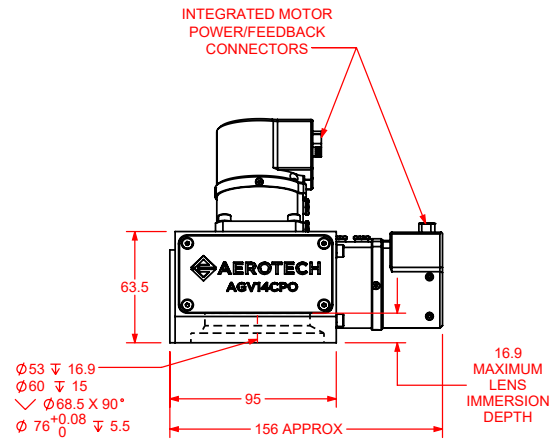
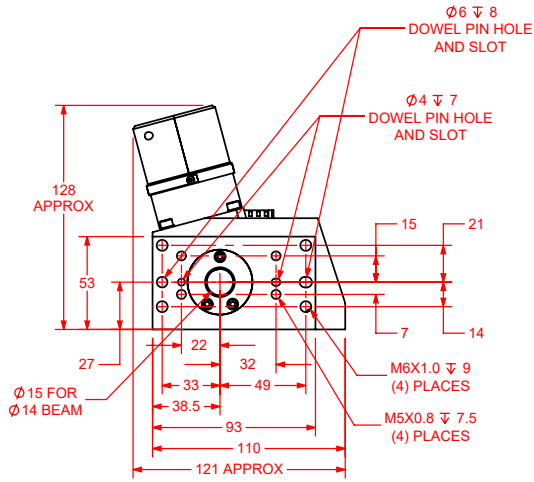


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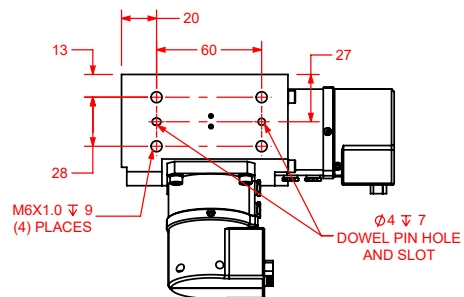
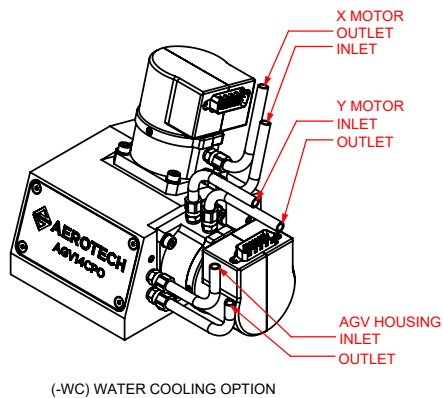


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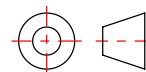
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INLET TUBES = BLUE
OUTLET TUBES = BLACK

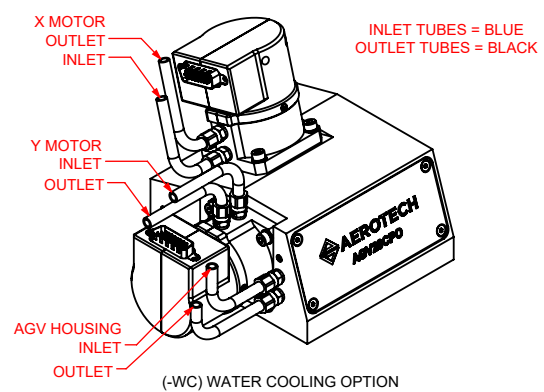
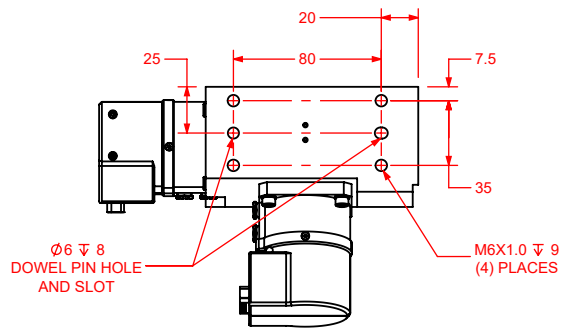
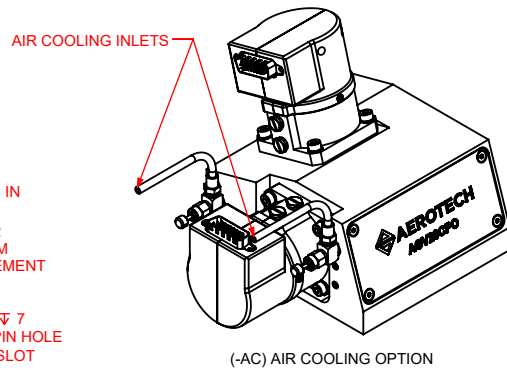
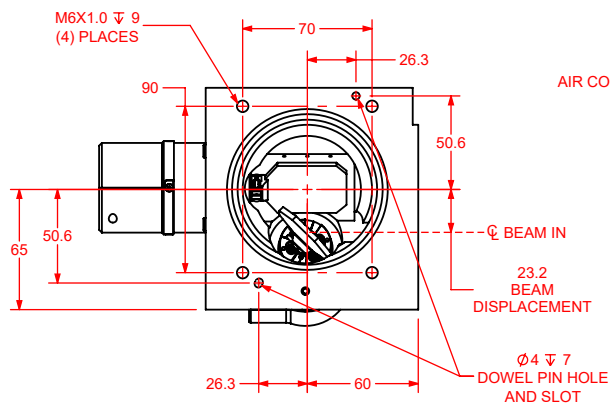
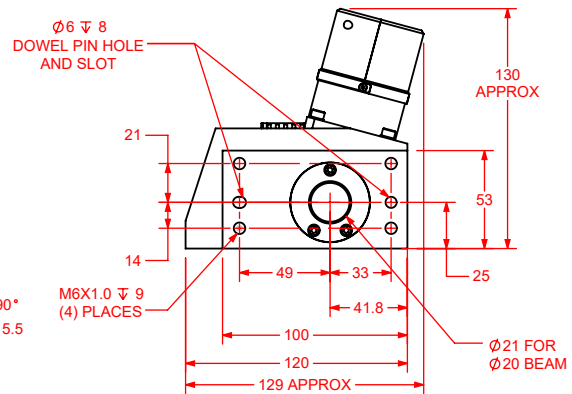
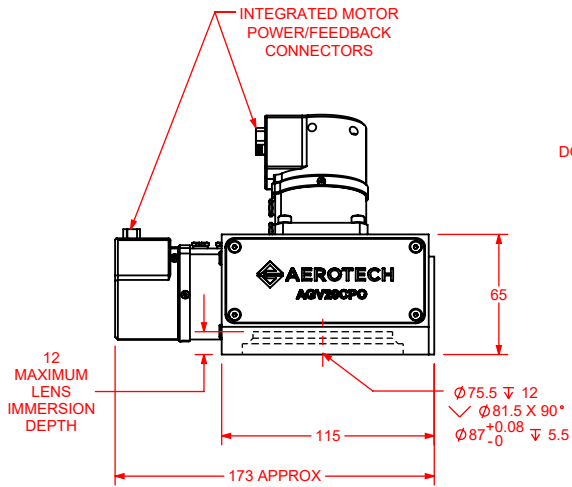


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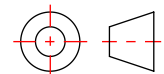


AGV-CPO DIMENSIONS

AGV20CPO-BE1

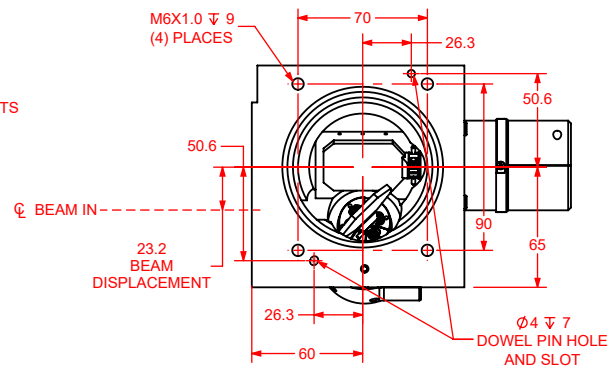
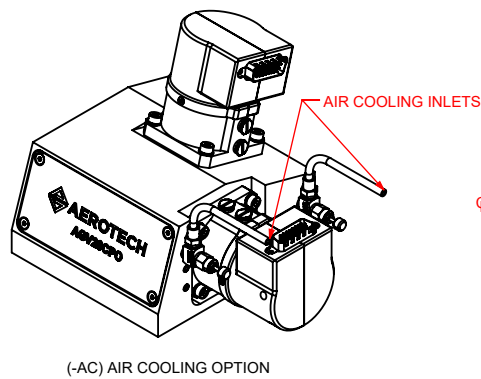
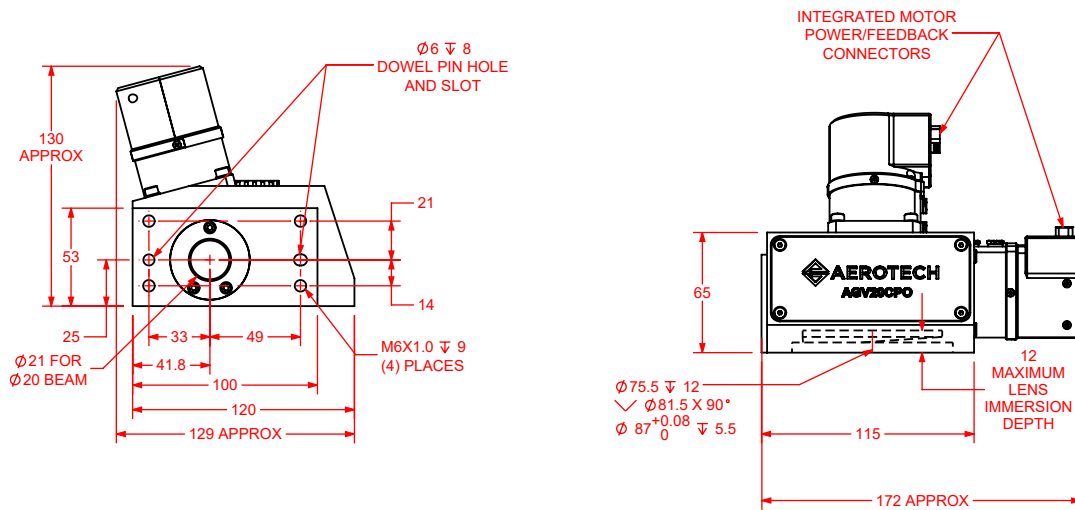


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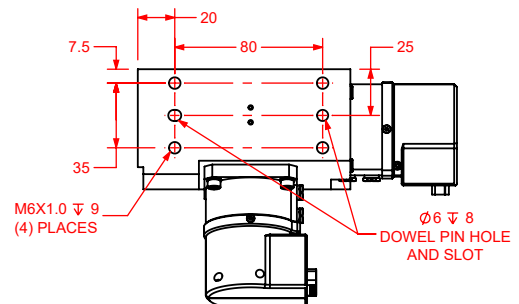
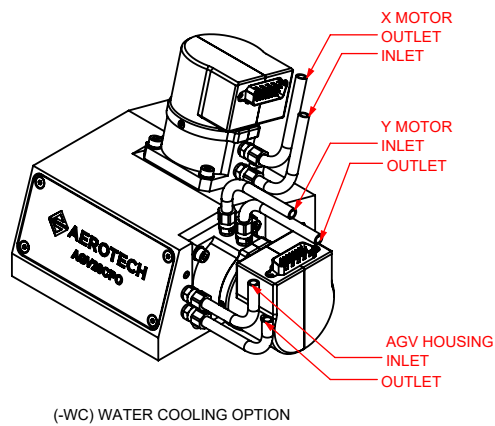


AGV-CPO DIMENSIONS

AGV20CPO-BE2



INLET TUBES = BLUE
OUTLET TUBES = BLACK



DIMENSIONS: MILLIMETERS

