AIR OPERATED SHEARS

WYSONG AND MILES COMPANY

GREENSBORO, NORTH CAROLINA

INSTALLATION AND BLADE CARE

LUBRICATION AND POWER SUPPLY

HOW TO CHECK FOR LEAKS-FOOT VALVE CARE

ILLUSTRATION HANNIFIN AIR CYLINDER

PARTS LIST - A-72, A-96, A-120, A-144, and A-168

PART LIST - RACK AND PINION BACK GAUGE

ILLUSTRATION - A-72

ILLUSTRATION - A-96

ILLUSTRATION A-120

FLOOR PLAN - A-72, A-96, A-120, A-144, and A-168

MARCH, 1968

INSTALLATION AND INSTRUCTION MANUAL

ALL AIR OPERATED SHEARS

When your WYSONG Air Shear arrives, check the machine and parts carefully for possible damage. Should any evidence of damage exist, file claim against the carrier and contact us directly for any necessary information.

INSTALLATION

The machine should be removed from the skids and placed directly over the mounting bolts (See Floor Plan on machine involved for bolt location). Use a precision lever and be careful to level the unit both logitudinally and horizontally. After the unit is leveled on the foundation, securely tighten the mounting bolts and recheck for any possible change. Check the blade clearance as follows:

1. Place a bar under the cylinder bracket and lift the knife bar to remove the shipping blocks.

2. Use the bar to lower the knife bar, while checking the blade clearance from right to left as the knife bar moves downward. The clearance should be .003" on each end and .002" in the center. Be sure to check the clearance at the point the cutting edges intersect. Due to the way the blades are ground, if checked other than at this point, an incorrect reading may result.

3. If the clearance varies, loosen the table bolts and move the table in or out, whichever the case may be. Use the square head set screws to push the table in, and the cap screws to draw the table out. Be careful to maintain the same pressure on both pushing and drawing so as to have complete control over the table at all times. Check the clearance after the table bolts are tightened to see if any changes have occured.

4. To change the clearance in the center, use the tension stud in the center of the knife bar. Never shim back of the blade.

5. After the blade clearance has been determined, the machine is ready for power to be applied.

BLADE CARE

1. Never permit the blades to rub each other, as this will cut down the blade life and cause an overloaded condition.

2. Lubricate the blades with a brush or oil soaked cloth when shearing stainless or galvanized material. Wipe oil on the lower blade; the upper blade will pick up enough during shearing cycle.

3. Keep the blades sharp, as dull blades can increase the shear load as much as 50%. Turn or change the blades as soon as a burr is noted on the sheared stock if no change has occurred in the blade clearance.

The A-72, A-96, A-120, A-144, and A-168 have a 4-edge lower blade with a 2-edge upper blade which offers several combinations of cutting edges, and should be turned as often as the edges become dull.

4. After the blades are ground, place shim stock under the blade to keep the blade level with the table.

5. Always use a feeler gauge to check the clearance.

LUBRICATION

1. Grease fittings and oil ports are provided for all points requiring lubrication and should be kept well lubricated at all times.

2. The air vitalizer unit should be drained daily to remove the moisture, and the needle valve above the oil chamber should be adjusted so that one drop of oil falls through the sight gauge for every 15 or 20 strokes. Oil may be added by removing the plug in the top of the oil chamber. (It is not necessary to remove the hose or turn the air off).)Use S.A.E. 20 wt. or lighter good grade of mineral lubricant).

3. The capacity of the moisture trap is sufficient to trap only the moisture which may form between the regular air system trap and the machine. It is best to open the trap before starting the machine in the morning, leaving the valve slightly open for the first few cycles. This will force out the moisture coming through the line due to the temperature change. When using the machine in high humidity zones or on production runs, the trap should be drained twice a day.

POWER SUPPLY

Approximately 75-85 pounds of pressure is required to operate a shear. A 5 H.P. unit is recommended for the A-72, A-96, A-120, A-144, and A-168. Larger compressors will increase the stroke per minute slightly and might be considered for production shearing. The speed rating below is for full length shearing. A much higher rate may be obtained in operations which do not require full cutting length. Be sure to use not less than 3/4" line to the machine from the feeder line. The ratings below are figures with 80 pound gauge pressure at 80% efficiency of the compressor.

MODEL	H.P.	STROKES PER MIN.	CUBIC FT. PER MIN.	H.P.	STROKES PER MIN.	CUBIC FT PER MIN.
A-72	5	7-11	29	7-1/2	9-13	34
A-96	5	7-11	29	7-1/2	9-13	34
A-120	5	7-11	29	7-1/2	9-13	34
A-144	5	7-11	29	7-1/2	9-13	34
A-168	5	7-11	29	7-1/2	9-13	34

HOW TO CHECK FOR LEAKS

1. Leakage at the exhaust part of the control valve indicates a leak within the valve or past the cylinder piston.

   (a) To determine if the leak is past the piston or past the valve, remove the hose from the cylinder opposite the end where pressure is applied (with knife bar down, remove the lower hose or with knife bar up, remove the upper hose.)

   (b) If the leakage is from the hose, the valve is leaking. Replace valve if leak is sufficient to warrant replacement. If the air escapes from the cylinder, it indicates the leakage is past the piston. (See "How to Pack Cylinder")

2. Leakage around piston rod can be found by applying light oil to the shaft and checking for bubbles. The chevron packing is self-adjusting but may be tightened after wear has exceeded the range of the packing as follows: Should a leak be noted, remove packing gland and place a ring of gasket material or shim stock on the chevron packing, tighten cap screws to apply sufficient pressure on the packing to stop leak.

FOOT VALVE CARE

It is a good practice to apply a few drops of oil from time to time to the foot valve. Since this is the lowest point of the system, moisture will collect and cause the plunger to stick causing the knife bar to stay in the down position. In some remote cases, it may be necessary to disassembly and clean, though a few drops of oil poured through the vent hole in the back will be sufficient in most cases.

Wasted air is costly-For best results, keep system free of leaks. The table below indicates just how expensive a leak can be.

Equivalent leak dia. in inches	1/32"	1/16"	1/8"	3/16"	1/4"
Air waster per month cubic feet of free air per 100 PSI	73,440	293,760	1,123,200	2,592,000	4,449,600
Savings possible at 10¢ per 1000 Cu. Ft.	$7.34	$29.38	$112.32	$259.20	$444.96

CATALOG FILE
0910-A48
ISSUED JANUARY, 1963

HANNIFIN® SERIES 2A AIR CYLINDERS

HEAD ASSEMBLIES

The following head assemblies, when cushioned, include symbols 26, 47, 69, 70, 71, 72; when non-cushioned, they include symbols 26 and 47 only. NOTE — When ordering service assembly, specify assembly number and "cushioned" or "non-cushioned".

ASSEMBLY NO.	DESCRIPTION
SA1	Basic head (symbol 1)
SA2	Side lug mounting head (symbol 2)
SA3	Centerline mounting head (symbol 3)
SA4	Side tapped mounting head (symbol 4)
SA5	Trunnion mounting head (symbol 5)
SA6	End lug mounting head (symbol 6)

SERVICE ASSEMBLY KITS

Service assemblies for servicing "2A" cylinders reduce your maintenance time and purchasing time. By specifying service assemblies for your power cylinder, you will receive subassemblies ready for installation. Instructions for installation will be included. Your paper work will be reduced by avoiding the necessity of the identification of each part.

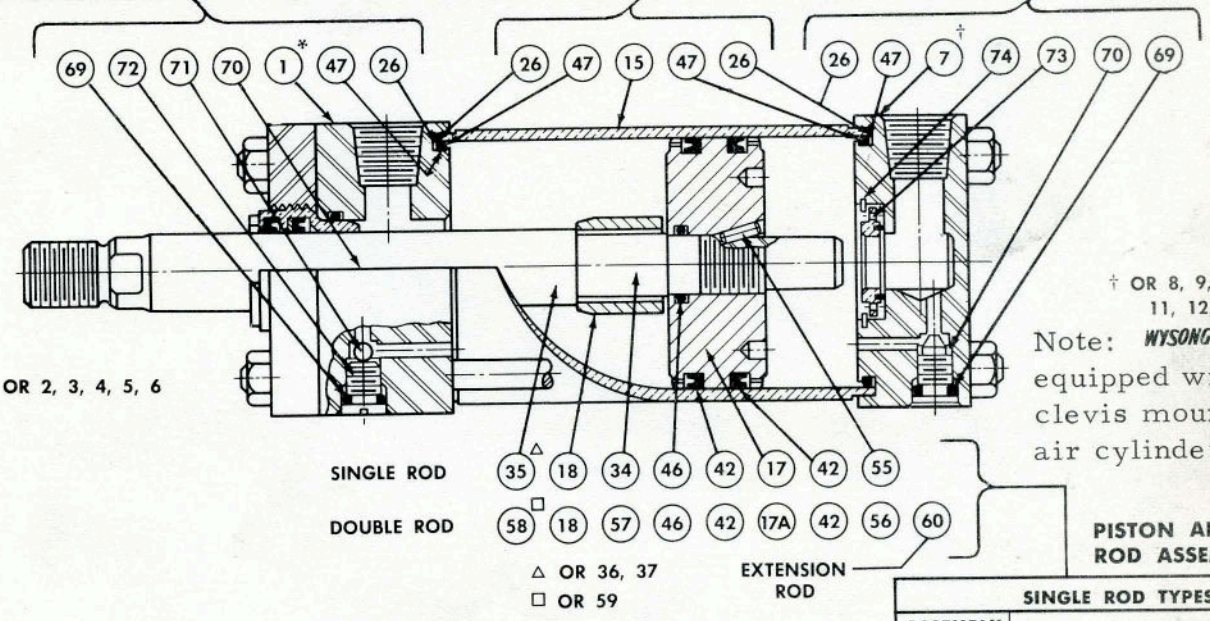
CYLINDER BODY ASSEMBLY

ASSEMBLY NO.	DESCRIPTION
SA15	Cylinder body (symbol 15) plus symbols 26 and 47 (2 of each)

CAP ASSEMBLIES

The following cap assemblies, when cushioned, include symbols 26, 47, 69, 70, 73, 74; when non-cushioned, they include symbols 26 and 47 only. NOTE — When ordering service assembly, specify assembly number and "cushioned" or "non-cushioned".

ASSEMBLY NO.	DESCRIPTION
SA7	Basic cap (symbol 7)
SA8	Side lug mounting cap (symbol 8)
SA9	Centerline lug mounting cap (symbol 9)
SA10	Side tapped mounting cap (symbol 10)
SA11	Trunnion mounting cap (symbol 11)
SA12	Fixed clevis mounting cap (symbol 12)
SA13	End lug mounting cap (symbol 13)



Note: WYSONG Air Shears equipped with fixed clevis mounting cap air cylinders. Style - BB

PARTS LIST

Symbol	PART NAME
1	HEAD, Basic, Styles BB, BC, DB, DD, H, HB, J, JB, T, TB, TC & TD
2	HEAD, Side Lug Mounting, Style C
3	HEAD, Centerline Lug Mounting, Style E
4	HEAD, Side Flush Mounting, Style F
5	HEAD, Trunnion Mounting, Style D
6	HEAD, Style G
7	CAP, Basic, Styles BC, D, DD, H, HB, J, JB, T, TB, TC & TD
8	CAP, Side Lug Mounting, Style C
9	CAP, Centerline Lug Mounting, Style E
10	CAP, Side Flush Mounting, Style F
11	CAP, Trunnion Mounting, Style DB
12	CAP, Fixed Clevis Mounting, Style BB
13	CAP, End Lug Mounting, Style G
15	CYLINDER BODY, Standard—Plain
17	PISTON BODY, Lipseal Type, Single Rod
17A	PISTON BODY, Lipseal Type, Double Rod
18	CUSHION SLEEVE, Rod Head Cushion
26	BACK-UP WASHER, Cylinder Body O-Ring
34	PISTON ROD, Single Rod Type—Non-Cushioned
35	PISTON ROD, Single Rod Type—Cushioned Head End
36	PISTON ROD, Single Rod Type—Cushioned Cap End
37	PISTON ROD, Single Rod Type—Cushioned Both Ends
42	LIPSEAL, Piston
46	O-RING, Piston to Rod Seal
47	O-RING, Cylinder Body to Head & Cap Seal
55	LOCK PIN, Piston to Piston Rod
56	LOCK PIN, Piston Rod To Extension Rod—K Type
57	PISTON ROD, Double Rod Type—Non-cushioned
58	PISTON ROD, Double Rod Type—Cushioned One End
59	PISTON ROD, Double Rod Type—Cushioned Both Ends
60	EXTENSION ROD, Double Rod Type—Non-Cushioned
61	EXTENSION ROD, Double Rod Type—Cushioned Both Ends
69	O-RING, Cushion Adjustment and Check Valve Plug Screw
70	NEEDLE, Cushion Adjustment Valve
71	BALL, Cushion Check Valve
72	PLUG SCREW, Cushion Check Valve
73	BUSHING, Float Check, Cushion on Cap End
74	RETAINING RING, Float Check Cushion Bushing

PISTON AND ROD ASSEMBLIES

SINGLE ROD TYPES	
ASSEMBLY NO.	DESCRIPTION
SA34	Non-cushioned model (symbol 34); includes symbols 17, 42, 46, 55
SA35	Cushioned head end (symbol 35); includes symbols 17, 18, 42, 46, 55
SA36	Cushioned cap end (symbol 36); includes symbols 17, 42, 46, 55
SA37	Cushioned both ends (symbol 37); includes symbols 17, 18, 42, 46, 55

DOUBLE ROD TYPES	
ASSEMBLY NO.	DESCRIPTION
SA57	Non-cushioned models (symbol 57); includes symbols 17A, 42, 46, 56, 60
SA58	Cushioned one end (symbol 58); includes symbols 17A, 18, 42, 46, 56, 60
SA59	Cushioned both ends (symbol 59); includes symbols 17A, 18, 42, 46, 56, 61

HOW TO ORDER SERVICE ASSEMBLIES

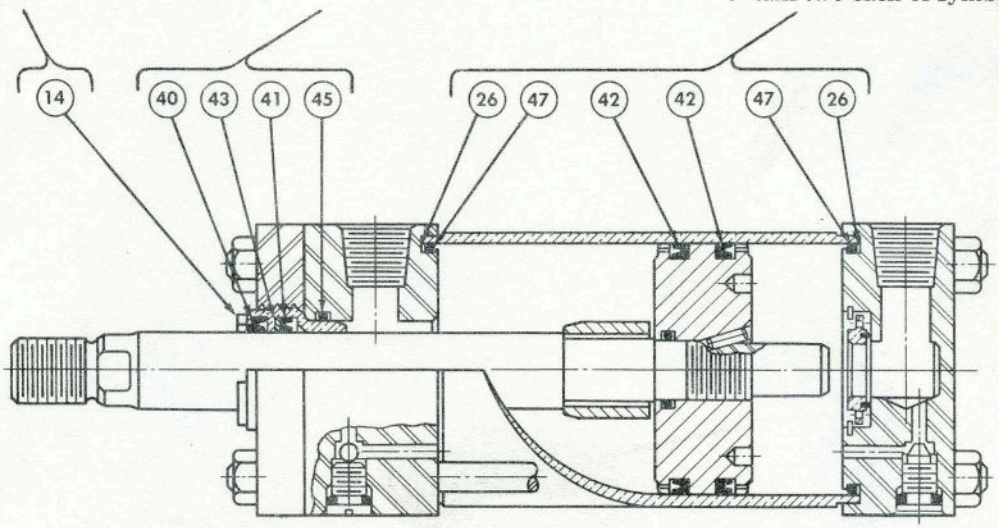
When ordering Service Assemblies, specify Serial Number, Bore, Stroke and Model Number shown on the cylinder's name plate.

SEAL KITS

RG KITS CONTAIN "JEWEL" GLAND AND SEALS
(Includes symbols 14, 40, 41, 43, 45.)

RK KITS CONTAIN ALL SEALS FOR GLAND CARTRIDGE
(Includes symbols 40, 41, 43 and 45.)

PK KITS CONTAIN PISTON SEALS AND CYLINDER BODY END SEALS
PK kits for Series "2A" cylinders contain two each of symbols 42, 26 and 47.



Service kits of expendable parts for Series "2A" fluid power cylinders are stocked in principle industrial locations across the U.S.A. and other countries. Contact your nearest distributor or Parker-Hannifin office.

For complete part identification and service instructions, ask for Maintenance Bulletin 0910-M1.

Service kits contain seals for standard fluid service, Class 1. Seals are compatible to all fluid power circuits operating with air, petroleum base oils, ethylene glycol, Freon 11, Freon 12, etc. Standard temperature for Class 1 service is +10° F. to +165° F. Maximum recommended temperature for standard seals is 200° F. with reduced life.

Seals are available for all common fluids applied to fluid power circuits.

CLASS	FLUIDS
1	Air & oil at standard temperatures
2	Water and water soluble fire resistant
3	Phosphate ester base fire resistant
4	Air & oil at low temperatures
5	Air, oil and water at high temperatures

ST'D. ROD DIA.	RG GLAND CARTRIDGE KIT NOS.* INCLUDES RK KIT	RK ROD SEAL KIT NOS.* CONTAINS ROD SEALS	GLAND CARTRIDGE WRENCH PART NO.	SPANNER WRENCH PART NO.
½"	RG2AHL-051	RK2AHL-051	69590	11676
⅝"	RG2AHL-061	RK2AHL-061	69590	11676
1"	RG2AHL-101	RK2AHL-101	69591	11676
1⅜"	RG2AHL-131	RK2AHL-131	69592	11703
1¾"	RG2AHL-171	RK2AHL-171	69593	11677
2"	RG2AHL-201	RK2AHL-201	69594	11677
2½"	RG2AHL-251	RK2AHL-251	69595	11677
3"	RG2AHL-301	RK2AHL-301	69596	11677
3½"	RG2AHL-351	RK2AHL-351	69597	11677
4"	RG2AHL-401	RK2AHL-401	69598	11677
5"	RG2AHL-501	RK2AHL-501	69599	11678
5½"	RG2AHL-551	RK2AHL-551	69600	11678

BORE SIZE	PK PISTON SEAL KIT NOS.*	TIE ROD NUT TORQUE SPECIFICATIONS FOOT POUNDS MIN.	MAX.
1"	PK1002A001	1¾	2
1½"	PK1502A001	8	12
2"	PK2002A001	12	17
2½"	PK2502A001	12	17
3¼"	PK3202A001	17	23
4"	PK4002A001	17	23
5"	PK5002A001	48	57
6"	PK6002A001	48	57
8"	PK8002A001	117	140
10"	PK9002A001	140	170
12"	PK9202A001	140	170
14"	PK9402A001	217	261

*Kit numbers identify Class 1 seals only. For seal kits with Class 2, 3, 4 or 5 seals, specify kit number desired and state class number.

HOW TO ORDER SEAL KITS

When ordering seal kits, call out kit number listed above, and if your fluid or temperature conditions differ from standard service, call out the name of the fluid and the temperature.

HOW TO ORDER HANNIFIN AIR CYLINDER LUBRICANT

Lubricant is available in 4-ounce tubes. To order, specify "Hannifin Air Cylinder Lubricant" and indicate quantity desired.

PARTS LIST

NOS. A-72, A-96, A-120, A-144, AND A-168 Air Shears

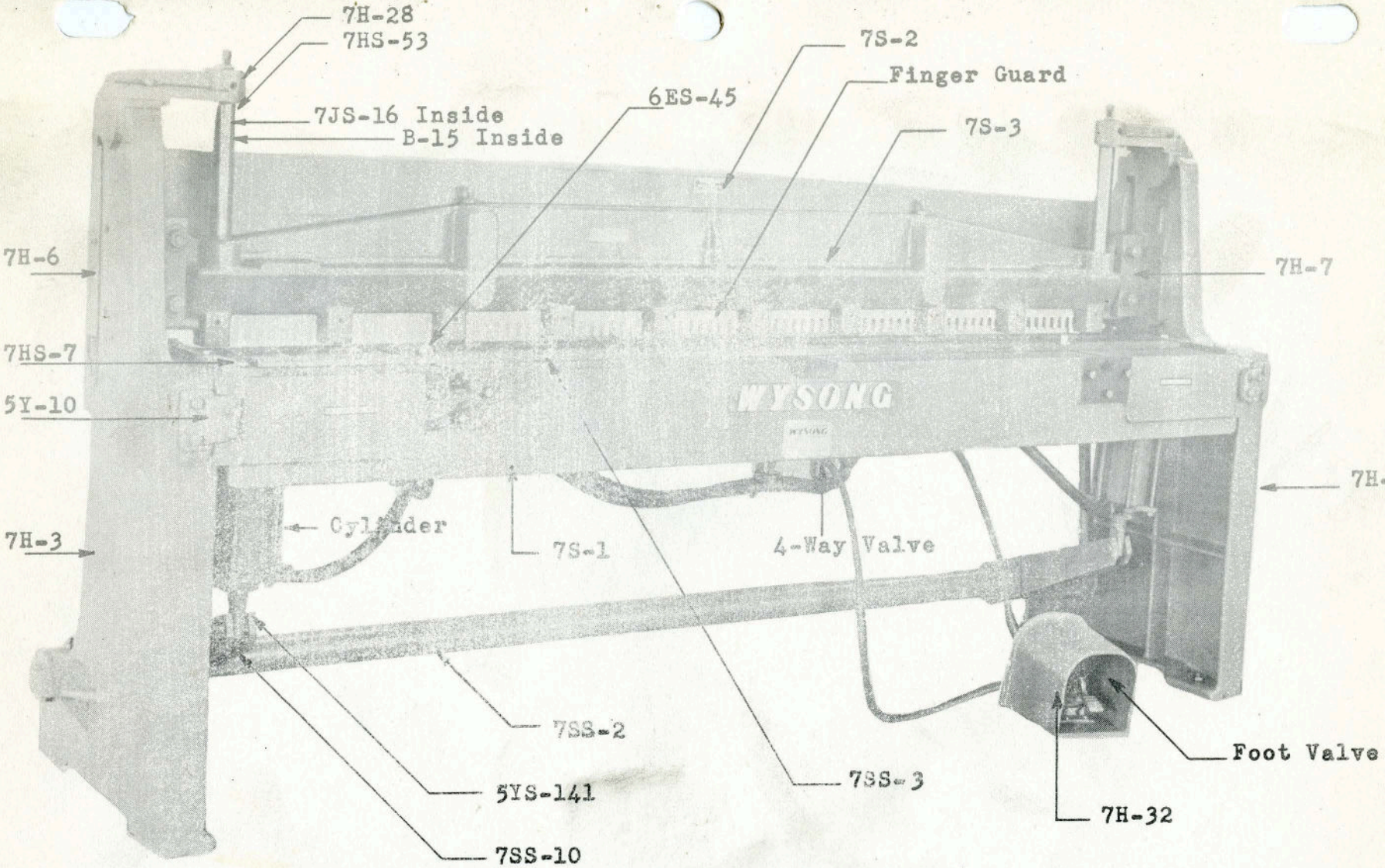
TITY	NAME OF PART	A-72	A-96	A-120	A-144	A168
1	Table	7S-11	7H-1	7H-25	A12-1	A14-1
1	Knife Bar	7S-2	7H-4	7H-26	A12-2	A14-2
1	Holddown	7S-5	7H-161	7H-160	A12-3	A14-3
1	RH End Housing	7H-2	7H-2	7H-2	7H-2	7H-2
1	LH End Housing	7H-3	7H-3	7H-3	7H-3	7H-3
2	Knife Bar Gibs	7H-6	7H-6	7H-6	7H-6	7H-6
2	Holddown Bar Gibs	8C-7	8C-7	8C-7	8C-7	8C-7
2	Spring Brackets	7H-28	7H-28	7H-28	7H-28	7H-28
2	Table Adjusting Lugs	5Y-10	5Y-10	5Y-10	5Y-10	5Y-10
2	Table Extensions	7E-6	7E-6	7E-6	7E-6	7E-6
1	Air Valve Guard	7H-36	7H-36	7H-36	7H-36	7H-36
1	Foot Treadle Shaft	7SS-2	7HS-2	7HS-54	A12S-1	A14S-3
2	Disappearing Stops	S12S-55A	S12S-55A	S12S-55A	S12S-55A	S12S-55A
1	Tension Rod	7SS-4	7HS-719	7HS-56	A12S-2	Al4S-1
1	Torque Tube	7SS-120	7HS-578	7HS-579	A12S-10	A14S-14
2	Side Gauges	SGS-17	SGS-17	SGS-2	SGS-2	SGS-2
2	Take Up Gibs	7HS-8	7HS-8	7HS-8	7HS-8	7HS-8
2	Gibs NonMetallic	MG-38	MG-40	MG-4	MG-43	MG-43
2	Gibs NonMetallic	MG-39	MG-41	MG-42	MG-44	MG-44
1	Knife Bar Pull Rods LH	7SS-48	7HS-93	7HS-94	A12S-9	A14S-13
	Knife Bar Pull Rods RH	7SS-258	7HS-699	7HS-700	A12S-19	A14S-24
2	Air Cylinder Pivot Bearings	5YS-195	5YS-195	5YS-195	5YS-195	5YS-195
2	Air Cylinder Knuckles	5YS-199	5YS-199	5YS-199	5YS-199	5YS-199
2	Air Cylinder Knuckles Pins	7SS-121	7SS-121	7SS-121	7SS-121	7SS-121
1	Bracket for Air Valve	7HS-87	7HS-87	7HS-87	7HS-87	7HS-87
2	Upper Treadle Conn. Pins	5YS-173	5YS-173	5YS-173	5YS-173	5YS-173
2	Lower Treadle Conn. Pins	7SS-108	7SS-108	7SS-108	7SS-108	7SS-108
1	Tension Rod Stud	7GS-43	7GS-43	7HS-621	S12S-4	8FS-6
2	Cylinder Pivot Bear. Pins	7LS-1	7LS-1	7LS-1	7LS-1	7LS-1
2	Housing Ends	7ES-5	7ES-5	7ES-5	7E^{S}-5	7ES-5
2	Holddown Springs	B-15	B-15	B-15	B-15	B-15
2	Spring Pressure Plungers	7JS-16	7JS-16	7JS-16	7JS-16	7JS-16
2	Holddown Studs	7NS-28	7NS-28	7NS-28	7NS-28	7NS-28
2	Cover Plates	7SS-110	7SS-110	7SS-110	7SS-110	7SS-110
2	Table Bolt Locking Plates	7SS-259	7SS-259	7SS-259	7SS-259	7SS-259
2	Table Bolt Locking Plates	7SS-260	7SS-260	7SS-260	7SS-260	7SS-260
2	Spring Housing	7HS-53	7HS-53	7HS-53	7HS-53	7HS-53
2	Blades					
	Upper Blade 6 degree bevel	3" x 1" x 73"	3"x1"x98"	3"x1"x122"	3"x1"x146"	3"x1"x170"
2	Blade Bolts	28-5/8"x3"	34-5/8"x3"	42-5/8"x3"	50-5/8"x3-1/2"	5/8" x3-1/

QUANTITY	NAME OF PART	A-72	A-96	A-120	A-144	A-168
1	Holddown Tension Bar				A12S-3	A14S-5
1	Finger Guard	FG-25	FG-26	FG-27	FG-28	FG-29
2	Treadle Washers	-	-	-	-	A14S-4
4	Spacers	-	-	-	-	A14S-17
8	Holddown Plungers	7HS-71				
10	Holddown Plungers		7HS-71			
12	Holddown Plungers			7HS-71		
8	Plunger Guide Collars	7HS-72				
10	Plunger Guide Collars		7HS-72			
12	Plunger Guide Collars			7HS-72		
8	Plunger Washers	7HS-73				
10	Plunger Washers		7HS-73			
12	Plunger Washers			7HS-73		

2	Hannifin Air Cylinders, Series 2A, Style BB, 5" Bore, 9 Stroke, Rod No. 1 Std (1" Dia.), Style 4, Thd, (3/4" -16)
2	Hannifin Knuckle #69091
1	Hannifin Regulator R2037-B with Gauge
1	Schrader 4-Way Valve #3456
1	Schrader 3-Way Valve #1255
2	Schrader Quick Exhaust Valves #3340
2	Schrader Air Mufflers #476A
2	A-2608 Speed Coupler Connectors (Aro)
2	210 Speed Couplers (Aro)
1	Norgren Vitalizer Unit #85DA-B3, 3/8"
4	Bronze Bushings 1-1/4" OD x 1" ID x 7/8" L. (Pull Rods)
2	Bronze Bushings 2-5/8" OD x 2" ID x 4" L. (7LS-28) for A-72, A-96, A-120, A-144
2	Bronze Bushings 3-3/4" OD x 2-1/2" ID x 4" L. (A14-4) A-168 only
2	BGW Bear-N-Bronze Bearings #M1216-10 (3/4 ID x 1 OD x 1-1/4 L.)
2	10-32 x 1/4" Fil Hd. Machine Screws
2	1/4" - 20 x 7/8" L. Socket Hd. Screws
4	3/8" - 16 x 7/8" L. Socket Hd. Screws
6	3/8" St. Ells
4	3/8" 2" Pipe
1	3/8" Pipe Cap
1	3/8" Tee
1	3/8" Close Nipple
1	3/8" to 1/4" Bushing
1	1/8" St. Ell
1	1/8" Close Nipple
1	1/4" Pipe Coupling
2	3/8" x 1/4" Hose Shanks
2	1/4" to 1/4" Hose Shanks
2	1/2" Hose - 1 Length
1	1/4" Hose - 1 Length
1	1/4" to 1/8" Bushing

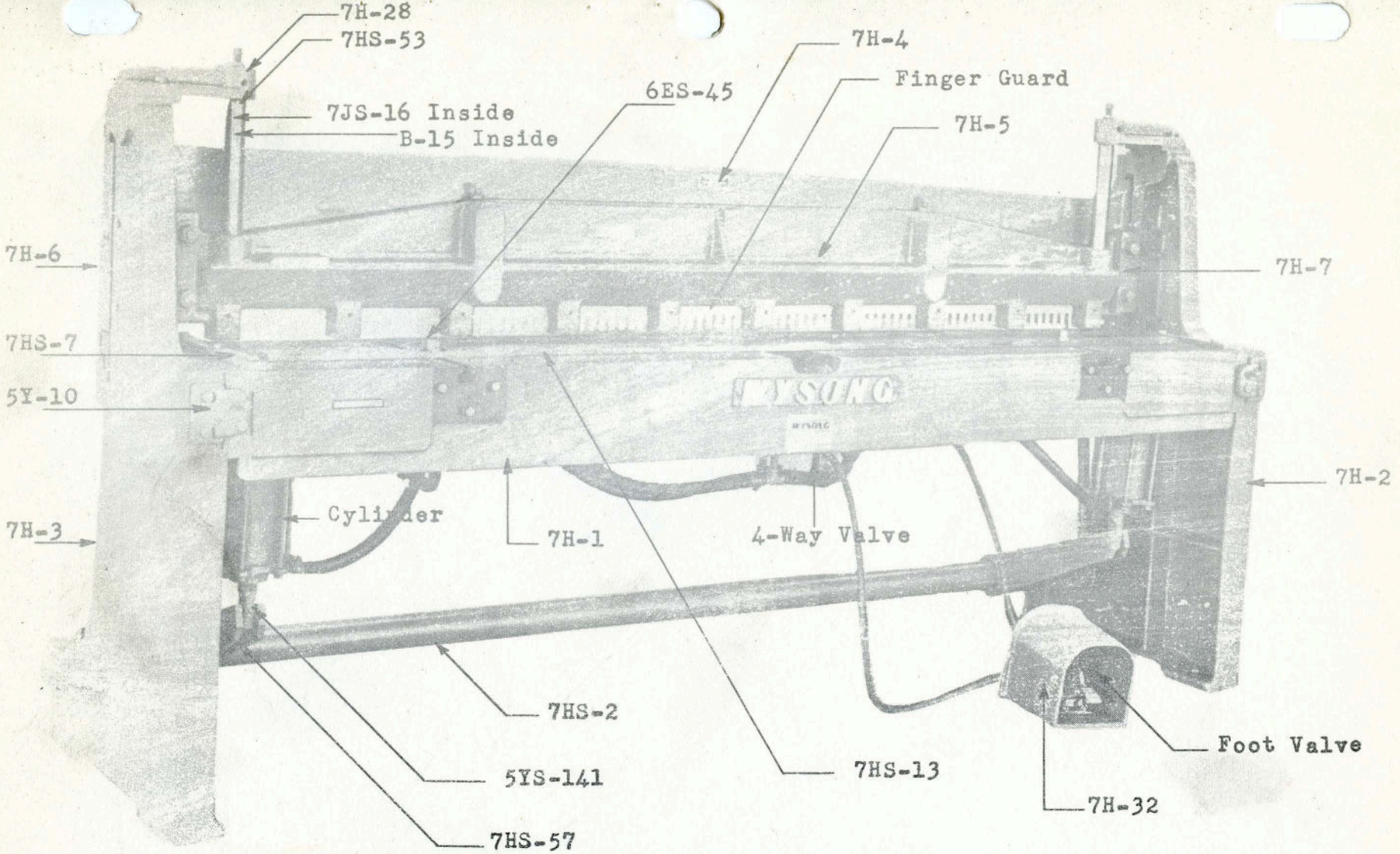
RACK AND PINION OPERATED BACK GAUGE

QUANTITY	NAME OF PART	A-72	A-96	A-120	A-144	A-168
2	Back Gauge Adapter Lugs	7H-176	7H-176	7H-176	7H-176	7H-176
2	Back Gauge Housings	7H-177	7H-177	7H-177	7H-177	7H-177
2	Back Gauge Locking Handles	FO-10	FO-10	FO-10	FO-10	FO-10
2	Back Gauge Traversing Handles	FO-22	FO-22	FO-22	FO-22	FO-22
2	Back Gauge Racks	7HS-197	7HS-197	7HS-197	7HS-197	7HS-197
2	Back Gauge Pinions	FOS-43	FOS-43	FOS-43	FOS-43	FOS-43
1	Back Gauge Stop	7HS-186	7HS-79	7HS-187	A12S-6	7HS-197
2	Back Gauge Locking Handle Screws	FOS-23	FOS-23	FOS-23	FOS-23	FOS-23
2	Back Gauge Indicators	FOS-24	FOS-24	FOS-24	FOS-24	FOS-24
1	LH Back Gauge Support	FOS-44	FOS-44	FOS-44	FOS-44	FOS-44
1	RH Back Gauge Support	FOS-45	FOS-45	FOS-45	FOS-45	FOS-45
3	Pivot Studs	FOS-46	FOS-46	FOS-46	FOS-46	FOS-46



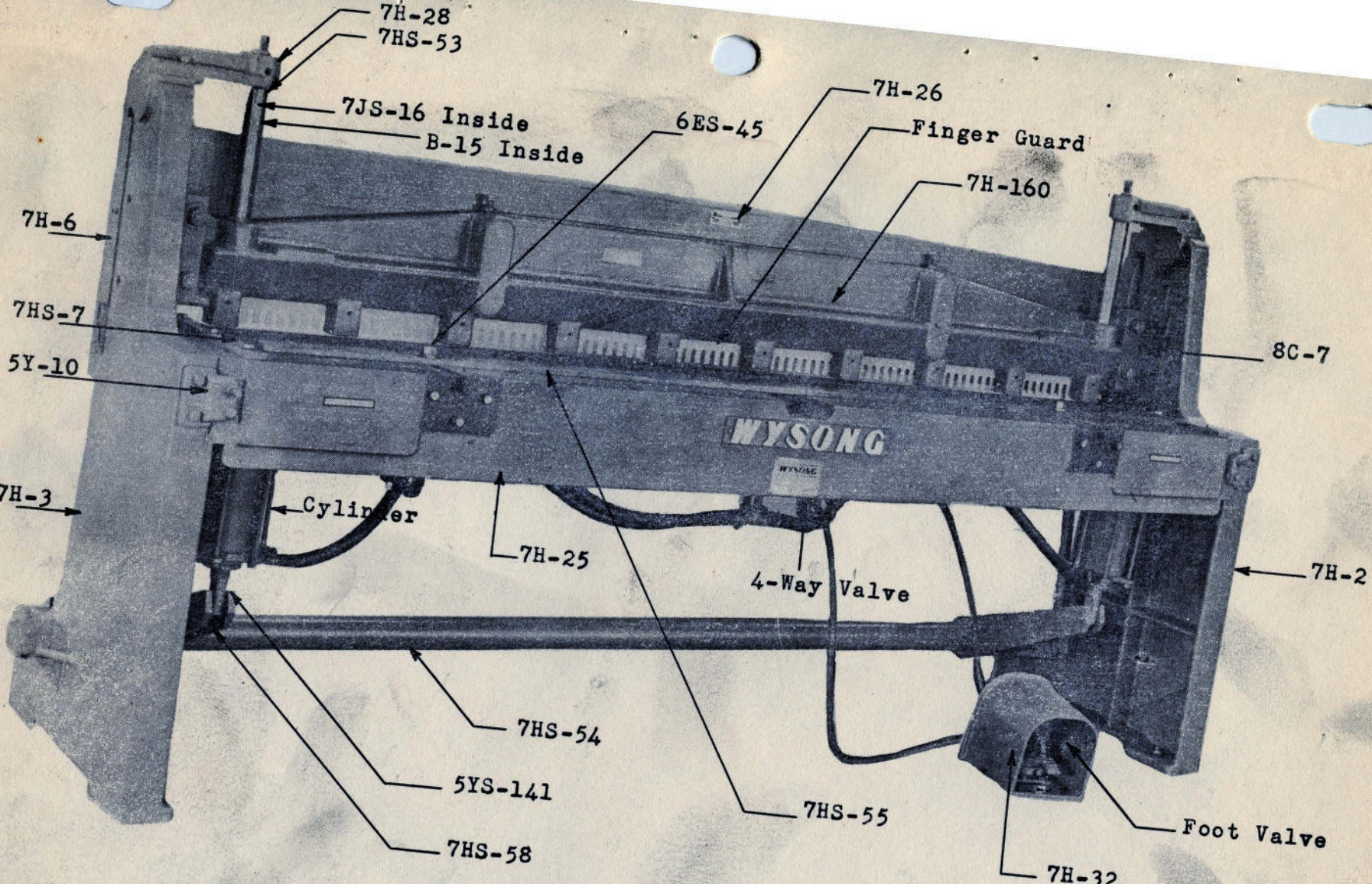
WYSONG AND MILES

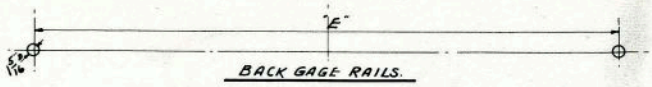
NO. A-72 AIR OPERATED SHEAR

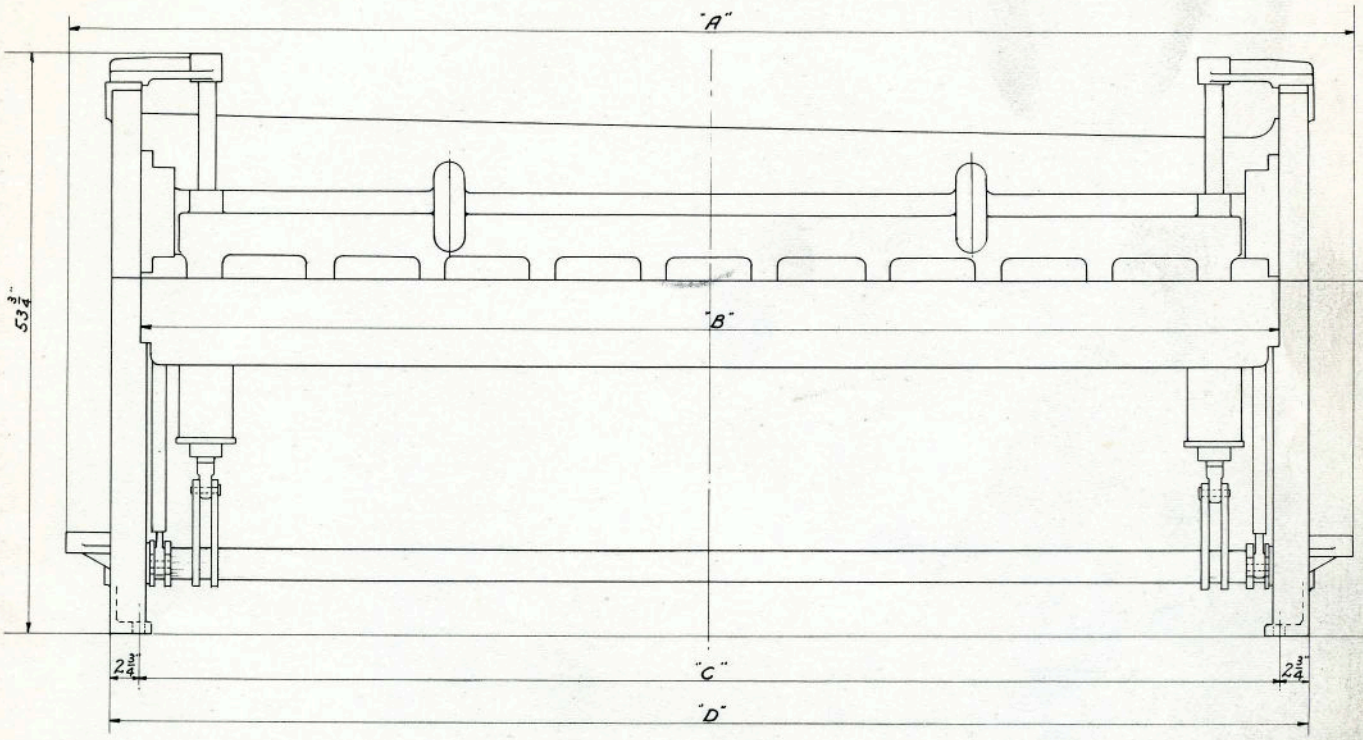


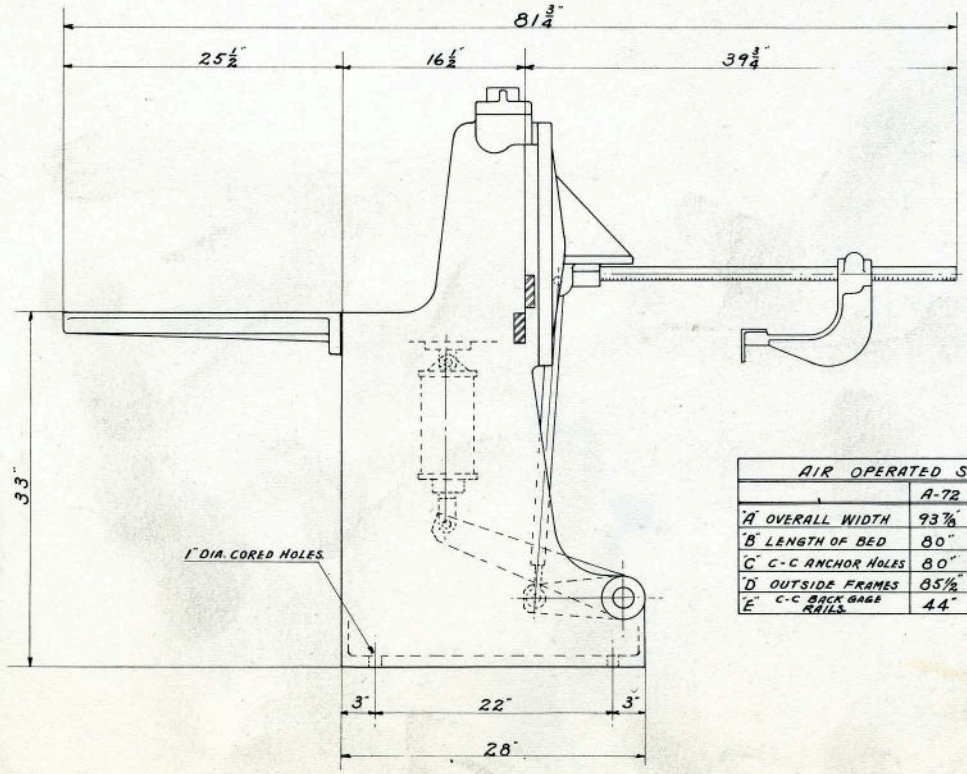
WYSONG AND MILES

NO. A-96 AIR OPERATED SHEAR


7H-28
7HS-53
7JS-16 Inside
B-15 Inside
6ES-45
7H-26
Finger Guard
7H-160
7H-6
7HS-7
5Y-10
8C-7
WYSONG
7H-3
Cylinder
7H-25
4-Way Valve
7H-2
7HS-54
5YS-141
7HS-55
Foot Valve
7HS-58
7H-32







AIR OPERATED SHEARS.					
	A-72	A-96	A-120	A-144	A-168
"A" OVERALL WIDTH	93 7/8"	117 7/8"	141 7/8"	165 7/8"	189 7/8"
"B" LENGTH OF BED	80"	104"	128"	152"	176
"C" C-C ANCHOR HOLES	80"	104"	128"	152"	176
"D" OUTSIDE FRAMES	85 1/2"	109 1/2"	133 1/2"	157 1/2"	181 1/2
"E" C-C BACK GAGE RAILS	44"	54"	66"	90"	90