

BACK STRAP REMOVAL AND
PREPARATION TOOL

MODEL # BSRT-15/10

MANUFACTURED BY:
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REV 0610

BACK STRAP REMOVAL AND PREPARATION TOOL
OPERATING AND PARTS MANUAL
BSRT-15/10

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NOTE: EQUIPMENT MANUALS AND PRICE SHEETS ARE AVAILABLE FOR DOWNLOAD
ON OUR WEBSITE: WWW.TRIENG.COM

BACK STRAP REMOVAL AND PREPARATION TOOL

THIS UNIT WAS DESIGNED AND DEVELOPED BY TRIANGLE ENGINEERING, INC. WEST 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 COVER ALL BEND SPECIMENS IN BOTH PIPE AND PLATE, ELIMINATING THE NEED FOR BENCH AREAS, VISES, AIR SUPPLIES, AND OTHER HAND TOOLS NORMALLY REQUIRED.

THE UNIT IS MANUFACTURED WITH 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 24" x 40". THE UNIT **DOES** REQUIRE **ATTACHMENT** TO THE FLOOR. THE MACHINE WILL BE WIRED FOR 230V 1 PH.

SPECIFICATIONS

1 1/2 H.P., 3450 RPM, 230V, 1 PH., 6.4A, 60HZ WHEEL DRIVE MOTOR

1/3 HP, 1725 RPM, 230V, 1 PH., 3.4A, 60HZ BLOWER MOTOR

WHEEL BRAKE SPRING SET 6 lb., 230V

10 WATT FLUORESCENT LIGHT 230V.

8 x 1 x 5/8" GRINDING WHEEL

48" OVERALL HEIGHT FROM FLOOR

40" FRONT TO REAR - 24" WIDE

WEIGHT 365#'S. SHIPPING WEIGHT 480#'S.

SAFETY
CLEANING AND MAINTENANCE

SAFETY GLASSES AND GLOVES 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 BSRT-15/10 REQUIRES A MINIMUM OF MAINTENANCE, HOWEVER, GOOD HOUSEKEEPING AND A FEW ROUTINE CHECKS WILL ENSURE YEARS OF UNINTERRUPTED SERVICE.

DANGER!!! DISCONNECT FROM THE ELECTRICAL POWER SOURCE AND LOCKOUT PRIOR TO SERVICING THIS UNIT.

SAFETY INTERLOCK

THIS MACHINE IS EQUIPPED WITH A SAFETY INTERLOCK WHICH AUTOMATICALLY DISCONNECTS POWER TO THE WHEEL DRIVE MOTOR AND ENGAGES THE MOTOR BRAKE WHEN THE HINGED GUARD IS OPENED. **WARNING** WHEN THE HINGED GUARD IS CLOSED (WITH THE POWER SWITCH ITEM #2 IN THE ON POSITION) THE BRAKE WILL DISENGAGE AND THE WHEEL MOTOR WILL BE ENERGIZED. INSURE THE WHEEL IS CLEAR AND SECURE PRIOR TO CLOSING GUARD.

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 OF 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.

REPLACE 1/8" PIPE PLUGS TO SEAL OFF ACCESS 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, INSURE 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 A 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 MUST BE WORN AT ALL TIMES.**

ELECTRICAL OVERLOAD (RESET)

IN THE EVENT OF AN ELECTRICAL OVERLOAD THE OVERLOAD RELAY THERMAL UNIT (BS02-NA) WILL TRIP CUTTING OFF POWER TO THE WHEEL MOTOR, EXHAUST BLOWER AND THE BRAKE WILL SET, TURN THE SWITCH TO OFF POSITION. DETERMINE AND ELIMINATE THE CAUSE OF THE OVERLOAD. AFTER SEVERAL MINUTES (TO ALLOW COOLING) INSURE ALL IS SAFE THEN RESET THE THERMAL PROTECTOR BY PRESSING DOWN ON THE ON/OFF SWITCH (BS02-N).

OPERATING INSTRUCTIONS

TO PROCESS A 6" TO 10" LONG SIDE BEND SPECIMEN.

- 1) **LEATHER GLOVES, SAFETY GLASSES AND FACE SHIELD MUST BE WORN AT ALL TIMES.**
- 2) MOTOR SWITCH MUST BE IN THE **OFF POSITION AND LOCKED OUT.**
- 3) HINGE BACK THE SPHERICAL BEARING COVER (BS57/00) COVERING THE SPHERICAL ADJUSTABLE FLANGE BEARING. THERE ARE THREE POSITIONS 6"-8"-10". MEASURE YOUR SPECIMENS, CHECK 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.
 - D) CLOSE SAFETY COVER.
- 4) OPEN PLEXI GLASS SAFETY SHIELD.
- 5) ROTATE THE TEE HANDLE, (SPECIMEN CLAMP UP) IN THE TEE HANDLE HANGER.
- 6) SELECT A SPECIMEN AND 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 HOLD OPEN THE SPRING LOADED GRIT DEFLECTOR WITH YOUR THUMB. BOTTOM THE OTHER END OF THE SPECIMEN INTO THE CENTER OF THE CLAMP. USING THE HEX TEE WRENCH TIGHTEN THE CLAMP SCREW SECURELY ONTO THE SPECIMEN.

OPERATING INSTRUCTIONS CONTINUED

- 8) CLOSE PLEXI GLASS SAFETY SHIELD, 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 THE SPECIMEN.

- 10) AFTER A SATISFACTORY BLEND HAS BEEN ACCOMPLISHED, REVOLVE CONTROL BAR 45 DEG. 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 EITHER 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 OR 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" x 1" x 5/8" GRINDING WHEEL, BUT A24 GRIT SIZE PROVED TO BE THE OPTIMUM FOR IN FIELD PERFORMANCE TEST WORK.

BACK STRAP REMOVAL AND PREP. TOOL PARTS SCHEDULE:
PARTS SCHEDULE:

<u>DETAIL NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QUANTITY REQ'D</u>
BS-MANUAL/10		OPERATING/PARTS MANUAL FOR BSRT-15/10	1
1	BS01	12" SCH 20 COLUMN & 1/2" BASE PLATE WELDMENT	1
2	BS02-N	MOTOR SWITCH DOUBLE POLE	1
2A	BS02-NA	OVERLOAD RELAY THERMAL UNIT	1
3	BS03	WHEEL DRIVE MOTOR 1 1/2 HP 115/230V 3450 RPM	1
4	BS03A	WHEEL BRAKE SPRING SET 6 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

BACK STRAP REMOVAL AND PREP. TOOL PARTS SCHEDULE:
PARTS SCHEDULE: (CONTINUED)

<u>DETAIL NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QUANTITY REQ'D</u>
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
N/S	BS65/00	BEARING HOUSING GRIT DEFLECTOR ASSY	1
29**	BS66/00	GRIT SHIELD (SPRING COLLAR)	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	SPERICAL 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	HINGED GUARD WITH CURTAIN (CLEAR)	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

BACK STRAP REMOVAL AND PREP. TOOL PARTS SCHEDULE:
PARTS SCHEDULE: (CONTINUED)

<u>DETAIL NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QUANTITY REQ'D</u>
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	ELECTRICAL JUNCTION BOX (2x4) (230 VOLT)	1
50	BS50	3/8" LIQUID TIGHT FLEXABLE CONDUIT	1
51	BS51	3/8" LIQUID TIGHT 90 DEGREE CONNECTER	1
52	BS52	3/8" LIQUID TIGHT STRAIGHT CONNECTOR	1
53	BS53	SAFETY INTERLOCK AND COVER LATCH	1
54	BS58	10 WATT, 230V FLUORESCENT FIXTURE	1
55	BS58B	10 WATT, 230V FLUORESCENT LAMP	1
N/S	BS57/00	SPHERICAL BEARING COVER	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

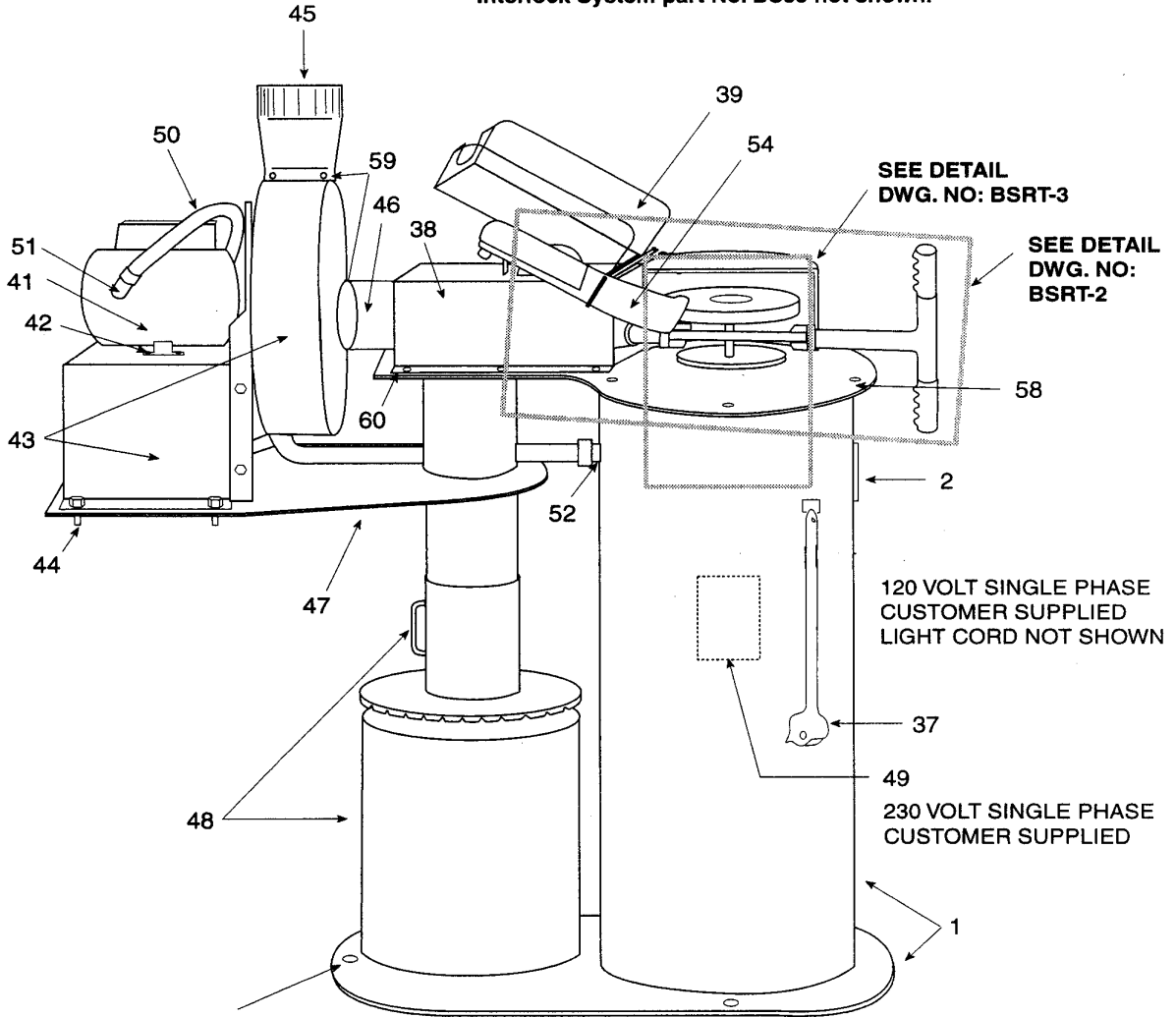
REPLACEMENT ASSEMBLIES

BSBH/00* BEARING HOUSING ASSEMBLY DETAIL # 18 THRU 28.

BSCA/00** SPECIMEN CARRIAGE ASSEMBLY DETAIL # 29 THRU 33

N/S NOT SHOWN

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



SEE DETAIL
DWG. NO: BSRT-3

SEE DETAIL
DWG. NO:
BSRT-2

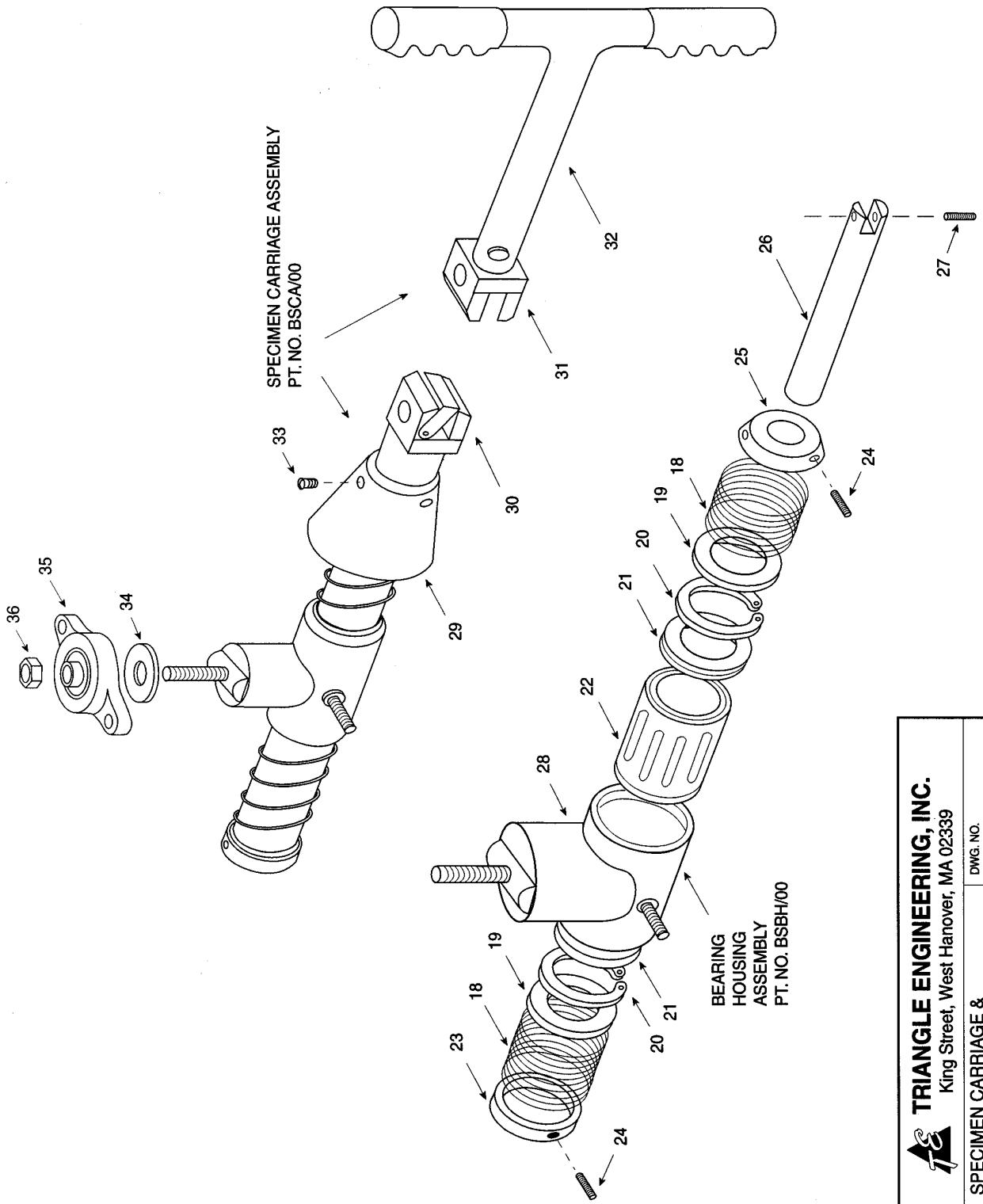
120 VOLT SINGLE PHASE
CUSTOMER SUPPLIED
LIGHT CORD NOT SHOWN


230 VOLT SINGLE PHASE
CUSTOMER SUPPLIED

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

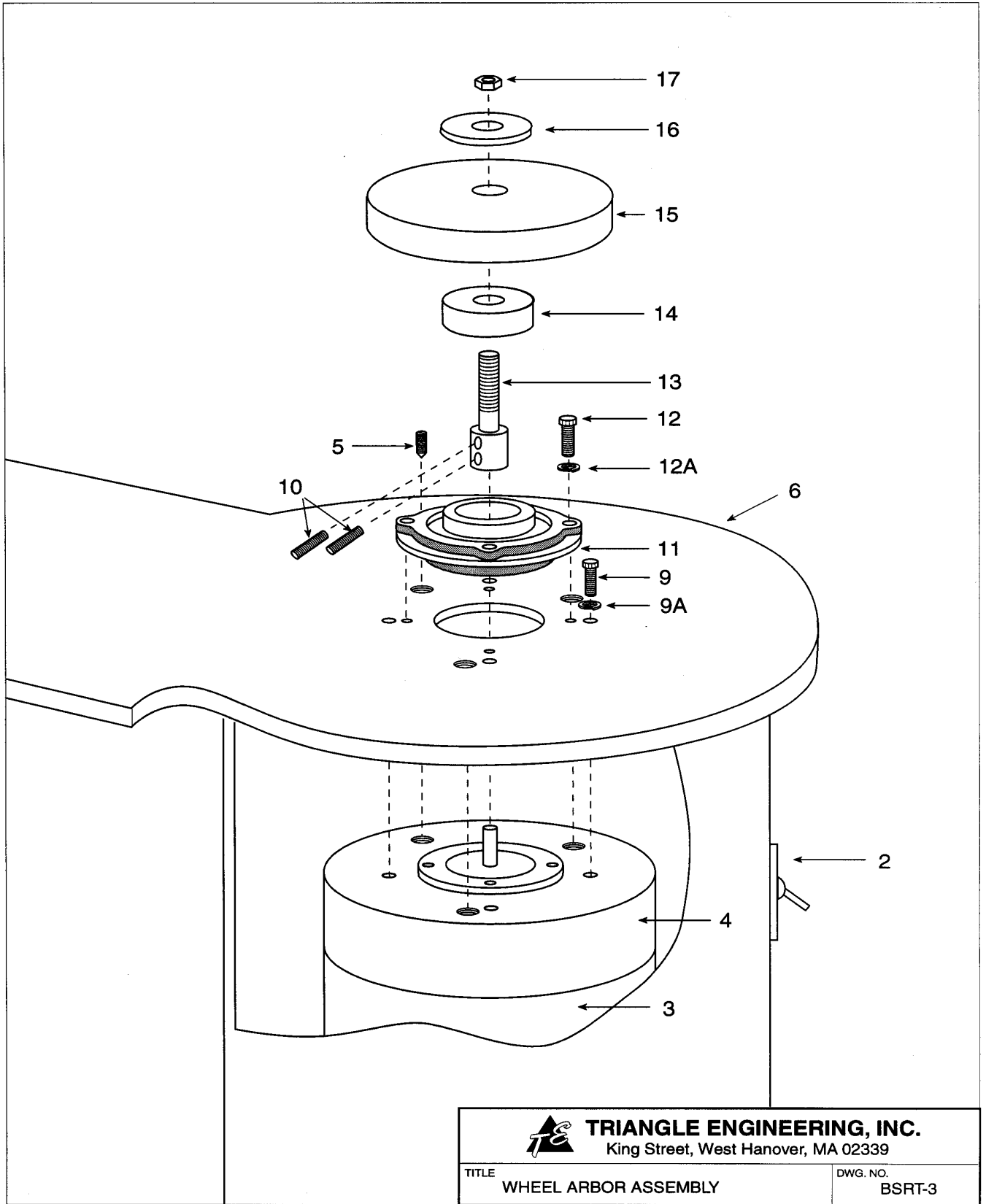
 TRIANGLE ENGINEERING, INC. King Street, West Hanover, MA 02339	
TITLE BACK STRAP REMOVAL & PREP. TOOL	DWG. NO. BSRT-1

06/2010



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

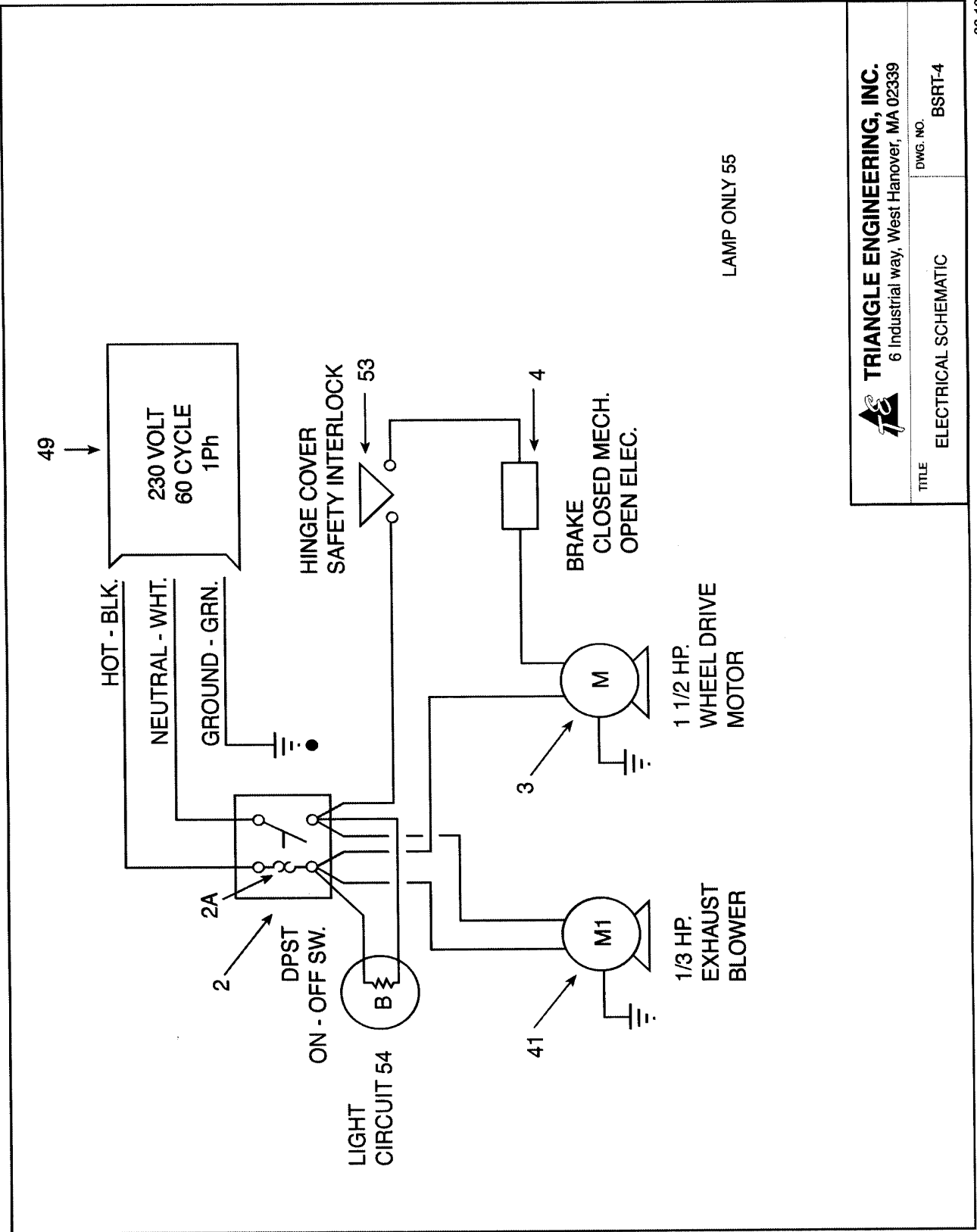
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TRIANGLE ENGINEERING, INC.
King Street, West Hanover, MA 02339

TITLE
WHEEL ARBOR ASSEMBLY

DWG. NO.
BSRT-3



 TRIANGLE ENGINEERING, INC. 6 Industrial way, West Hanover, MA 02339	
TITLE	ELECTRICAL SCHEMATIC
DWG. NO.	BSRT-4