



DOUBLE E
Engineering Excellence



USER AND MAINTENANCE MANUAL FOR EE250 PNEUMATIC BRAKE



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USER'S GUIDE AND MAINTENANCE MANUAL FOR EE 250 PNEUMATIC BRAKE

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A. INTRODUCTION

A.1 Introduction

We thank you for choosing Double E Company EE250 brakes and are pleased to have you as a customer. We are confident that our product will provide you with years of satisfaction. For optimal performance, please use and maintain your brakes as outlined in this manual. We recommend that you read this manual carefully and refer to it whenever a problem may arise. Our customer service department is always available for advice and assistance. This manual describes the installation, operation, usage precautions, and detailed information about this product's accessories and options.

The product must be used according to the instructions. Keep this manual as a reference for the future.

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Double E Company refuses any responsibility in case supplied brakes are set at work before the machine where they are going to be fitted has been declared to be in accordance with provision of the law 89/392 and its subsequent modifications.

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A.3 Important

- Don't use this product before having read and understood the whole content of this manual.
- Double E Company has done everything possible to make this manual complete and correct.
- Please transfer this manual to subsequent users if the product is lent or sold.
- Should this documentation or the warning labels applied on the device be lost or damaged, please request replacements from the supplying company.

A.4 Warranty

See general terms of sale.

B. SAFETY

B.1 Safety Instruction- Symbology

- For safe operation of the product, carefully read these safety instructions before use.
- Follow every WARNING and ATTENTION note, described in this section, since they are extremely important for safety.
- In this manual, warnings and are indicated by the following signal word conventions.



Indicates a potentially dangerous situation that, if not avoided, is almost certain to cause serious injury or death.



Indicates a potentially dangerous situation that, if not avoided, can cause moderate to serious injuries, or even death.



Indicates a potentially dangerous situation that, if not avoided can cause minor to moderate injuries or damage to the equipment.



Highlights information needed to ensure proper use of this device.

B.2 Safe Operation of Equipment



Double E Company designs and manufactures brakes with maximum safety in mind. Please take careful note of the following rules for safe operation:

- Double E recommends always using the EE250 brake carefully without abusing it. Avoid strong collisions and/or accidental impacts with foreign bodies. These collisions can cause damage.
- There is risk of injury or pinching from the rotation of this brake disc during unwinding. Guarding is integrated to the brake housing, but do not place fingers or foreign objects inside the housing or through the guards.
- Do not wear loose hair or clothing near rotating parts for risk of entanglement.
- Do not use the product in working conditions different from the customer quotation.
- Make sure all screws are fastened tightly before operation.
- EE250 brakes should not be operated in an Ex area or intrinsically safe area
- EE250 brakes should not be operated in an outdoor environment

All replacement parts on this brake should be original equipment supplied by the Double E Company

C. PRODUCT DESCRIPTION

C.1 Introduction

The EE250 brake has a 250mm (10 inch) diameter cross-drilled and ventilated disc. It can be configured with 1 to 6 caliper sets, either permanently plumbed or with manual sliding on/off valves. The bi-directional brake disc provides the same amount of heat dissipation when rotating in either direction. The brake disc can be provided in a variety of bore diameters and attachment methods to your unwind spindle. Standard retrofit packages are available for many popular unwind stands.

C.2 Theory of Operation

Air pressure supplied to the brake calipers acts on the brake piston inside the caliper. The pistons then press the brake pads against the brake disc. The normal force of pad against disc is proportional to the air pressure supplied and the pad coefficient of friction.

To maintain tension on an unwinding roll of material, brake torque must match the torque of the roll.

$$M_{\text{roll}} = (r_{\text{roll}})(T_{\text{web}})$$

Where M_{roll} equals brake torque in ft-lbs, r_{roll} equals roll radius in feet, and T_{web} equals total web tension in lbs.

Brakes are also used to stop a rotating roll of material. To calculate the required stopping torque for a given roll size rotating at a given speed, the following equation is used:

$$M_{\text{roll}} = \frac{(m_{\text{roll}})(D_{\text{roll}})(V)}{(94740)(t_{\text{stop}})}$$

Where M_{roll} equals brake torque in ft-lbs, m_{roll} equals roll mass in lbs., D_{roll} equals roll diameter in feet, V equals roll rpm, and t_{stop} equals stop time in seconds.

To find required brake torque, please refer to the torque vs. pressure curve found in section F.1 of this manual.



NOTICE

When quoting brakes, Double E engineers calculate required torques based on customer supplied application specifications. If the application changes, brakes may not work as intended. Please contact Double E customer service for any brake application review.

C.3 Nomenclature

Double E Company EE250 brakes are engineered and manufactured with a configurable number of caliper sets, fan and brake disc mounting in order to fit the customer's unwind stand. Below is the model code which can be used to order the brake configuration needed.

EE250.X.xxx.xxV

FAN OPTION

24V = 24VDC Fan

110V = 110/220 VAC fan

Empty = Grill with no fan

Disc Bore Option

B00 = Rough Bore

B + Number = Plain bore in mm

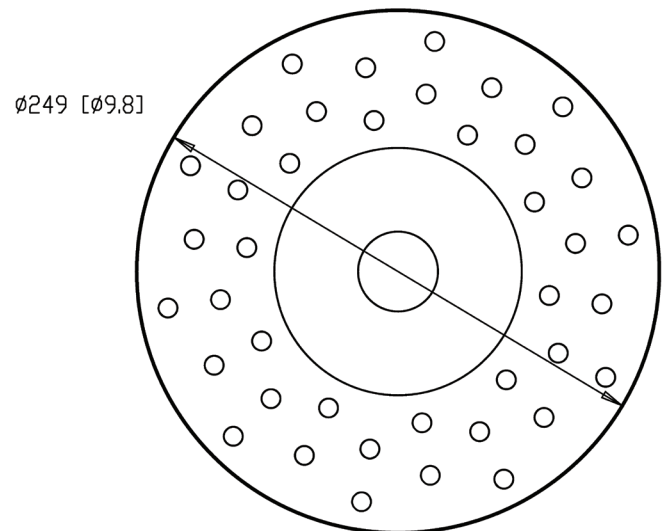
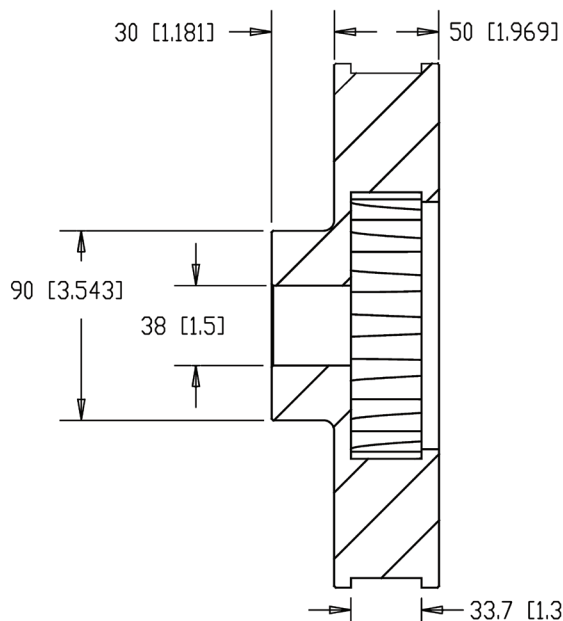
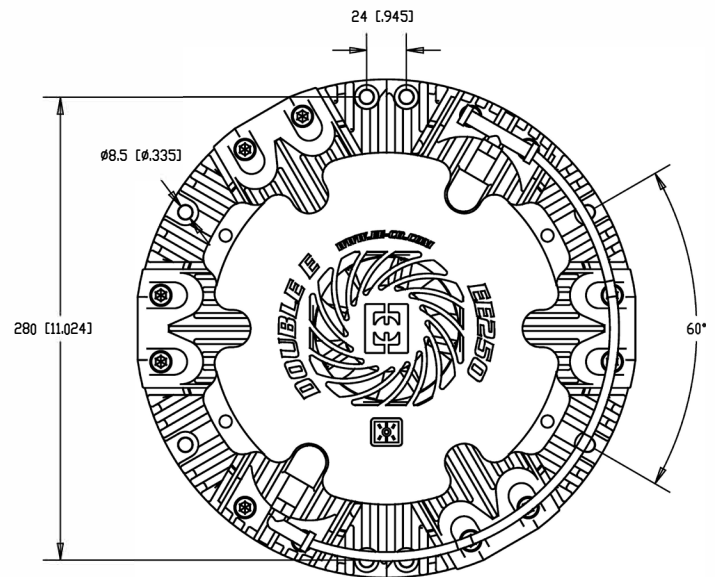
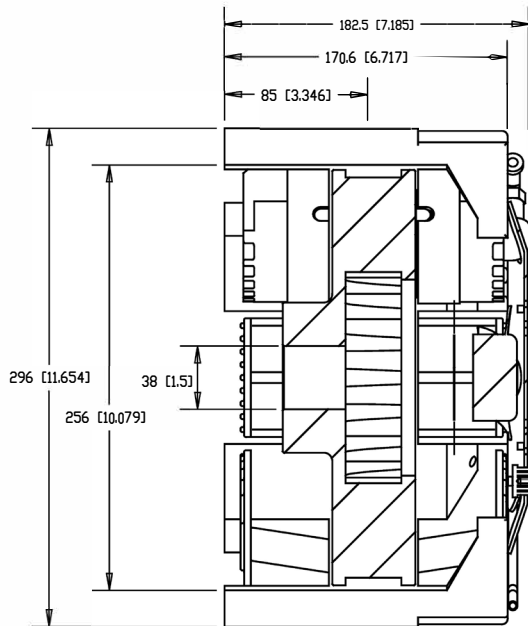
K + Number = Bore in mm with std. keyway

S + Number = Bore in mm with special features (see description)

Number of Caliper Sets (1-6)

C.4 Dimensions

Below are the brake housing dimensions and brake disc dimensions for the EE250.
Dimensions in millimeters and [inches]



Note Maximum bore on disc is 75mm[2.95]

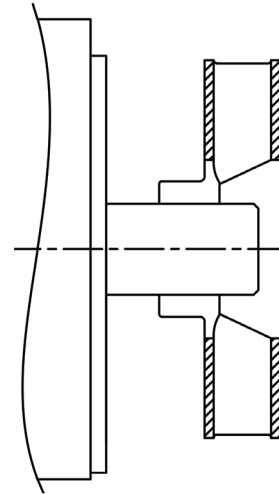
D. MOUNTING INSTRUCTIONS

D.1 Install Disc



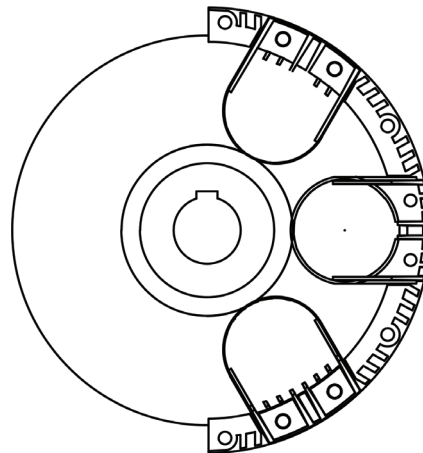
Lockout and tagout the machine before installation.

Slide the brake disc on the unwind spindle. Install tapered lock, keyway or other fixing means. Do not yet lock the disc into position.



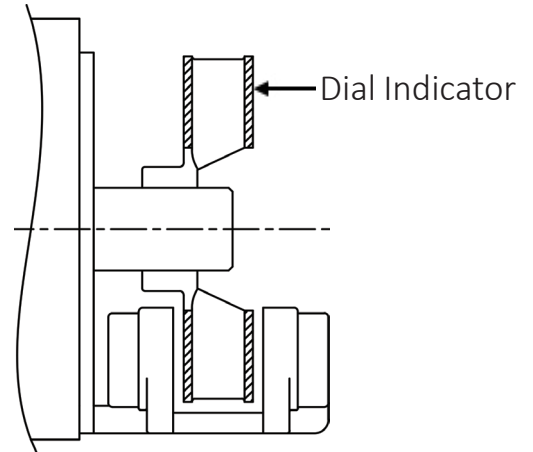
D.2 Install Half Housing

Secure the half housing to the machine frame or adapter plate. Fasten with (4) M8 x 100mm SHCS to a torque of 16 ft-lbs.



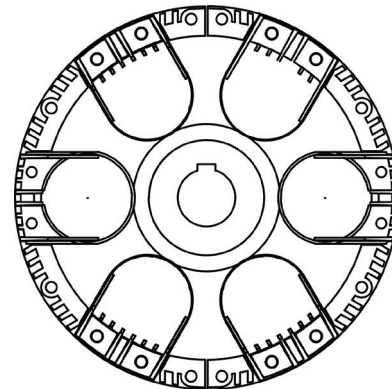
D.3 Align and Secure Disc

Using a feeler gauge, center the disc between the inner and out brake pads. Lock the disc in place using taper lock, set screw, collar or other method. After securing, check with feeler gauge again and adjust if necessary. Using a dial indicator indicate the disc face runout while rotating the disc by hand. Deviation should not exceed $\pm 0.1\text{mm}$ or $\pm 0.004''$.



D.4 Install Second Half Housing

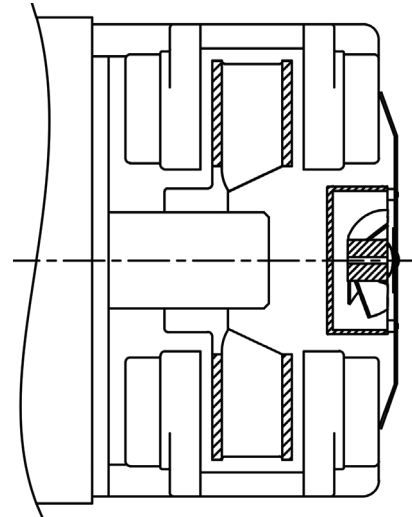
Install the second half housing as explained in D.3



D.5 Install Fan or Grill

Install the fan with cover or wire grill on the face of the half housings using (4) M4 screws.

Wire the fan plug as shown in section F.3. Verify the fan is blowing air into the brake.



E. PRODUCT SPECIFICATIONS

E.1 Technical Specifications



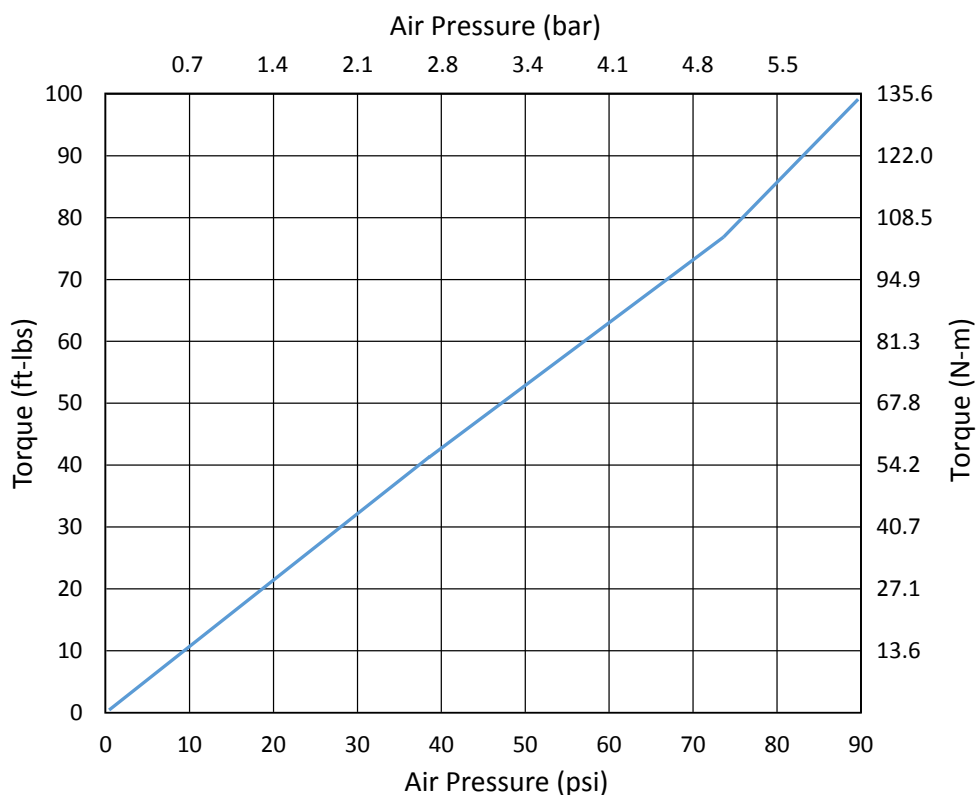
WARNING

Do not exceed the operating limits as specified on the quotation and/or approval drawing.

This voids the guarantee and can cause serious injury

Air Pressure Range	0-6 bar [0- 90 PSI]
Maximum Speed	2500 RPM
Maximum Torque	135.5 Nm [100 ft-lbs] per caliper set
Heat Dissipation with 24 VDC Fan @ 2.1 Amperes	4.47 kW [6 HP] @ 100 RPM
Heat Dissipation with 110/220 VAC Fan @ 12 Watts	3.5 kW [4.7 HP] @ 100 RPM
Heat Dissipation without Fan	1.1 kW [1.5 HP] @ 100 RPM

E.2 Torque vs. Pressure Curve



E.3 Fan Wiring

Pin 1 = 85-230 VAC

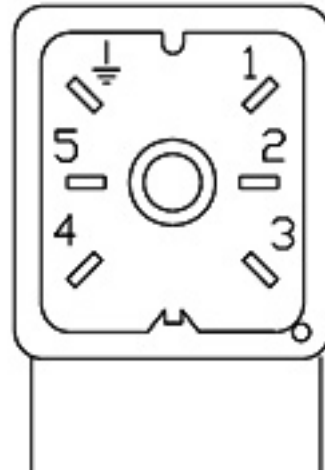
Pin 2 = N.C.

Pin 3 = N.C.

Pin 4 = +24 VDC

Pin 5 = 0 VDC

Pin 6 = 85-230 VAC



Wire End Connector Shown

F. MAINTENANCE

F.1 Routine Inspection

Perform routine inspection once per shift. The brake fan cover, housing and disc stays mounted on the machine for routine maintenance.

- Check air lines are connected and fittings are free of leaks
- Check the proper number of caliper slide valves are engaged
- Check fans are running and fan cover is free of dust / debris (if applicable)
- Visual inspection looking above brake that disc is centered and rotating evenly

F.2 Weekly Maintenance

Perform routine maintenance once per week or immediately if routine inspection uncovers a problem. The brake housing and disc stays mounted on the machine for routine maintenance.



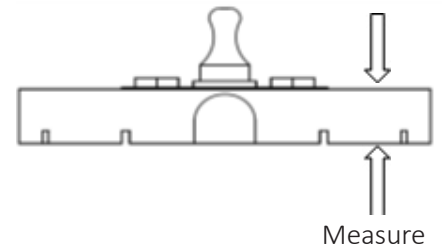
Danger of cutting injury. Lockout and tagout machine before performing maintenance.

- Perform all routine inspection step F.1 above
- Remove fan cover or protective grille
- Visually inspect brake disc or surface damage
- Use compressed air to blow any dust out of the disc, calipers and ventilation holes of the brake housing
- With flashlight, visually check the thickness of brake pads
- Check brake disc is properly locked to the spindle
- Check brake housing mounting bolts are tight
- Check caliper mounting bolts are tight

F.3 Internal Inspection and Maintenance

Perform internal inspection and every 6-12 months.

1. First perform all routine inspection and maintenance steps in sections F.1 and F.2
2. Disassemble the brake per instructions found in section H.2 of this manual. Leave brake disc mounted to spindle.
3. Inspect brake pads for wear. Using a calipers measure thickness in location shown. Replace pads at 5mm, or if uneven wear, when the thickest side is 6.5mm.
4. Check to make sure the piston can smoothly slide back and forth inside the caliper and rebuild caliper with kit (p/n 001-A9127E) if needed.
5. Check inside walls of caliper bore for wear or damage, replace caliper assy if needed.
6. Visually inspect brake disc for surface damage or cracks.



WARNING

Replace cracked discs immediately. Danger of injury from cracked discs.

7. Clean the disc with compressed air, solvent and a scrubbing pad.
8. Measure the brake disc thickness with calipers. A new disc measures 50mm, and disc needs to be replaced if thickness reaches 46mm.
9. Check disc for smoothness. If an extreme waviness is found, machine both disc faces. Be sure to remove as little material as possible to keep a thicker brake disc.

Note: Turned disc faces will cause reduced brake pad life.

10. Replace any other damaged or worn parts.

F.4 Non-Routine Maintenance

If the product is used under normal conditions and inspected regularly, it is rare that any extraordinary maintenance will be needed. In the event that it is necessary, it is recommended that you contact Double E Company technical support team at 508-588-8099 ext. 5.

F.5 Decommissioning

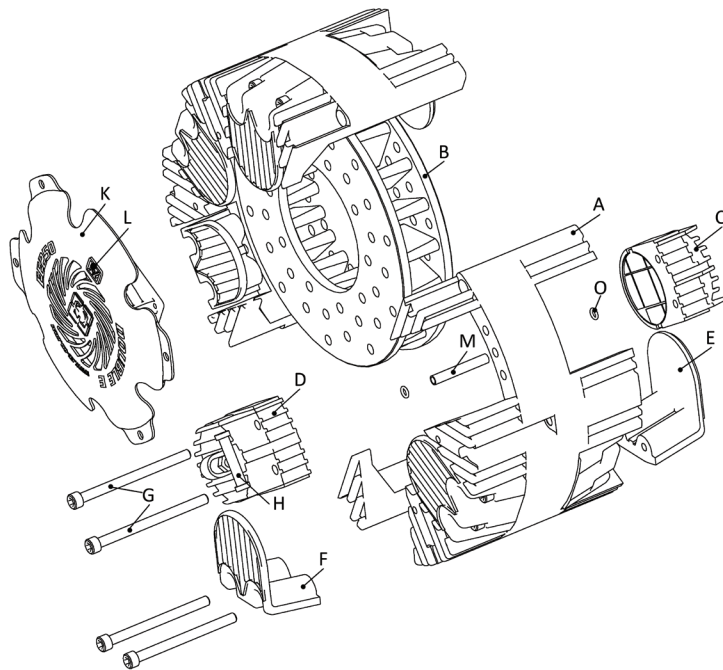
If the product is withdrawn or removed from service, it is necessary to make all at-risk components harmless through proper demolition. These operations must be carried out in accordance with the provisions existing in the nation where the product will be disposed.

G. TROUBLESHOOTING

Low or no brake force Too much brake force Unable to control brake force especially at or near core Brake squealing loudly Brake runs too hot Disc does not spin freely at 0 Cooling fan not working Instructions: 1. Locate problem along top left 2. Check for causes and solutions in numerical order in the corresponding column below.								
Problem							Possible Cause	Corrective Measure
5							Excessive pressure damaged calipers	Repair caliper and ensure air supply is within specified limits
4		2					Brake pads work beyond limit	Replace brake pads
		6	7	6	4		Disc damaged	Check disc for grooving or scoring. Replace if necessary
			3	2			Application generates more heat than the brake can dissipate	Contact Double E to confirm specifications and configuration
3							Low air supply pressure	Insure clean, dry, 90 psi air is supplied to the brake
	3	4	4	3	2		Pad not seated properly	Insure nubs on pad align with detents on piston and caliper housing
	2	3	5	4	1		Disc is not centered between pads	Remove 1/2 housing and check centering with feeler gauge
	4	5	6	5	3		Disc is not perpendicular to the mounting spindle	Measure run-out with dial indicator and correct to +/-0.1 mm or better
	1	1					Too many calipers active	Use caliper slide valve to disable some calipers
2							Too few calipers active	Use caliper slide valve to enable some calipers or add calipers to brake
1							Leak in air lines or fittings	Check and repair lines and fittings as necessary
							Caliper seal leaking	Replace with repair kit 001-A9127
							Too few calipers active	Use slide valve to enable additional calipers or add calipers to brake
			1	1		1	No power to cooling fan	Confirm correct supply voltage and plug wiring
			8	7		2	Fan Failure	Replace fan, insure proper supply
		8		8			Paper, dust or grease has built up on the housing blocking air flow	Confirm correct supply voltage and plug wiring
		7	2				Disc spinning on spindle	Check and securely fix disc to spindle

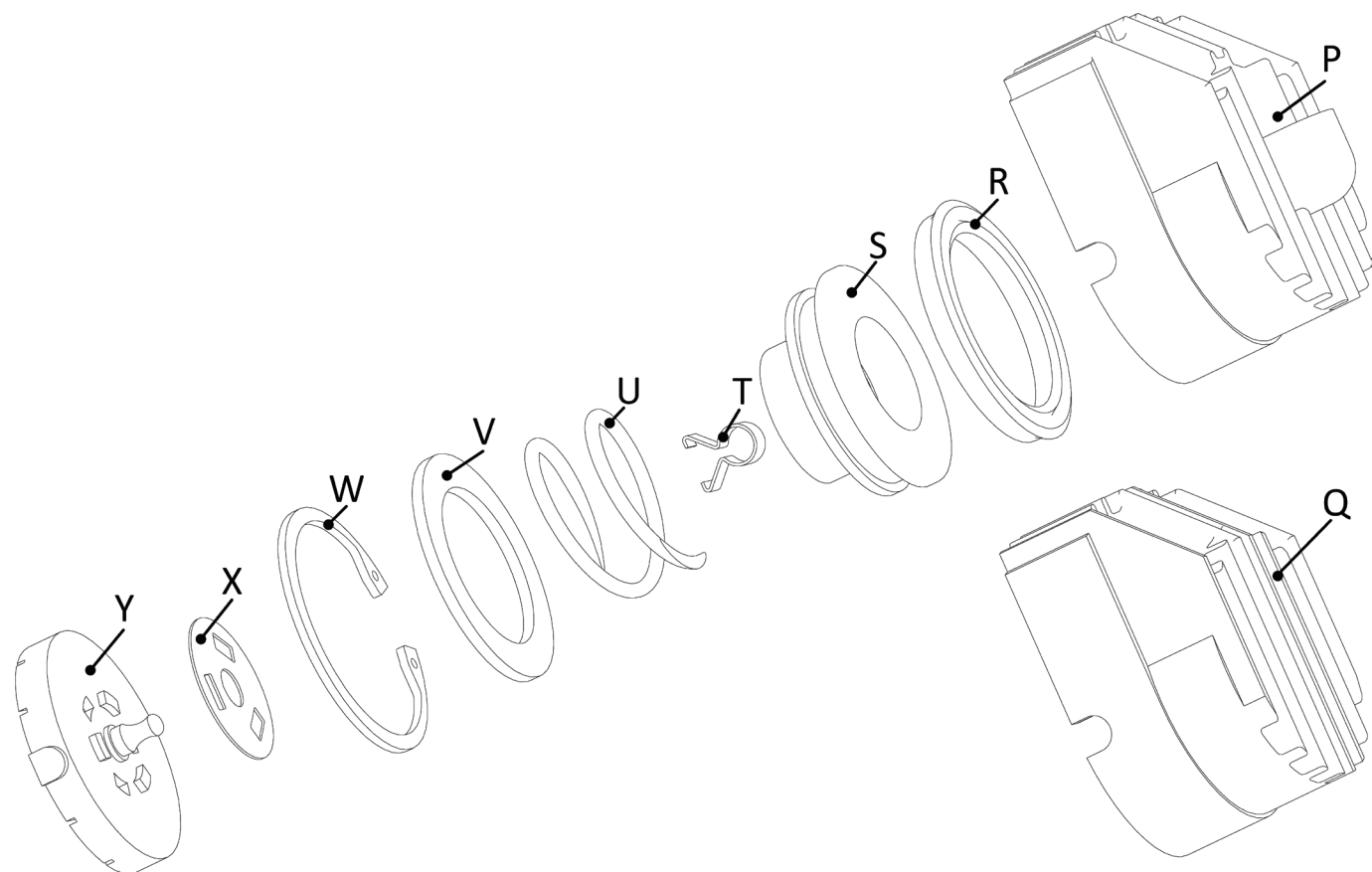
H. COMPONENTS

H.1 Brake Assembly Spares



KEY	PART NUMBER	DESCRIPTION
A	999-800-0131	Brake Half Housing
B	999-800-0104	Disc (Rough Bore)
C	999-800-0164	Inside Caliper
D	999-800-0163	Outside Caliper
E	999-800-0126	Inside Caliper Cover
F	999-800-0127	Outside Caliper Cover
G	999-402-1217	Caliper Fixing Bolts
H	999-800-0117	Pneumatic "T" fitting with Slide Valve
Not Shown	999-800-0116	Pneumatic "L" fitting with Slide Valve
Not Shown	999-800-0179	Grill
K	999-800-0462/0466	Fan and Cover(24DC/110AC & 220AC)
L	999-800-0137	Plug (Wire End)
M	999-800-0157	Air Tube
O	999-800-0119	O-Ring

H.2 Caliper Assembly Spares



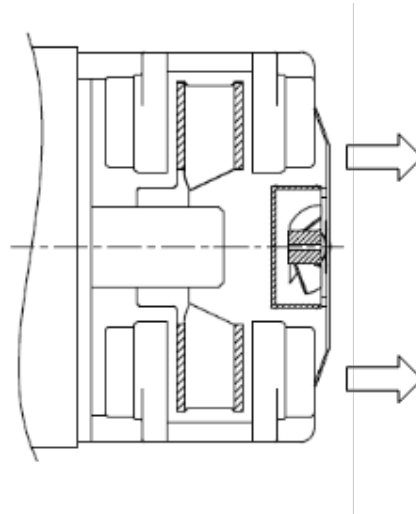
KEY	PART NUMBER	DESCRIPTION
P	NA	Outside Caliper Housing
Q	NA	Inside Caliper Housing
R	999-800-0114	Viton Lip Seal
S	999-800-0136	Piston
T	999-800-0106	Pad Retaining Spring Clip
U	999-800-0135	Piston Spring
V	999-800-0113	Spring Ring
W	888-800-0134	Snap Ring
X	999-800-0441	Antivibration Ring
Y	999-800-0322-BOX	Brake Pad (Box of 12)
-	001-A9127E	Repair Kit (R thru W)

H.3 Brake and Caliper Disassembly

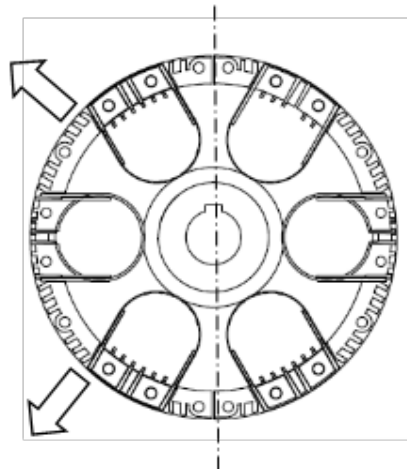


Lockout and tagout the machine before performing any maintenance tasks.

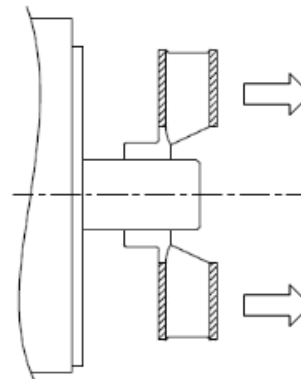
Remove the fan or grill from the brake front.



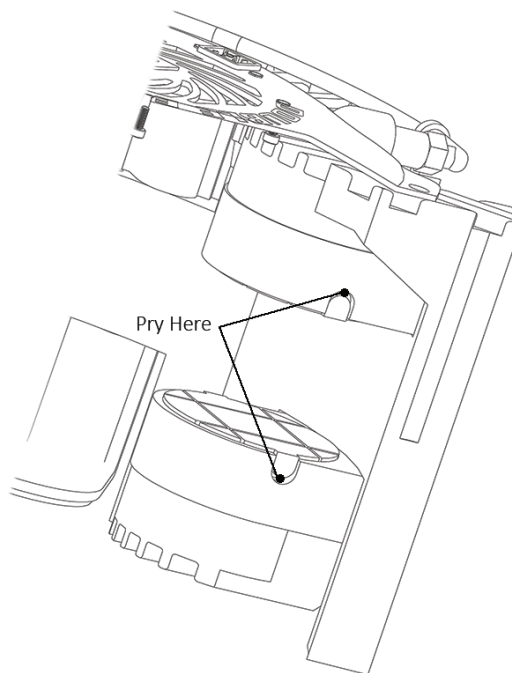
Remove the 8 M8 x 100 SHCS securing the brake halves. Slide the brake halves away from the disc.



Loosen the taperlock, set screws or clamp collar fixing the disc to the spindle. Slide the disc off the spindle.



To remove the brake pads, pry a flat head screwdriver between the pad and caliper at location shown. Slide the screwdriver in toward the middle of the pad and twist. The spring clip holding the pad in place will open and the pad will release.



I. MANUFACTURERS DECLARATION

Buyer shall afford Double E Company prompt and reasonable opportunity to inspect any goods as to which a claim is made and Double E Company shall have the right of final determination of the cause and existence of any defect under this warranty. No material may be returned to Double E Company without Double E Company's express prior permission in the form of a return authorization number.

Correction of non-conformities, in the manner and for the period provided above, shall constitute fulfillment of all liabilities of Double E Company to Buyer with respect for the goods, whether based on contract, negligence, strict tort, or otherwise.

J. RETURNS

Warranty and non-warranty returns are initiated through the issuance of a return material authorization (RMA) number from an authorized Double E Company sales or service/support representative. This can be obtained by calling Double E Company in West Bridgewater, MA at 508-588-8099.

The RMA number should be clearly evident on the shipping label and/or invoice and the package should be shipped freight prepaid. If questions arise or if additional information is required, please call the Inside Sales department at 508-588-8099

Product returns should be sent to the address below:

Double E Company, LLC
319 Manley Street
West Bridgewater, MA 02379
ATTN:
RMA # _____

[illegible]

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