Since 1875
Edwards MFG. COMPANY
P.O. Box 166, Albert Lea, Minnesota 56007
Telephone (507) 373-8206 Fax: (507) 373-9433

115 Ton

"JAWS V"
Ironworker

Operator's Manual

Serial Number _____

Edwards Mfg. Co.

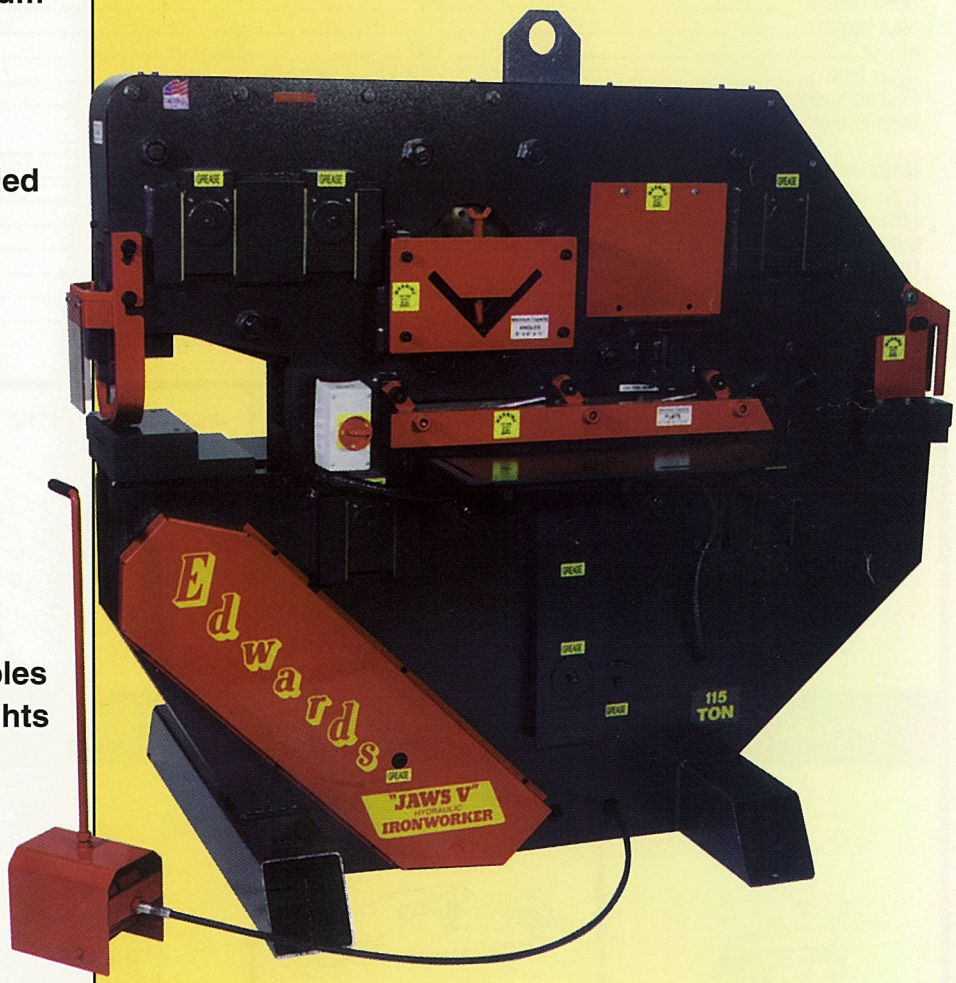
Established 1875

Made In The U.S.A.

115 TON "JAWS V" IRONWORKER

STANDARD FEATURES

- Punching station - maximum size punch 1 1/16" diameter
- Coupling wrench
- Flat bar shear blades installed - low rake
- Angle shear blades installed
- Coper/notcher table and blades installed
- Open cavity available for accessory tooling
- Up-stroke limiter installed
- Fully guarded
- Adjustable steel punch strippers
- Fast adjusting holddown bars
- Threaded holes in tables for jigs
- Slots for gauging feed tables
- Comfortable working heights
- Remote foot pedal operation
- Integral lifting lug for instant portability
- Direct drive pump - no belts
- Sound insulated
- Hydraulic system fully charged - ready to operate
- 8 piece set round punches & dies in metal box (Punch sizes 3/16", 5/16", 7/16", 9/16", 11/16", 13/16", 15/16" and 1 1/16")
- One year warranty



Most Tons Per Dollar

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CONGRATULATIONS ON YOUR PURCHASE OF A "JAWS V" 115 TON IRONWORKER

Made in the U.S.A.

This 115 Ton JAWS V Ironworker is an "ALL AMERICAN MADE PRODUCT", which is designed and built to give you years of consistent and dependable service.

Grease your JAWS V Ironworker daily to make sure the unit is properly lubricated at all times to make it work best for you. This machine has a protective grease coating. It must be completely greased before using. Use any multi purpose grease.

EDWARDS "JAWS V" IRONWORKER WARRANTY

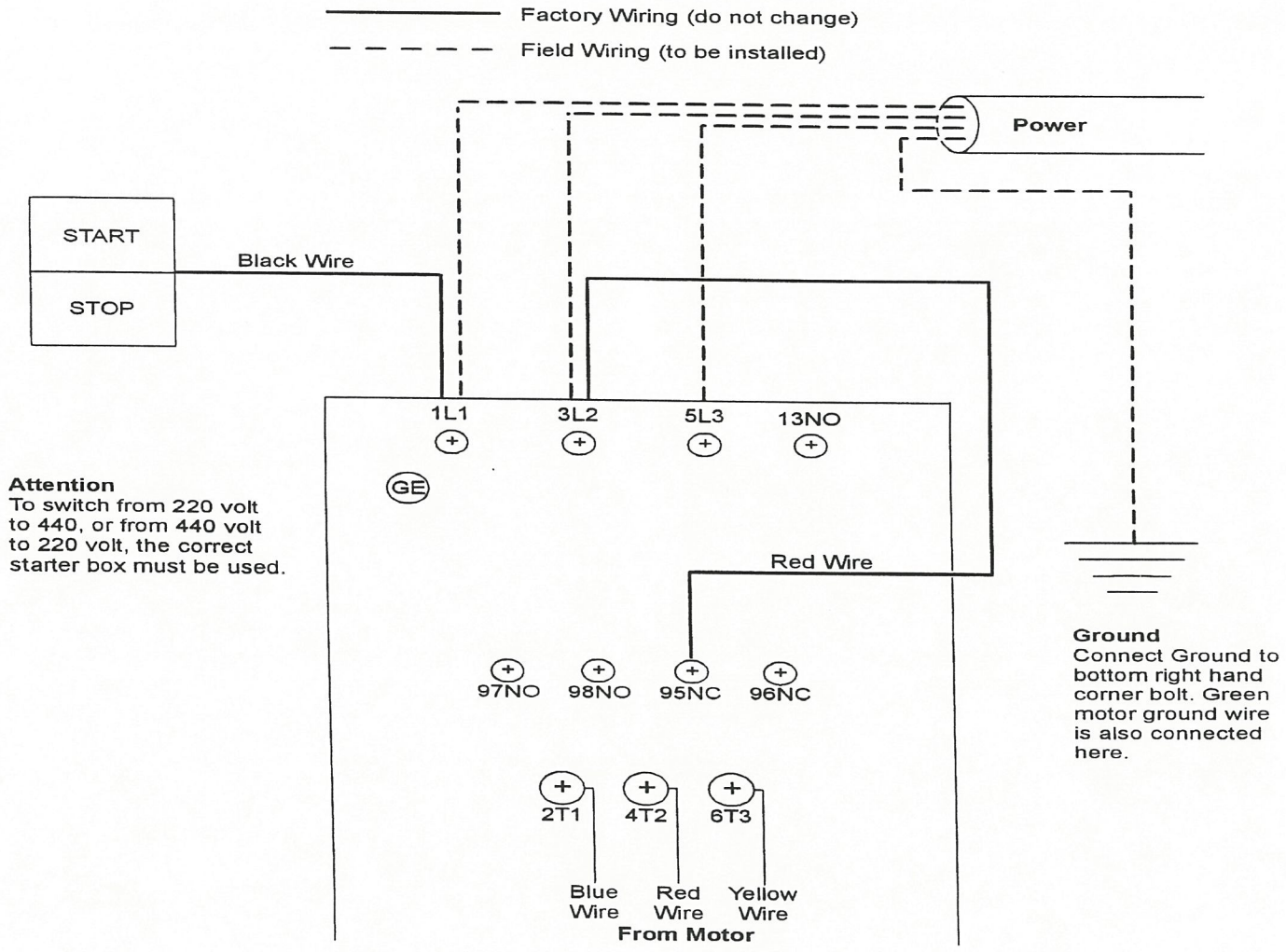
Edwards Manufacturing Co. will, within one (1) year of date of purchase, replace F.O.B. the factory, any goods, excluding punches, dies, and/or blades, which are defective in materials and workmanship provided that the buyer returns the defective goods, freight prepaid, to the seller, which shall be the buyer's sole and exclusive remedy for the defective goods. Hydraulic and electrical components are subject to their respective manufacturer's warranties. Edwards Manufacturing will, within thirty (30) days of date of purchase, replace F.O.B. the factory any punches, dies, and/or blades that prove to be defective in material and workmanship.

(Proof of purchase date required)

This warranty does not apply to machines and/or components which have been altered, changed or modified in any way, or subjected to abusive and abnormal use, inadequate maintenance and lubrication, or subjected to use beyond seller recommended capacities and specifications. In no event shall seller be liable for labor costs expended on such goods or consequential damages. Seller shall not be liable to the purchaser or any other person for loss, down-time, or damage directly or indirectly arising from the use of the goods or from any other cause. No officer, employee, or agent of seller is authorized to make any oral representations or warranty of fitness or to waive any of the foregoing terms of sale and none shall be binding on seller.

Wire Diagram for
3 Phase - 220/440 Volt

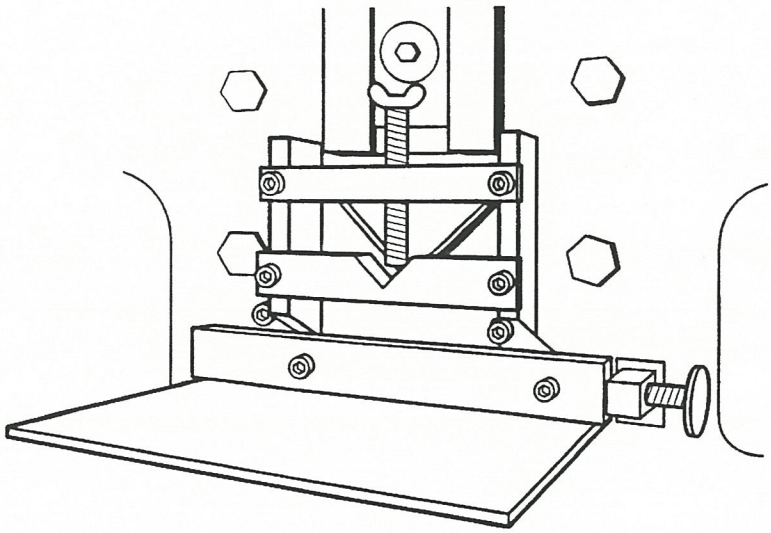
10 HP
Sprecher & Schuh Motor Starters



The only connections that you need to make are to the top terminals - 1L1, 3L2, 5L3 and to the groud. All other connections have been made and have been tested at the factory. If your machine runs in reverse, change 3L2 and 5L3.

To check motor rotation, shine flashlight into bell housing of motor, through the wire mesh at notcher end. The motor direction is shown on the label at the motor end of the Ironworker housing.

BAR SHEAR



Maximum Capacity: ½" x 24" mild steel
1" x 12" mild steel

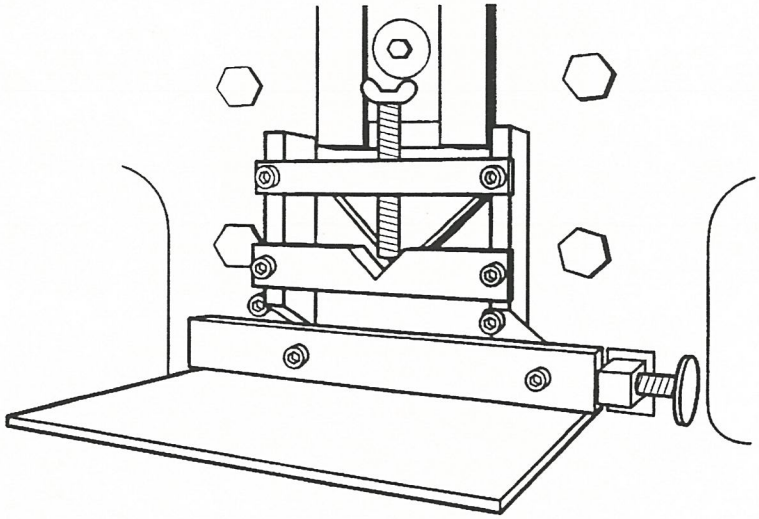
1. When shearing bar stock, bring "hold down" down to the bar to be sheared. Leave enough clearance (1/32") so bar can move freely. DO NOT ALLOW EXCESSIVE CLEARANCE BETWEEN "HOLD DOWN" AND MATERIAL TO BE CUT. Excessive clearance will bind the guides in the shear and can cause excessive wear.

2. When cutting heavy bar stock, bring down the "hold down" and lock tight. This will assure that the bar stock will not lift.

3. Always shear in the center of bar shear blades

DO NOT ATTEMPT TO STACK CUT

ANGLE IRON SHEAR

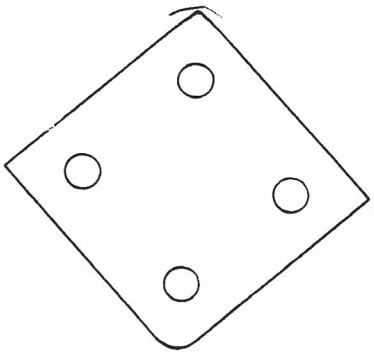


Maximum Capacity: 6" x 6" x ½" (optional blade)

1. Set the screw "hold down" to the angle iron inserted in the shear.
   When shearing angle iron, DO NOT ALLOW THE MATERIAL TO RAISE UP.

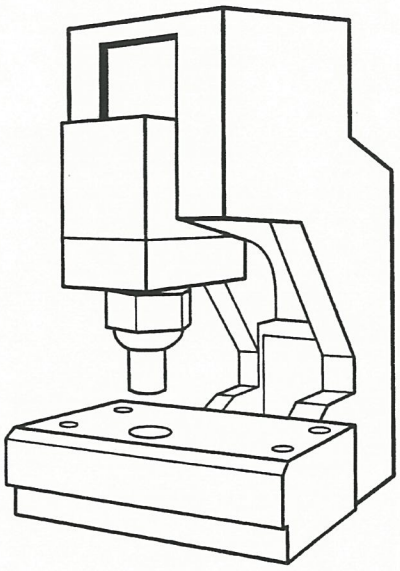
ANGLE IRON BLADE IS REVERSIBLE (180°)

To eliminate distortion in "light" angle iron, use this cutting edge of the blade which has a .25 radius



For regular cutting up to 3/8" angle iron, use this cutting edge of the blade which has a .50 radius

PUNCHING STATION



Maximum Capacity: 1 7/16" hole in 1" plate

SET-UP OF PUNCHING STATION

A. Take out bottom ½" bolt (use 3/4" wrench) on each side of stripper. Loosen the top bolts and swing stripper arms up.

B. To remove punch, loosen punch holder nut.

C. To remove die, loosen the set screw on the front edge of the punch table and lift out die. (If die is stuck, tap from the bottom side.)

D. Install new die and tighten set screws. Install new punch and tighten punch holder nut.

E. When new punch and die are inserted, inch punch down with foot pedal. Check to see that punch is centered. (If punch is not centered, see step F.)

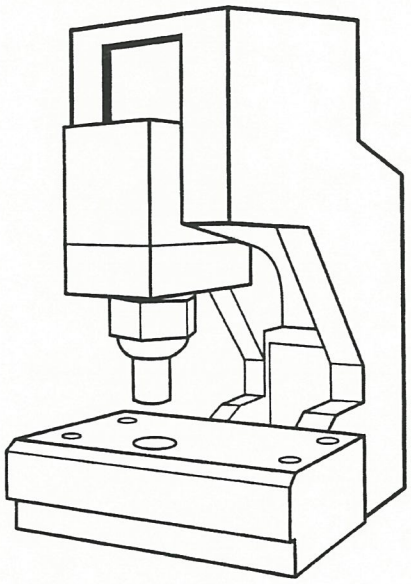
F. Loosen four ½" hex bolts under table (use 3/4" wrench). Top of table will now be loose and can be moved to center die. When this is complete, tighten four bolts to lock table in place.

PUNCHING

IMPORTANT NOTE: The thickness of the material you are punching should not exceed the punch diameter being used. When punching holes, you will find stripping material off punch much easier if one to two drops of oil are placed on the material prior to punching. For best results, this should be done on approximately every 5th hole, or when punch becomes dry. This will not only help to strip material easier, but also extend the life of the punch.

DO NOT ATTEMPT TO STACK PUNCH

TONS OF PRESSURE REQUIRED FOR PUNCHING ROUND HOLES IN MILD STEEL



This table shows the tons of pressure required for single punching mild steel derived by the formula: Tons of pressure required + hose size x material thickness x constant 80. All figures shown are tons or percentages of tons. For intermediate sizes interpolations can be made.

Tons of pressure for punch sizes over 1" round can also be computed.

Examples: What pressure is required to punch a 1 ½" round hole in 3/8" thick material? Since a ½" round hole in 3/8" thick material requires 15 tons pressure, 1 ½" round hole in 3/8" thick material requires 45 tons.

1.5 round hole / .5 round hole x 15 tons + 45 tons

Punch Size

Stock Thickness	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1"
26 ga. .0179	.18	.27	.36	.45	.54	.63	.72	.81	.90	.99	1.07	1.16	1.25	1.34	1.43
24 ga. .0239	.24	.36	.48	.60	.72	.84	.96	1.08	1.20	1.31	1.43	1.5	1.67	1.89	1.91
22 ga. .0299	.30	.45	.60	.75	.90	1.05	1.20	1.35	1.50	1.65	1.80	1.95	2.10	2.24	2.39
20 ga. .0359	.36	.54	.72	.90	1.08	1.26	1.44	1.62	1.80	1.98	2.15	2.33	2.51	2.69	2.87
18 ga. .0478	.48	.72	.96	1.20	1.43	1.67	1.91	2.15	2.39	2.63	2.87	3.11	3.34	3.58	3.82
16 ga. .0598	.60	.90	1.20	1.50	1.79	2.09	2.39	2.69	2.99	3.29	3.59	3.89	4.19	4.49	4.78
14 ga. .0747	.75	1.12	1.49	1.87	2.24	2.61	2.99	3.36	3.73	4.11	4.48	4.86	5.23	5.60	5.97
12 ga. .1046	1.05	1.57	2.09	2.62	3.14	3.66	4.18	4.71	5.23	5.75	6.28	6.80	7.32	7.85	8.57
10 ga. .1345		2.02	2.69	3.36	4.04	4.71	5.38	6.05	6.73	7.40	8.07	8.74	9.42	10.09	10.76
3/16 .187		2.81	3.74	4.68	5.61	6.50	7.48	8.42	9.35	10.29	11.22	12.16	13.09	14.03	14.96
1/4 .250			5.00	6.25	7.50	8.75	10.00	11.25	12.50	13.75	15.00	16.25	17.50	18.75	20.00
3/8 .375					11.25	13.13	15.00	16.88	18.75	20.63	22.50	24.38	26.25	28.13	30.00
½ .500							20.00	22.50	25.00	27.50	30.00	32.50	35.00	37.50	40.00
5/8 .625									31.25	34.38	37.50	40.63	43.75	46.88	50.00
3/4 .750											45.00	48.75	52.50	56.25	60.00
7/8 .875													61.25	65.63	70.00
1" 1.000															80.00

PRESSURES ABOVE ARE REDUCED BY SHEAR ON PUNCH END OR STAGGERING PUNCHES

PUNCHES AND DIES

Edwards maintains a large stock of Punches and Dies for immediate shipment. The following punches are in stock and will be shipped with a die which has a 1/32" clearance, unless otherwise specified.

IMPORTANT NOTE: The thickness of the material you are punching should not exceed the punch diameter being used.

STANDARD ROUND Punch Size	OVERSIZE ROUND Punch Size	STANDARD SQUARE Punch Size	STANDARD OBLONG Punch Size
1/8"	1"	1/4"	1/4" x 1"
5/32"	1 1/32"	5/16"	9/32" x 1"
3/16"	1 1/16"	3/8"	5/16" x 1"
7/32"	1 3/32"	13/32"	3/8" x 1"
1/4"	1 1/8"	7/16"	13/32" x 1"
9/32"	1 5/32"	15/32"	7/16" x 1"
5/16"	1 3/16"	1/2"	1/2" x 1"
11/32"	1 7/32"	17/32"	17/32" x 1"
3/8"	1 1/4"	9/16"	9/16" x 1"
13/32"	1 9/32"	19/32"	5/8" x 1"
7/16"	1 5/16"	5/8"	11/16" x 1"
15/32"	1 11/32"	21/32"	3/4" x 1"
1/2"	1 3/8"	11/16"	13/16" x 1"
17/32"	1 13/32"	23/32"	5/16" x 3/4"
9/16"	1 7/16"	3/4"	3/8" x 3/4"
19/32"	1 15/32"		7/16" x 3/4"
5/8"	1 1/2"		13/32" x 13/16"
21/32"	1 17/32"		5/16" x 1 1/16"
11/16"	1 9/16"		9/16" x 1 1/16"
23/32"			11/16" x1 1/16"
3/4"			13/16" x1 1/16"
25/32"			
13/16"			
27/32"			
7/8"			
29/32"			
15/16"			
31/32"			
1"			
1 1/32"			
1 1/16"			

RECOMMENDED CLEARANCES FOR PUNCHING

Thickness of Material	Clearance Between Punch and Die
1/4" through 15/32"	1/32"
1/2" through 23/32"	1/16"
3/4" and over	3/32"

PRICING OF PUNCH AND DIE SETS

STANDARD PUNCH AND DIE SETS

Round	$ 19.95 - up to 1 1/16"
Square	$ 76.95 - up to 3/4"
Oblong	$ 86.95 - up to 1 1/16"
Hex	$130.00 - up to 29/32"
Rectangular	$135.00 - up to 5/8" x 7/8"

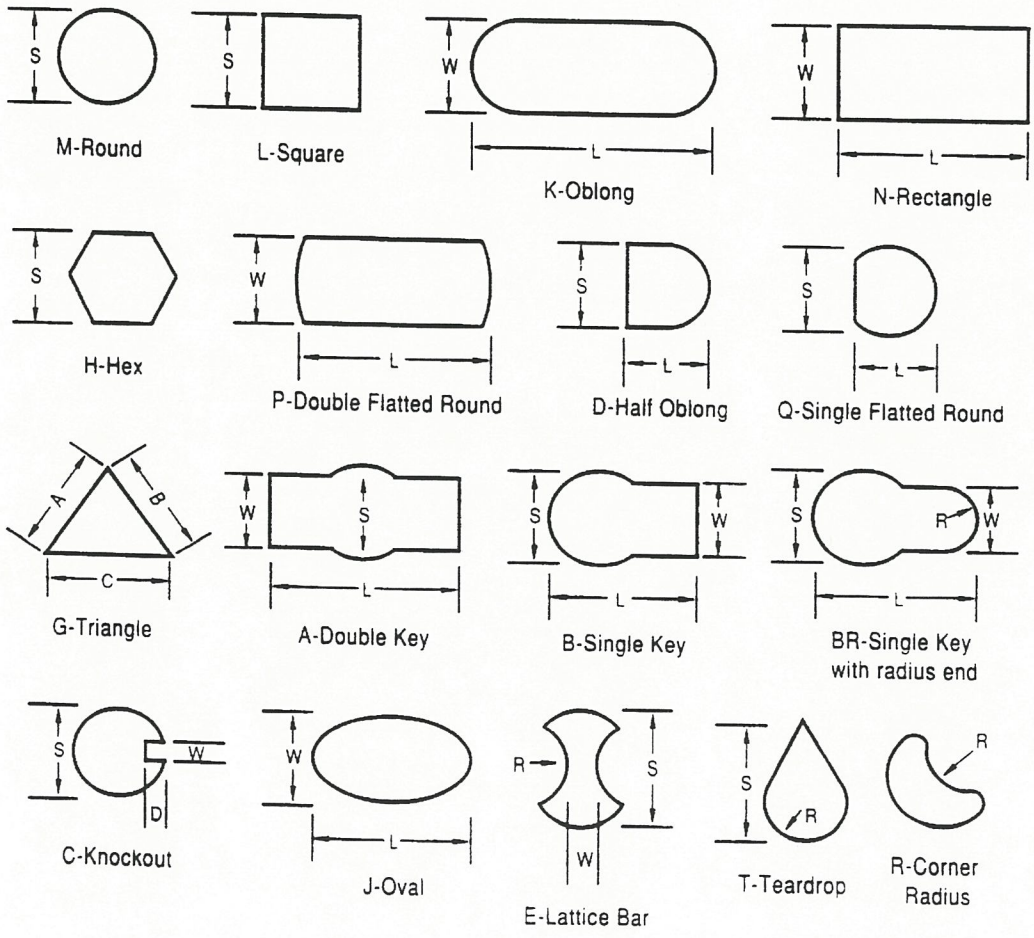
OVERSIZE PUNCH AND DIE SETS

Round	$ 39.95 - up to 1 9/16"
Square	$125.00 - up to 1 1/16"
Oblong	$150.00 - up to 1 9/16"
Hex	$175.00 - up to 1 1/4"

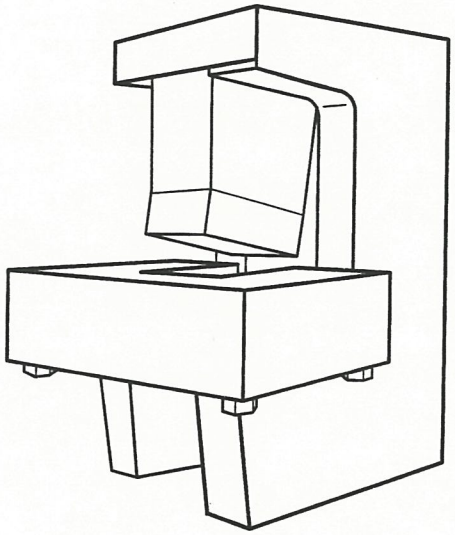
Prices effective 8-1-92

Keyway Punches and Whistle Spot Dies are available as a special order (not in stock). Add an additional $20.00 per set to the prices listed above. Please allow 10 days for shipment.

In addition Edwards can supply you with any style of punch or die in most shapes. If you need a shape that is not shown below, send your sketch, sample or blueprint for a quotation.

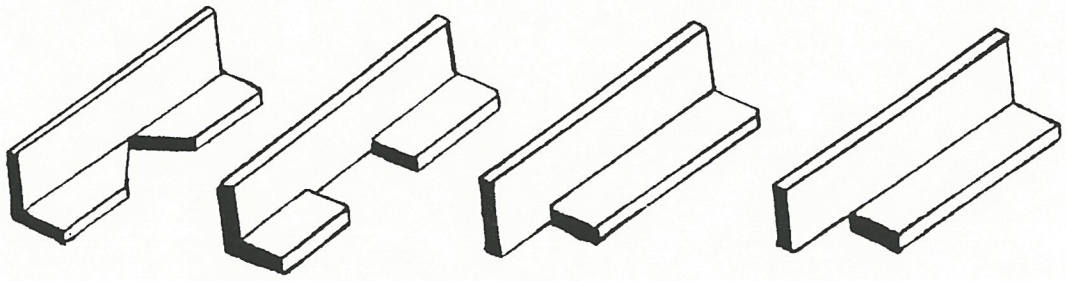


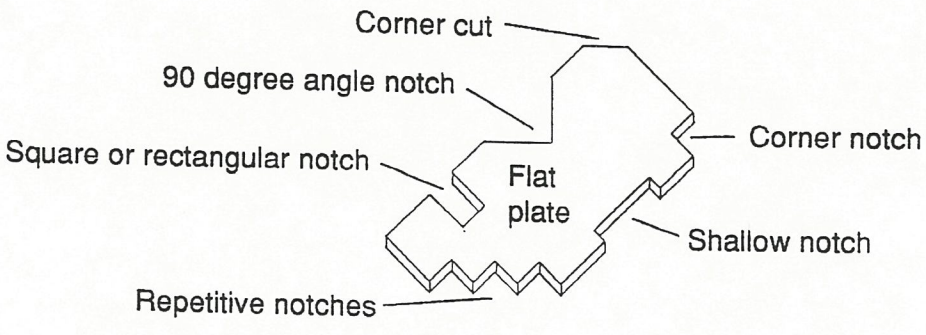
NOTCHING



Maximum Capacity: 2 ½" x 6" x ½"

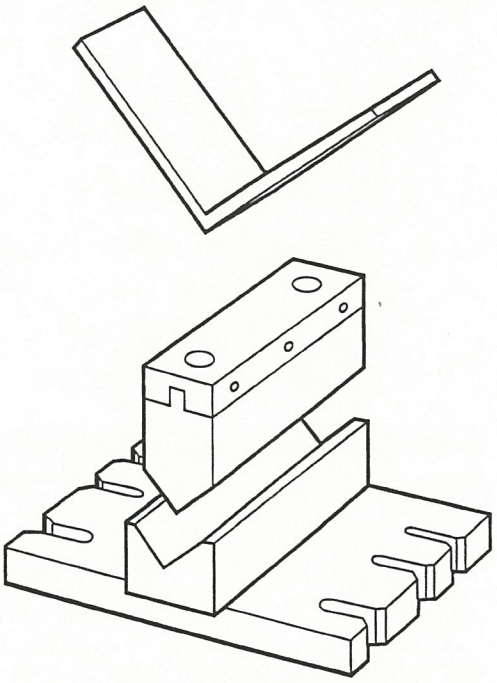
The notcher may be used to notch corners on sheets or notch angle iron. The notcher may also be used to trim edges or used to shape corners.





NOTE: LEAVE SAFETY SHIELD IN PLACE AT ALL TIMES

PRESSBRAKE OPTION



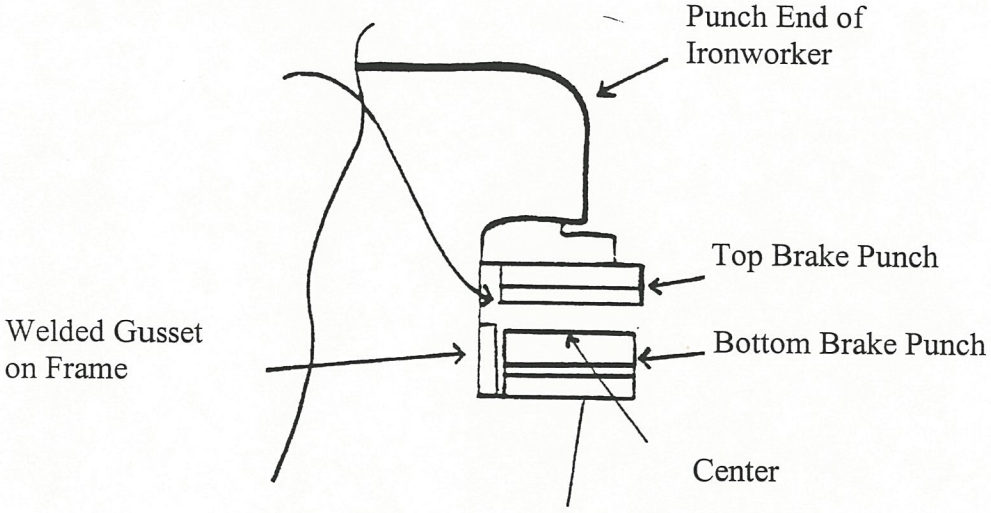
TO BE INSTALLED IN PUNCH END OF IRONWORKER

To mount Pressbrake, remove punch holder and die table and use existing holes to bolt on unit as shown.

CAUTION

When installing brake for the first time, make sure you have clearance between back end of top punch and welded gusset on frame.

Maximum Capacity: 1/4" x 12"



IMPORTANT

ALWAYS PLACE MATERIAL IN CENTER OF BRAKE. BENDING IN FRONT OF CENTER, OR IN BACK OF CENTER CAN DAMAGE THE IRONWORKER.

CLEARANCE ADJUSTMENT

BAR SHEAR

1. The clearance on the shear should be maintained at .015. If the clearance opens too far, cuts will become deformed, leaving a burr on the bottom side of material. This will also shorten the life of the blade.

2. To set the clearance on both the angle shear and the bar shear, loosen the jam nuts on the adjusting screws. By backing out the adjusting gib screws on the front of the Ironworker, and turning in the adjusting screws on the back of the Ironworker, it will be possible to move the shear blades closer together to obtain the proper clearance (.015). With the use of a feeler gauge, clearance can be checked as the rear adjusting gib screws are turned in. When the proper clearance is obtained, re-tighten the jam nuts and check to be sure the adjusting gib screws do not move as jam nuts are tightened. Before shearing, check blade clearance. Punch table and notcher must be adjusted after shear blades are reset.

ANGLE SHEAR

The clearance on the angle shear will be set at the same time the clearance of the bar shear is set. The clearance should be the same as the bar shear (.015).

NOTCHER

The notcher can be moved to achieve proper clearance by loosening the four ½" bolts under the notcher table (use 3/4" wrench). Center notcher, re-tighten the four ½" bolts under the table. Both of the side blades on the notcher can be adjusted inward by loosening the mounting screws and adding shim stock behind the blades and re-tightening the mounting screws. When using the notcher, be sure that the slug chute remains clear.

DO NOT NOTCH MATERIAL WITHOUT NOTCHER GUARD IN PLACE.

GENERAL MAINTENANCE

As with any high quality piece of equipment, the LIFE OF THE MACHINE IS ONLY AS GOOD AS THE MAINTENANCE PROGRAM.

All shearing blades should be periodically checked for clearance and adjusted to maintain (.015) clearance.

Grease all guides and pins daily.

IF UNDER CONSTANT PRODUCTION USE, YOU MUST GREASE THE GUIDES DAILY AND THE PINS TWICE DAILY.

1. Grease guides and pins.
2. Check hydraulic fluid.
3. Change the filter only when oil may be contaminated. Use hydraulic oil with viscosity of 32 or higher. Call the factory if this is not available in your area.

TECHNICAL BULLETIN

A trouble shooting guide for hydraulic systems

Sympton	Possible cause	Corrective action
Noisy pump	Entrained air in oil	Check packing and tubing connections for leaks. Check oil in reservoir for proper level. Be sure oil intake and return lines are below surface of oil level.
	Cavitation	Check for plugged intake line, strainers, filters or reservoir air vent. Oil viscosity too high.
	Worn or loose pump parts	Tighten or replace parts as necessary.
	Stuck pump parts	Determine cause of sticking and remedy.
	Suction strainer plugged or too small	Clean or re-size strainer.
	Coupling alignment off center	Check to be sure shafts and coupling are aligned.
Leaking pump	Worn packing	Tighten packing gland or replace packing. Check for abrasive material in oil.
	Oil head on suction line	Positive head pressure on suction side often cannot be avoided. If not, keep leaks cleaned up.
Overheating	Oil viscosity too high	Be sure proper viscosity grade is used.
	High pump pressure	Reset relief valve to proper pressure.
	Pump parts too tight	Refit parts and check alignment.
	Internal leakage	Check wear and loose packings. Internal leakage can cause low viscosity due to high temperature.
	Oil cooler fouled	Check for plugged tubes. Blow out tubes with compressed air or try solvents.
	Low oil level	Bring oil up to proper level.
Low or no pressure	Insufficient oil in tank	Add oil to proper level.
	Pump intake plugged	Clear intake.
	Filter blocked	Clean or replace filter or strainers.
	Pump-shaft spinning fee	Replace shear pin.
	Incorrect direction of pump rotation	Reverse rotation
	Air leaks in intake line	Tighten joints and packing glands.
	Relief valve stuck open	Repair valve.
	Relief valve setting too low	Check pressure setting and adjust if necessary.
	Oil too heavy	Replace with oil of proper viscosity.
	Incorrect control valve setting or worn valve	Change setting or replace worn parts.
Erratic action	Binding pump parts	Check for worn parts. Correct misalignments. Clean up sludge, varnish or sticky lacquers.
	Oil too thick at start-up	Use lower viscosity oil. Try immersion heaters.
Foaming	Entrained air	See similar cause at noisy pump.
	Oil too heavy	Replace with lower viscosity oil.
	Low anti-foam additive level	Add additional silicone antifoam agent, but never more than 10 parts per million.

Product Information Sheet

CENLUBE +™

PREMIUM R & O ANTI-WEAR HYDRAULIC/TURBINE OIL

DESCRIPTION:

Cenlube + Premium R & O Anti-wear Hydraulic/Turbine Oil is a top quality ashless antiwear hydraulic oil designed for use in hydraulic systems ranging from simple to the latest in high technology and high performance, while also designed for use in turbine applications and moderate duty gear boxes.

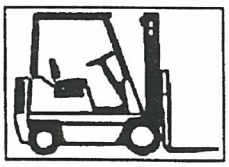
The line of Cenlube + oils is blended with high quality base oils having excellent stability and quality, balanced additive system that provides oxidation and thermal stability, antirust, demulsibility, antiwear, and antifoam characteristics. The zinc-free antiwear agent used in Cenlube + oils helps minimize wear in high speed, high pressure, vane and gear pumps while meeting the lubrication requirements of the axial piston pumps having bronze and steel metallurgy. Cenlube + oils are highly stable under thermal or oxidative stress and are exceptionally stable when in the presence of moisture.

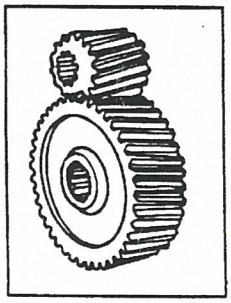
Cenlube Sub-Zero RO-AW Premium Anti-Wear Hydraulic Oil is formulated with exceptional cold temperature flow properties that exhibit multigrade properties. A very shear stable viscosity index improver is used which imparts a high viscosity index to the lubricant enabling it to perform over a wide range of start up and operating temperatures. Cenlube Sub-Zero also has very good dielectric properties and can be used in hydraulic systems that must be electrical non-conductors.

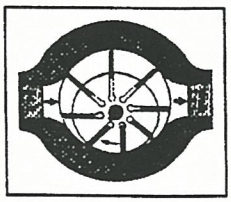
APPLICATION:

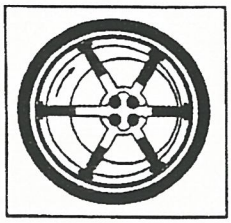
Cenlube + Premium R & O Anti-Wear Hydraulic/Turbine Oils are recommended for the most severe operating pressure applications and exceed the following manufacturers' performance levels:

- Abex Denison HF-0, HF-1, HF-2
- Cincinnati Milacron P-68, P-69, P-70
- Ford M-6C32
- Sperry Vickers 286-S, M2950-S (35VQ25)
- U.S. Steel 127, 136
- ASTM D-943 Oxidation Test: Exceeds 2000 Hours
- ASTM D-665 Rust Test: Pass









FEATURES & BENEFITS:

Excellent vane and piston pump performance providing extended pump life.

Provides excellent oxidation and thermal stability for longer drain intervals.

Reduced maintenance due to outstanding rust prevention capabilities.

Superior hydrolytic stability with quick water separation providing good demulsibility and protection against filter plugging.

Special antifoam agent assures the proper functioning of the system.

CENLUBE + PREMIUM R&O ANTI-WEAR HYDRAULIC/TURBINE OIL
Typical Properties

ISO Viscosity Grade	Sub Zero	22	32	46	68	100	150	220
Former Number (Pre 1993)		100	150	200	300	500	750	1000
Approximate SAE Grade	(5W-20)	(5W)	(10W)	(20W)	(20)	(30)	(40)	(50)
Viscosity @ 100°C, cSt	6.98	4.14	5.18	6.70	8.56	11.1	15.0	18.4
SUS	49.1	39.9	43.3	48.1	54.3	63.1	77.9	91.7
@ 40°C, cSt	33.7	20.7	30.2	45.3	66.0	96.3	149	203
SUS	158	101	142	211	306	446	690	940
Viscosity Index	175	100	100	100	100	100	100	100
Pour Point, °F	-50	-40	-25	-20	-20	-10	-20	15
API Gravity	30.3	32.5	30.5	29.6	29.0	28.5	28.3	28.0
Flash Point, °F	330	400	405	410	440	485	440	470

The typical properties listed reflect the general characteristics of the product, and are not manufacturing specifications. Normal batch-to-batch variations should be expected.

HEALTH & SAFETY:

A complete Material Safety Data Sheet is available upon request. Used oil contains by-products which may be harmful. Avoid prolonged or repeated skin contact. Wash clothing and exposed areas with soap and water. Don't pollute - return used oil to a collection center.

Technical Bulletin

SHELL SUPER DUTY® GREASE

Premium, heavy duty grease for extended severe service in automotive chassis and wheel bearing lubrication

Product Description

Super Duty® Grease is a lead free NLGI Grade 2 lithium 12-hydroxystearate thickened grease, containing 1% molybdenum disulfide and a special polymer. It is especially formulated for heavy-duty severe service in trucks and other automotive applications where extended lubrication intervals are desired, along with superior lubrication and protective qualities.

Super Duty® Grease was developed in conjunction with two major truck manufacturers and meets the long-life requirements of Mack MG-C and Ford ESA-M1C75-B specifications.

Super Duty® Grease is Shell's premium automotive chassis and wheel bearing grease. It is available in bulk and 400-pound drums, and in 14-ounce cartridges for ease of handling and application.

Applications

Shell's Super Duty® Grease provides excellent oxidation stability for long grease life, and excellent extreme pressure, anti-rust and water resistance qualities for protection of bearing surfaces.

In automotive applications, Shell recom- mends Super Duty® Grease for general chassis and wheel or rolling bearing relubrication. It is especially recommended for extended relubrication programs in these applications.

Field tests of Super Duty® Grease in over-the-road tractor/trailer combinations were conducted to examine its extended-service capability. An inspection of components of one of the trucks at 167,458 miles showed kingpins, universal joints, brake cams and drive splines to be satisfactory for continued service.

Of course, such a period is extreme and cannot be generally recommended. The test shows, however, that Super Duty® Grease can facilitate the extension of relubrication intervals in a carefully-planned program.

HANDLING & SAFETY INFORMATION

Refer to Shell's Material Safety Data Sheet (MSDS) and Environmental Data Sheet (EDS). The MSDS and EDS should be available from your Shell supplier or you may call Shell's general MSDS assistance number, 1-800-240-6737.

SOC: 19-96
(Supersedes SOC: 19-95)

Typical Properties of Shell Super Duty® Grease compared with Mack Truck Specification MG-C

	ASTM Method	Shell Super Duty Grease		Mack Truck Specification
Product Code		70440	70437	
NLGI Grade		1	2	2
Property				
Viscosity:	D88			
@ 210°F, SSU		78	78	75-85
Flash Point, °F	D92	445	445	400 min
Pour Point, °F	D97	5	5	5 max
Color	Visual	Gray	Gray	Gray
Appearance	Visual	Smooth	Smooth	Smooth
Thickener		Lithium	Lithium	---
Worked Penetration	D217			
@ 60 strokes		325	272	265-295
Dropping Point, °F	D566	365	385	350 min
Oxidation Stability, psi drop	D942			
@ 100 hrs		4.3	2.0	3 max
@ 1000 hrs			12.5	no spec.
Rust Prevention	D1743	Passes	1,1,1	1,1,1
Water Content, %w	D1744	Trace	Trace	0.25 max
Water Washout, %	D1264			
@ 175°F		---	0.5	10 max
Timken OK Load, lbs	D2509	50	50	50 min
Deleterious particles	D1404			
Average no. of scratches			6	10 max
Roll Stability, % change	D1831		9.6	15 max
Evaporation loss, %	D2595			
@ 300°F			2.4	10 max
Penetrometer Mechanical Stability				
480 hrs @ 1/4 scale, change			55	--
Wheel Bearing Test, loss, gm	D1263		9.3	--
Useful Temperature Range°F		-5 to 275	-5 to 275	

NOTE: Product typical properties are current as of the date of publication of this Technical Bulletin. These properties are determined by averaging actual batch data provided by the manufacturing locations over a period of time. These typical data cannot be guaranteed to be identical to the products produced at any specific time. The data provided in this publication are presented as a guide to Shell Lubricants users. Check with your Shell Representative for the latest information.

SHELL ALVANIA® EP GREASES ALVANIA EP Greases are non-lead containing greases which use a combination of extreme pressure and other additives to give increased load carrying properties. They also have excellent salt water protection and anti-rust properties.

Shell ALVANIA EP Greases are available in NLGI grades 0, 1, 2 and 3 and can be used for both on- and off-highway equipment, construction equipment and industrial applications requiring extreme pressure protection due to heavy or shock loading conditions.

ALVANIA EP Grade 2 is available packed in 14-ounce cartridges as well as other containers.

Typical Properties of Shell ALVANIA® EP Greases

	ALVANIA EP				ASTM Method
	RO	1	2	3	
Color	Brown	Brown	Brown	Brown	Visual
NLGI Grade	0	1	2	3	—
Dropping Point, °F	350	360	370	370	D2265
Penetration, worked 60 strokes	380	330	275	235	D217
Timken OK Load, lbs.	45	45	45	45	D2509
Bomb Oxidation, 100 hrs. at 210°F, psi drop	—	—	4	10	D942
Mineral Oil Viscosity cSt at 40°C cSt at 100°C	145 12.5	200 14	205 15	220 16	D445 D445

PARTS LIST

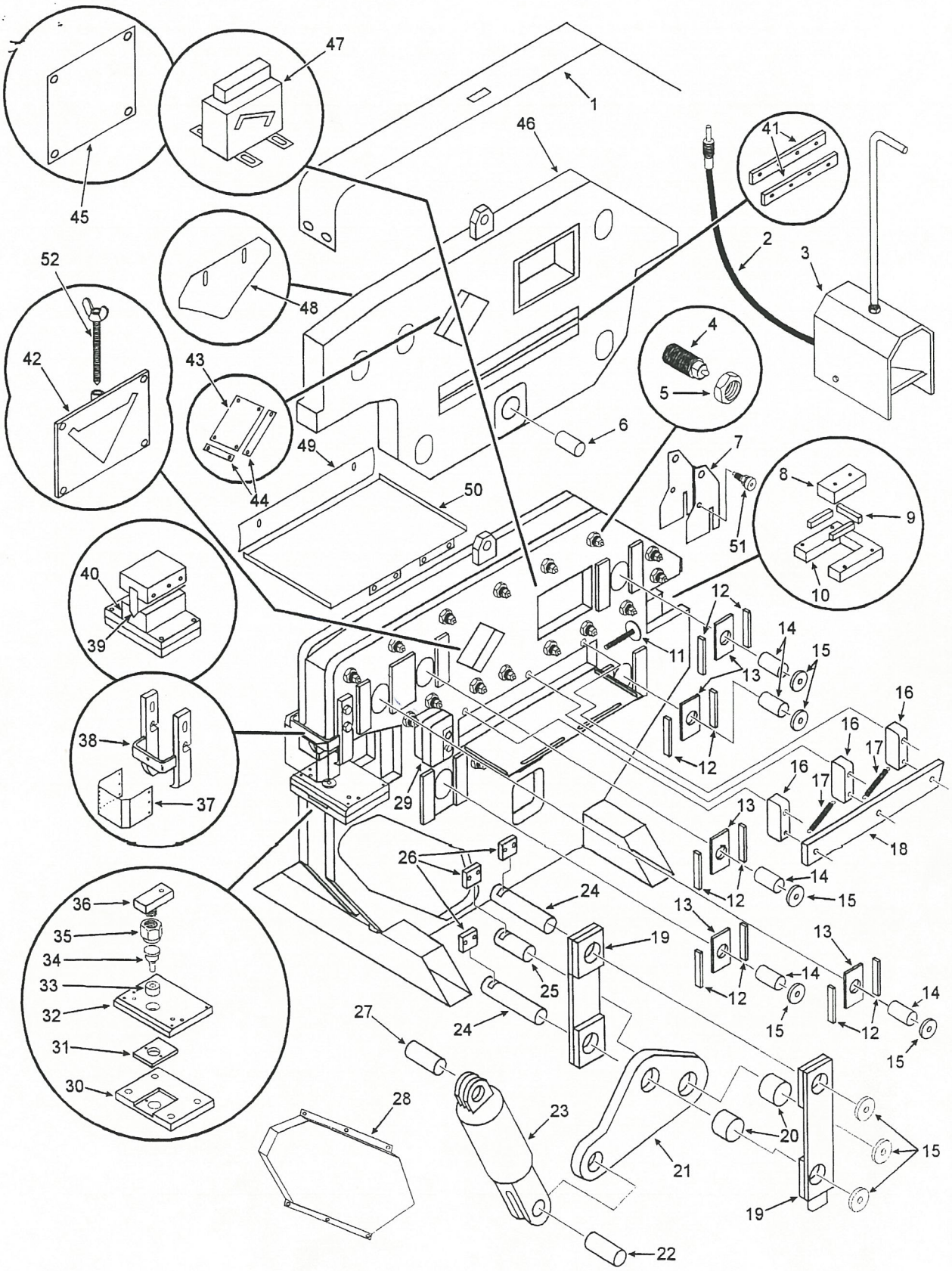
REF.	PART NO.	DESCRIPTION	6-1-99
1	115-27	Top Cover	
2		Foot Cable 96"	
3	781-00	Foot Pedal Assembly	
4	128-00	Gib Pin	
5		Jam Nut	
6		Bushing-3 ½" x 3" x 3"	
7	115-29	Notcher Guard	
8	115-41	Top Notcher Blade	
9	125-37	Bottom Notcher Blade (2 required)	
	125-22-01	Bottom Notcher Blade (1 required)	
10	115-15	Notcher Table	
11	806-00	Hand Screw Adjustment	
12	127-00	Brass Slide - Top	
	127-150	Brass Slide - Bottom	
13	701-00	Guide Plate (6 required)	
	115-24	Guide Plate (4 required)	
14	727-00	Guide Pin	
15		Washer-3/16" x 3 ½"	
16	785-00	Holddown Spacer	
17	V-20	Holddown Spring	
18	115-38	Bar Shear Holddown/Guard	
19	115-30	Link	
20		Bushing-3 ½" x 3" x 3"	
21	115-06	Whale	
22		Cylinder Pin-6"-Bottom	
23		Cylinder-7 ½"	
24	115-26	Top Link Pin-3" Diameter	
	115-46	Link Pin Retainer	
25	115-21	Whale Pin-3" Diameter	
	115-46	Link Pin Retainer	
26	115-46	Link Pin Retainer	
27		Cylinder Pin-6 1/4"-Top	
28	115-34	Cylinder Cover	
29		Starter-10HP - Order by HP, Phase and Voltage	
30	816-00	Spacer Plate	

PARTS LIST

REF.	PART NO.	DESCRIPTION	6-1-99
31	265-00	Back-up Plate	
32	817-00	Die Table	
33		Die	
34		Punch	
35	222-00	Punch Nut	
36	818-00	Punch Holder	
37	115-44	Punch Shield	
38	115-33	Punch Strippers/Guard	
39	476-00	Top Brake Punch	
40	477-00	Bottom Brake Die	
41	115-12	Bar Shear Blade-24" (2 req.)	
42	115-36	Angle Iron Holddown	
43	452-00	Top Angle Shear Blade	
44	800-00	Bottom Angle Shear Blade	
45	115-32	Power Cavity Cover	
46	115-02	Center	
47		Bump Die Housing	
48	115-36	Angle Iron Guard	
49	115-35	Bar & Rod Shear Guard	
50	115-42	Drop Off Chute	
51		Notcher Guard Spring Plunger Bolts	
52	423-00	Angle Iron Adjustment Screw	
53	747-00	Valve Arm	
54	853-00	Up-Stroke Limiter	
55	115-2	Directional Valve to Pump Hose - High Pressure Line	
56		Cable Adjustment Yoke	
57		Directional Valve	
58	115-3	Top Cylinder Hose	
59	115-1	Bottom Cylinder Hose	
60	5-75/100	Return to Tank Hose	
61	6-75/100	High to Low Pressure Sensor Hose	
62		Hydraulic Pump	
63		Pipe to O' Ring Adapter	
64		Motor-10HP	
65		Motor to Pump Adapter	

PARTS LIST

REF.	PART NO.	DESCRIPTION	6-1-99
66		Coupling Set with Rubber Spider	
67		Oil Reservoir	
68		Pipe Nipple	
69		Tank Strainer	
70		Oil Reservoir Cover	
71		Oil Cap	
72		Pipe Nipple	
73		Street Elbow	
74		Oil Filter-Long	
75		Filter Head	
76	115-4	Valve to Filter Hose to Tank Return Hose	
77		Return Tension - Valve Adjustment	
78	V-7	Spring Return	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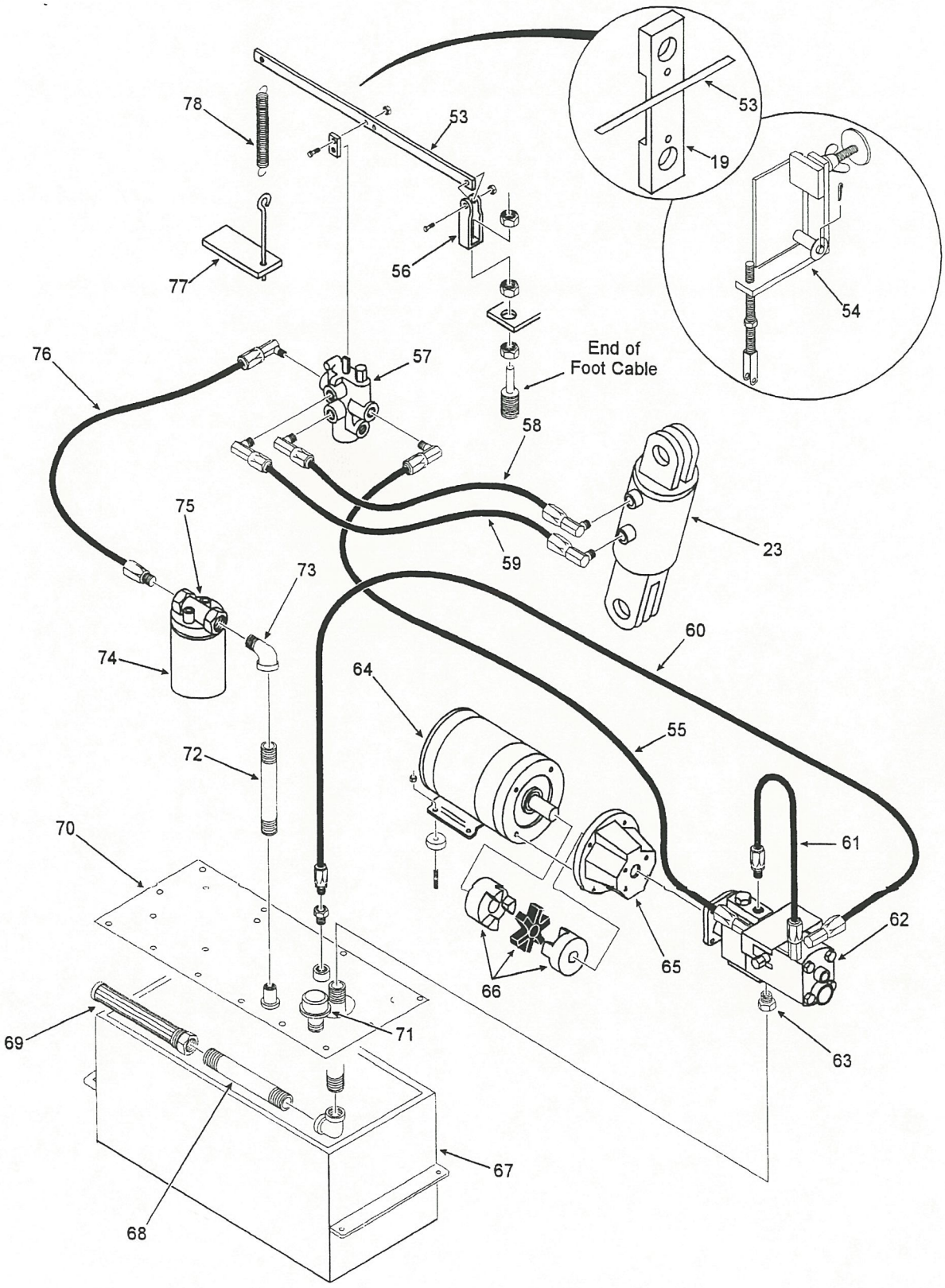
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