

Back Strap Removal and
Preparation Tool
Operating and Parts Manual

Model# BSRT

Manufactured by:
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Table of Contents

Page 1.....	Description and Specifications
Page 2.....	Safety and Maintenance
Page 3.....	Safety and Maintenance
Page 4.....	Operating Instructions
Page 5.....	Operating Instructions
Page 6.....	Parts List
Page 7.....	Parts List
Page 8.....	Reference DWG. No. BSRT-1
Page 9.....	Reference DWG. No. BSRT-2
Page 10.....	Reference DWG. No. BSRT-3
Page 11.....	Reference DWG. No. BSRT-4

Note: Equipment manuals and price sheets are available for download on our website:
www.trienq.com

Back Strap Removal and Preparation Tool

This unit was designed and developed by Triangle Engineering, Inc. Hanover, MA to provide a rapid and more uniform high quality surface preparation of face, root, and side bend specimens prior to bending.

The use of this equipment will eliminate the inconsistency and damaging results often experienced with present "hand held" tools by inexperienced craftsmen.

The tool is pedestal mounted, from floor surface, and completely equipped to civer al bend specimens in both pipe and plate, eliminating the need for bench areas, vises, air supplies, and other hand held tools normally required.

The unit is manufactured with an integral air exhaust system to be piped outside of the work area.

Safety guards with spark deflectors have reduced the concern for personal injury to both operator and other personnel in a congested work area.

The Back Strap Removal Tool requires a minimum floor area of 31" x 45". The unit **DOES** require **ATTACHMENT** to the floor. The machine will be wired for 230v 1 PH. 15A.

Specifications

1 ½ H.P., 3450 RPM, 230v, 1 PH., 6.4A, 60HZ Wheel drive motor

1/3 HP, 1725 RPM, 230v, 1 PH., 3.3A, 60HZ Blower motor

Wheel brake spring set 6 lb., 230v

24v LED workspace light

8" Diameter x 1" x 5/8" grinding wheel

48" overall height from floor

45" Front to rear – 31" wide

Weight: 420 lbs. Shipping weight 500 lbs.

Safety

Safety glasses, face shield and gloves at a minimum must be worn at all times when operating this equipment. Keep your hands, tools or any foreign objects off the table and away from all moving parts during operation.

The lockout tag out main disconnect switch is located on the control panel box on the right lower side of the machine.

DANGER!! Always disconnect from the electrical power source and lockout prior to servicing this unit.

This machine is also equipped with an emergency stop (E-STOP) located on the start/stop switch box and a safety interlock switch for the hinged Lexan guard. When the E-STOP is pressed or the hinged guard is opened, the machine is designed to automatically disconnect power to the wheel motor, blower motor and engage the wheel brake. To restart the machine, ensure the wheel is clear and secure prior to closing the guard or reset the E-STOP by twisting the E-STOP button clockwise. The machine will now start when the start button is pressed.

Cleaning and Maintenance

The BSRT requires a minimum of maintenance, however, good housekeeping and a few routine checks will ensure years of uninterrupted service.

Grease

A shot of grease to the flange bearing (#11) every three months during normal use should be sufficient, but care should be taken not to pressurize this bearing with excessive lubrication.

A couple pumps of grease in fitting (#28) on tubular “tee” weldment and the fitting on the spherical flange bearing (#35) every month should suffice. Motor bearings are pre-lubricated and sealed for the life of the motor.

Wheel Brake Adjustment

- 1) Turn off and lockout power switch (#2).
- 2) Remove Grinding Wheel. (**Left Hand Thread #17**).
- 3) Using a 3/16" hex key, remove the three 1/8" pipe plugs (#5) to expose the access holes. They are located 120° apart around the bearing flange. (#11) Then follow the brake manufacturer's instructions.
- 4) Replace 1/8" pipe plugs to seal off excess holes.

Housekeeping

Brush or vacuum the grit off the table and empty the grit receptacle (48) periodically, insure the tube & air exhaust are free flowing.

Wheel Dressing

Occasional wheel dressing may be required to maintain a free cutting surface on the grinding wheel. First, ensure the grinding wheel is properly tightened (left hand thread) and the specimen clamp is away from the wheel. Close the hinge guard with curtain (#39), engaging the safety interlock (BS53), the wheel dresser should make hand held contact at the 9 o'clock position on the grinding wheel face. A light, but firm pressure will suffice while moving up and down on the face of the wheel. Keep dresser in contact with the wheel face. **Gloves, safety glasses and face shield at minimum must be worn at all times.**

Electrical Overload (Reset)

In the event of an electrical overload the thermal overload relay will trip cutting off power to the wheel motor, exhaust blower and the brake will close. The overload will reset automatically after it cools down.

Operating Instructions

To process a 6" to 10" long side bend specimen.

(Note that the factory setting is for an 8" long specimen.)

- 1) **Leather gloves, safety glasses and face shield at a minimum must be worn at all times.**
- 2) Motor switch must be in the **off position and locked out.**
- 3) The adjustable flange bearing can be adjusted to three positions 6" – 8" – 10". Measure your specimens, check flange bearing position setting and adjust if necessary as follows;
 - A) Remove the two socket head screws.
 - B) Slide the flanged bearing into the correct position.
 - C) Place both socket head screws into the flange and tighten securely.
- 4) Open Lexan safety guard.
- 5) Rotate the tee handle, (Specimen clamp set screw up) in the tee handle hanger.
- 6) Select a specimen and the bottom one end into the center line of the tee handle clamp (#31). Using the hex tee wrench tighten the clamp screw securely on to the specimen.
- 7) Grasp the inside specimen clamp (#30) in one hand and bottom the other end of the specimen into the center clamp. Using the hex tee wrench tighten the clamp screw securely on to the specimen.
- 8) Close Lexan safety guard, revolve specimen to present backing strap segment toward peripheral face of grinding wheel. Remove lock out, then snap motor switch on. (#2)
- 9) Gripping tee handle control bar (#32) with both hands, swing specimen into contact with grinding wheel and commence a short back and forth motion, alternately pushing and pulling against front and rear spring load compensators, (#18) constant pressure should be maintained against grinding wheel face during lineal movement. Check clamp screws periodically to insure tightness. When backing strap surface recedes to a close proximity of the specimen surface, a longer lineal stroke with a less contact pressure should be employed to accomplish a gradual and smooth blending of the entire surface. Rotate tee handle 180° to complete opposite side of specimen.

Operating Instructions (continued)

- 10) After a satisfactory blend has been accomplished, revolve control bar 45° each side of horizontal plane, and grind radius along each of the two edges, within the 180° bend radius area.

The same procedure is used on 1-1/2" wide face and root specimens in both pipe or plate tests, except when removing the face weld on a pipe strap, a gradual rolling motion is employed with each successive push, pull stroke on the control bar to accomplish a blend with the O.D. surface of pipe strap. When a small diameter pipe, root bend strap is being tested, it is recommended that the face of the wheel be contoured and crowned, to prevent corners of the wheel from scoring the pipe strap on the I.D. This can be accomplished with a hand held dressing stone, or a wheel dresser. Occasional redressing to maintain face contour will be required (see wheel dressing). A wide selection of grit sizes are available in the standard 8" x1" x 5/8" grinding wheel, but a A24 grit size proved to be the optimum for in field performance test work.

Back Strap Removal and Preparation Tool

Parts Schedule

<u>Detail Number</u>	<u>Part Number</u>	<u>Description</u>	<u>Quantity Req'd</u>
BS-Manual		Operating/parts manual for BSRT-15	1
1	BS01	12" sch 20 Column & 1/2" Base plate weldment	1
2	BS02-N	Start/stop/E-STOP switch	1
3	BS03	Wheel drive motor 1 1/2 HP 115/230V 3450 RPM	1
4	BS03A	Wheel brake spring set 6 FT LB. 230V	1
5	BS58/00	1/8" Pipe plug	3
6	BS06	1/2" Base plate	1
9	BS09	3/8-16 x 1-1/4" SHCS	4
9A	BS09A	Lock washer	1
10	BS10	10-32 x 3/8" Socket set screws (Arbor shaft)	2
11	BS11	Bearing flanged 1.5 Dia. Bore	1
12	BS12	3/8-16 x 1-7/16" O.A.L. SHCS (Bearing)	4
12A	BS12A	3/8" Lock washer	4
13	BS13	Arbor shaft 5/8" DIA.	1
14	BS14	Lower wheel flange	1
15	BS15	8 x 1 x 5/8 AH A24-PSL Grinding wheel	1
N/S	BS15A	8 x 1 x 5/8 AH Grinding wheel for aluminum	1
16	BS16	Upper wheel flange	1
17	BS17	5/8-11 LEFT HAND Hex nut (Wheel jam nut)	1
18*	BS18	Spring (Carriage)	2
19*	BS19	Thrust washer	2
20*	BS20	Retaining snap rings	2
21*	BS21	Linear bearing seals	2
22*	BS22	Linear bearing	1
23*	BS23	Rear spring collar	1
24*	BS61/00	1/4-20 x 1/4" SHCS (Spring collars)	4
25*	BS62/00	Front spring collar	1
26*	BS26	Carriage shaft	1
27*	BS63/00	1/4-20 x 1-1/2" SHCS/Locknut	1
28*	BS64/00	Bearing housing w/ grease fitting & split pin	1
29**	BS66/00	Grit shield (Spring collar)	1

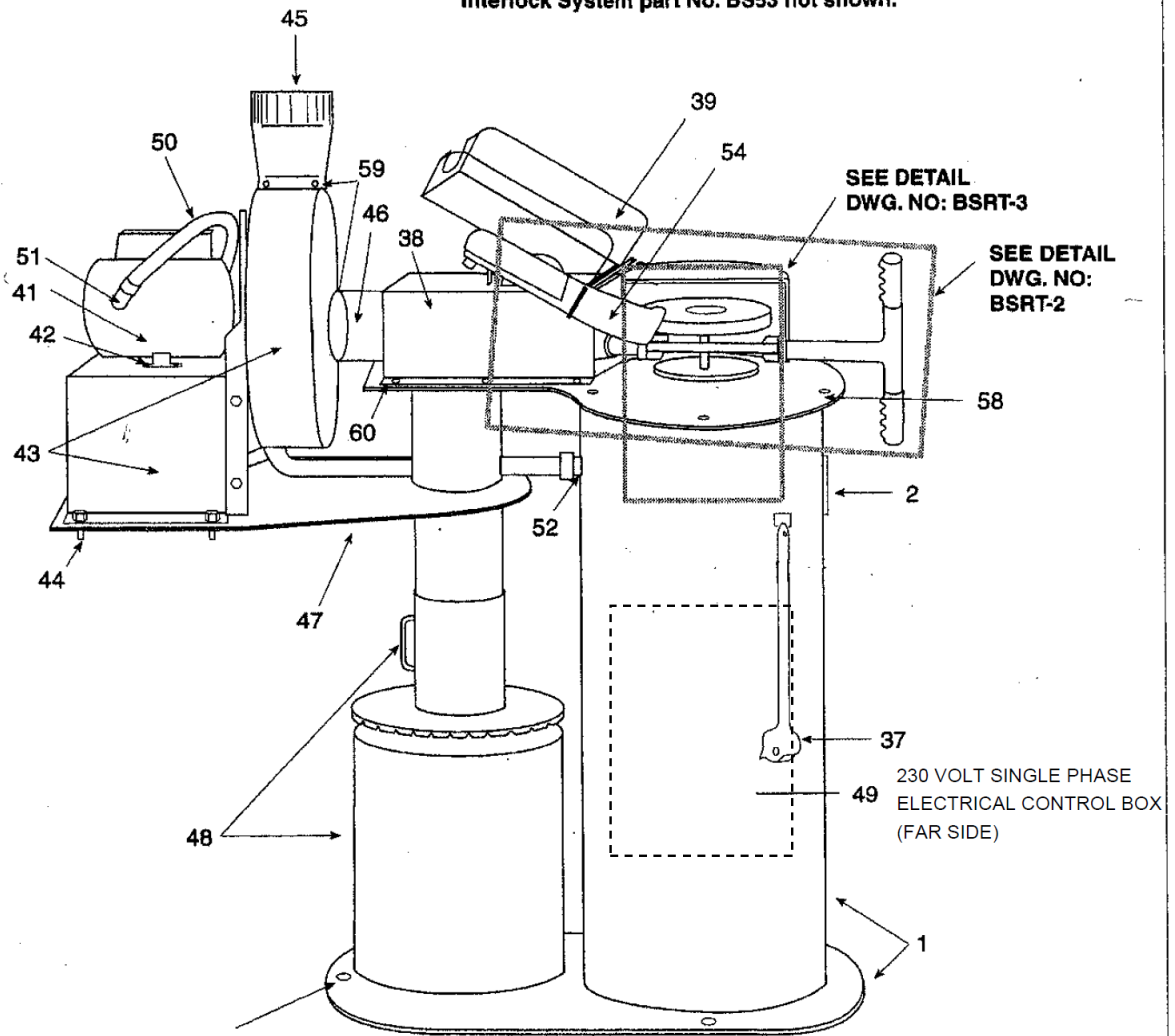
Parts Schedule (continued)

<u>Detail Number</u>	<u>Part Number</u>	<u>Description</u>	<u>Quantity Req'd</u>
N/S	BS65/00	Bearing housing grit deflector assembly	1
30**	BS67/00	Inside specimen clamp	1
31**	BS68/00	Tee handle specimen clamp	1
32**	BS69/00	Tee handle control bar w/ hand grips	1
33**	BS70/00	6-32 x 1/4" Pan head	2
34	BS71/00	Washer	1
35	BS72/00	Spherical adjustable flange bearing	1
36	BS73/00	Nut (5/8-11 HDH Thin Nyloc)	1
37	BS37	Desmond #21 wheel dresser	1
38	BS38	Wheel guard enclosure & suction plenum	1
39	BS39	Lexan hinged guard with curtain assembly	1
N/S	BS40	BSRT name plate	1
41	BS41	Exhaust blower motor 1/3HP 230V 1725RPM FR48	1
42	BS42	5/16-18 x 3/4" SHCS, Nut & washer	4
43	BS43	Exhaust blower 265 CFM	1
44	BS44	3/8-16 x 1" SHCS, Nut & lock washer	4
45	BS45	Exhaust blower outlet transition	1
46	BS46	Exhaust blower inlet collar	1
47	BS47	Exhaust blower base plate	1
48	BS48	Grit receptacle with duct & flange	1
49	BS49	(Far side) 230V Electrical control box	1
51	BS51	3/8" Liquid tight 90 degree connector	1
52	BS52	3/8" Liquid tight straight connector	1
53	BS53	Safety interlock and cover latch	1
54	BS58	24v LED light fixture	1
58	BS34	3/8-16 x 1" SHCS w/ lock washer	4
59	BS59/00	10-32 x 1/4", 3/8", 1/2", 5/8" Pan head	19
60	BS60/00	1/4-20 x 1/2"	8


Replacement Assemblies

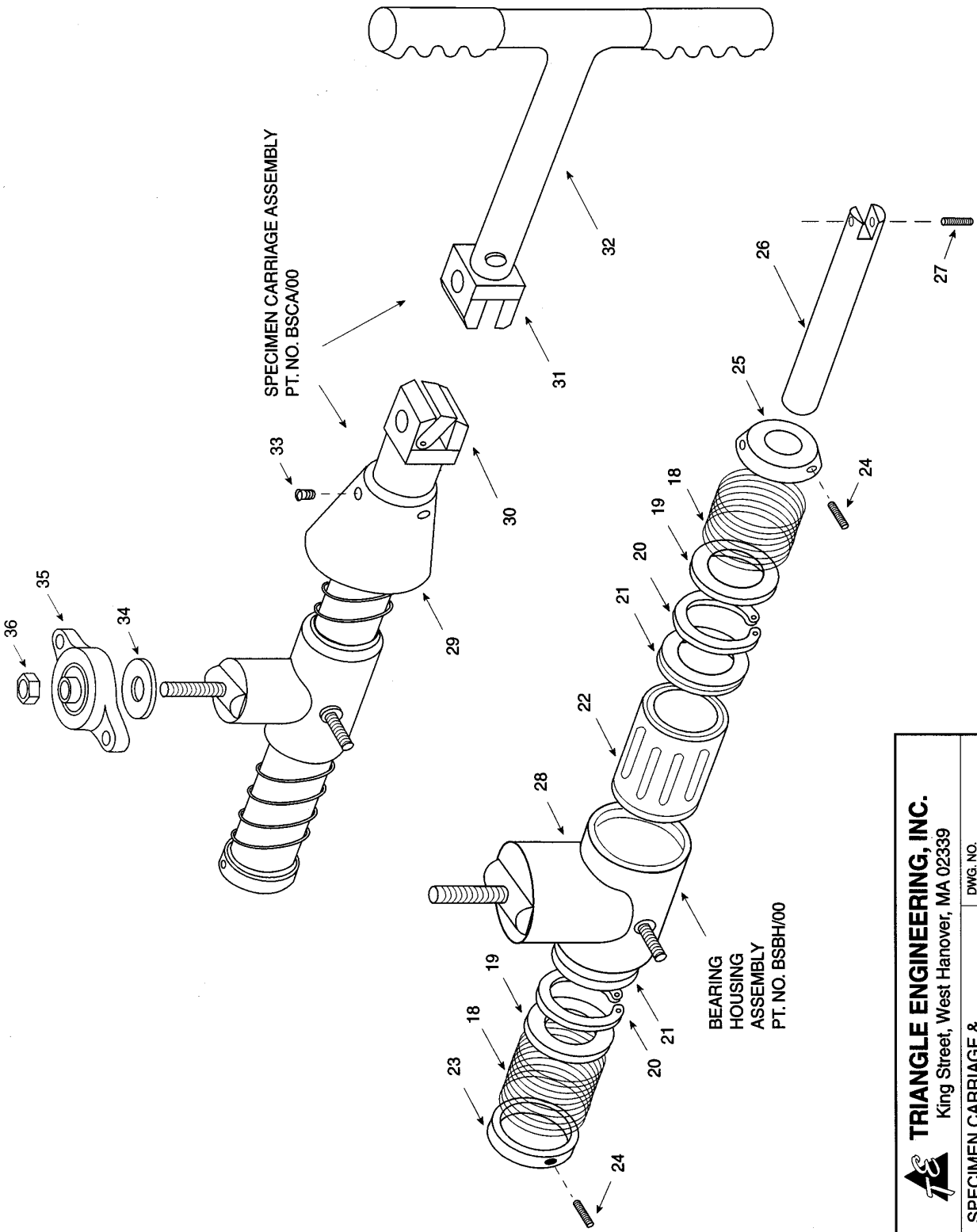
BSBH/00*	Bearing housing assembly detail #18 through 28.
BSCA/00**	Specimen carriage assembly detail #29 through 33.

Note: Machine illustrated with Safety Interlock System part No. BS53 not shown.



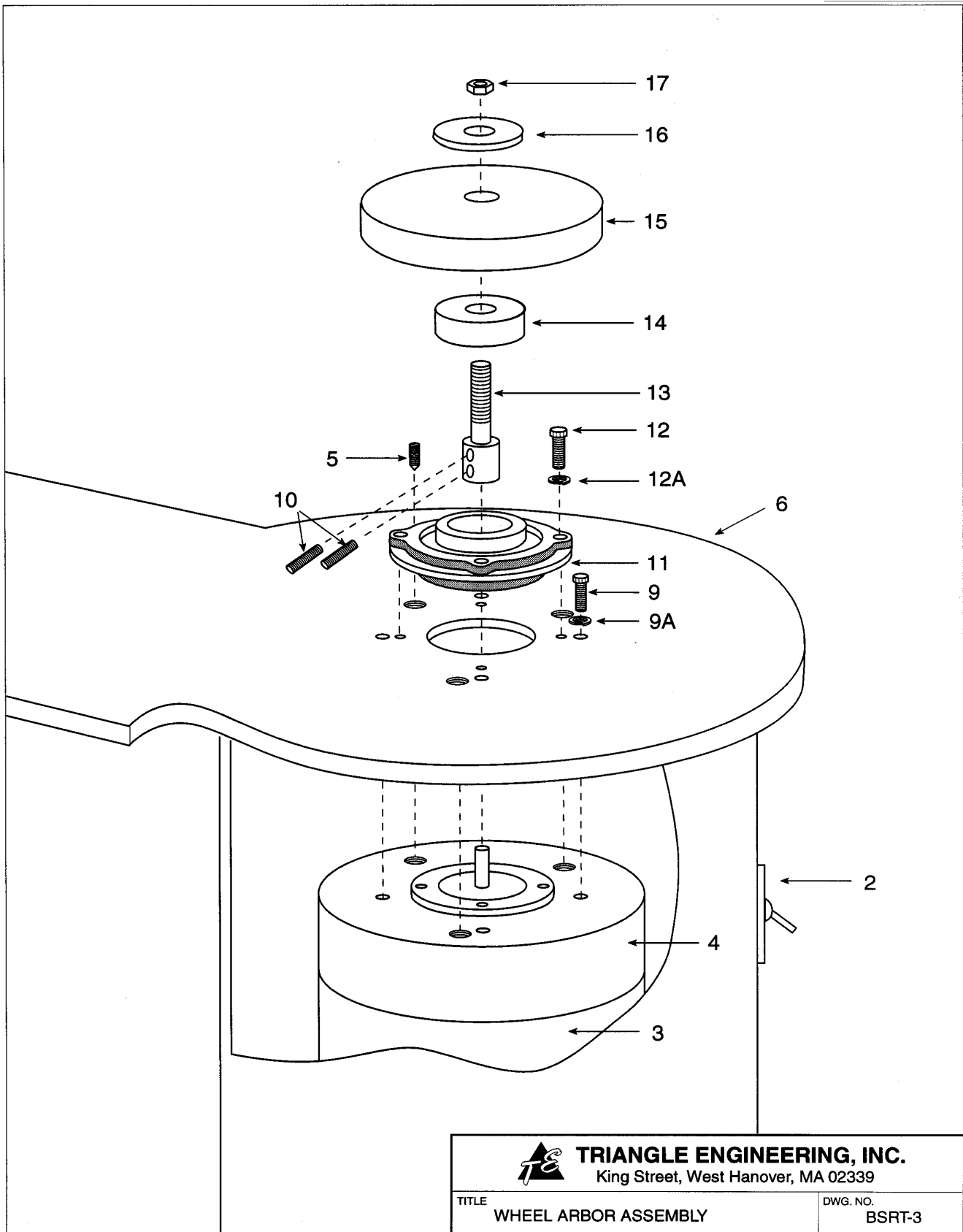
7/16" DIA. THRU HOLES FOR FLOOR MOUNTING — 3 PLACES

 TRIANGLE ENGINEERING, INC. King Street, West Hanover, MA 02339	
TITLE BACK STRAP REMOVAL & PREP. TOOL	DWG. NO. BSRT-1



TRIANGLE ENGINEERING, INC. King Street, West Hanover, MA 02339	
TITLE SPECIMEN CARRIAGE & BEARING HOUSING ASSEMBLY	DWG. NO. BSRT-2

12/2000



 TRIANGLE ENGINEERING, INC. King Street, West Hanover, MA 02339	
TITLE WHEEL ARBOR ASSEMBLY	DWG. NO. BSRT-3

12/2000

