MODEL 36A and 52A PNEUMATIC SHEARS

OPERATION, PARTS & MAINTENANCE MANUAL

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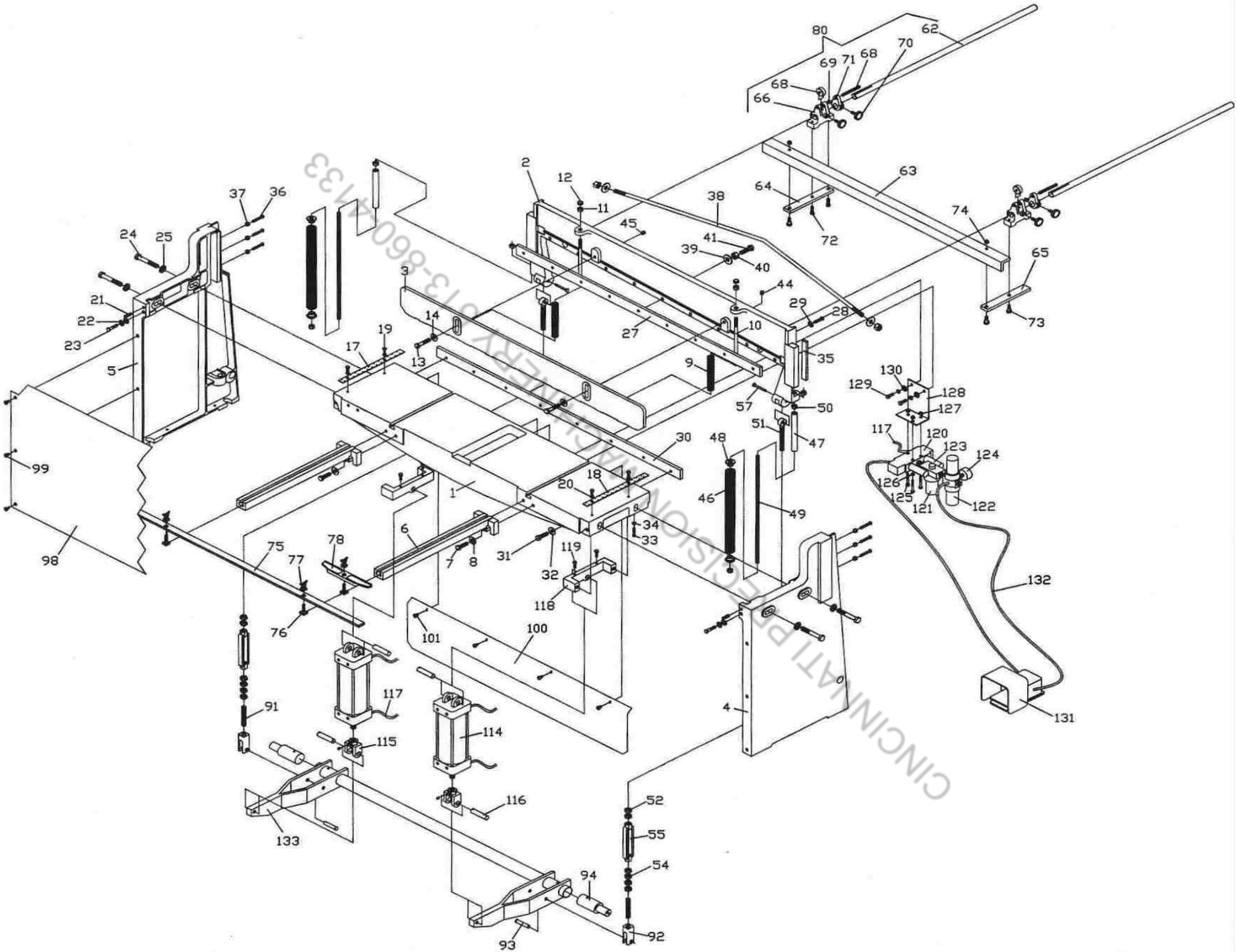
A Family Tradition Since 1928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Model 36A and 52A Parts List

INDEX NO.	36	52	DESCRIPTION	QTY.
1	10101	10151	TABLE	1
2	10102	10152	CUTTER BAR	1
3	10103	10153	HOLDDOWN	1
4	10051	10051	R.H. SIDE PANEL	1
5	10052	10052	L.H. SIDE PANEL	1
6	10053	10053	FRONT ARM EXT.	2
7	05055	05055	SCREW, FRONT ARM EXT.	4
8	05673	05673	WASHER, FRONT ARM EXT.	4
9	10054	10054	SPRING, HOLDDOWN	2
10	10111	10164	STUD, HOLDDOWN SPRING	2
11	05880	05880	NUT, HOLDDOWN STUD	2
12	05907	05907	CAP NUT, HOLDDOWN STUD	2
13	05060	05060	SCREW, HOLDDOWN	2
14	05673	05673	WASHER, HOLDDOWN SCREW	2
17	10055	10055	SCALE, L.H. TABLE	1
18	10056	10056	SCALE, R.H. TABLE	1
19	05021	05021	SCREW, TABLE SCALE	4
20	05639	05639	WASHER, TABLE SCREW	4
21	05327	05327	SET SCREW, TABLE ADJ.	2
22	05035	05035	SCREW, TABLE LOCK	2
23	05670	05670	WASHER, TABLE LOCK SCREW	4
24	05075	05075	BOLT, TABLE	4
25	05676	05676	WASHER, TABLE BOLT	4
26	05925	05925	NUT, TABLE	4
27	10105	10155	KNIFE, UPPER	1
28	05033	05033	SCREW, UPPER KNIFE	7/9
29	05670	05670	WASHER, UPPER KNIFE	14/18
30	10106	10156	KNIFE, LOWER	1
31	05035	05035	SCREW, LOWER KNIFE	6/8
32	05670	05670	WASHER, LOWER KNIFE	12/16
33	05246	05246	SET SCREW, LOWER KNIFE ADJ.	6/8
34	05759	05759	NUT, LOWER KNIFE ADJ.	6/8
35	10064	10064	SHIM, C'BAR	2
36	05249	05249	SCREW, C'BAR SHIM	6
37	05762	05762	NUT, C'BAR SHIM SCREW LOCK	6
38	10107	10157	STRAIGHTENER ROD, C'BAR	1
39	05673	05673	WASHER, STRAIGHTENER ROD	3
40	05787	05787	NUT, STRAIGHTENER ROD	3
41	10112	10165	ADJ. SCREW, STRAIGHTENER ROD	1
44	05331	05331	SET SCREW, BACKGAUGE ROD	2
45	05331	05331	SET SCREW, HOLDDOWN LOCK	2
46	10302	10302	SPRING, FOOT PEDAL	2
47	15053	15053	SPRING GUIDE	2
48	15057	15057	CAP, SPRING	4
49	15055	15055	STUD, SPRING	2
50	05787	05787	NUT, SPRING STUD	8
51	10069	10069	LINKAGE BOLT, C'BAR	2
52	05827	05827	NUT, LINKAGE BOLT, C'BAR	2
54	05826	05826	NUT, STUD	8
55	10071	10071	TURNBUCKLE	2
57	06354	06354	PIN, LINKAGE, MOUNTING	2
62	10058	10058	ROD, BACKGAUGE	2
63	10110	10163	STOP, BACKGAUGE	1
64	10065	10065	R. EXT. BAR, BACKGAUGE	1
65	10066	10066	L. EXT. BAR, BACKGAUGE	1
66	10059	10059	ADJ. BLOCK, BACKGAUGE	2
67	10060	10060	ADJ. DIAL, BACKGAUGE	2
68	10075	10075	ADJ. SCREW, BACKGAUGE	2
69	05762	05762	NUT, ADJ. SCREW	2
70	10061	10061	LOCK SCREW, BACKGAUGE	4
71	10062	10062	ADJ. BRKT. BACKGAUGE	2
72	05027	05027	SCREW, EXT. BAR	2
73	05325	05325	SWIVEL BOLT	3
74	10109	05765	NUT, SWIVEL BOLT	2
75	10159	10159	STOP, FRONT MATERIAL	1
76	10074	10074	"T"-NUT	3
77	05938	05938	WING NUT, "T"-NUT	3
78	10063	10063	BEVEL GAUGE	1
80	10108	10158	BACKGAUGE ASSEMBLY	1
91	10302	10302	STUD	2
92	10303	10303	CLEVIS, FOOT PEDAL	2
93	05544	05544	PIN, FOOT PEDAL CLEVIS	2
94	10304	10304	PIN, PEDAL BAR	2
98	10255	10305	GUARD PANEL, FRONT	1
99	05545	05545	SCREW, FRONT GUARD PANEL	6
100	10256	10306	GUARD PANEL, REAR	1
101	05546	05546	SCREW, REAR GUARD PANEL	4
114	70707		AIR CYLINDER	1
114		70707	AIR CYLINDER	2
115	70708		CLEVIS, CYLINDER	2
115		70708	CLEVIS, CYLINDER	4
116	70709	70709	PIN, CYLINDER	2/4
117	70710	70710	CYLINDER CORD ASSEMBLY	1
118	10260	10310	CYLINDER BRKT.	1/2
119	05500	05550	ADJ. SCREW, CYLINDER BRKT.	2/4
120	70711	70711	FOUR WAY VALVE	1
121	70712	70712	OILER	1
122	70713	70713	AIR REGULATOR	1
123	70714	70714	MUFFLER	1
124	70715	70715	AIR PRESSURE GAUGE	1
125	05551	05551	SCREW, VALVE MOUNTING	3
126	05552	05552	WASHER, VALVE MOUNTING	3
127	05553	05553	NUT, VALVE MOUNTING	3
128	10311	10311	MOUNTING BRKT.	1
129	05554	05554	SCREW, MOUNTING	2
130	05555	05555	WASHER, MOUNTING	2
131	70716	70716	AIR FOOT SWITCH COVER PLATE	1
132	70717	70717	FOOT SWITCH CORD ASSEMBLY	1
133	10262	10312	FOOT PEDAL ASSEMBLY	1

FOREWORD

This manual has been prepared for the owner and operators of the TENNSMITH Model 36A and 52A Shears. Its purpose, aside from operation instruction, is to promote safety through the use of accepted operating procedures. Read all instructions thoroughly before operating your shear.

Also contained in this manual is the parts list for your shear. It is recommended that only TENNSMITH factory authorized parts be used for replacement parts.

WARRANTY

Your shear has a three year limited warranty from the date of purchase. The terms of the warranty are stated on the warranty registration card shipped with your machine. Please complete and return this card to activate your warranty.

SAFETY INSTRUCTIONS

1. Know the safety and operating instructions contained in this manual prior to operation of this shear. Become familiar with and understand the hazards and limitations of this shear. Always practice safety.
2. Wear approved eye safety protection, such as safety glasses or goggles, etc., when operating the shear to protect your eyes.
3. Protective type footwear should be worn, and jewelry such as rings, watches, necklaces, etc., should be removed prior to operation of this shear.
4. **Do not remove the front hold-down guard (Index # 3). This is a protective device. If the hold-down is inoperable, immediately disconnect the power and lock the main power to the machine, and contact Tennsmith or your authorized distributor for a replacement part.**
5. **Keep the hold-down (Index #3) at the minimum gap required to feed the material into the shear. The gap should never be higher than 3/16" from the table.** If you have questions regarding the Hold-down, please consult the factory.
6. Always keep hands clear of the blade.
7. Do not misuse the shear by using it for other than its intended purpose.
8. Never exceed the rated capacity of this machine.
9. Keep the work area clear and clean to avoid tripping or slipping.
10. Always disconnect the power to the shear prior to performing any maintenance or adjustments to the machine.
11. Turn off machine when not in use.
12. Any malfunction or abnormality pertaining to this machine should be reported to the maintenance supervisor immediately.

RECEIVING THE SHEAR

Examine the shear and accessories package for evidence of any possible damage sustained during transit. Any damage should be reported to your distributor immediately.

INSTALLING THE SHEAR

Carefully remove the shear from the shipping pallet. Locate the shear in a well-lighted area on a solid level floor. Use lag screws or bolts with expandable shields or similar holding devices through the mounting feet, located on the bottom of the side panels.

Place an accurate machinist level on the table top, and check the level of the machine in both directions. Use metal shims between the floor and the shear mounting surface to adjust the level. After the machine is level, tighten the mounting bolts. Periodically, recheck the unit for levelness.
NOTE: Proper levelness greatly affects the performance of your shear, it is very important to ensure your machine is level prior to operation.

The 36A and 52A shear is available only for air operation. Only certified technicians should perform air connections and any necessary maintenance on this machine. If you have any questions, please consult Tennsmith.

OPERATION INSTRUCTIONS

The mild steel capacity of the Model 36A and 52A shear is 16gauge. Included in the manual is a standard shearing, bending, and forming conversion chart for various materials including Aluminum, Stainless, and Plastics. If you have any capacity related questions on materials that do not appear on the chart, please contact Tennsmith technical support to help determine the exact capacity ratings.

NEVER ATTEMPT TO SHEAR ANY MATERIAL GREATER THAN THE MAXIMUM RATING FOR YOUR SHEAR.

The 36A and 52A is a fixed angle designed machines. Reducing the maximum width of your material does not increase the capacity rating of this shear.

Never attempt to shear any material which would be less than a ½" cut across the full length of the table under full capacity.

BLADE GAP ADJUSTMENT

The factory setting for the gap between the upper and lower blade is .002. This setting is the optimal clearance for the entire range of material likely to be sheared on this machine. Different materials and thickness may require a larger or slightly smaller clearance. If you have any specific questions regarding optimal blade gap, please consult Tennsmith.

To adjust the blade gap of your shear, the turnbuckles (55) are utilized to move the cutter bar down and hold the position while the blade adjustment is being made. Please note: when checking the blade clearance between the blades at any particular point across the travel of the bed, check the gap at the point where the upper blade intersects the lower blade by 1/8" depth.

To start, disconnect the main air supply connection to the shear.

1. Loosen the jam nuts (54) that lock the turnbuckle in position.
2. Move the cutter bar down by tightening each turnbuckle. To avoid putting the cutter bar in a bind, tighten each turnbuckle evenly. The first checkpoint when verifying or changing the blade gap is 2 inches from the right side end of the blade facing the machine. Make sure the upper blade intersects the lower blade by 1/8". Once you have moved the cutter bar into the desired position, use a set of shim feeler gauges to verify the blade clearance between the two blades. The second checkpoint is the center of the shear, and the last is 2 inches from the left end of the blades.
3. To close the gap on the either the left or the right ends of the blade, loosen the table bolts(24) for the particular end you are adjusting, and loosen the 9/16" adjustment screw (22) located in the front of your side panel by a ¼ turn. Next tighten the set screw (21) to move the lower blade towards the upper blade. When you have reached the desired gap verified by your feeler gauge, tighten the adjustment screw (22) to ensure the proper tension on the set screw. To open the gap, reverse the previous procedure.
4. After you have reached the desired gap, tighten the table bolts (24) on each side.
5. The blade gap in the center of the shear is controlled by the adjustment screw (40) located on the backside of the cutter bar of the shear. To close the gap, tighten the screw in ¼ increments until you have reached the desired gap.
6. After you have adjusted the shear gap to the desired settings, move the cutter bar back to its original settings. This is called the pitch or rake of the blade:

Rake angle settings:

MODEL 36A

Use a marker to mark the shear bed 2 inches to the from the right side edge of the table. Next, measure over 32 inches from the right side edge of the table and make another mark. Starting at the right hand side (facing the machine) at the designated mark on the table, rotate the turnbuckle (55) until the distance between the top and bottom blades is approximately 3/8 of an inch. At the opposing end, repeat the procedure allowing 1 ¾ inches clearance between the upper and lower blades. After you have the desired clearance between the upper and lower blades slightly adjust the turnbuckles so that they have an equal amount of tension. That is, if one turnbuckle has more play or lost motion in it than the other, it should be readjusted accordingly. Once the rake has been set and equal tension verified between the turnbuckles, retighten the jam nuts (54) and lock the turnbuckles in place.

MODEL 52A

Use a marker to mark the shear bed 2 inches to the from the right side edge of the table. Next, measure over 48 inches from the right side edge of the table and make another mark. Starting at the right hand side (facing the machine) at the designated mark on the table, rotate the turnbuckle (55) until the distance between the top and bottom blades is approximately 3/8 of an inch. At the opposing end, repeat the procedure allowing 1 ¾ inches clearance between the upper and lower blades. After you have the desired clearance between the upper and lower blades slightly adjust the turnbuckles so that they have an equal amount of tension. That is, if one turnbuckle has more play or lost motion in it than the other, it should be readjusted accordingly. Once the rake has been set and equal tension verified between the turnbuckles, retighten the jam nuts (54) and lock the turnbuckles in place.

HOLD-DOWN ADJUSTMENT

CAUTION: THIS SHEAR SHOULD NOT BE OPERATED WITHOUT THE HOLDDOWN IN PLACE AND PROPERLY ALIGNED. The hold-down (3) is designed to engage the material before the blades yet allow only minimal clearance between the guard's feet and the table surface. **The gap between the hold-down feet and table surface should never be above 3/16" of an inch.** The gap between the hold-down and the table is controlled by turning the nut on the hold-down studs (11). Clockwise rotation will increase clearance; counter clockwise turns will decrease the gap.

The guard should be held snug against the milled pads on the cutter bar and not feel loose. You must be careful, however, that the hold-down bolts (13) are not so tight as to bind the guard when the cutter bar is in the down position. Properly aligned, the bolts will snug but still allow rotation of the hold-down screw washers (14). At the rear of the cutter bar you will find two tapped holes wherein hold-down jam screws (45) are located. Once you have applied proper tension to the hold-down screws, tighten the jam screws to lock alignment in place. (Note: The milled pads on the front and rear of the hold-down should be greased periodically to maintain proper action.

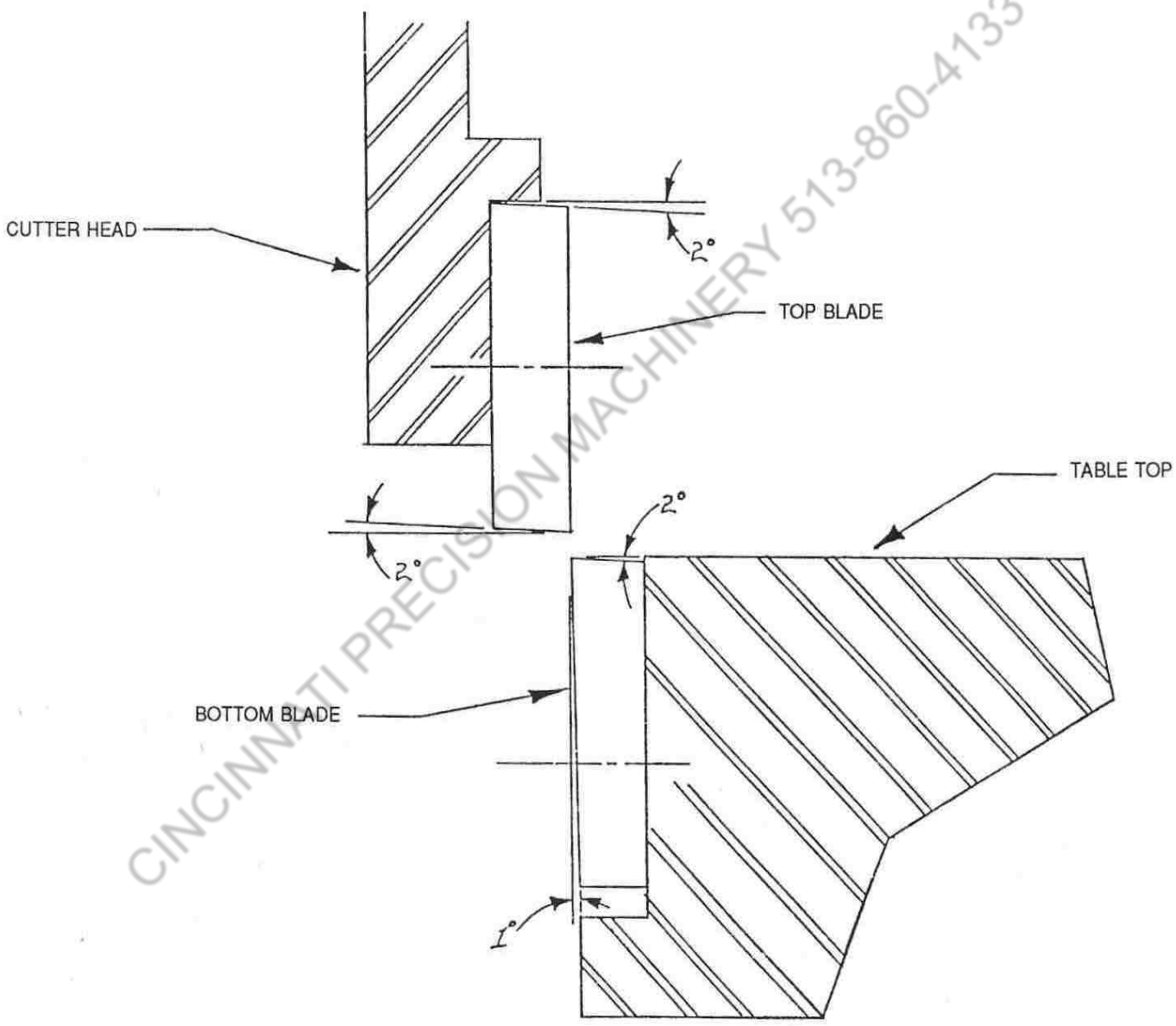
BACK GAUGE ADJUSTMENT

Slide back gauge rods (62) through the adjustment blocks (66) and brackets (71). Mount the rods in the holes found at the rear of the cutter bar. Move the gauge angle (63) up the rods until it contacts with the lower blade. Observe the pointers attached to the adjustment blocks and adjust the rods in or out until the embossed scales read zero on the pointers. Tighten the set screws (44) to lock the rods in place.

To attain a particular setting, loosen the four lock screws (70) and slide the gauge to an approximate position. Fine tune adjustments are accomplished by locking the screws of the two adjustment brackets (71) while keeping those of the blocks (66) loose. The adjustment dial (68) can then be used to position the gauge in or out.

SHARPENING BLADES

Your TENNSMITH shear features “Tri-Action” ground blades. The upper blade has two cutting edges which are ground with a 2 degree edge relief. The upper blade can be turned over to expose the new cutting edge. It can be sharpened on a surface grinder by grinding both wide sides to the blade. The lower blade has one cutting edge with a 2 degree cutting edge relief and a 1 degree face relief. It can be sharpened on a surface grinder by grinding the wide side of the blade having the 1 degree relief. See Figure 2). Blade sharpening service is available from the factory.



MACHINE SPECIFICATIONS

TENNSMITH

Model 36A

Maximum shearing capacity, mild steel	16 gauge / 1,6mm
Maximum shearing capacity, stainless steel	20 gauge / 1,0mm
Maximum cutting length	52-1/4 in. / 1327mm
Back gauge range	30 in. / 762mm
Front gauge range	37 in. / 940 mm
Floor space, gauges in position	45 x 80 in. / 1143 x 2032 mm
Overall dimensions, less gauges, LxWxH	46-1/4 x 24 x 42 in. / 1181 x 686 x 1067 mm
Strokes per minute, full length	40
Maximum operating pressure	75 psi / 5.1 atmos.
Air consumption per stroke	1.1 cu. ft. / 0.031 cu. m
Shipping weight	800 lbs. / 363 kg

TENNSMITH

Model 52A

Maximum shearing capacity, mild steel	16 gauge / 1,6mm
Maximum shearing capacity, stainless steel	20 gauge / 1,0mm
Maximum cutting length	52-1/4 in. / 1327mm
Back gauge range	30 in. / 762mm
Front gauge range	37 in. / 940 mm
Floor space, gauges in position	60 x 80 in. / 1524 x 2032 mm
Overall dimensions, less gauges, LxWxH	61 x 25 x 42 in. / 1550 x 915 x 1067 mm
Strokes per minute, full length	40
Maximum operating pressure	75 psi / 5.1 atmos.
Air consumption per stroke	1.33 cu. ft. / 0.038 cu. m
Shipping weight	1300 lbs. / 590 kg

APPROXIMATE SHEARING, BENDING AND FORMING CAPCITIES FOR VARIOUS MATERIALS COMPARED TO MILD STEEL

Mild Steel Capacity	20ga.	18ga.	16ga.
NON-FERROUS METALS			
Aluminum			
1100-0, 2024-0	.070	.090	.125
5052-0. 6061-T4	.070	.090	.125
2024-T3, 5052-H34	.048	.063	.090
5086-H36, 6061-T6	.048	.063	.090
Copper and Alloys			
Electrolytic Copper	18ga.	16ga.	14ga.
Bronze Commercial	18ga.	16ga.	14ga.
Brass 70-30	18ga.	16ga.	14ga.
Nickel Alloys			
Inconel 600	24ga.	22ga.	20ga.
Monel R405	24ga.	22ga.	20ga.
Nickel 200A Annealed	24ga.	22ga.	20ga.
Zinc as Rolled	20ga.	18ga.	16ga.

Mild Steel Capacity	20ga.	18ga.	16ga.
FERROUS METALS			
Iron-dead soft	20ga.	18ga.	16ga.
Steel low carbon			
1074, 1095 C.R. Spring Steel	24ga.	22ga.	20ga.
Hot Rolled	20ga.	18ga.	16ga.
Low carbon Cold Rolled	20ga.	18ga.	16ga.
Stainless Steel Annealed	24ga.	22ga.	20ga.
OTHER MATERIALS			
Plastics			
ABS Compounds .120	.150	.200	
Polycarbonate	.075	.105	.125
Printed Circuit Boards			
Copper-Clad			
Epoxy Laminate	.086	.115	.150

Approximate Gauge Equivalents

Gauge	**28**	**26**	**24**	**22**	**20**	**18**	**16**	**14**	**12**	**11**	**10**
Inches	**.015**	**.018**	**.024**	**.030**	**.036**	**.048**	**.060**	**.075**	**.105**	**.120**	**.135**
Millimeters	**.38**	**.46**	**.61**	**.76**	**1.00**	**1.25**	**1.60**	**2.00**	**2.70**	**3.05**	**3.50**

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3-YEAR LIMITED WARRANTY

TENNSMITH machinery and component parts are carefully inspected at various stages of production and are tested and inspected prior to shipment. We agree that for a period of twelve (12) months from the date of delivery from our authorized distributor to replace, at our option, any machine (or component part thereof) proving defective within the above period. Additionally, we agree that for a period of thirty-six (36) months from date of delivery to replace component parts proving defective within the stated period. All warranty claims are made F.O.B. our plant, providing such machine (or component part) is returned freight prepaid to our plant, or a designated service center of the undersigned, for our examination. This warranty does not include repair or replacement required because of misuse, abuse, or because of normal wear and tear; or electrical components which are warranty by their manufacturer. Further, we cannot be responsible for the cost of repairs made or attempted outside our factory or designated service center without our authorization. No claims for defects will be honored if the name and data place has been remove. This warranty is made expressly in place of all other warranties or guarantees express or implied, with respect to fitness, merchantability, quality or operative ness. This warranty becomes effective only when the accompanying warranty card is fully and properly filled out returned to the factory within ten (10) days from date of delivery.

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