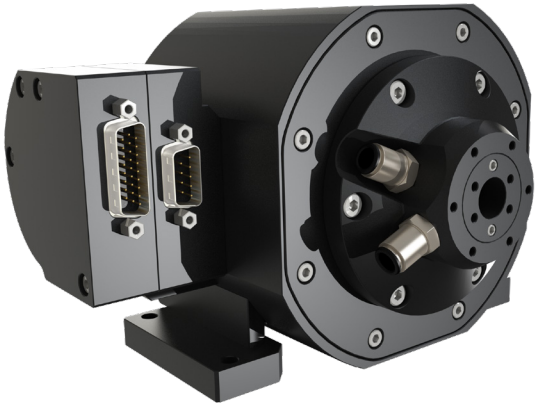
1040 CLASSIC ROAD | APEX, NC 27539
P: 919.577.6333
www.griffinmotion.com

STS-110: Precision Spindle with 1C or Type D Collet

FEATURES

- Integrated Pneumatic Actuation with Zero-Friction Air Union
- High Precision Spindle Bearings
- Compatible with 1C or Type D Lathe Collets
- Up to 8.0mm Workpiece Diameter (with Type D Collet)
- Low-Inertia Design
- Dead-Length Collet Closing
- Wet-Cut Capable
- Field-Serviceable Collet-Closing Mechanism





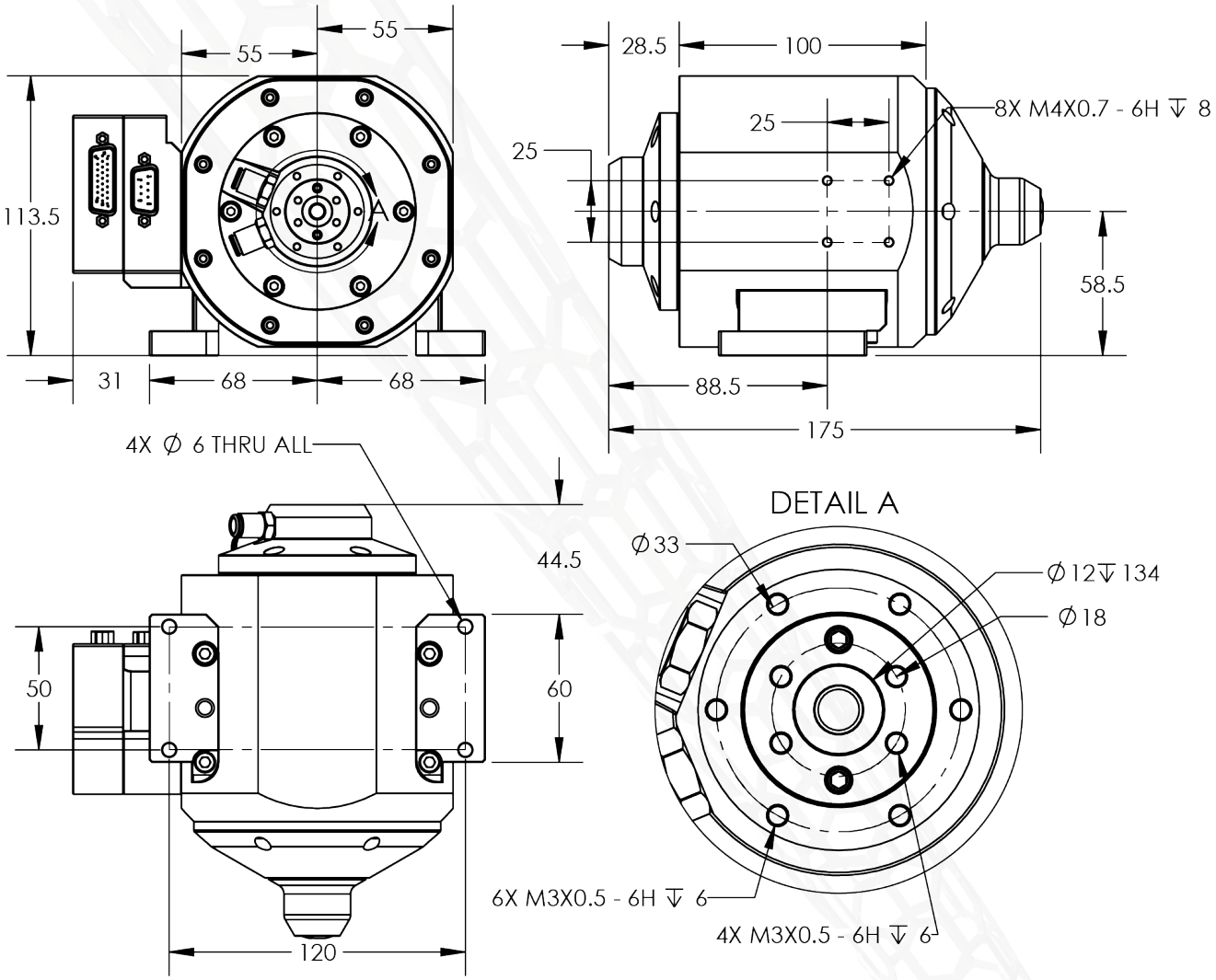
The STS-110 is a high-precision rotary motion stage with integrated pneumatic work holding, designed for processing high-precision tubular components in medical device manufacturing.

The design incorporates precision spindle bearings, a non-contact rotary union, and a high-resolution encoder to support high acceleration, smooth rotation, and precise positioning. The STS-110 is compatible with wet-cut operations and is available with 1C or Type D collet compatibility.

For additional specifications and configuration options, contact the Griffin Motion Applications Team.

1040 CLASSIC ROAD | APEX, NC 27539
P: 919.577.6333
www.griffinmotion.com

Dimensions



1040 CLASSIC ROAD | APEX, NC 27539
P: 919.577.6333
www.griffinmotion.com

Specifications

Performance Specifications	
Air Pressure Range (PSI)	60-90
Air Quality Required	ISO8573-1:2010 Class 3.4.3
Angular Accuracy +/- (arc-sec)	30
Angular Repeatability +/- (arc-sec)	4
Max Angular Velocity (rpm)	600
Collet Type*	1C or Type D
Continuous Torque (Nm)	1.58
Peak Torque (Nm)	3.15
Piston Surface Area (mm^2)	670
Radial Runout of Gage Pin (µm)	<30
Rotational Inertia ($kg-m^2$)	0.0005
Stage Mass (kg)	5.0
Maximum Workpiece Diameter (mm)	8.0 (6.35 for 1C)

*Collet type must be decided at time of order and is not interchangeable in the field

Motor Specifications	
Motor Type	3φ Brushless DC
Max Voltage (VDC)	340
Back EMF (Vp/KRPM)	92.329
Electrical Time Constant (ms)	1.913
Max Continuous Current (Apk)	2.06
Peak Current (Apk)	4.13
Torque Constant (Nm/Apk)	0.763
Pin-to-Pin Resistance (Ω)	13.2
Pin-to-Pin Inductance (mH)	25.3
Pole Pairs	6

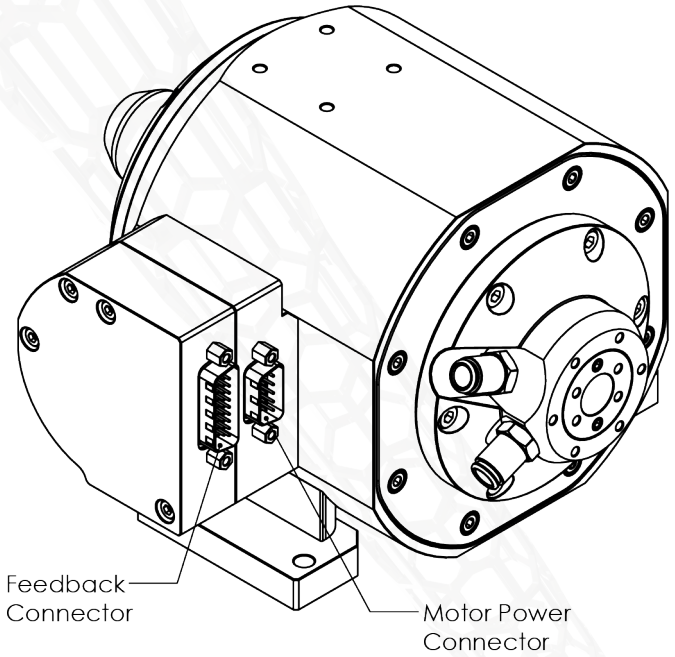
Feedback Specifications	
Supply Voltage (V)	5.0±10%
Supply Current (mA)	200
Encoder Type	Incremental
Encoder Output	Analog Option: 1Vpp, Sin, Cos, Idx; Differential Pairs Digital Option: TTL, RS-422, A, B, Z, Differential Pairs
Encoder Resolution	Analog Option: 11,840 Periods/Rev Digital Option: 1,184,000 Counts/Rev
Hall Switch Output	CMOS
Hall Switch Max Current (mA)	±20
Index Pulse	Once per Rev, Differential Pair

1040 CLASSIC ROAD | APEX, NC 27539
P: 919.577.6333
www.griffinmotion.com

Electrical Connections

Feedback Connector Pinout (DSUB26HD Male)	
Pin	Signal
1	+5V
2	Sin+/A+
3	Cos+/B+
4	IDX+/Z-
5	*
6	*
7	*
8	*
9	*
10	*
11	Sin-/A-
12	Cos-/B-
13	IDX-/Z-
14	*
15	*
16	*
17	*
18	*
19	GND
20	Hall A
21	Hall B
22	Hall C
23	*
24	*
25	*
26	*
*Reserved	

Motor Power Pinout (DSUB9 Male)	
Pin	Signal
1	GND
2	*
3	*
4	*
5	*
6	Phase A
7	Phase B
8	Phase C
9	*
*Reserved	



1040 CLASSIC ROAD | APEX, NC 27539
P: 919.577.6333
www.griffinmotion.com

STS-110 Ordering Options	
Product Series	STS-110: Small Tube Spindle, 110mm Profile
Encoder Options	Analog: 1Vpp, Sin, Cos, Idx; Differential Pairs, 11,840 Periods/Rev Digital: TTL, A, B, Z; Differential Pairs, 1,184,000 Counts/Rev
Connector Box	Left Side (As Shown on Pages 1, 2, 3) Right Side
Fasteners	Black Oxide (Recommended for Dry Applications) Stainless (Recommended for Wet-Cutting Applications)
Collet Compatibility	Type D: Up to 8.0mm Tubing, Recommended Manufacturer: Levin Lathe 1C: Up to 6.35mm Tubing, Recommended Manufacturer: Forkhardt Hardinge
Example Part Number	30145 (All STS-110 Spindles are Assigned 5 Digit Part Numbers)

Collet Operation

Apply a thin layer of anti-seize to the external tapered surface of the collet. Thread the collet fully into the spindle until the front face of the collet is flush with the spindle nose.

Supply compressed air to the appropriate port using 6 mm OD tubing. Increasing air pressure will increase clamping and release force. Exhaust air will exit through the non-pressurized port and must be vented to atmosphere.

Due to the non-contact design of the rotary union, a small amount of air leakage at the rear of the union is normal.

