

RPS100

*High Speed
Pneumatic Sander*



Manual

PUSHCORP

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1.0 General Overview

The *PushCorp, Inc.* RPS100 High Speed Pneumatic Sander enables light duty robotic sanding in a compact form factor. This product is designed to be mounted onto a PushCorp force compliance device making this system a perfect fit for small industrial or collaborative robots. It's housing is compatible with a wide variety of drop-in motors, which allows the user to select a setup that will best fit their process. For example, PushCorp RPS100 products can be purchased with a drop in motor for a 1-1/4", 3", 5", or 6" diameter pad, or a 3"x4" rectangular pad. These motors are powered with an external air supply that will generate roughly ¼ hp [186 W].

2.0 Installation

2.1 Air Connections

All PushCorp Pneumatic Sanders require a filtered, lubricated air supply, with a maximum pressure of 90 psi (6.2 bar). If the supply air pressure is too low then the unit will be unable to reach full speed (10,500 RPM). Exceeding the maximum air pressure could result in permanent damage to the pneumatic motor. The pneumatic supply system should be configured as shown in the Figure below; the thread located on the RPS100 is Rc1/4. A manual or electrically operated valve may be used to turn on and off the pneumatic motor. An electrically operated pneumatic valve is normally used in an automated workcell.

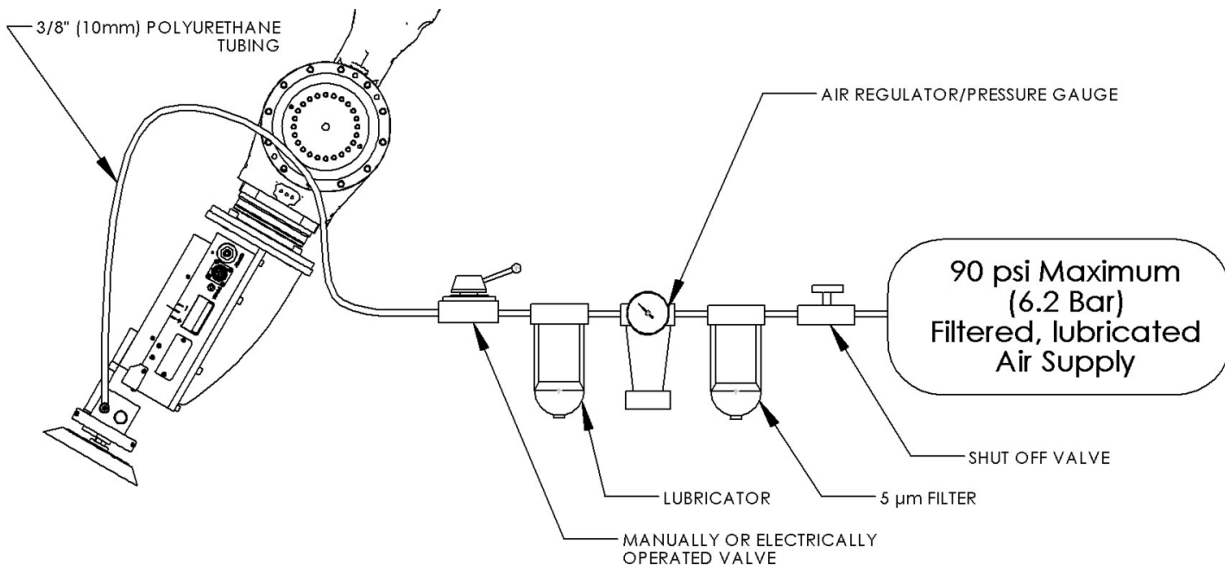


FIGURE 1: PNEUMATIC CONNECTIONS

2.2 AFD Mounting

The RPS100 can be mounted onto a PushCorp force compliance device to allow for consistent force while sanding. The RPS is mounted to the AFD310 & AFD70 via the parallel mounting kit supplied by PushCorp (ASM03240), and the AFD120 & AFD60 via the parallel mounting kit supplied by PushCorp (ASM04064).



FIGURE 2: RPS100-AFD310-2 MOUNTING CONFIGURATION

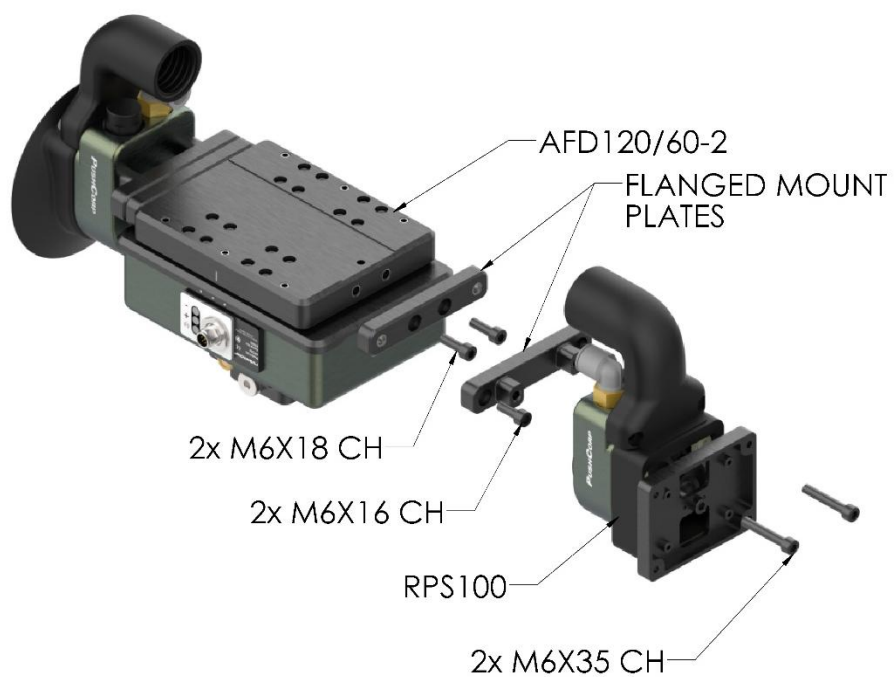


FIGURE 3: RPS100-AFD310-2 MOUNTING CONFIGURATION

2.3 Dust Collection

The RPS100 has the option to be used with or without a dust collection system. The dust shield that is sold with each RPS100 is equipped with a removal tab; for shrouds purchased before October 2024, once this tab is removed it cannot be replaced. The order of operations for the dust collection set up is:

- 1) Remove tab from dust collection shield
- 2) Fasten the dust collection adapter to the RPS100 housing with 2x M5x28 CH
- 3) Fasten the dust shield to the RPS100 housing with 4x M4x10 CH

Please refer to the schematic below for proper set up procedure.



FIGURE 4: DUST COLLECTION

For dust shrouds purchased after October 2024, a removable tab has been designed to allow for the user to alternate between RPS100 setup configurations with and without dust collection.

Please refer to the schematic below for proper set up procedure.



FIGURE 5: DUST COLLECTION TAB REMOVAL

2.4 Dust Collection Hoses

Once the RPS100 is assembled for dust collection, it can be used with the following 3M tubing:

TABLE 1: DUST COLLECTION HOSES

Part No	Description	Inner Diameter	Length
28730	Black, Anti-Static	1"	4ft
28301	Red	1"	6 ft
28393	Red	1"	60 ft



FIGURE 6: DUST COLLECTION SETUP

3.0 Calculating Speed – PSI to RPM

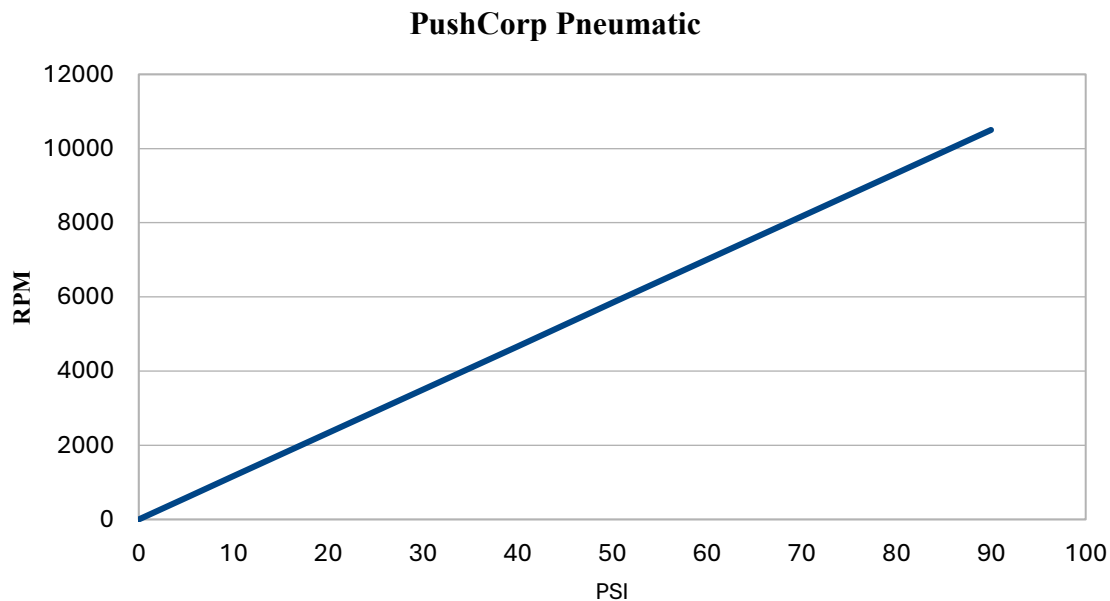
Enter desired RPM to calculate the corresponding PSI needed.

$$.00857 * \text{RPM} \approx \text{PSI}$$

Example: $.00857 * 10500 \text{ RPM} \approx 90 \text{ PSI}$

****Please note speeds may vary based on the motor. A vibrating reed tachometer can be used to accurately measure the motor speed****

TABLE 2: PSI vs RPM RELATION



4.0 Maintenance

4.1 Drop-in Motors

The RPS100 uses the same housing across all orbit diameters for the 3", 5", & 6" pad sizes; this allows the user to swap drop in motors to meet their application needs. The 1-1/4" disc and 3"x4" pad utilize a similar housing with the same external form factor, but is not compatible with the 3", 5", & 6" drop in motors. The table below lists the corresponding PushCorp P/N to the drop in motor for the particular disk size and orbit diameter:

TABLE 3: CIRCULAR DISC - DROP-IN MOTORS

Orbit Diameter	1-1/4" Disc	3" Disc	5" Disc	6" Disc
3/8"	N/A	N/A	PAR04467	PAR04647
3/16"	PAR05686	PAR04648	PAR04649	PAR04650
3/32"	N/A	PAR04651	PAR04652	PAR04653

TABLE 4: RECTANGULAR PADS - DROP-IN MOTORS

Orbit Diameter	1-1/4" Disc
1/8"	PAR05686

4.2 Drop-in Motor Removal and Installation

To remove the drop in motor from the housing it is advised to use the 3M installation tool - P/N: 7000119289. First, align the tool with the flats on the drop in motor and loosen the nut. Once this is loose, you can pull the drop in motor out by hand.

To properly install the drop in motor, align the dowel pin on the back of the drop in motor with the hole located at the bottom of the RPS100 housing; this allows for proper orientation of the drop in motor with the air inlet and exhaust port. Next, use the installation tool to thread the drop in motor into the housing. Please refer to the figure below for further details regarding motor installation/removal.



FIGURE 7: DROP-IN MOTOR INSTALLATION/REMOVAL



FIGURE 8: DROP-IN MOTOR GROOVE ALIGNMENT

4.3 Oil Lubrication

Proper oil lubrication is essential for motor function and life span. Oil lubrication can be applied to the RPS100 motor through a sight glass via a lubrication device that atomizes the oil to the air stream, or through manual application. The Numatic Series 42 Lubricator or the Norgen L17 Lubricator are compatible auto lubricating devices that can apply the recommended 1.8 drips/min lubrication rate. For manual lube application, the recommended rate is 5-6 drops/8 hour shift. Please refer to the table below for compatible oil lubricants.

TABLE 5: COMPATIBLE OIL LIST

Manufacturer	Product	ISO 3448 Viscosity Number
British Petroleum	Energal HLP10	10
Castrol	Hyspin AWS10	10
Mobil	Velocite Oil No. 6	10
Shell	Tellus R10	10
Total	Azolla ZS10	10
Century	P198	15
Duckhams	Zerflo 15	15
Elf	Elfolna 15	15
Esso	Nuto H15	15
Mobil	Velocite Oil No. 8	15
Rocol	MO-4	15
Mobil	Velocite Oil No. 10	22
Shell	Tellus 22	22

5.0 Technical Specifications

Category	Specification
Power	0.24 hp (179 W)
Speed Range	60-10,500 RPM
Tool Weight	4.0 Lb (1.81 kg)
Supply Air	90 psi (6.2 bar) Maximum (While Running)
Airflow Rate	17 SCFM (481 LPM)
Recommended Airline Size	Minimum: 12 mm
Recommended Maximum Hose Length	25 feet (8 meters)
Auto Lubrication Rate	1.8 drip/min.
Recommended Lubricator	Numatic Series 42, Norgren L17
Manual Lubrication Rate	5-6 drops/8 hour shift
Recommended Lubricant	3M™ Air Tool Lubricant PN 20451 Fuji Kosan FK-20 Mobil ALMO 525
Internal Threads	1/4-20 for 3" orbit 5/16-24 for 5" and 6" orbit

Specifications subject to change without notice.

Fastener Tightening Torque Specs					
Fastener Size	Torque			Minimum Depth	
	in.-lbs.	ft.-lbs.	N·m	in.	mm
M4 x .7	50	4.2	5.6	0.17	4.3
M5 x .8	85	7.1	9.6	0.21	5.3
M6 x 1	140	11.7	15.8	0.25	6.3
M8 x 1.25	348	29.0	39.3	0.33	8.4
M10 x 1.5	600	50.0	67.8	0.41	10.5

6.0 Preventative Maintenance Schedule

It is highly recommended to adhere to the preventative maintenance schedule in order help extend the longevity of the specified PushCorp, Inc. equipment. Failing to do so could cause a loss in functionality as well as a decrease in product life.

<u>PUSHCORP, INC. SPINDLES</u>			
Maintenance	Weekly	Monthly	3 Months
Check Supply Air		X	

Agency/Organization: _____

Date Completed: _____