

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

Dayton® 52" Shear, Brake and Roll

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Description

Dayton combination Shear, Brake and Roll machine is hand operated and capable of shearing, bending and rolling .0598" thick mild steel (16 gauge) up to 52" long. Shearing is made easy with micro adjustable material stop, square cut guide, and spring loaded material hold-down bar. Double edged shearing blades are reversible. The slip roll uses three adjustable rolls with wire forming grooves to produce cylinders, cones, wire loops and curves. The brake has 9 adjustable male dies, adjustable stop for repeated bends, and extended shut height for fabricating pans, boxes, channels, angles and other shapes. The female die is adjustable and replaceable.

Unpacking

Refer to Figure 2. Check for shipping damage. If damage has occurred, a claim must be filed with carrier. Check for completeness. Immediately report missing parts to dealer. The shear, brake and roll comes assembled as one unit. Additional parts which need to be fastened to the tool should be located and accounted for before assembling: Handle bar with handles, material stop rod with hex nuts, material stop bar and blocks with mounting hardware.

IMPORTANT: Table, rollers and male dies are coated with a protectant. To ensure proper fit and operation, remove coating. Coating is easily removed with mild solvents, such as mineral spirits, and a soft cloth. Avoid getting cleaning solution on paint or any of the rubber or plastic parts. Solvents may deteriorate these finishes. Use soap and water on paint, plastic or rubber components. After cleaning, cover all exposed surfaces with a light coating of oil. Paste wax is recommended for table top.

CAUTION Always follow proper operating procedures as defined in this manual even if you are familiar with use of this or similar tools. Remember that being careless for even a fraction of a second can result in severe personal injury.

WARNING Never use highly volatile solvents. Non-flammable solvents are recommended to avoid possible fire hazard.

General Safety Information

WARNING For your own safety, read all of the instructions and precautions before operating tool.

| Specification | | 12G597 |
|--------------------|------------------------|--|
| SHEAR | Maximum thickness | .0598" mild steel |
| | Maximum length | 52" |
| BRAKE | Maximum thickness | .0598" mild steel |
| | Shut height | 4 19/32" |
| | Material stop range | 3 1/4-13 1/2" |
| ROLLER | Male die sizes | 1", 1 1/2", 2", 2 1/2", 4", 7", 9", 10", 15" |
| | Maximum thickness | .0598" mild steel |
| | Maximum length | 52" |
| | Roller diameter | 2 3/8" |
| | Minimum roll diameter | 2 3/8" |
| | Minimum radius | 1 3/16" |
| | Wire groove (Diameter) | 25/64", 19/64", 15/64" |
| Overall dimensions | 73 x 37 x 37" | |
| Weight | 1008 lbs | |
| Ship weight | 1129 lbs | |

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General Safety Information

BE PREPARED FOR JOB

1. Wear proper apparel. Do not wear loose clothing, gloves, neckties, rings, bracelets or other jewelry which may get caught in moving parts of machine.
2. Wear protective hair covering to contain long hair.
3. Wear safety shoes with non-slip soles.
4. Wear safety glasses complying with United States ANSI Z87.1. Everyday glasses have only impact resistant lenses. They are NOT safety glasses.
5. Be alert and think clearly. Never operate tools when tired, intoxicated or when taking medications that cause drowsiness.

PREPARE WORK AREA FOR JOB

1. Keep work area clean. Cluttered work areas invite accidents.
2. Work area should be properly lighted.
3. Keep visitors at a safe distance from work area.
4. Keep children out of workplace. Make workshop childproof. Use padlocks to prevent any unintentional use of tools.

TOOL SHOULD BE MAINTAINED

1. Consult manual for specific maintaining and adjusting procedures.
2. Keep tool lubricated and clean for safest operation.
3. Remove adjusting tools. Form habit of checking to see that adjusting tools are removed before using machine.
4. Keep all parts in working order. Check to determine that the guard or other parts will operate properly and perform their intended function.
5. Check for damaged parts. Check for alignment of moving parts, binding, breakage, and mounting or any other condition that may affect a tool's operation.
6. A guard or other damaged part should be properly repaired or replaced. Do not perform makeshift repairs. (Use parts list provided to order repair parts.)

KNOW HOW TO USE TOOL

1. Use right tool for job. Do not force tool or attachment to do a job for which it was not designed.

2. Keep hands out of path of shearer blades and clear from male and female dies.
3. Always cover rollers with guard when not in use.
4. Keep hands and clothing clear of roller nip joints.
5. The maximum capacity of this machine is .0598" mild steel or equivalent. Exceeding capacity may be dangerous to operator.
6. Bolt machine to floor or sturdy stand that is bolted to floor to prevent sliding or tipping of machine.

Assembly

Refer to Figure 2.
MOUNT SHORT AND LONG HANDLE BARS
 Remove two Socket head bolts (Ref No. 53) and eccentric cap (Ref No. 7) for long handle bar. Mount handle bar in groove in eccentric (Ref. No. 14) with handles away from machine. Screw in and tighten the bolt (Ref. No. 11) at the eccentric cap. Repeat the same procedure for short handle bar.

MOUNT MATERIAL STOP BAR

Set the material stop bar (Ref No. 33) on the Positioning piece (Ref No. 29) by the bolt (Ref No. 63). Thread material stop guide rods (Ref. No. 28) thru the positioning piece and then into holes on back of lower support bar (Ref. No. 6). Position material stop bar angle iron "up" for bending operations and "down" for shearing operations. Set material stop bar at desired position and secure with the bolt (Ref. No. 58).

Installation

Machine should be installed on a level surface, with proper lighting. Machine can be floor-mounted, stand-mounted or bench-mounted. Be sure to provide clearance for handle bar rotation. Use four mounting holes on left and right supports to bolt machine securely to floor or stand (fasteners not included). Area around machine should be clear of scraps, oil or dirt. Apply a suitable non-skid material to floor.

Operation

Refer to Figures 1 and 2. Rotating handle bar (Ref. No. 48) operates shear, brake and roll mechanisms simultaneously. Be sure to keep clear of shear blades, forming dies and rollers when rotating crank handle. The maximum capacity of the machine is .0598" mild steel or equivalent. Below is an equivalency chart for use when working with materials other than mild steel:

| Specification | 12G597 |
|----------------------------|---------|
| SHEAR | 52" |
| Mild steel | 0.0598" |
| Stainless steel | 0.043" |
| SAE 1050 cold-rolled steel | 0.043" |
| Aluminum | 0.091" |
| Soft brass | 0.072" |
| 1/2 Hard brass | 0.051" |
| Annealed phosphor bronze | 0.057" |
| Soft copper | 0.072" |
| Hard copper | 0.057" |
| ABS plastic | 0.170" |

SHEARING

Rotate hex head bolts (Ref. No. 70) so that hold down bar (Ref. No. 41) is no more than 1/4" above shearer table when shear blade is in the fully up position. The spring loaded hold down bar will be forced firmly against workpiece, holding it in place during shearing operation. Align workpiece against the squaring positioner (Ref. No.42) to make cuts square to workpiece edge. Shearing thicker materials is done by "snapping" crank handle so that upper blade impacts workpiece. Upper blade is mounted at an angle so that workpiece can be sheared in small increments. To minimize distortion, approximately 5/8" of workpiece should be sheared with each impact. Loosen bolts (Ref. No. 75) and rotate table adjusting bolt (Ref. No. 30) so that upper and lower blades are as close together as possible without interference. Retighten table mounting bolts. (Ref. No. 30). Make sure material stop angle iron is pointed "down" for shearing. Do not reach in back of machine to grasp fallout piece.

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Operation (Continued)

When shearing thicker materials, work-piece tends to separate blades so tension might have to be increased on the lower blade. Rotate the bolt (Ref. No. 59) against supporting plate to increase tension on lower blade. Be sure blades do not interfere with each other. Material stop can be used to make repeated cuts to a desired length. Set material stop to desired position and secure locking screw

BENDING

The bending operation is performed between male and female dies by inserting workpiece between dies and rotating handle bar. Bends from 0° to over 90° can be made depending upon workpiece material. Repeated bends can be made by adjusting the bolts (Ref. No. 66) to the desired height. Adjust the hex head bolts so that desired bend is achieved at both ends of dies. Boxes and pans from 1 to 30" long can be bent by mounting different combination of male dies (See Figure 1). Loosen hex screw bolt (Ref. No. 68) on male die clamp bar (Ref. No. 35) and mount male die combination that gives desired bend length. Make sure the material stop angle iron is pointed "up" for bending operations. Adjust material to desired position and secure with socket head bolts. The female die is set at the factory and should need no adjustment. If the female die is removed or replaced, mount die and secure it with shoulder bolts (Ref. No.73).

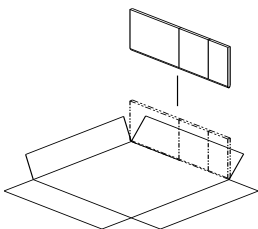


Figure 1 - Box Fabricating

ROLLING

Protecting cover (Ref. No. 17) should always cover rollers except when performing rolling operations. Slip roll can form straight cylinders as small as the diameter of rollers, cones of limited dimensions, and wire loops of various thicknesses and diameters using wire forming grooves. Rolling operations are performed by inserting workpiece between driving and driven rollers (Ref. Nos. 20 and 21) and rotating handle bar. Insert workpiece between driving and driven rollers. Tighten two knobs (Ref. No. 24) to force the driving roller against workpiece. To produce desired bend radius, adjust idler roller (Ref. No. 19) by rotating thread rod (Ref. No. 32). Initial bending process can be simplified by making a slight bend near end of workpiece using bending dies and then inserting bent portion between roller dies. The bent portion might affect final workpiece configuration. It may be necessary to shear or cut away this material. If possible, make the workpiece oversized and shear off bent scrap. Cones can be formed by setting idler roller adjusting knobs to different position so that the bend radius of one end of workpiece is different than other end. Closed cylinders and cones can be removed by pivoting the driven roller. Loosen both roller adjustment screws, and pivot the driven roller away from machine. Remove workpiece; pivot driven roller back into position, turn latch and tighten roller adjustment screws.

Wire forms can be produced using wire forming grooves. Grooves are 25/64", 19/64" and 15/64" diameters. Insert wire into groove of same diameter. Force driven roller against wire by tightening the roller adjustment bolts (do not overtighten) and adjust idler roller to produce wire forms of desired radius. Closed wire loops can be removed by pivoting driven roller.

MAINTENANCE

Refer to Figure 2.

LUBRICATION

All exposed iron surfaces such as rollers, shear table, shear blades, dies and blade bar should be coated with light oil to prevent rusting. Use a multi-purpose or bearing grease for lubrication. The roller gears, roller bushings and both ends of rollers should be greased. The sliding surface between shearing beam (Ref. No. 39) and lower support bar (Ref. No. 6) should be greased. The surface between female die and the bolt, the eccentric shaft, guide stud should be greased

SHEAR BLADES

Always keep shear blades lubricated and clean of any dirt or rust. Abrasive particles on blades will drastically reduce life of blades. Both blades are reversible. Blades have a 5° relief on cutting edge. These blades should be sharpened according to industry standards by a competent grinding service only.

For Repair Parts, call 1-800-323-0620

24 hours a day – 365 days a year

Please provide following information:

- Model number
- Serial number (if any)
- Part description and number as shown in parts list

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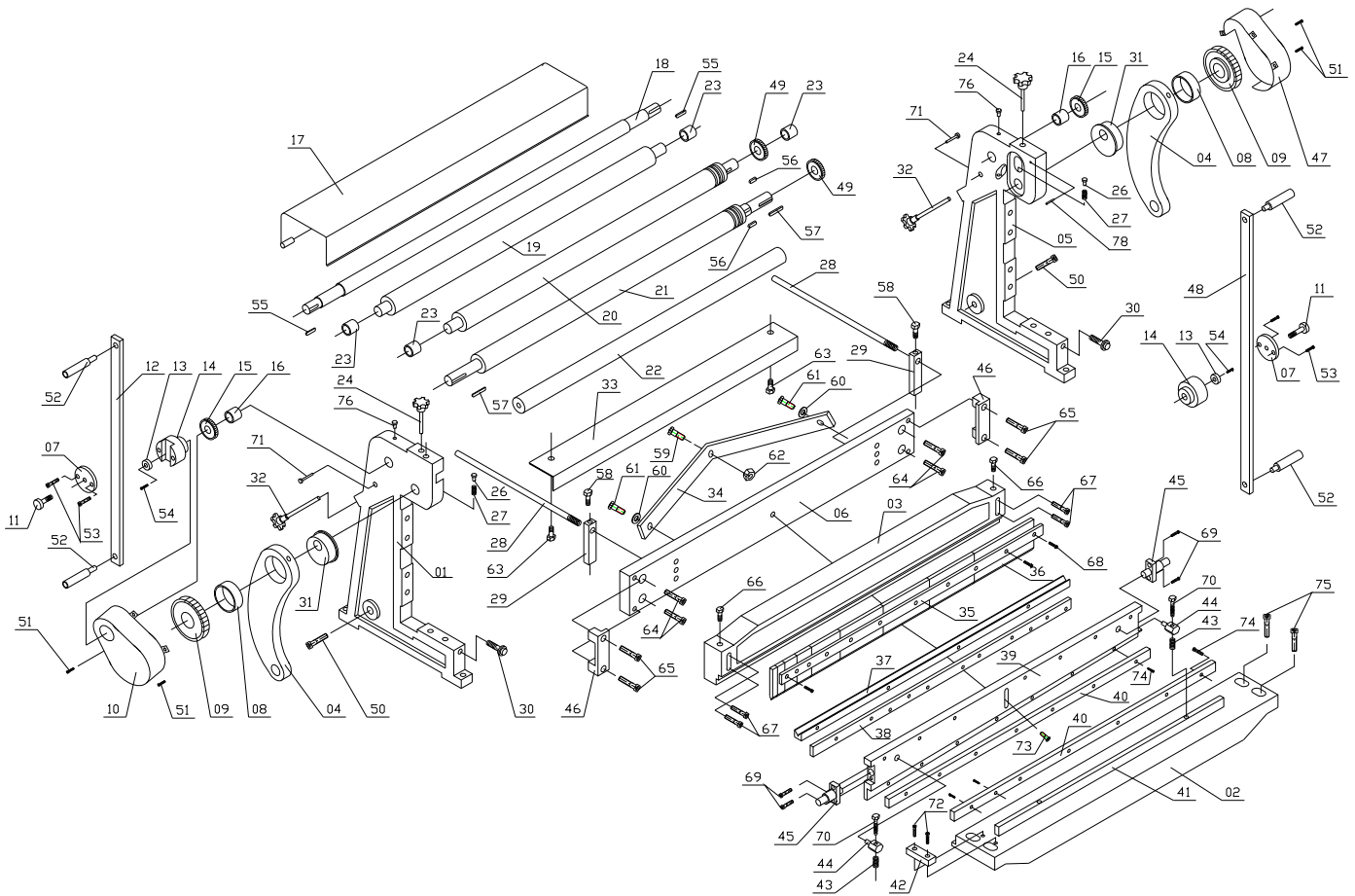


Figure 2 – Repair Parts Illustration for Shear, Brake and Roll

Repair Parts List for Shear, Brake and Roll

| Ref. No. | Description | Part No. | Qty |
|----------|-------------------------|-------------|-----|
| 1 | Left frame | † | 1 |
| 2 | Table | † | 1 |
| 3 | Upper support beam | † | 1 |
| 4 | Pivot arm | † | 2 |
| 5 | Right frame | † | 1 |
| 6 | Lower support bar | † | 1 |
| 7 | Eccentric | † | 2 |
| 8 | Arm Upper Bushing | † | 2 |
| 9 | Big gear wheel | † | 2 |
| 10 | Left Gear Wheel GUARD | † | 1 |
| 11 | Round Head Screw | † | 2 |
| 12 | Short handle bar | TT11320012G | 1 |
| 13 | Pressing cover | † | 2 |
| 14 | Eccentric cap | TT11320014G | 2 |
| 15 | Gear wheel | † | 2 |
| 16 | Brass bushing | † | 2 |
| 17 | Protection cover | † | 1 |
| 18 | Transmission rod | † | 1 |
| 19 | Idler roller | † | 1 |
| 20 | Driven roller | † | 1 |
| 21 | Driving roller | † | 1 |
| 22 | Connecting bar | † | 1 |
| 23 | Roller Bushing | † | 4 |
| 24 | Knob | TT11320024G | 2 |
| 26 | Adjusting shaft | † | 2 |
| 27 | Spring | † | 2 |
| 28 | Material Stop guide rod | † | 2 |
| 29 | Positioning piece | † | 2 |
| 30 | Adjusting bolt | † | 2 |
| 31 | Eccentric shaft | TT11320031G | 2 |
| 32 | Knob handle | TT11320032G | 2 |
| 33 | Material Stop bar | † | 1 |
| 34 | Supporting plate | † | 1 |
| 35 | Male dies clamp bar | † | 1 |
| 36-1 | 1" MALE DIE | TT11320036G | 1 |
| 36-2 | 1 1/2" MALE DIE | | 1 |
| 36-3 | 2" MALE DIE | | 1 |
| 36-4 | 2 1/2" MALE DIE | | 1 |
| 36-5 | 4" MALE DIE | | 1 |
| 36-6 | 7" MALE DIE | | 1 |
| 36-7 | 9" MALE DIE | | 1 |
| 36-8 | 10" MALE DIE | | 1 |
| 36-9 | 15" MALE DIE | | 1 |

| Ref. No. | Description | Part No. | Qty |
|----------|----------------------------|-------------|-----|
| 37 | Female die | † | 1 |
| 38 | Ajusting plate | † | 1 |
| 39 | Shearing beam | † | 1 |
| 40 | Cutter | † | 2 |
| 41 | Shear hold down bar | † | 1 |
| 42 | Positioner | † | 1 |
| 43 | Spring | † | 2 |
| 44 | Guide Stud | † | 2 |
| 45 | Shaft seat | † | 2 |
| 46 | Pressing plate | † | 2 |
| 47 | Right gear wheel guard | † | 1 |
| 48 | Long handle bar | TT11320048G | 1 |
| 49 | Roller Gear | † | 2 |
| 50 | Socket head screw M12X55mm | * | 2 |
| 51 | Socket head screw M6X10mm | * | 6 |
| 52 | Handle bolt M12X100 | TT11320052G | 4 |
| 53 | Socket head bolt M6X12mm | * | 4 |
| 54 | Socket head screw M6X14mm | * | 2 |
| 55 | Key 8X7X55mm | * | 2 |
| 56 | Key 6x12mm | * | 2 |
| 57 | Key 8X7X45mm | * | 2 |
| 58 | Socket head bolt M12X20mm | * | 2 |
| 59 | Socket head bolt M16X80mm | * | 1 |
| 60 | Washer 16mm | * | 2 |
| 61 | Socket head bolt M16X30mm | * | 2 |
| 62 | Nut M16 | * | 1 |
| 63 | Socket head bolt M12X20mm | * | 2 |
| 64 | Socket head bolt M16X40mm | * | 4 |
| 65 | Socket head bolt M12X55mm | * | 4 |
| 66 | Socket head bolt M12X40mm | * | 2 |
| 67 | Socket head bolt M12X65mm | * | 4 |
| 68 | Socket head screw M8X25mm | * | 13 |
| 69 | Socket head screw M8X25mm | * | 4 |
| 70 | Socket head bolt M12X120mm | * | 2 |
| 71 | Socket head screw M8X60mm | * | 2 |
| 72 | Socket head screw M6X12mm | * | 2 |
| 73 | Socket head bolt M12X45mm | * | 2 |
| 74 | Socket head screw M8X25mm | * | 14 |
| 75 | Socket head bolt M16X40mm | * | 4 |
| 76 | Oil cup M10X1 | † | 2 |
| 78 | Pin 3x18mm | * | 2 |

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(†) Not available as repair part. (*) Standard hardware item, available locally.

Dayton® Shear, Brake and Roll

Troubleshooting Chart

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| Symptom | Possible Cause(s) | Corrective Action |
|-----------------------------------|---|--|
| Crank handle will not rotate 360° | 1. Shearing beam (Ref. No. 39) is loose 2. Male and female dies too close together 3. Shear table interferes with upper blade 4. Driven roller is too tight 5. Improper lubrication | 1. Tighten the bolts (Ref. No. 73); be sure not to overtighten 2. Properly adjust bolts (Ref. No. 66) 3. Adjust table properly, see "Shearing," page 2 4. Loosen the knob (Ref. No. 24) 5. Lubricate properly, see "Lubrication," page 3 |
| Machine will Not shear | 1. Blades too far apart 2. Tension bolt loose (Ref. No. 59) 3. Workpiece material too thick 4. Dull blades | 1. Adjust lower table properly, see "Shearing," page 2 2. Tighten bolt, see "Shearing," page 2 3. Do not exceed machine capacity of .0598" mild steel or equivalent, see "Equivalency Chart," page 2 4. Have blades sharpened by a qualified grinding service |
| Cuts are not square | Positioner (Ref. No. 42) improperly adjusted | Adjust guide properly using machinist's square and tighten screws |

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DAYTON ONE-YEAR LIMITED WARRANTY.

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