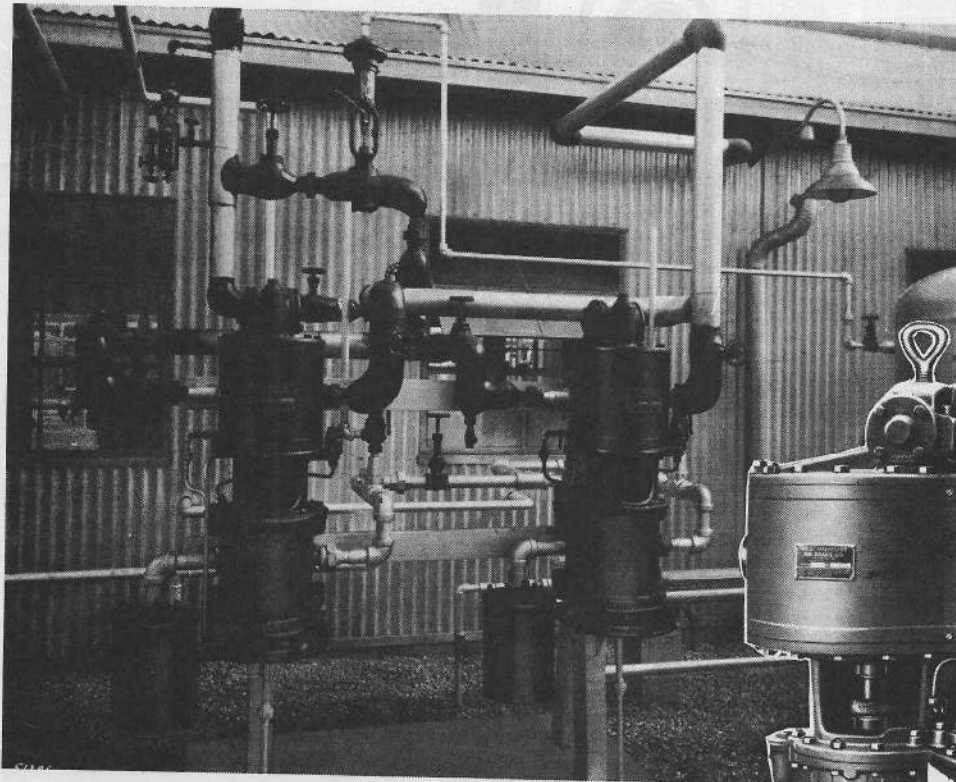


CROWN METAL PRODUCTS CO.

WYANO, PA. 15695 - U.S.A.

Telephone 872-8720 Area Code 412



510056 (F-2)

509653 (B-3)

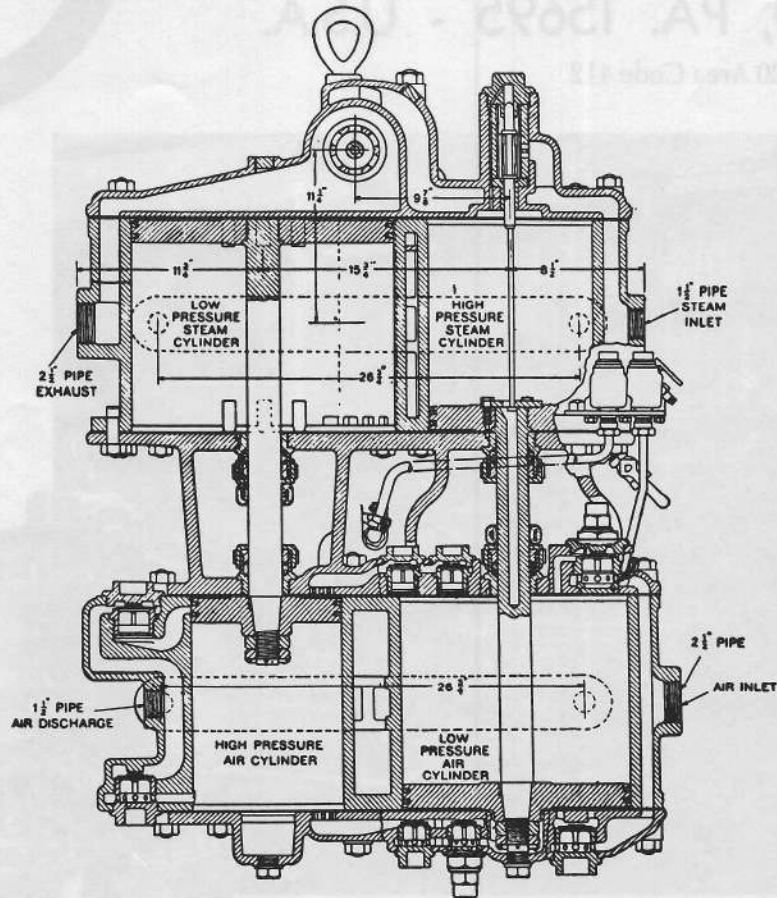
8½-150-D and 8½-120-D

CROSS COMPOUND AIR COMPRESSORS

Part Catalog No. 3204-1

Supplement No. 8 February, 1969

(Superseding Issues of February, 1938, and June, 1947)



Steam Locomotives. Rolling Stock. Steam Driven Air Compressors. Foundation Brake Rigging.

8½"-150-D and 8½"-120-D Cross Compound Air Compressors

Originally built by Westinghouse Air Brake Co. for railroad air brake service where absolute reliability, great durability, and low maintenance expense are essential features, these compressors have also proved to be admirably suited for a wide range of industrial and marine service. Of compact design, they are ideally portable, require a minimum of floor space, and may be fastened to any solid support. The use of a cast iron stand to which the compressor is bolted, however, is recommended for permanent stationary installations.

Generally, the two stage air compressor is recommended wherever there is a continuous demand for compressed air. This is a highly efficient, large capacity compressor with marked economy in steam consumption, due to the compounding of both steam and air.

The single stage air compressor is suitable for installations involving continuous operation only against air pressures not exceeding 100 pounds, also where steam consumption is not of paramount importance or where the exhaust steam can be fully utilized.

Accessories supplied with compressors include Automatic Oil Cups for air cylinder lubrication, Intake Strainer, Drain Cocks for steam cylinders, and a set of wrenches.

Each installation involves the use of a governor to automatically control the air compressor operation, and a lubricator in the steam supply line to lubricate the steam cylinders. These devices as well as other accessories for a complete installation are listed in tabulation on page 10.

Installation diagrams illustrate the items required and indicate in a general way the sequence and arrangement of the apparatus from the steam boiler to the air supply line. A separate publication, covering the installation and maintenance, is included with each compressor shipment.

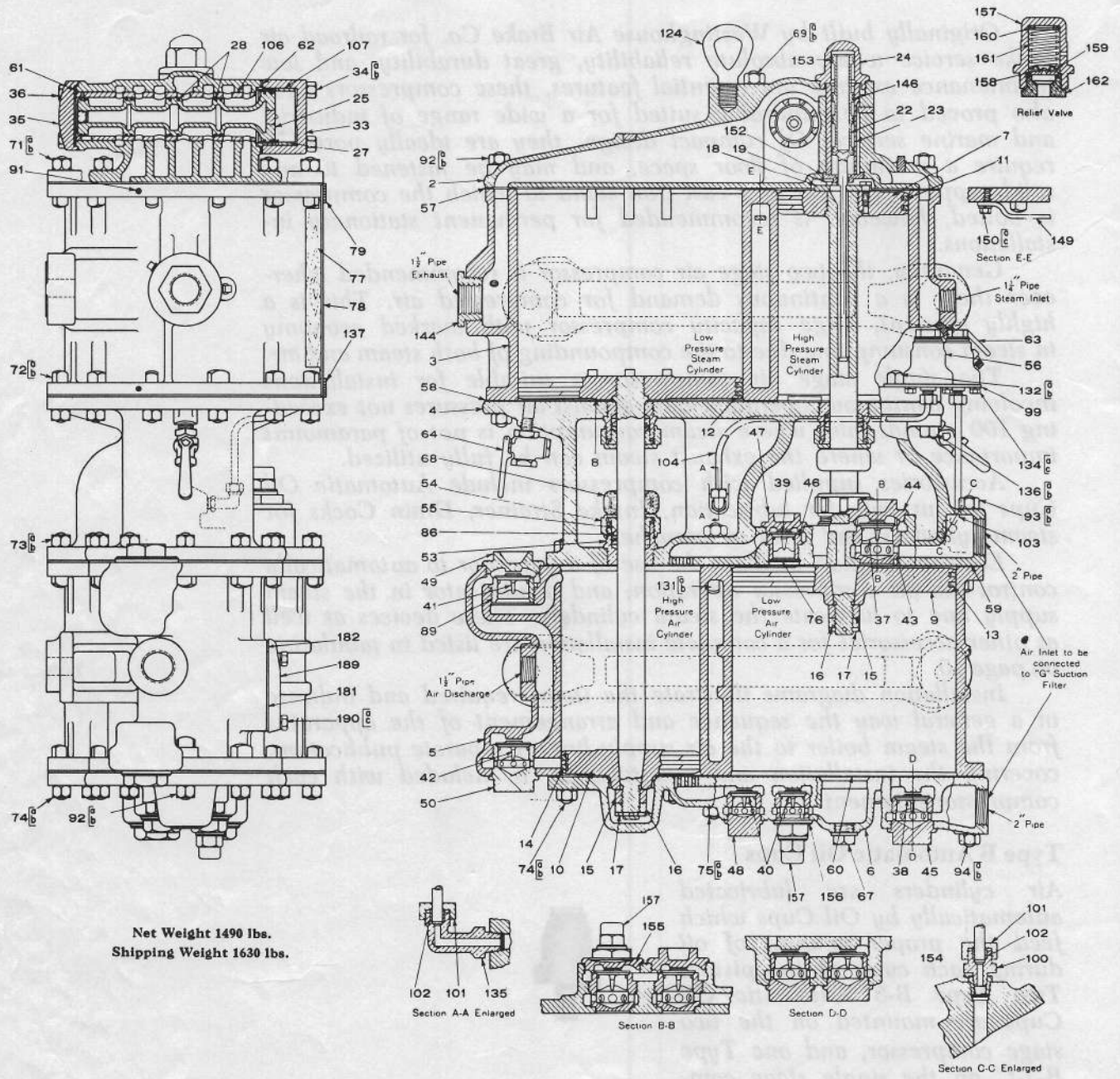
Type B Automatic Oil Cups

Air cylinders are lubricated automatically by Oil Cups which feed the proper amount of oil during each cycle of the piston. Two Type B-3 Automatic Oil Cups are mounted on the two stage compressor, and one Type B-3-C on the single stage compressor.



Intake Strainers

An air strainer or filter is supplied with each compressor to prevent the entrance of dirt into the compressor intake.



Net Weight 1490 lbs.
Shipping Weight 1630 lbs.

Prices will be quoted upon application
Orders should give *PIECE NUMBER* and *NAME* of part wanted

8 1/2"-150-D CROSS COMPOUND AIR COMPRESSOR

The 8 1/2"-150-D Steam Driven Air Compressor is recommended for steam pressures up to 300 lbs., and is designed to operate at approximately 131 single strokes per minute with Saturated Steam Pressure of 200 lbs. When steam pressures above this figure or Superheat steam at any pressure is used the steam supply should be choked to maintain this speed. (See Note H).

Piece No. 514896 8 1/2"-150-D Cross Compound Air Compressor, complete with Type "B-3" Automatic Air Cylinder Oil Cup, Type "A" Air Inlet Manifold, G-2 Intake Filter, and Relief Valves.

Piece No.	Ref. No.	*No. Per Pkg.	Description	Piece No.	Ref. No.	*No. Per Pkg.	Description
93221			Top Head, complete, (Includes 2, 21, 22, 24, 25, 33, 35, 61, 62; two of Pc. 33711; four of 34 and 36)	91207	73		3/4"x2 1/2" Bolt and Nut (15 Req'd)
502741	2		Top Head (Includes 23, 106 and 152)	91207	74		3/4"x2 1/2" Bolt and Nut (13 Req'd)
508558	3		Steam Cylinder, complete, (Inc. 63, 77, 78, 79, 137, 144, 149, 150, 151; two of Pc. 33711; and six of 91)	91219	75		3/4"x3 1/2" Bolt and Nut (2 Req'd)
				17990	76		Guard Plate (2 Req'd)
				77295	77		Lagging
				77294	78		Jacket
509654	4		Center Piece, complete, (Inc. 44, 155, 157, 158, 159, 160, 161, 162, Pc. 3526; two of 37, 39, 43, 46, 47, 76, Pc. 33711 and four of 53, 54 and 55)	11314	79		Upper Jacket Band
				91353	86		Piston Rod Packing (Composition) Set (2 Req'd)
08954	5		Air Cylinder, complete, (Inc. 41, 42, 49, 50, 89, 181, 182; two of 189; four of 190 and 191)	8269	89	24	Upper Discharge Valve Seat
				68421	91		Jacket Band Screw (6 Req'd)
509655	6		Lower Head, complete, (Includes 48, 67, 156, 157, 158, 159, 160, 161, 162; two of 38, 40 and 45)	91211	92		3/4"x3 1/2" Bolt and Nut (7 Req'd)
				91215	93		3/4"x5" Bolt and Nut (2 Req'd)
†98246	7	1	H. P. Steam Piston and Rod, complete, (Includes 15, 16, 17, 18; two of 11; and three of 19)	91217	94		3/4"x5 1/4" Bolt and Nut (2 Req'd)
				77290			Set Type "B-3" Oil Cups, Bracket and Oil Tubes, complete, (Includes 99, 100, 103, 104, 135; two of 56, 101, 102; four of 133 and 134)
†98240	8	1	L. P. Steam Piston and Rod, complete, (Includes 15, 16, 17 and two of 12)	91812	99		Oil Cup Bracket
				71756			1/4" Union Stud Connection, complete, for 3/8" Copper Tube (Includes 100, 101 and 102)
†98222	9	1	L. P. Air Piston, complete, (Includes two of 13)				
†98212	10	1	H. P. Air Piston, complete, (Includes two of 14)	* 79926	77755	100	1/4" Union Stud
†97401	11	12-25	H. P. Steam Piston Ring (2 Req'd)	77755	101		Union Nut (2 Req'd)
†97478	12	12-25	L. P. Steam Piston Ring (2 Req'd)	77755	101		Union Sleeve for 3/4" Copper Tube (2 Req'd)
†97478	13	12-25	L. P. Air Piston Ring (2 Req'd)	77727	102		Oil Tube and Connection to L. P. Air Cylinder, complete, (Includes 100, 101, 102 and 103)
†97436	14	12-25	H. P. Air Piston Ring (2 Req'd)	81214	77287		3/8" Oil Tube to Low Pressure Air Cylinder
12136	15	42	Piston Rod Nut (2 Req'd)				Oil Tube and Connection to H. P. Air Cylinder, complete, (Includes 101, 102, 104 and 135)
12137	16	42	Piston Rod Jam Nut (2 Req'd)	77286	103		3/8" Oil Tube to High Pressure Air Cylinder
1018	17		Piston Rod Cotter (2 Req'd)	77289			Piston Valve Bush
1688	18	3	Reversing Valve Plate				Large Main Valve Bush
12065	19		Reversing Valve Plate Bolt (3 Req'd)	77288	104		Eye Bolt
93217	21		Reversing Valve Rod, complete, (Inc. 147 and 148)	89589	106		3/8"x3 3/8" Bolt and Nut (3 Req'd)
†91286	22		Reversing Valve, complete, (Includes two of 153 and six of 146)	92674	107		3/8"x3 3/8" Bolt and Nut
				71080	124		3/8"x2 3/4" Bolt and Nut
95173	23		Reversing Valve Bush	91221	131		3/8" Lock Washer (4 Req'd)
89600	24		Reversing Valve Cap Nut	91223	132		3/8"x1 1/4" Cap Screw (4 Req'd)
†89595	25		Main Valve Piston, complete, (Includes two of 27 and eight of 28)	17173	133		3/8" Union Ell Connection, complete, for 3/8" Copper Tube, (Includes 101, 102 and 135)
				24286	134		3/8" Union Ell
†89608	27		Large Main Valve Piston Ring (2 Req'd)	71754	135		3/8"x3 3/8" Bolt and Nut
†89607	28		Small Main Valve Piston Ring (8 Req'd)	91221	136		Lower Jacket Band
89598	33		Front End Cap, complete, (Includes 107)	77293	137		Reducing Bush
91317	34		5/8"x5 1/2" Stud and Nut (4 Req'd)	56018	144		1 1/2" Piston Ring (6 Req'd)
502736	35		Rear End Cap	527413	147		3/8" Lock Nut
91331	36		5/8"x1 1/2" Hex. Hd. Cap Screw (4 Req'd)	50216	149		Guard for Bolts
29177	37	12-36	Upper Inlet Valve (2 Req'd)	24286	150		3/8"x7/8" Cap Screw
29177	38	12-36	Lower Inlet Valve (2 Req'd)	17173	151		3/8" Lock Washer
24396	39	12-36	Upper Intermediate Valve (2 Req'd)	99775	152		Stop Nut
24396	40	12-36	Lower Intermediate Valve (2 Req'd)	†88351	153		1 1/4" Piston Ring (2 Req'd)
29177	41	12-36	Upper Discharge Valve	39952	154		3/8"x1/4" Reducing Bush
29177	42	12-36	Lower Discharge Valve	508979			Upper Inlet Valve Chamber Cap with Relief Valve, complete, (Includes 155 and Pc. No. 510451)
77117	43	12	Upper Inlet Valve Seat (2 Req'd)	509638	155		Upper Inlet Valve Chamber Cap
505774	44	2	Upper Inlet Valve Chamber Cap	508976			Lower Intermediate Valve Cage with Relief Valve complete, (Includes 156, and Pc. No. 510451)
44445	45	6	Lower Inlet Valve Cage (2 Req'd)	509637	156		Lower Intermediate Valve Cage
8430	46	12	Intermediate Valve Seat (2 Req'd)	510451			Relief Valve, complete (Includes 157, 158, 159, 160, 161, and 162) (2 Req'd)
505773	47	1	Intermediate Valve Chamber Cap (2 Req'd)	509564	157		Relief Valve Body (2 Req'd)
46806	48	6-12	Lower Intermediate Valve Cage	509635	158		Valve (2 Req'd)
505774	49	2	Upper Discharge Valve Cap	509636	159		Spring Equalizer (2 Req'd)
44445	50	6	Lower Discharge Valve Cage	18723	160		Washer (Sufficient to Set Valve at 55 to 60 lbs.)
1702	53	1	Stuffing Box (4 Req'd)	99157	161		Spring (2 Req'd)
51343	54	6	Stuffing Box Nut (4 Req'd)	509634	162		Valve Seat (2 Req'd)
1703	55	1	Stuffing Box Gland (4 Req'd)	520715	181		Blanking Pad Gasket (Left)
89042	56		Type "B-3" Automatic Air Cylinder Oil Cup, complete, (2 Req'd) (See Note B)	520716	182		Blanking Pad Gasket (Right)
93105	57		Upper Steam Cylinder Gasket	521933	189		Lubricator Blanking Pad (2 Req'd)
502686	58		Lower Steam Cylinder Gasket	20805	190		1 1/2"x1 3/8" Blanking Pad Cap Screw (4 Req'd)
11310	59		Upper Air Cylinder Gasket	15951	191		2" Lock Washer (4 Req'd)
11310	60		Lower Air Cylinder Gasket	525663			G-2 Intake Filter (See P.C. 3216-2, S. 12)
502740	61		Rear End Cap Gasket	63917			Type "A" Air Inlet Manifold (See Page 11 and Note E)
90450	62		Front End Cap Gasket	33711			3/8" Pipe Plug (6 Req'd)
1587	63		3/8" Drain Cock	3526			1/8" Pipe Plug
99080	64		1/2" Drain Cock (2 Req'd)	11215			
1919	67	3	Lower Head Plug				
90785	68		Piston Rod Swab (2 Req'd)				
503911	69		3/4"x8 3/8" Bolt and Nut (2 Req'd)				
91207	71		3/4"x2 3/8" Bolt and Nut (14 Req'd)				
91207	72		3/4"x2 1/2" Bolt and Nut (17 Req'd)				

NOTE A—For TAPER ASSEMBLY TYPE STEAM PISTON AND ROD combinations, Ref. 7 and 8, see page 12. All Compressor parts, other than the Steam Pistons and Rods, are the same as listed above.

NOTE B—The B-3-A (Double Capacity) Oil Cup Pc. 88232 will be substituted for the B-3 Oil Cup Pc. 89042 when specially ordered. For details of the B-3 and B-3-A Oil Cups, see Part Catalog 3204-5.

†NOTE C—For oversize Pistons and Rings, see pages 9, 10 and 11.

NOTE D—If Air Valves with wing diameter .025" larger than standard are desired, specify as follows: Pc. 78344 Inlet and Discharge Valve, Pc. 78345 Intermediate Valve.

NOTE E—If desired, the Type "B" Manifold, Pc. 91204, or the Type "C" Manifold, Pc. 517400, will be substituted for the Type "A" Inlet Manifold.

NOTE F—We are prepared to furnish when desired, A.A.R. Union Fittings for 300 lbs. working pressure, for Steam Inlet, Steam Discharge, Air Inlet and Air Discharge as follows:
 95819 1 1/4"x1 1/4" Steam Inlet Union Fitting
 95820 1 1/2"x1 1/2" Steam or Air Exhaust Union Fitting
 93365 2"x2" Air Inlet Union Fitting

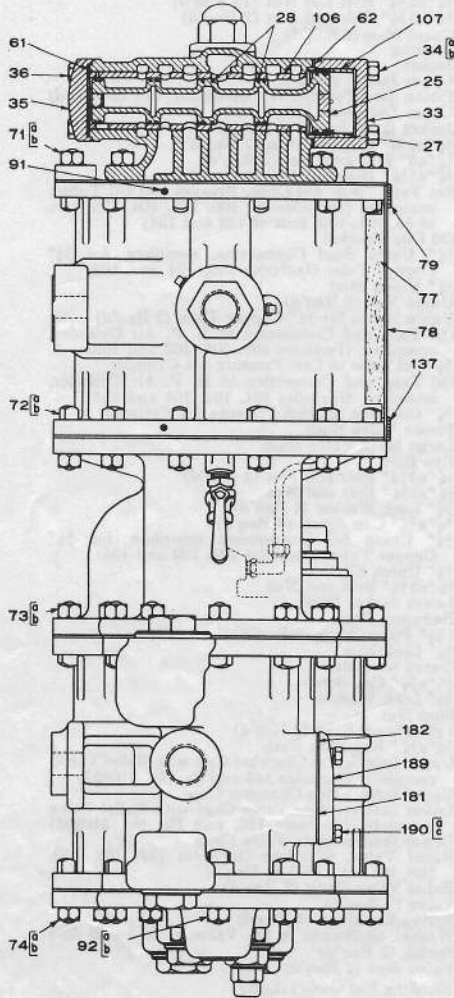
*NOTE G—Column headed "No. Per Pkg." indicates the items for which standard shipping packages have been established and the number contained in the package. Orders placed in these quantities and multiples thereof will facilitate shipments and provide convenient means for handling in store room stock.

NOTE H—We are prepared to furnish suitable Steam Inlet Choke Fitting for controlling the compressor speed. Orders should specify size of Choke desired, or the conditions under which the compressor operates.

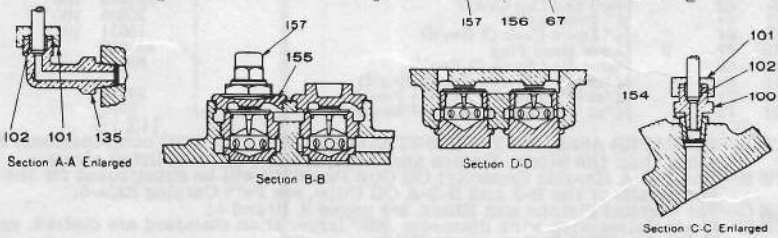
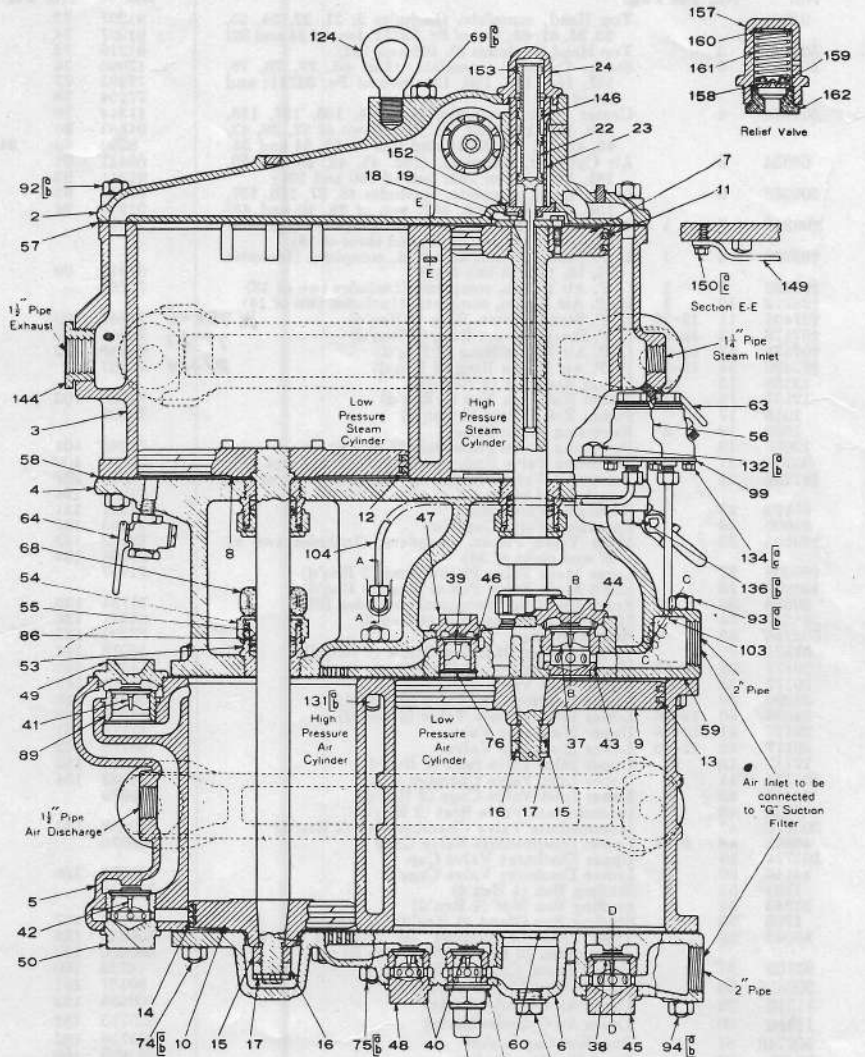
NOTE I—For material to install the F-2 Lubricator, see Note I on page 7

* 87214 3/8 UNION STUD

Prices will be quoted upon application
 Orders should give PIECE NUMBER and NAME of part wanted



Net Weight 1490 lbs.
Shipping Weight 1630 lbs.



Prices will be quoted upon application
Orders should give **PIECE NUMBER** and **NAME** of part wanted

8 1/2"-120-D CROSS COMPOUND AIR COMPRESSOR

The 8 1/2"-120-D Steam Driven Air Compressor is suitable for steam pressures up to 300 lbs., and is designed to operate at approximately 131 single strokes per minute with Saturated Steam Pressure of 160 lbs. When steam pressures above this figure or Superheat steam at any pressure is used the steam supply should be choked to maintain this speed. (See Note H).

Piece No. 518973 8 1/2"-120-D Cross Compound Air Compressor, complete, with Type "B-3" Automatic Air Cylinder Oil Cup, Type "A" Air Inlet Manifold, G-2 Intake Filter, and Relief Valves.

Table with columns: Piece No., Ref. No., *No. Per Pkg., and description. It lists various components like Top Head, Steam Cylinder, Air Cylinder, and various valves and nuts with their respective part numbers and quantities.

NOTES A, B, C(+), D, E, F, G(*) and H, see Page 5

NOTE I—Air Cylinders (Ref. 5, Pc. 68954 for 150-D and Pc. 75254 for 120-D Compressor) are now furnished with Mounting Pads for the F-2 Lubricator. If it is desired to install the Lubricator on such Air Cylinders, the following material is required (see Part Catalog 3204-5, Sup. 9 for details of the Lubricator and Terminal Elbow Fitting):

- Handwritten note: * 87214 3/8 6/10 250
1-F-2 Lubricator, Complete
1-1/4" Union Stud, Complete, for 1/2" O.D. Tube
1-Terminal Elbow Fitting, Complete
1-Gasket (Left)
1-Gasket (Right)
4-1/4"x5" Stud and Nut

- Pc. 524587
Pc. 525623
Pc. 525624
Pc. 520715
Pc. 520716
Pc. 522153
4-1/4" Lock Washer
1-Upper Tubing Clamp and Bracket, Complete
1-Lower Tubing Bracket, Complete
1-1/4" O.D. Tube (Length as Required)
1-Special Fitting, for locating Terminal Elbow Fitting in Steam Line
Pc. 15951
Pc. 522656
Pc. 525403
Pc. 526867

Prices will be quoted upon application
Orders should give PIECE NUMBER and NAME of part wanted

8 $\frac{1}{2}$ "-D CROSS COMPOUND AIR COMPRESSORS

Pistons and Rings for Rebored Cylinders

The most modern development in packing rings for steam driven air compressors is now available and involves an improved form of lap joint for the ring somewhat similar to the lap joint rings which have proven so successful in triple valves.

These Lap Joint rings are made from a special mixture of metal to give what long experience has indicated as the most desirable wearing and friction qualities in conjunction with the metal in the cylinder walls. Ring gap and its attendant leakage is eliminated through the medium of a special lap joint at the ring ends that closes the rings in a complete circle. With the ring closed in its groove this joint seals on both the cylinder wall and one wall of the ring groove, forming a double leakage barrier which prevents blow-by between cylinder wall and ring. The joint maintains the sealing function of the ring throughout its entire circumference and thereby effectively eliminates the ring gap as a chief source of blow-by losses. Very careful attention has been given in design and manufacture to provide uniform wall pressure of the proper amount, the inside diameter of the ring being left intact to preserve this characteristic pressure over a long period of service. The sides of the ring are accurately ground to the proper width, permitting a close fit in the ring groove. No filing or fitting is required.

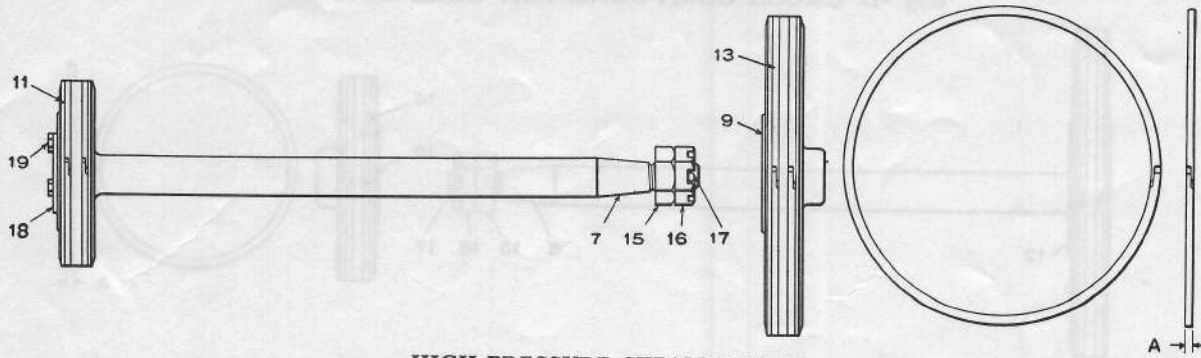
In reconditioning air compressors, it is our recommended practice to rebores the steam and air cylinders in steps of $\frac{1}{16}$ " and the main valve cylinders in steps of $\frac{1}{32}$ "; the maximum rebored diameter not to exceed that specified in the accompanying tables. We have provided pistons in the above oversize and piston rings of our latest improved manufacture in corresponding oversize diameters. The indicated diameter of the rings in each case is exact (a few thousandths large to take care of normal variations in reboring) so that when the ring is installed in the cylinder it will remain a true circle, thus insuring an even bearing at all points on the circumference and a tight fit against leakage. In addition to the oversize in diameter, the steam and air piston rings can all be obtained in widths greater than standard for use in ring grooves that have become wider than standard through wear. They range in overwidths of .006", .012", .018", .025", .030" and .036".

The wide variety of combinations in diameter and widths of rings should be sufficient to meet all normal requirements with the minimum of expense.

Prices will be quoted upon application

Orders should give PIECE NUMBER and NAME of part wanted

8 1/2"-D CROSS COMPOUND AIR COMPRESSORS



HIGH-PRESSURE STEAM PISTON

REF. No.	No. PER Pkg.††		CYLINDER DIAMETERS AND PIECE NUMBERS					
			8 1/2"	8 1/4"	8 1/8"	8 3/16"	8 1/2"	8 3/4"
7	1	†*High-Pressure Steam Piston and Rod, complete (includes 15, 16, 17, 18, two of 11 and three of 19).....	98246	504725	98247	98248	98249	98250
11	12-25	*High-Pressure Steam Piston Ring (Standard width 1/8", Dimension "A") (2 Req'd).....	97401	98935	97408	97415	97422	97429
11	12-25	*High-Pressure Steam Piston Ring (.006" wider than standard) (2 Req'd).....	97402	98936	97409	97416	97423	97430
11	12-25	*High-Pressure Steam Piston Ring (.012" wider than standard) (2 Req'd).....	97403	98937	97410	97417	97424	97431
11	12-25	*High-Pressure Steam Piston Ring (.018" wider than standard) (2 Req'd).....	97404	504151	97411	97418	97425	97432
11	12	*High-Pressure Steam Piston Ring (.025" wider than standard) (2 Req'd).....	97405	504152	97412	97419	97426	97433
11	12	*High-Pressure Steam Piston Ring (.030" wider than standard) (2 Req'd).....	97406	504153	97413	97420	97427	97434
11	12	*High-Pressure Steam Piston Ring (.036" wider than standard) (2 Req'd).....	97407	504154	97414	97421	97428	97435

LOW-PRESSURE AIR PISTON

REF. No.	No. PER Pkg. ††		CYLINDER DIAMETERS AND PIECE NUMBERS							
			8 1/2"-150	14 1/2"	14 1/4"	14 1/8"	14 3/16"	14 1/2"	14 3/4"	14 1/2"
			8 1/2"-120	13 1/2"	13 1/4"	13 1/8"	13 3/16"	13 1/2"	13 3/4"	13 1/2"
9	1	*Low-Pressure Air Piston, complete, (Includes two of 13).....	8 1/2"-150 8 1/2"-120	98222 98256	504727 504726	98224 98257	98226 98258	98228 98259	98230 98260	98232 98261
13	12-25	*Low-Pressure Air Piston Ring (standard width 1/8", Dimension "A") (2 Req'd).....	8 1/2"-150 8 1/2"-120	97478 97782	99049 99019	97485 97788	97492 97794	97499 97800	97471 97806	97889 97812
13	12-25	*Low-Pressure Air Piston Ring (.006" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97479 97783	99050 99020	97486 97789	97493 97795	97500 97801	97472 97807	97890 97813
13	12-25	*Low-Pressure Air Piston Ring (.012" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97480 97784	99051 99021	97487 97790	97494 97796	97501 97802	97473 97808	97891 97814
13	12-25	*Low-Pressure Air Piston Ring (.018" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97481 97785	504194 504185	97488 97791	97495 97797	97502 97803	97474 97809	..... 97815
13	12	*Low-Pressure Air Piston Ring (.025" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97482 97786	504195 504186	97489 97792	97496 97798	97503 97804	97475 97810	..... 97816
13	12	*Low-Pressure Air Piston Ring (.030" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97483 504184	504196 504187	97490	97497	97504	97476	97892
13	12	*Low-Pressure Air Piston Ring (.036" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97484 97787	504197 504188	97491 97793	97498 97799	97505 97805	97477 97811	..... 97817

*NOTE A—Pistons and Rings are designated by the diameter of the cylinder for which they are suitable.

NOTE B—Above sizes of pistons and rings are carried in stock. Should orders be received for other sizes, we will substitute nearest standard size unless specific instructions are received to the contrary.

NOTE C—If maximum oversize High-Pressure Steam Piston and Rod or Low Pressure Air Piston (less Rings and having ring grooves cut to standard caliber) suitable for turning to bore of cylinder is desired, specify:

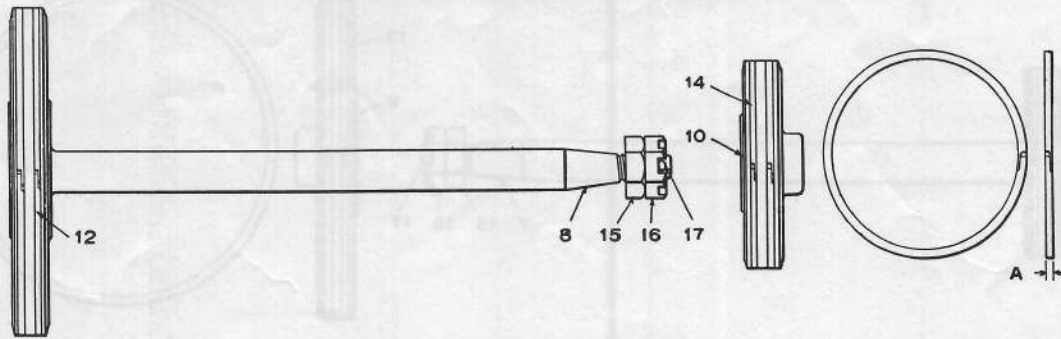
Pc. No. 59091 8 3/4" High-Pressure Steam Piston and Rod
 Pc. No. 59094 14 1/4" Low-Pressure Air Piston for 8 1/2"-150
 Pc. No. 89499 13 1/4" Low-Pressure Air Piston for 8 1/2"-120

†NOTE D—For Piece Number Combinations of High-Pressure Steam Pistons with Taper Assembly of Steam Piston Head and Rod, see page 12

††NOTE E—Column headed "No. Per Pkg." indicates the items for which standard shipping packages have been established and the number contained in the package. Orders placed in these quantities and multiples thereof will facilitate shipments and provide convenient means for handling in store room stock.

Prices will be quoted upon application
 Orders should give PIECE NUMBER and NAME of part wanted

8 1/2"-D CROSS COMPOUND AIR COMPRESSORS



LOW-PRESSURE STEAM PISTON

REF. No.	No. PER Pkg.††		CYLINDER DIAMETERS AND PIECE NUMBERS							
			8 1/2"-150	14 1/2"	14 1/4"	14 1/8"	14 3/8"	14 1/2"	14 1/4"	14 1/8"
			8 1/2"-120	14"	14 1/8"	14 1/16"	14 1/8"	14 1/8"	14 1/4"	14 1/8"
8	1	*Low-Pressure Steam Piston and Rod, complete includes 15, 16, 17 and two of 12).....	8 1/2"-150 98240	504731	98241	98242	98243	98244	98245	
12	12-25	*Low-Pressure Steam Piston Ring (standard width 1/16", Dimension "A") (2 Req'd).....	8 1/2"-150 97478 97818	99049 99034	97485 97824	97492 97830	97499 97836	97471 97842	97839 97848	
12	12-25	*Low-Pressure Steam Piston Ring (.006" wider than standard) (2 Req'd).....	8 1/2"-150 97479 97819	99050 99035	97486 97825	97493 97831	97500 97837	97472 97843	97890 97849	
12	12-25	*Low-Pressure Steam Piston Ring (.012" wider than standard) (2 Req'd).....	8 1/2"-150 97480	99051 99036	97487 97826	97494 97832	97501 97838	97473 97844	97891 97850	
12	12-25	*Low-Pressure Steam Piston Ring (.018" wider than standard) (2 Req'd).....	8 1/2"-150 97481 97821	504194 504190	97488 97827	97495 97833	97502 97839	97474 97845	..... 97851
12	12	*Low-Pressure Steam Piston Ring (.025" wider than standard) (2 Req'd).....	8 1/2"-150 97482	504195 504191	97489 97828	97496 97834	97503 97840	97475 97846	..... 97852
12	12	*Low-Pressure Steam Piston Ring (.030" wider than standard) (2 Req'd).....	8 1/2"-150 97483 504189	504196 504192	97490	97497	97504	97476	97892	
12	12	*Low-Pressure Steam Piston Ring (.036" wider than standard) (2 Req'd).....	8 1/2"-150 97484 97823	504197 504193	97491 97829	97498 97835	97505 97841	97477 97847	..... 97853

HIGH-PRESSURE AIR PISTON

REF. No.	No. PER Pkg.††		CYLINDER DIAMETERS AND PIECE NUMBERS						
			8 1/2"-150	9"	9 1/8"	9 1/16"	9 1/4"	9 1/8"	9 1/4"
			8 1/2"-120	8 1/2"	8 3/8"	8 1/8"	8 3/8"	8 1/8"	8 1/2"
10	1	*High-Pressure Air Piston, complete, (Includes two of 14).....	8 1/2"-150 98212	98212	504733	98214	98216	98218	98220
14	12-25	*High-Pressure Air Piston Ring (standard width 1/16", Dimension "A") (2 Req'd).....	8 1/2"-150 97436 97553	97436	98947 98923	97443 97559	97450 97565	97457 97571	97464 97401
14	12-25	*High-Pressure Air Piston Ring (.006" wider than standard) (2 Req'd).....	8 1/2"-150 97437 97554	97437	98948 98924	97444 97560	97451 97566	97458 97572	97465 97402
14	12-25	*High-Pressure Air Piston Ring (.012" wider than standard) (2 Req'd).....	8 1/2"-150 97438 97555	97438	98949 98925	97445 97561	97452 97567	97459 97573	97466 97403
14	12-25	*High-Pressure Air Piston Ring (.018" wider than standard) (2 Req'd).....	8 1/2"-150 97439 97556	97439	504155 504147	97446 97562	97453 97568	97460 97574	97467 97404
14	12	*High-Pressure Air Piston Ring (.025" wider than standard) (2 Req'd).....	8 1/2"-150 97440 97557	97440	504156 504148	97447 97563	97454 97569	97461 97575	97468 97405
14	12	*High-Pressure Air Piston Ring (.030" wider than standard) (2 Req'd).....	8 1/2"-150 97441 504146	97441	504157 504149	97448	97455	97462	97469 97406
14	12	*High-Pressure Air Piston Ring (.036" wider than standard) (2 Req'd).....	8 1/2"-150 97442 97558	97442	504158 504150	97449 97564	97456 97570	97463 97576	97470 97407

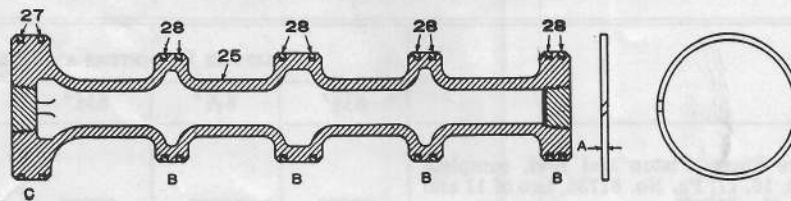
*NOTE A—Pistons and rings are designated by the diameter of the cylinder for which they are suitable.
 NOTE B—Above sizes of pistons and rings are carried in stock. Should orders be received for other sizes, we will substitute nearest standard size unless specific instructions are received to the contrary.
 NOTE C—If maximum oversize Low-Pressure Steam Piston and Rod or High-Pressure Air Piston (less rings and having ring grooves cut to standard caliper), suitable for turning to bore of cylinder is desired, specify:
 Pc. No. 59093 14 1/8" Low-Pressure Steam Piston and Rod, for 8 1/2"-150
 Pc. No. 89570 14 1/4" Low-Pressure Steam Piston and Rod, for 8 1/2"-120
 Pc. No. 59092 9 1/8" Air Piston, for 8 1/2"-150
 Pc. No. 89498 8 1/2" Air Piston, for 8 1/2"-120

†NOTE D—For Piece Number Combinations of Low-Pressure Steam Pistons with Taper Assembly of Steam Piston Head and Rod, see page 12

††NOTE E—Column headed "No. Per Pkg." indicates the items for which standard shipping packages have been established and the number contained in the package. Orders placed in these quantities and multiples thereof will facilitate shipments and provide convenient means for handling in store room stock.

Prices will be quoted upon application
 Orders should give PIECE NUMBER and NAME of part wanted

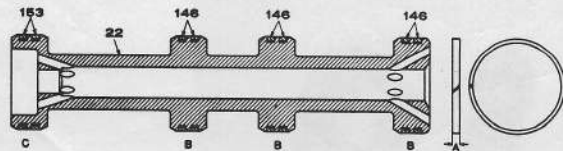
8 1/2" -D CROSS COMPOUND AIR COMPRESSORS



See table below showing by B and C the cylinder diameter for which above pistons and rings are suitable.

MAIN VALVE PISTON

REF. No.		CYLINDER DIAMETERS AND PIECE NUMBERS				
		B-2 7/16" C-3 1/4"	B-2 3/8" C-3 3/8"	B-2 1/2" C-3 5/8"	B-2 11/16" C-3 11/16"	B-2 3/8" C-3 3/8"
25	Main Valve Piston, complete, (includes two of 27 and eight of 28).....	89595	98435	98436	98437	98438
27	Large Main Valve Piston Ring (standard width, Dimension "A" .136") (2 Req'd).....	89608	97174	97177	97180	97183
27	Large Main Valve Piston Ring (.006" wider than standard) (2 Req'd).....	97172	97175	97178	97181	97184
27	Large Main Valve Piston Ring (.012" wider than standard) (2 Req'd).....	97173	97176	97179	97182	97185
28	Small Main Valve Piston Ring (standard width, Dimension "A" .136") (8 Req'd).....	89607	97160	97163	97166	97169
28	Small Main Valve Piston Ring (.006" wider than standard) (8 Req'd).....	97158	97161	97164	97167	97170
28	Small Main Valve Piston Ring (.012" wider than standard) (8 Req'd).....	97159	97162	97165	97168	97171



See table below showing by B and C the cylinder diameter for which pistons and rings are suitable.

REVERSING VALVE

REF. No.		CYLINDER DIAMETERS AND PIECE NUMBERS				
		B-1 1/2" C-1 3/4"	B-1 11/16" C-1 3/4"	B-1 3/8" C-1 3/4"	B-1 11/16" C-1 3/4"	B-1 5/8" C-1 3/4"
22	Reversing Valve, complete, (includes two of 153 and six of 146).....	91286	98443	98444	.....	.....
146	Large Reversing Valve Ring (standard width, Dimension "A" .124") (6 Req'd).....	74276	97648	97703	97715	97731
146	Large Reversing Valve Ring (.006" wider than standard) (6 Req'd).....	97646	97649	97707	97719	97735
146	Large Reversing Valve Ring (.012" wider than standard) (6 Req'd).....	97647	97650	97711	97723	97739
153	Small Reversing Valve Ring (standard width, Dimension "A" .124") (2 Req'd).....	88351	507538	507635	.....	.....
153	Small Reversing Valve Ring (.006" wider than standard) (2 Req'd).....	507631	507633	507636	.....	.....
153	Small Reversing Valve Ring (.012" wider than standard) (2 Req'd).....	507632	507634	507637	.....	.....

NOTE A—Piston and Rings are designated by the diameter of the cylinder for which they are suitable.

NOTE B—Above sizes of pistons and rings, and no other sizes, are made and carried in stock. Should orders be received for other sizes, we will substitute nearest standard size, unless specific instructions are received to the contrary.

Prices will be quoted upon application
Orders should give PIECE NUMBER and NAME of part wanted

HIGH-PRESSURE STEAM PISTON

REF. No.		CYLINDER DIAMETERS AND PIECE NUMBERS				
		8½"	8 ⁹ / ₁₆ "	8 ⁵ / ₈ "	8 ¹¹ / ₁₆ "	8¾"
7	*High-Pressure Steam Piston and Rod, complete (includes 15, 16, 17, Pc. No. 81736, two of 11 and three of Pc. No. 81743) Reversing Valve Plate Reversing Valve Plate Bolt (3 req'd)	98296 81736 81743	98297 81736 81743	98298 81736 81743	98299 81736 81743	98300 81736 81743

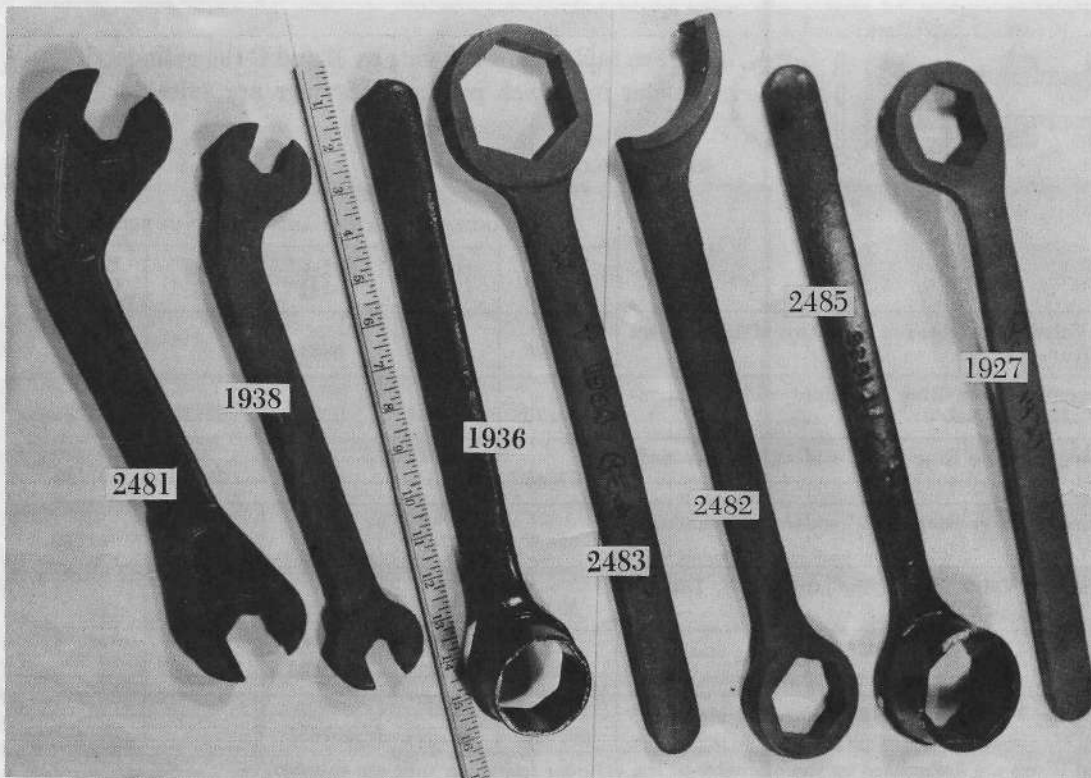
LOW-PRESSURE STEAM PISTON

REF. No.			CYLINDER DIAMETERS AND PIECE NUMBERS					
			14½"	14 ⁹ / ₁₆ "	14 ⁵ / ₈ "	14 ¹¹ / ₁₆ "	14¾"	14 ¹³ / ₁₆ "
8	*Low-Pressure Steam Piston and Rod, complete (includes 15, 16, 17 and two of 12 and three of Pc. No. 81746) Piston Bolt (3 req'd)	8½"-150	98307	98308	98309	98310	98311	98312
		8½"-120	98301	98302	98303	98304	98305	98306
			81746	81746	81746	81746	81746	81746

*NOTE A—For Lap Joint Piston Rings, see pages 7 and 8.

NOTE B—If maximum oversize High-Pressure or Low-Pressure Steam Piston and Rod (less Rings and having ring grooves cut to standard caliper) suitable for turning to bore of cylinder is desired, specify:

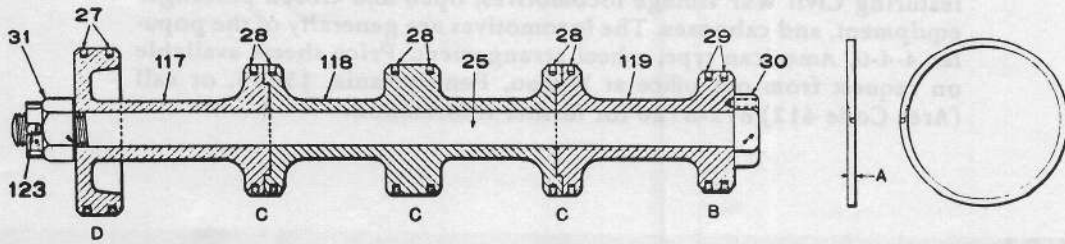
Pc. No. 88569 8³/₄" High-Pressure Steam Piston and Rod
Pc. No. 88570 14¹¹/₁₆" Low-Pressure Steam Piston and Rod



Wrenches;
Order by number.

Prices will be quoted upon application
Orders should give PIECE NUMBER and NAME of part wanted

LAP JOINT PISTON PACKING RINGS
For
8 1/2-INCH CROSS COMPOUND AIR COMPRESSORS



See table below showing by B, C and D the cylinder diameter for which above pistons and rings are suitable.

***MAIN VALVE PISTON**
 (Packing Rings—See Foreword)

REF. No.		CYLINDER DIAMETERS AND PIECE NUMBERS				
		B-2 5/16" C-2 1/2" D-3 1/4"	B-2 11/32" C-2 13/32" D-3 9/32"	B-2 3/8" C-2 1/16" D-3 1/8"	B-2 13/32" C-2 3/8" D-3 11/32"	B-2 7/16" C-2 5/8" D-3 3/8"
25	Main Valve Piston, complete (includes 30, 117, 118, 119, two of 27, 29 and six of 28).....	502051	502052	502053	502054	502055
27	Large Main Valve Piston Ring (standard width, Dimension "A," .136") (2 Req'd).....	501997	501998	501999	502000	502001
27	Large Main Valve Piston Ring (.006" wider than standard (2 Req'd).....	502002	502003	502004	502005	502006
27	Large Main Valve Piston Ring (.012" wider than standard) (2 Req'd).....	502007	502008	502009	502010	502011
28	Exhaust Piston Valve Ring (standard width, Dimension "A," .136") (6 Req'd).....	501982	501983	501984	501985	501986
28	Exhaust Piston Valve Ring (.006" wider than standard (6 Req'd).....	501987	501988	501989	501990	501991
28	Exhaust Piston Valve Ring (.012" wider than standard) (6 Req'd).....	501992	501993	501994	501995	501996
29	Small Piston Valve Ring (standard width, Dimension "A," .136") (2 Req'd).....	501967	501968	501969	501970	501971
29	Small Piston Valve Ring (.006" wider than standard) (2 Req'd).....	501972	501973	501974	501975	501976
29	Small Piston Valve Ring (.012" wider than standard) (2 Req'd).....	501977	501978	501979	501980	501981

REPAIR PISTON VALVE BUSH

Pc. No.	Ref. No.	
65803	106	Piston Valve Bush (.01" larger than standard)
65804	106	Piston Valve Bush (1/32" larger than standard)

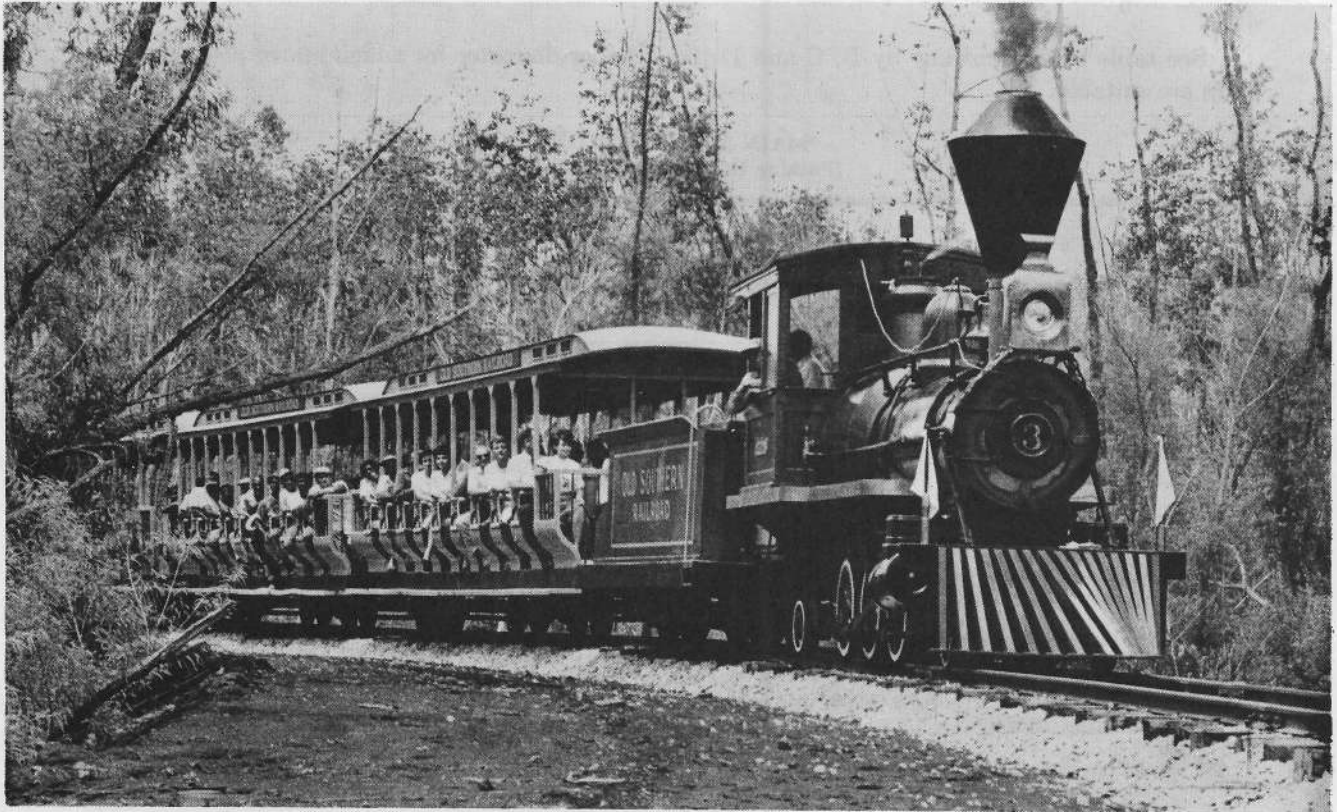
*NOTE A—Pistons and rings are designated by the diameter of the cylinder for which they are suitable.

NOTE B—Above sizes of pistons and rings, and no other sizes, are made and carried in stock. Should orders be received for other sizes, we will substitute nearest standard size, unless specific instructions are received to the contrary.

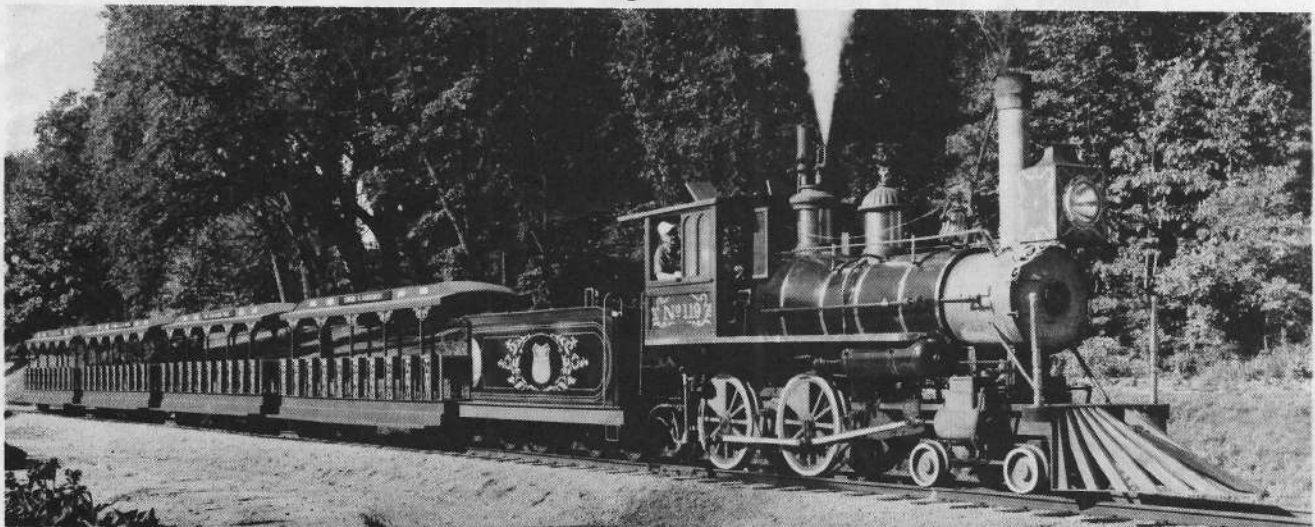
Prices will be quoted upon application
Orders should give PIECE NUMBER and NAME of part wanted

Crown Metal Products Steam Locomotives and Rolling Stock

In recent years the Crown Metal Products Co. has become the nation's Number One manufacturer of narrow gauge park type railroads, featuring Civil War vintage locomotives, open and closed passenger equipment, and cabooses. The locomotives are generally of the popular 4-4-0, American type, wheel arrangement. Price sheets available on request from our office at Wyano, Pennsylvania, 15695, or call (Area Code 412) 872-8720 for further information.



36" Gauge Locomotives

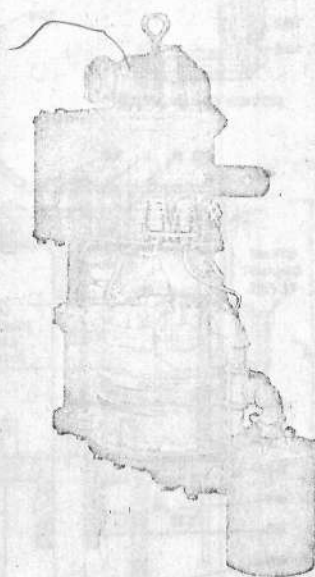


old type 8 1/2 cc 120-150

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Pittsburgh, Pa., U. S. A.

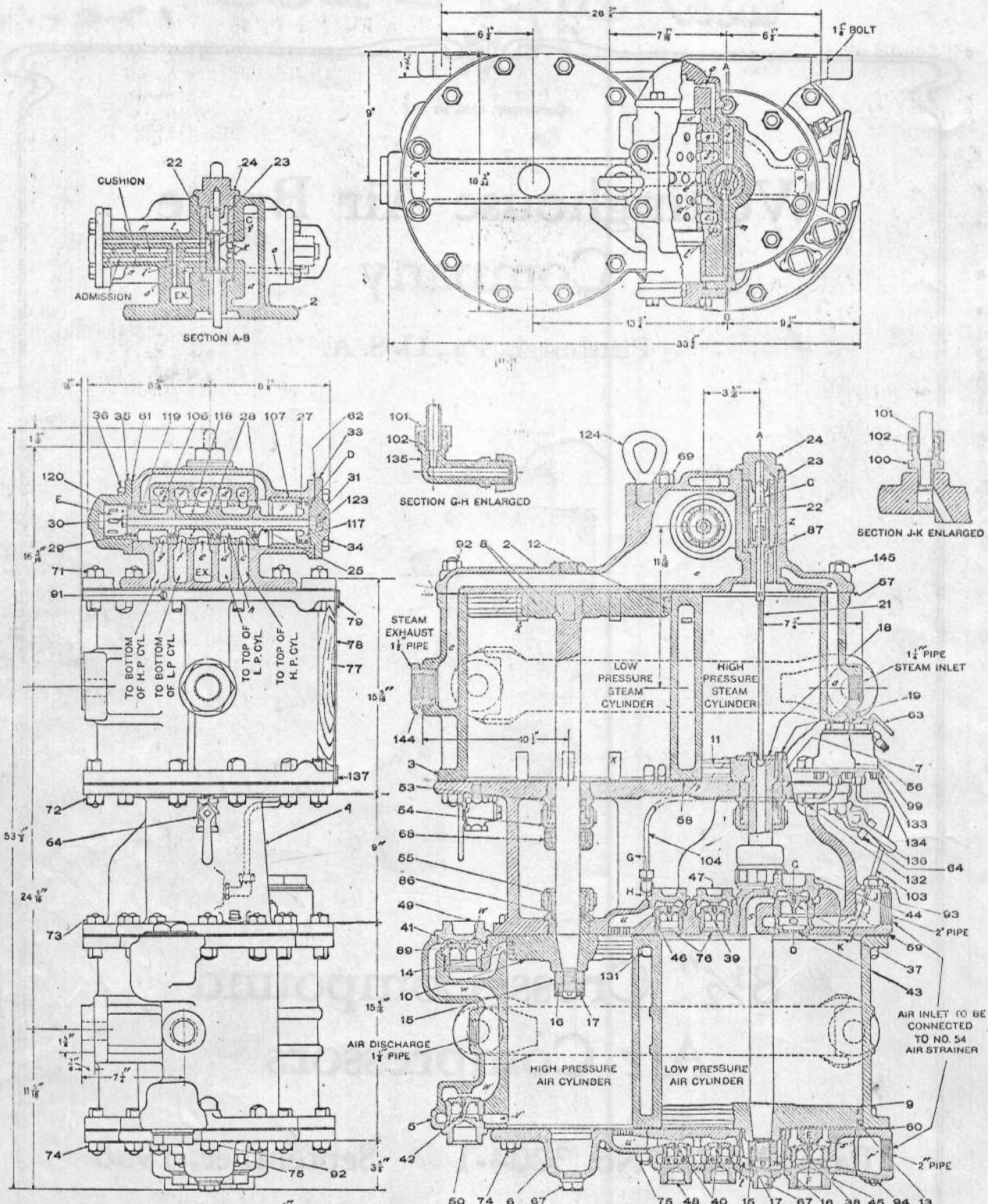


8 1/2" Cross Compound Air Compressors

Part Catalog No. 3204-1 September, 1936

(SUPERSEDING ISSUE OF DECEMBER, 1930)

81 1/2" - 150 CROSS COMPOUND AIR COMPRESSOR



Net Weight 1475 lbs.
Shipping Weight 1625 lbs.

8 1/2"-150 CROSS COMPOUND AIR COMPRESSOR

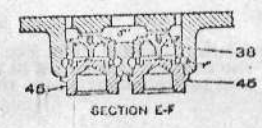
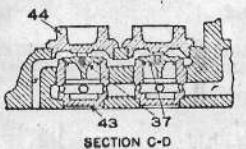
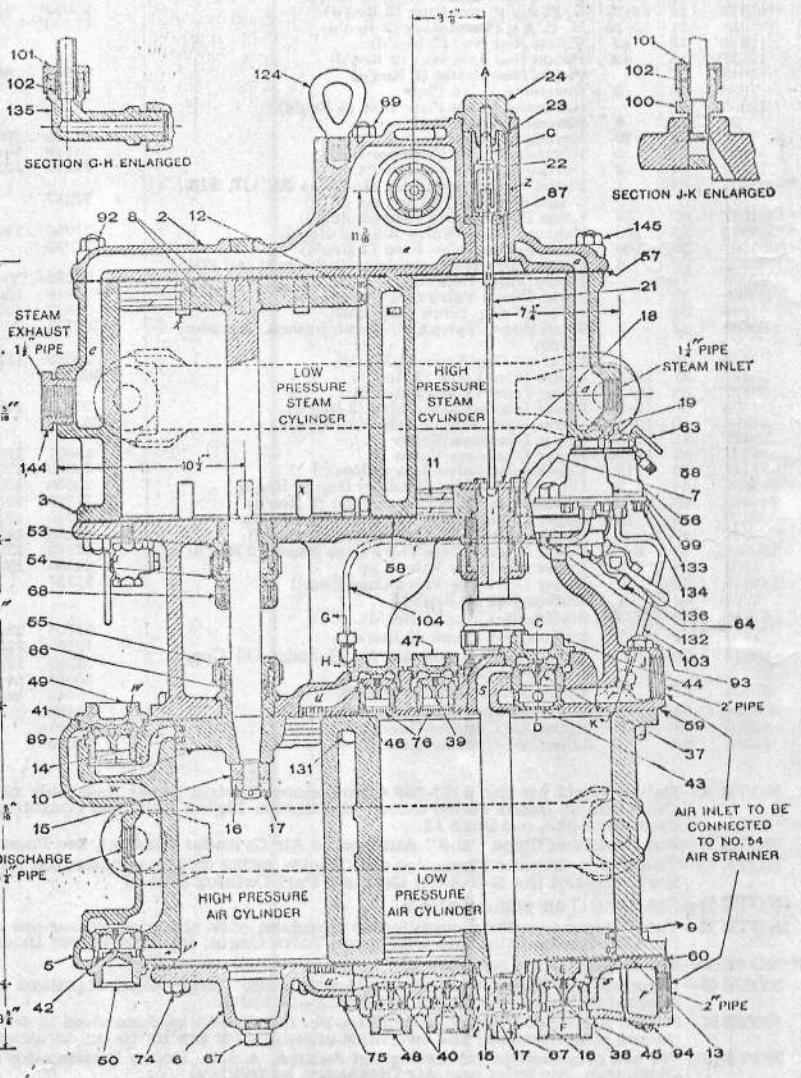
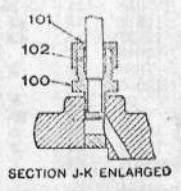
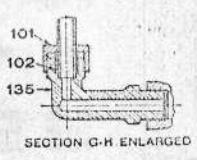
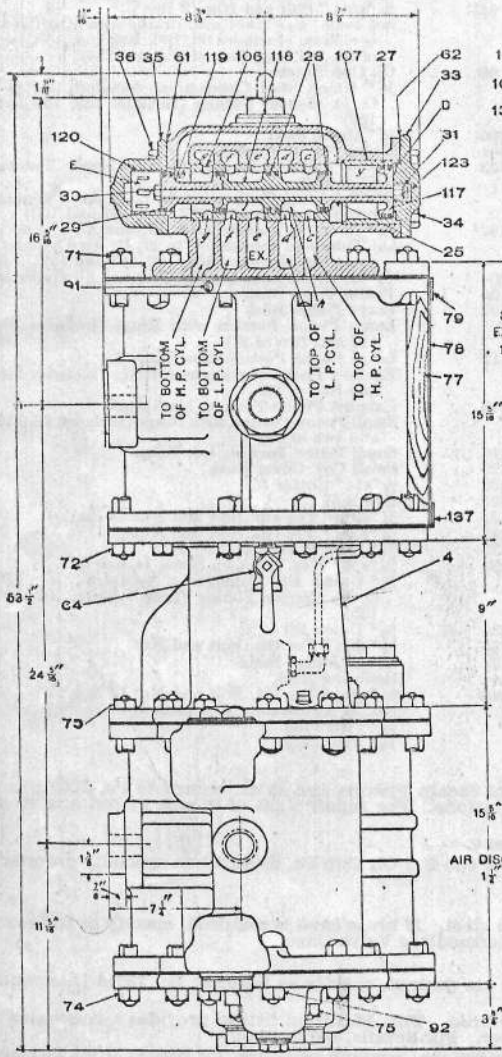
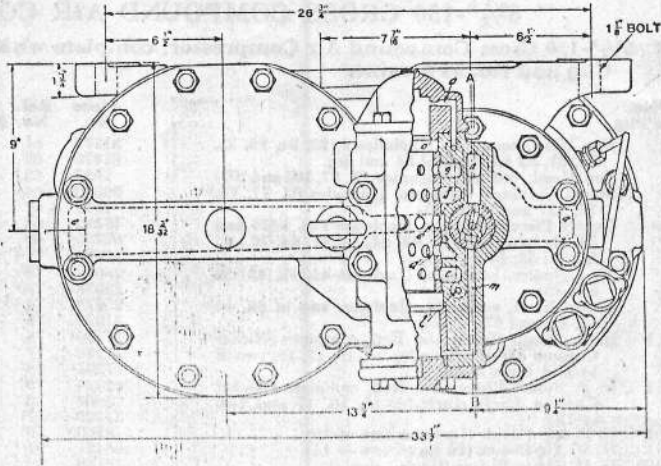
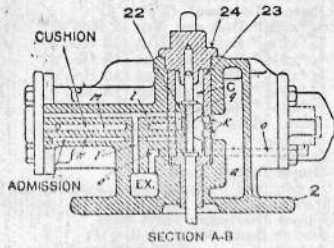
Piece No. 73513 8 1/2"-150 Cross Compound Air Compressor, complete with Type "B-3" Automatic Air Cylinder Oil Cup and No. 54 Strainer

Table with columns: Piece No., Ref. No., *No. Per Pkg., Description, Piece No., Ref. No., *No. Per Pkg., Description. Lists various parts like Top Head, Steam Cylinder, Air Cylinder, Piston, Valve, etc.

NOTE A—Repair parts for the 8 1/2"-150 Compressor, having Taper Assembly of Steam Pistons and Rods, complete Pc. 81407, are the same as listed above except the Steam Piston and Rod combinations. For repair sizes of Steam Piston and Rod combinations, see page 11.
NOTE B—For details of Type "B-3" Automatic Air Cylinder Oil Cup, see Page 6.
NOTE C—The B-3-A (Double Capacity) Oil Cup Pc. 82322 will be substituted for the B-3 Oil Cup Pc. 89042 when specially ordered. For details of the B-3-A Oil Cup, see Part Catalog 3204-5.
NOTE D—See Note C on pages 8 and 9.
NOTE E—Valve Cages regularly supplied as standard with the compressor are steel. If brass cage is required, specify as follows: Pc. 1708 Lower Inlet and Discharge Valve Cages. Pc. 1904 Lower Intermediate Valve Cage.
**NOTE F—For Repair sizes, see page 10.
NOTE G—If repair Air Valves with wing diameter .025" larger than standard are desired, specify as follows: Pc. 78344 Inlet and Discharge Valve. Pc. 78345 Intermediate Valve.
NOTE H—Single Air Inlet Fitting, complete, Pc. 63917, will be furnished if desired. This Manifold fitting provides a convenient means of connecting the two inlet openings for piping to the strainer. For details, see page 6.
NOTE J—We are prepared to furnish when desired, A.A.R. Union Fittings for 300 lbs. working pressure, for Steam Inlet, Steam Discharge, Air Inlet and Air Discharge, as follows:
95819 1 1/2"x1 1/2" Steam Inlet Union Fitting
95820 1 1/2"x1 1/2" Steam or Air Exhaust Union Fitting
93365 2"x2" Air Inlet Union Fitting
**NOTE K—Column headed "No. Per Pkg." indicates the items for which standard shipping packages have been established and the number contained in the package. Orders placed in these quantities and multiples thereof will facilitate shipments and provide convenient means for handling in store room stock.

Prices will be quoted upon application
Orders should give PIECE NUMBER and NAME of part wanted

8 1/2"-120 CROSS COMPOUND AIR COMPRESSOR



Net Weight 1475 lbs.
Shipping Weight 1625 lbs.

8 1/2"-120 CROSS COMPOUND AIR COMPRESSOR

Piece No. 75180 8 1/2"-120 Cross Compound Air Compressor, complete with Type "B-3" Automatic Air Cylinder Oil Cup and No. 54 Strainer

Piece No.	Ref. No.	*No. Per Pkg.	Description	Piece No.	Ref. No.	*No. Per Pkg.	Description
40332			Top Head, complete, (Includes 2, 22, 24, 25, 33, 35, 61, 62 and four of 34 and 36)	81172	61		Small Cylinder Cover Gasket
23616	2		Top Head, bushed (Includes 23, 87, 106 and 107)	81176	62		Large Cylinder Cover Gasket
91893	3		Steam Cylinder, complete, (Includes 63, 77, 78, 79, 137 and six of 91)	1887	63		1/2" Drain Cock
64288	4		Center Piece, complete, (Includes Pcs. 3526 and 33711, two of 37, 39, 43, 44, 46, 47, 64, 76 and four of 53, 54 and 55)	99080	64		1/2" Drain Cock (2 Req'd)
75254	5		Air Cylinder, complete, (Includes 41, 42, 49, 50 and 89)	1919	67	6	Lower Head Plug (2 Req'd)
68955	6		Lower Head, complete, (Includes two of 38, 40, 45, 48 and 67)	17582	68		Piston Rod Swab (2 Req'd)
98246	7	1	H. P. Steam Piston and Rod, complete (Nickel Chrome Steel) (Includes 15, 16, 17, 18, two of 11 and three of 19)	66790	69		3/4"x8 3/4" Bolt and Nut (2 Req'd)
98234	8	1	L. P. Steam Piston and Rod, complete (Nickel Chrome Steel) (Includes 15, 16, 17 and two of 12)	25078	71		3/4"x2 1/2" Bolt and Nut (13 Req'd)
98256	9	1	L. P. Air Piston (Includes two of 13)	25078	72		3/4"x2 1/2" Bolt and Nut (18 Req'd)
98251	10	1	H. P. Air Piston (Includes two of 14)	25078	73		3/4"x2 1/2" Bolt and Nut (15 Req'd)
97101	11	12-25	H. P. Steam Piston Ring (2 Req'd)	25078	74		3/4"x2 1/2" Bolt and Nut (13 Req'd)
97818	12	12-25	L. P. Steam Piston Ring (2 Req'd)	21922	75		3/4"x3 1/2" Bolt and Nut (2 Req'd)
97782	13	12-25	L. P. Air Piston Ring (2 Req'd)	17990	76		Guard Plate (2 Req'd)
97553	14	12-25	H. P. Air Piston Ring (2 Req'd)	77296	77		Lagging
12136	15	42	Piston Rod Nut (2 Req'd)	77294	78		Jacket
12137	16	42	Piston Rod Jam Nut (2 Req'd)	11314	79		Upper Jacket Band
1018	17		Piston Rod Cotter (2 Req'd)	4862	86		Piston Rod Packing (Composition) set (2 Req'd)
1688	18	3	Reversing Valve Plate	31329	87	2	Reversing Valve Rod Bush
12065	19		Reversing Valve Plate Bolt (3 Req'd)	8269	89	24	Upper Discharge Valve Seat
20103	21	5	Reversing Valve Rod	68421	91		Jacket Band Screw (2 Req'd)
1706	22	10	Reversing Valve	12148	92		3/4"x3 1/2" Bolt and Nut (9 Req'd)
31328	23	2	Reversing Valve Chamber Bush	12152	93		3/4"x5" Bolt and Nut (2 Req'd)
13302	24	2	Reversing Valve Chamber Cap	25092	94		3/4"x5 1/2" Bolt and Nut (2 Req'd)
**502051	25	1	Piston Valve, complete, (Includes 30, 117, 118, 119, two of 27, 29 and six of 28)	77290			Set Type "B-3" Oil Cups, Brackets and Oil Tubes, complete, (Includes 99, 100, 103, 104, 135, two of 56, 101, 102, four of 133 and 134)
**501997	27	50	Large Piston Valve Ring (2 Req'd)	91812	99		Oil Cup Bracket
**501982	28	100	Exhaust Piston Valve Ring (6 Req'd)	71756			1/4" Union Stud Connection, complete for 3/4" O. D. Copper Tubing (Includes 100, 101 and 102)
**501967	29	100	Small Piston Valve Ring (2 Req'd)	71755	100		1/4" Union Stud
80233	30	6	Piston Valve Bolt, complete, (Includes 31 and 123)	71748	101		Union Nut (2 Req'd)
87690	31		Piston Valve Bolt Nut	71727	102		Union Thimble for 3/4" O. D. Copper Tubing (2 Req'd)
20565	33	1	Large Piston Valve Cyl. Cover	77287			Oil Tube and Connection to L. P. Air Cylinder, complete, (Includes 100, 101, 102 and 103)
1759	34		5/8"x1 1/2" Cap Screw (4 Req'd)	77286	103		3/4" O. D. Oil Tube to Low Pressure Air Cylinder
39609	35	1	Small Piston Val. Cyl. Cover, bushed (Inc. 120)	77289			Oil Tube and connection to H. P. Air Cylinder, complete, (Includes 101, 102, 104 and 135)
1759	36		5/8"x1 1/2" Cap Screw (4 Req'd)	77288	104		3/4" O. D. Oil Tube to High Pressure Air Cylinder
29177	37	12-36	Upper Inlet Valve (2 Req'd)	**25848	106	1-4	Piston Valve Bush
29177	38	12-36	Lower Inlet Valve (2 Req'd)	25847	107	2	Large Piston Bush
24396	39	12-36	Upper Intermediate Valve (2 Req'd)	**502771		1	Large Piston Portion with Rings (Includes 28, 117 and two of 27)
24396	40	12-36	Lower Intermediate Valve (2 Req'd)	20583	117	1	Large Piston Portion, less Rings
29177	41	12-36	Upper Discharge Valve	**502766		1	Exhaust Piston portion with Rings (Includes 118 and four of 28)
29177	42	12-36	Lower Discharge Valve	20585	118	1	Exhaust Piston Portion, less Rings
77117	43	12	Upper Inlet Valve Seat (2 Req'd)	**502761		1	Small Piston Portion with Rings (Includes 28, 119 and two of 29)
1697	44	2	Upper Inlet Valve Chamber Cap (2 Req'd)	45201	119	1	Small Piston Portion, less Rings
144445	45	6	Lower Inlet Valve Cage (Steel) (2 Req'd)	54693	120	2	Small Cyl. Cover Bush
8430	46	12	Upper Intermediate Valve Seat (2 Req'd)	20556	123		1/2"x3/4" Cotter
1906	47	1	Upper Intermediate Valve Cap (2 Req'd)	71080	124		Eye Bolt
146806	48	6-12	Lower Intermediate Valve Cage (Steel) (2 Req'd)	12150	131		3/4"x3 3/4" Tee Hd. Bolt and Nut (2 Req'd)
1697	49	2	Upper Discharge Valve Cap	12155	132		3/4"x2 3/4" Tee Hd. Bolt and Nut
144445	50	6	Lower Discharge Valve Cage (Steel)	17173	133		3/8" Lock Washer (4 Req'd)
1702	53	1	Stuffing Box (4 Req'd)	24286	134		3/8"x3/4" Hex. Hd. Cap Screw (4 Req'd)
51343	54	6	Stuffing Box Nut (4 Req'd)	71757			3/8" Union Ell Connection, complete, for 3/4" O. D. Copper Tubing (Includes 101, 102 and 135)
1703	55	1	Stuffing Box Gland (4 Req'd)	71754	135		3/4" Union Ell
89042	56		Type "B-3" Automatic Air Cylinder Oil Cup, complete (2 Req'd)	12150	136		3/4"x3 3/4" Tee Hd. Bolt and Nut
93105	57		Upper Steam Cylinder Gasket	77203	137		Lower Jacket Band
502686	58		Lower Steam Cylinder Gasket	56018	144		Reducing Bush
11310	59		Upper Air Cylinder Gasket	3662	145		3/4"x3 1/2" Tee Hd. Bolt and Nut (2 Req'd)
11310	60		Lower Air Cylinder Gasket	51426			No. 54 Air Strainer (See page 6)
				33711			3/4" Pipe Plug
				3526			1/2" Pipe Plug

NOTE A—Repair parts for the 8 1/2"-120 Compressor, having Taper Assembly of Steam Pistons and Rods, complete Pc. No. 81411, are the same as listed above, except the Steam Piston and Rod combinations. For repair sizes of Steam Piston and Rod combinations, see page 11.

NOTE B—For details of Type "B-3" Automatic Air Cylinder Oil Cup, see Page 6.

NOTE C—The B-3-A (Double Capacity) Oil Cup Pc. 88232 will be substituted for the B-3 Oil Cup Pc. 89042 when specially ordered. For details of the B-3-A Oil Cup, see Part Catalog 3204-5.

NOTE D—See Note C on pages 8 and 9.

NOTE E—Valve Cages regularly supplied as standard with the compressor are steel. If brass cage is required, specify as follows: Pc. 1708 Lower Inlet and Discharge Valve Cages. Pc. 1904 Lower Intermediate Valve Cage.

NOTE F—For Repair sizes, see page 10.

NOTE G—If repair Air Valves with wing diameter .025" larger than standard are desired, specify as follows: Pc. 78344 Inlet and Discharge Valve. Pc. 78345 Intermediate Valve.

NOTE H—Single Air Inlet Fitting complete, Pc. 63917, will be furnished if desired. This manifold fitting provides a convenient means of connecting the two inlet openings for piping to the strainer. For details, see page 6.

NOTE J—We are prepared to furnish when desired, A.A.R. Union Fittings for 300 lbs. working pressure, for Steam Inlet, Steam Discharge, Air Inlet and Air Discharge, as follows:

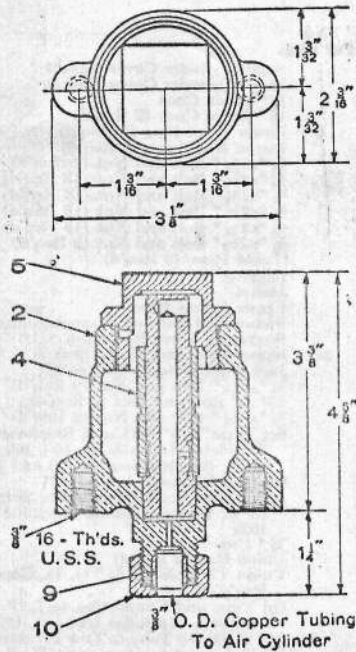
- 95819 1 1/2"x1 1/2" Steam Inlet Union Fitting
- 95820 1 1/2"x1 1/2" Steam or Air Exhaust Union Fitting
- 93365 .2"x2" Air Inlet Union Fitting

NOTE K—Column headed "No. Per Pkg." indicates the items for which standard shipping packages have been established and the number contained in the package. Orders placed in these quantities and multiples thereof will facilitate shipments and provide convenient means for handling in store room stock.

Prices will be quoted upon application

Orders should give PIECE NUMBER and NAME of part wanted

8 1/2" CROSS COMPOUND AIR COMPRESSOR

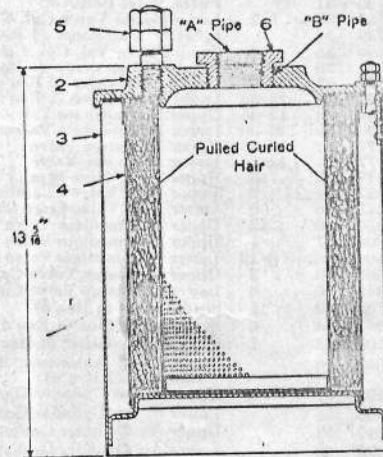
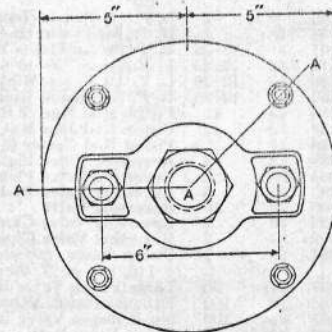


Net Weight 2 3/8 lbs.

TYPE B-3 AUTOMATIC AIR CYLINDER OIL CUP

Piece No. 89042 Type B-3 Automatic Air Cylinder Oil Cup, complete, less Bracket and Oil Tubes

Pc. No.	Ref. No.	Description
89043	2	Body with Valve Bushing
70883	4	Sleeve
88418	5	Cap Nut
81214	9	Sleeve for 3/8" Copper Tubing
79927	10	Union Nut

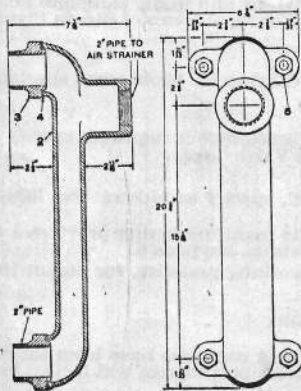


Section A-A
Net Weight 20 1/2 lbs.

No. 54 AIR STRAINER

Piece No. 51426 No. 54 Air Strainer, complete

Pc. No.	Ref. No.	Description
53693	2	Head, tapped for 2" Pipe, complete (includes two of 5)
87839	3	Shell, complete
87842	4	Strainer Case, complete
502146	5	3/4"x2 7/8" Stud and Nut (2 Req'd)
88790		Carton Pulled Curled Hair



Net Weight 25 lbs.

SINGLE AIR INLET

Piece No. 63917 Single Air Inlet, complete

Pc. No.	Ref. No.	Description
63308	2	Tee
63307	3	Studs (2 Req'd)
63306	4	Gaskets (2 Req'd)
23350	5	Sq. Hd. Mch. Bolt with Hex. Nut (4 Req'd)

Prices will be quoted upon application

Orders should give PIECE NUMBER and NAME of part wanted

8 $\frac{1}{2}$ " CROSS COMPOUND AIR COMPRESSORS

Pistons and Rings for Rebored Cylinders

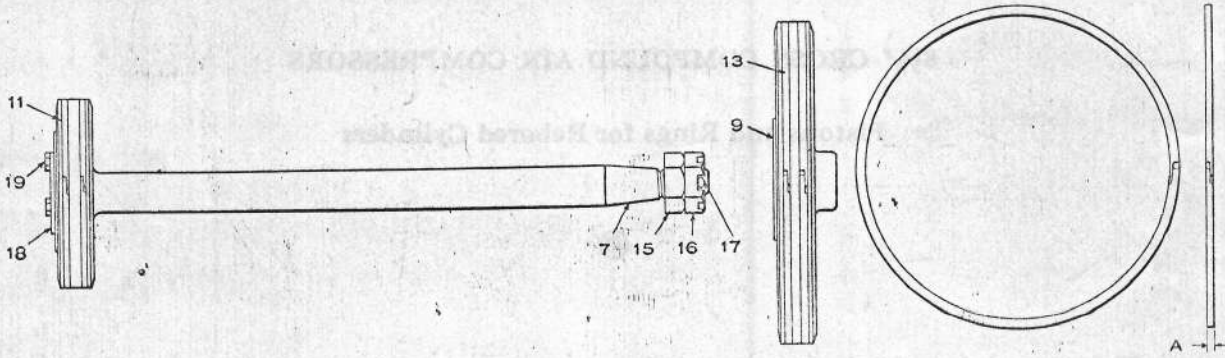
The most modern development in packing rings for steam driven air compressors is now available and involves an improved form of lap joint for the ring somewhat similar to the lap joint rings which have proven so successful in triple valves.

These Lap Joint rings are made from a special mixture of metal to give what long experience has indicated as the most desirable wearing and friction qualities in conjunction with the metal in the cylinder walls. Ring gap and its attendant leakage is eliminated through the medium of a special lap joint at the ring ends that closes the rings in a complete circle. With the ring closed in its groove this joint seals on both the cylinder wall and one wall of the ring groove, forming a double leakage barrier which prevents blow-by between cylinder wall and ring. The joint maintains the sealing function of the ring throughout its entire circumference and thereby effectively eliminates the ring gap as a chief source of blow-by losses. Very careful attention has been given in design and manufacture to provide uniform wall pressure of the proper amount, the inside diameter of the ring being left intact to preserve this characteristic pressure over a long period of service. The sides of the ring are accurately ground to the proper width, permitting a close fit in the ring groove. No filing or fitting is required.

In reconditioning air compressors, it is our recommended practice to rebores the steam and air cylinders in steps of $\frac{1}{16}$ " and the main valve cylinders in steps of $\frac{1}{32}$ "; the maximum rebored diameter not to exceed that specified in the accompanying tables. We have provided repair pistons in the above oversize and piston rings of our latest improved manufacture in corresponding oversize diameters. The indicated diameter of the rings in each case is exact (a few thousandths large to take care of normal variations in reboring) so that when the ring is installed in the cylinder it will remain a true circle, thus insuring an even bearing at all points on the circumference and a tight fit against leakage. In addition to the oversize in diameter, the steam and air piston rings can all be obtained in widths greater than standard for use in ring grooves that have become wider than standard through wear. They range in overwidths of .006", .012", .018", .025", .030" and .036".

The wide variety of combinations in diameter and widths of rings should be sufficient to meet all normal repair requirements with the minimum of expense.

8 1/2" CROSS COMPOUND AIR COMPRESSORS



HIGH-PRESSURE STEAM PISTON

REF. No.	No. Per Pkg.††		CYLINDER DIAMETERS AND PIECE NUMBERS					
			8 1/2"	8 1/2"	8 1/8"	8 3/8"	8 1/4"	8 3/4"
7	1	*High-Pressure Steam Piston and Rod, complete, (Includes 15, 16, 17, 18, two of 11 and three of 19).....	98246	504725	98247	98248	98249	98250
11	12-25	*High-Pressure Steam Piston Ring (Standard width 3/8", Dimension "A") (2 Req'd).....	97401	98935	97408	97415	97422	97429
11	12-25	*High-Pressure Steam Piston Ring (.006" wider than standard) (2 Req'd).....	97402	98936	97409	97416	97423	97430
11	12-25	*High-Pressure Steam Piston Ring (.012" wider than standard) (2 Req'd).....	97403	98937	97410	97417	97424	97431
11	12-25	*High-Pressure Steam Piston Ring (.018" wider than standard) (2 Req'd).....	97404	504151	97411	97418	97425	97432
11	12	*High-Pressure Steam Piston Ring (.025" wider than standard) (2 Req'd).....	97405	504152	97412	97419	97426	97433
11	12	*High-Pressure Steam Piston Ring (.030" wider than standard) (2 Req'd).....	97406	504153	97413	97420	97427	97434
11	12	*High-Pressure Steam Piston Ring (.036" wider than standard) (2 Req'd).....	97407	504154	97414	97421	97428	97435

LOW-PRESSURE AIR PISTON

REF. No.	No. Per Pkg. ††		CYLINDER DIAMETER AND PIECE NUMBERS							
			8 1/2"-150	14 1/2"	14 1/4"	14 1/8"	14 3/8"	14 1/2"	14 3/4"	14 1/4"
			8 1/2"-120	13 3/8"	13 3/4"	13 1/8"	13 1/4"	13 3/8"	13 3/4"	13 1/8"
9	1	*Low-Pressure Air Piston, complete, (Includes two of 13).....	8 1/2"-150 8 1/2"-120	98222 98256	504727 504726	98224 98257	98226 98258	98228 98259	98230 98260	98232 98261
13	12-25	*Low-Pressure Air Piston Ring (standard width 3/8", Dimension "A") (2 Req'd).....	8 1/2"-150 8 1/2"-120	97478 97782	99049 99010	97485 97788	97492 97794	97499 97800	97471 97806	97889 97812
13	12-25	*Low-Pressure Air Piston Ring (.006" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97479 97783	99050 99020	97486 97789	97493 97795	97500 97801	97472 97807	97890 97813
13	12-25	*Low-Pressure Air Piston Ring (.012" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97480 97784	99051 99021	97487 97790	97494 97796	97501 97802	97473 97808	97891 97814
13	12-25	*Low-Pressure Air Piston Ring (.018" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97481 97785	504194 504185	97488 97791	97495 97797	97502 97803	97474 97809	97815
13	12	*Low-Pressure Air Piston Ring (.025" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97482 97786	504195 504186	97489 97792	97496 97798	97503 97804	97475 97810	97816
13	12	*Low-Pressure Air Piston Ring (.030" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97483 504184	504196 504187	97490	97497	97504	97476	97892
13	12	*Low-Pressure Air Piston Ring (.036" wider than standard) (2 Req'd).....	8 1/2"-150 8 1/2"-120	97484 97787	504197 504188	97491 97793	97498 97799	97505 97805	97477 97811	97817

*NOTE A—Pistons and Rings are designated by the diameter of the Cylinder for which they are suitable.

NOTE B—Above sizes of Pistons and rings are carried in stock. Should orders be received for other sizes, we will substitute nearest standard size unless specific instructions are received to the contrary.

NOTE C—If maximum repair size High-Pressure Steam Piston and Rod or Low-Pressure Air Piston (less Rings and having ring grooves cut to standard caliber) suitable for turning to bore of cylinder is desired, specify:

Pc. No. 59091 / 8 3/8" High-Pressure Steam Piston and Rod
 Pc. No. 59094 / 14 1/4" Low-Pressure Air Piston for 8 1/2"-150
 Pc. No. 59499 / 13 1/8" Low-Pressure Air Piston for 8 1/2"-120

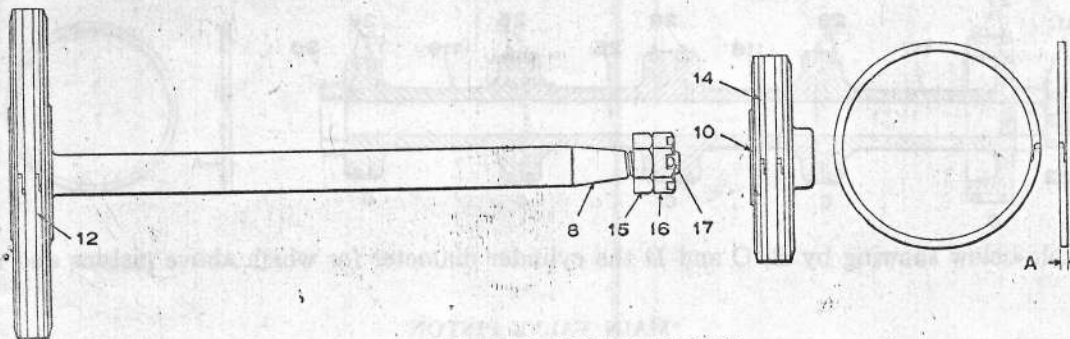
†NOTE D—For Piece Number Combinations, of High-Pressure Steam Pistons with Taper Assembly of Steam Piston Head and Rod, see page 11.

††NOTE E—Column headed "No. Per Pkg." indicates the items for which standard shipping packages have been established and the number contained in the package. Orders placed in these quantities and multiples thereof will facilitate shipments and provide convenient means for handling in store room stock.

Prices will be quoted upon application

Orders should give PIECE NUMBER, NAME and CYLINDER DIAMETER for part wanted

8 1/2" CROSS COMPOUND AIR COMPRESSORS



LOW-PRESSURE STEAM PISTON

REF. No.	No. Per Pkg.††		CYLINDER DIAMETERS AND PIECE NUMBERS												
			8 1/2"-150	14 1/2"	14 1/2"	14 1/8"	14 1/8"	14 1/4"	14 1/4"	14 1/2"					
8	1	*Low-Pressure Steam Piston and Rod, complete, (Includes 15, 16, 17 and two of 12).....	8 1/2"-150 98240	504731	98241	98242	98243	98244	98245	98234 504730	98235	98236	98237	98238	98239
12	12-25	*Low-Pressure Steam Piston Ring (standard width 1/8", Dimension "A") (2 Req'd).....	8 1/2"-150 97478	99049	97485	97492	97499	97471	97889	97818 99034	97824	97830	97836	97842	97848
12	12-25	*Low-Pressure Steam Piston Ring (.006" wider than standard) (2 Req'd).....	8 1/2"-150 97479	99050	97486	97493	97500	97472	97890	97819 99035	97825	97831	97837	97843	97849
12	12-25	*Low-Pressure Steam Piston Ring (.012" wider than standard) (2 Req'd).....	8 1/2"-150 97480	99051	97487	97494	97501	97473	97891	97820 99036	97826	97832	97838	97844	97850
12	12-25	*Low-Pressure Steam Piston Ring (.018" wider than standard) (2 Req'd).....	8 1/2"-150 97481	504194	97488	97495	97502	97474	97892	97821 504190	97827	97833	97839	97845	97851
12	12	*Low-Pressure Steam Piston Ring (.025" wider than standard) (2 Req'd).....	8 1/2"-150 97482	504195	97489	97496	97503	97475	97893	97822 504191	97828	97834	97840	97846	97852
12	12	*Low-Pressure Steam Piston Ring (.030" wider than standard) (2 Req'd).....	8 1/2"-150 97483	504196	97490	97497	97504	97476	97894	97823 504192	.....	.....	.....	.....	.....
12	12	*Low-Pressure Steam Piston Ring (.036" wider than standard) (2 Req'd).....	8 1/2"-150 97484	504197	97491	97498	97505	97477	97895	97824 504193	97829	97835	97841	97847	97853

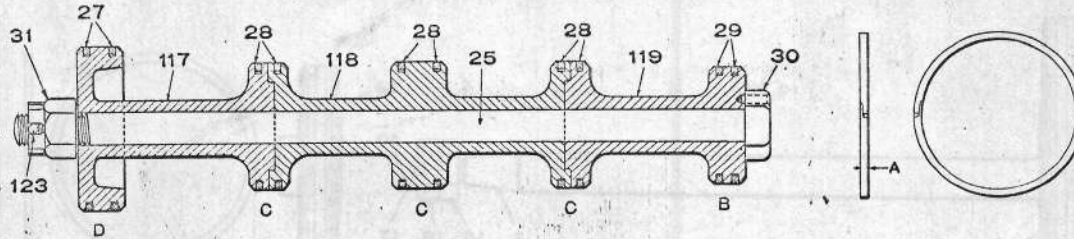
HIGH-PRESSURE AIR PISTON

REF. No.	No. Per Pkg.††		CYLINDER DIAMETERS AND PIECE NUMBERS												
			8 1/2"-150	9"	9 1/8"	9 1/8"	9 1/4"	9 1/4"	9 1/2"						
10	1	*High-Pressure Air Piston, complete, (Includes two of 14).....	8 1/2"-150 98212	98211	504733	98214	98216	98218	98220	8 1/2"-120 98251	8 1/2"	8 1/8"	8 1/8"	8 1/4"	98225
14	12-25	*High-Pressure Air Piston Ring (standard width 1/8", Dimension "A") (2 Req'd).....	8 1/2"-150 97436	98947	97443	97450	97457	97464	97401	8 1/2"-120 97553	8 1/2"	8 1/8"	8 1/8"	8 1/4"	97402
14	12-25	*High-Pressure Air Piston Ring (.006" wider than standard) (2 Req'd).....	8 1/2"-150 97437	98948	97444	97451	97458	97465	97402	8 1/2"-120 97554	8 1/2"	8 1/8"	8 1/8"	8 1/4"	97403
14	12-25	*High-Pressure Air Piston Ring (.012" wider than standard) (2 Req'd).....	8 1/2"-150 97438	98949	97445	97452	97459	97466	97403	8 1/2"-120 97555	8 1/2"	8 1/8"	8 1/8"	8 1/4"	97404
14	12-25	*High-Pressure Air Piston Ring (.018" wider than standard) (2 Req'd).....	8 1/2"-150 97439	504155	97446	97453	97460	97467	97404	8 1/2"-120 97556	8 1/2"	8 1/8"	8 1/8"	8 1/4"	97405
14	12	*High-Pressure Air Piston Ring (.025" wider than standard) (2 Req'd).....	8 1/2"-150 97440	504156	97447	97454	97461	97468	97405	8 1/2"-120 97557	8 1/2"	8 1/8"	8 1/8"	8 1/4"	97406
14	12	*High-Pressure Air Piston Ring (.030" wider than standard) (2 Req'd).....	8 1/2"-150 97441	504157	97448	97455	97462	97469	97406	8 1/2"-120 504146	8 1/2"	8 1/8"	8 1/8"	8 1/4"	97407
14	12	*High-Pressure Air Piston Ring (.036" wider than standard) (2 Req'd).....	8 1/2"-150 97442	504158	97449	97456	97463	97470	97407	8 1/2"-120 97558	8 1/2"	8 1/8"	8 1/8"	8 1/4"	97408

*NOTE A—Pistons and rings are designated by the diameter of the cylinder for which they are suitable.
 NOTE B—Above sizes of pistons and rings are carried in stock. Should orders be received for other sizes, we will substitute nearest standard size unless specific instructions are received to the contrary.
 NOTE C—If maximum repair size Low-Pressure Steam Piston and Rod or High-Pressure Air Piston (less rings and having ring grooves cut to standard caliber), suitable for turning to bore of cylinder is desired, specify:
 Pc. No. 89093 14 1/8" Low-Pressure Steam Piston and Rod, for 8 1/2"-150
 Pc. No. 89570 14 1/8" Air Piston, for 8 1/2"-150
 Pc. No. 89092 9 1/4" Air Piston, for 8 1/2"-150
 Pc. No. 89498 8 1/2" Air Piston, for 8 1/2"-120
 †NOTE D—For Piece Number Combinations, of Low-Pressure Steam Pistons with Taper Assembly of Steam Piston Head and Rod, see page 11.
 †NOTE E—Column headed "No. Per Pkg." indicates the items for which standard shipping packages have been established and the number contained in the package. Orders placed in these quantities and multiples thereof will facilitate shipments and provide convenient means for handling in store room stock.

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 Orders should give PIECE NUMBER, NAME and CYLINDER DIAMETER for part wanted

8 1/2" CROSS COMPOUND AIR COMPRESSORS



See table below showing by B, C and D the cylinder diameter for which above pistons and rings are suitable.

*MAIN VALVE PISTON

REF. No.	No. PER PKG. ††	DESCRIPTION	CYLINDER DIAMETERS AND PIECE NUMBERS				
			B-2 5/16"	B-2 1/2"	B-2 3/8"	B-2 1/2"	B-2 7/8"
			C-2 1/2"	C-2 1/2"	C-2 1/8"	C-2 1/2"	C-2 5/8"
			D-3 1/4"	D-3 3/8"	D-3 1/8"	D-3 1/2"	D-3 3/8"
25	1	Main Valve Piston, complete (includes 30, 117, 118, 119, two of 27, 29 and six of 28).....	502051	502052	502053	502054	502055
	1	Large Piston Section, complete, for Main Piston Valve (includes 28, 117 and two of 27).....	502771	502772	502773	502774	502775
27	50	Large Main Valve Piston Ring (standard width, Dimension "A," .136") (2 Req'd).....	501997	501998	501999	502000	502001
27	50	Large Main Valve Piston Ring (.006" wider than standard) (2 Req'd).....	502002	502003	502004	502005	502006
27	50	Large Main Valve Piston Ring (.012" wider than standard) (2 Req'd).....	502007	502008	502009	502010	502011
	1	Exhaust Piston Section, complete, for Main Piston Valve (includes 118 and four of 28)...	502766	502767	502768	502769	502770
28	100	Exhaust Piston Valve Ring (standard width, Dimension "A," .136") (6 Req'd).....	501982	501983	501984	501985	501986
28	100	Exhaust Piston Valve Ring (.006" wider than standard) (6 Req'd).....	501987	501988	501989	501990	501991
28	100	Exhaust Piston Valve Ring (.012" wider than standard) (6 Req'd).....	501992	501993	501994	501995	501996
	1	Small Piston Section, complete, for Main Piston Valve (includes 28, 119 and two of 29).....	502761	502762	502763	502764	502765
29	100	Small Piston Valve Ring (standard width, Dimension "A," .136") (2 Req'd).....	501967	501968	501969	501970	501971
29	100	Small Piston Valve Ring (.006" wider than standard) (2 Req'd).....	501972	501973	501974	501975	501976
29	100	Small Piston Valve Ring (.012" wider than standard) (2 Req'd).....	501977	501978	501979	501980	501981

REPAIR PISTON VALVE BUSH

Pc. No.	Ref. No.	DESCRIPTION
65803	106	Piston Valve Bush (.01" larger than standard)
65804	106	Piston Valve Bush (1/32" larger than standard)

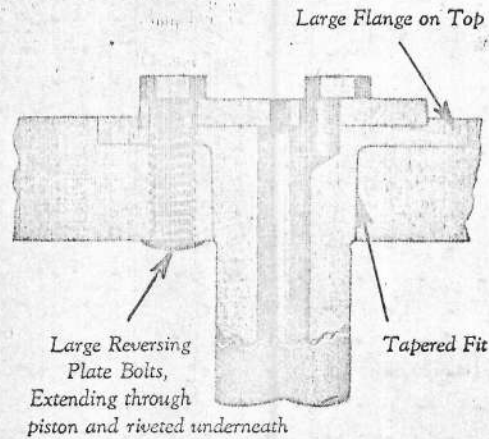
*NOTE A—Pistons and rings are designated by the diameter of the cylinder for which they are suitable.
 NOTE B—Above sizes of pistons and rings, and no other sizes, are made and carried in stock. Should orders be received for other sizes, we will substitute nearest standard size, unless specific instructions are received to the contrary.
 ††NOTE C—Column headed "No. Per Pkg." indicates the items for which standard shipping packages have been established and the number contained in the package. Orders placed in these quantities and multiples thereof will facilitate shipments and provide convenient means for handling in store room stock.

Prices will be quoted upon application

Orders should give PIECE NUMBER, NAME and CYLINDER DIAMETER for part wanted

8½" CROSS COMPOUND AIR COMPRESSORS

**TAPER ASSEMBLY OF
STEAM PISTON HEAD AND ROD**
(Supplied when specified)



HIGH-PRESSURE STEAM PISTON

REF. No.		CYLINDER DIAMETERS AND PIECE NUMBERS				
		8½"	8 ⁹ / ₁₆ "	8 ⁵ / ₈ "	8 ¹¹ / ₁₆ "	8 ³ / ₄ "
7	*High-Pressure Steam Piston and Rod, complete (includes 15, 16, 17, 18, two of 11 and three of 19)	98296	98297	98298	98299	98300

LOW-PRESSURE STEAM PISTON

REF. No.			CYLINDER DIAMETERS AND PIECE NUMBERS					
			8½"-150 8½"-120	14½" 14"	14 ⁹ / ₁₆ " 14 ¹ / ₁₆ "	14 ⁵ / ₈ " 14 ¹ / ₈ "	14 ¹¹ / ₁₆ " 14 ³ / ₁₆ "	14 ³ / ₄ " 14 ⁹ / ₁₆ "
8	*Low-Pressure Steam Piston and Rod, complete (includes 15, 16, 17 and two of 12)	8½"-150 8½"-120	98307 98301	98308 98302	98309 98303	98310 98304	98311 98305	98312 98306

*NOTE A—For Repair Size Lap Joint Piston Packing Rings, see pages 8 and 9.

NOTE B—If maximum repair size High-Pressure or Low-Pressure Steam Piston and Rod (less Rings and having ring grooves cut to standard caliper) suitable for turning to bore of cylinder is desired, specify:

Pc. No. 88569 8½" High-Pressure Steam Piston and Rod
Pc. No. 88570 14¹¹/₁₆" Low-Pressure Steam Piston and Rod

Prices will be quoted upon application

Orders should give **PIECE NUMBER, NAME** and **CYLINDER DIAMETER** for part wanted

