

# **WESTERN ENGINE COMPANY**

DIVISION OF  
**VERNON TOOL CO., LTD.**

**1101 Meridian Avenue  
ALHAMBRA, CALIFORNIA**

[www.rustyiron.com](http://www.rustyiron.com)

**Phone  
CU. 3-1206**

WESTERN GAS ENGINES  
INSTRUCTIONS  
FOR  
INSTALLING, OPERATING, MAINTAINING

WESTERN ENGINE CO.

DIVISION OF

VERNON TOOL CO. LTD.

1101 MERIDIAM AVE. ALHAMBRA, CAL.

## INSTRUCTIONS FOR INSTALLING.

The right hand side of a Western engine is considered the side to the right from the operator standing at the cylinder head end of the engine and looking toward the crankshaft.

Standing on the right side of the engine and looking at the flywheel, all Western engines run clock wise.

In case of a belt drive place the engine so that the tight belt runs at the bottom.

Foundations. With each engine is furnished an installation plan giving the proper size of the foundation, the size and location of foundation bolts, the distance from center line of engine to center line of belt pulley and all other dimensions pertaining to the installation of the particular engine.

The foundation should be built of concrete and in such proportion as indicated on the blue print furnished with the engine. The old idea of wooden foundations with certain flexibility is unsound. The wear and tear on an engine standing on a wooden foundation is excessive, the alignment never can be maintained and the possibility of breaking crankshaft or crankshaft extensions is much greater on wooden foundations than on concrete foundations where proper alignment can be maintained.

Installing Engine. After the engine is placed on the foundation and properly levelled, a mixture of equal parts of cement and sand should be used for grouting, watered so as to flow freely. After the grout has properly set, all anchor bolt nuts should be tightened carefully.

To place the flywheel on the crankshaft, drive a steel wedge in the split hub of the flywheel just enough to be able to slip the flywheel on the shaft. When the flywheel is in place insert the key, remove the wedge and tighten the hub bolt, then only drive key home.

Use extreme care in lining up outboard bearing. Slide the outboard bearing over the end of the extension shaft, put it on the concrete pedestal supported with steel wedges, line up the extension shaft to the crankshaft and bolt the shaft hub to the flywheel. Turn the engine over to make sure that the extension shaft is running true and then tighten the nuts.

Grout in outboard bearing and tighten its anchor bolt nuts.

Exhaust piping should not be smaller than the exhaust ell or flange furnished with engine.

Cooling Systems. With each engine is furnished a belt driven water circulating pump of sufficient size to keep engine properly cooled.

There are three types of cooling systems which can be used:

- 1 - Using fresh water which leaves engine as waste,
- 2 - With a storage basin and a cooling tower,
- 3 - With water circulating through coils.

The second type is commonly used. A vertical check valve should be placed directly below the centrifugal pump to prevent the engine from running dry during shutdown periods. The size of the storage basin and cooling tower depends on the size of the engine and climatic conditions.

The third type, usually called enclosed system, consists of a basin with a cooling tower in which are placed a series of pipe coils which form a closed water system with the engine water jackets.

A pump continuously forces the water through the engine, then through the cooling coils, and back through the engine again. Usually an automatic float is arranged in order to keep the enclosed system full of water.

In order to cool the water within the coils, a second pump picks up the water in the basin of the cooling tower and raises it to the top of the tower where it is sprayed, falling back into the basin over the cooling coils, being cooled as well as cooling the coils at the same time.

This system has the distinct advantage of preventing the formation of scale within the cylinder jackets, as the same water is used over and over again.

The second pump mentioned is not furnished with the engine as standard equipment. It should have a capacity of from 4 to 6 times larger than the pump furnished with the engine.

Regardless of the system used it is advisable to insert a thermometer in the discharge water line from each cylinder to watch the temperature as explained in paragraph 26.

Air Starting System. Single cylinder engines up to 50 H.P. can be easily started by hand, therefore they receive an air starting equipment only on special order. All engines from 60 H.P. up have air starting arrangement as standard equipment.

The air receiver should be located near the engine and connected to it by a piping not less than  $1\frac{1}{4}$ " diameter. A safety valve must be installed between air compressor and receiver. A valve must be provided at the bottom of the receiver in order to drain any condensed water and oil which settles in the tank.

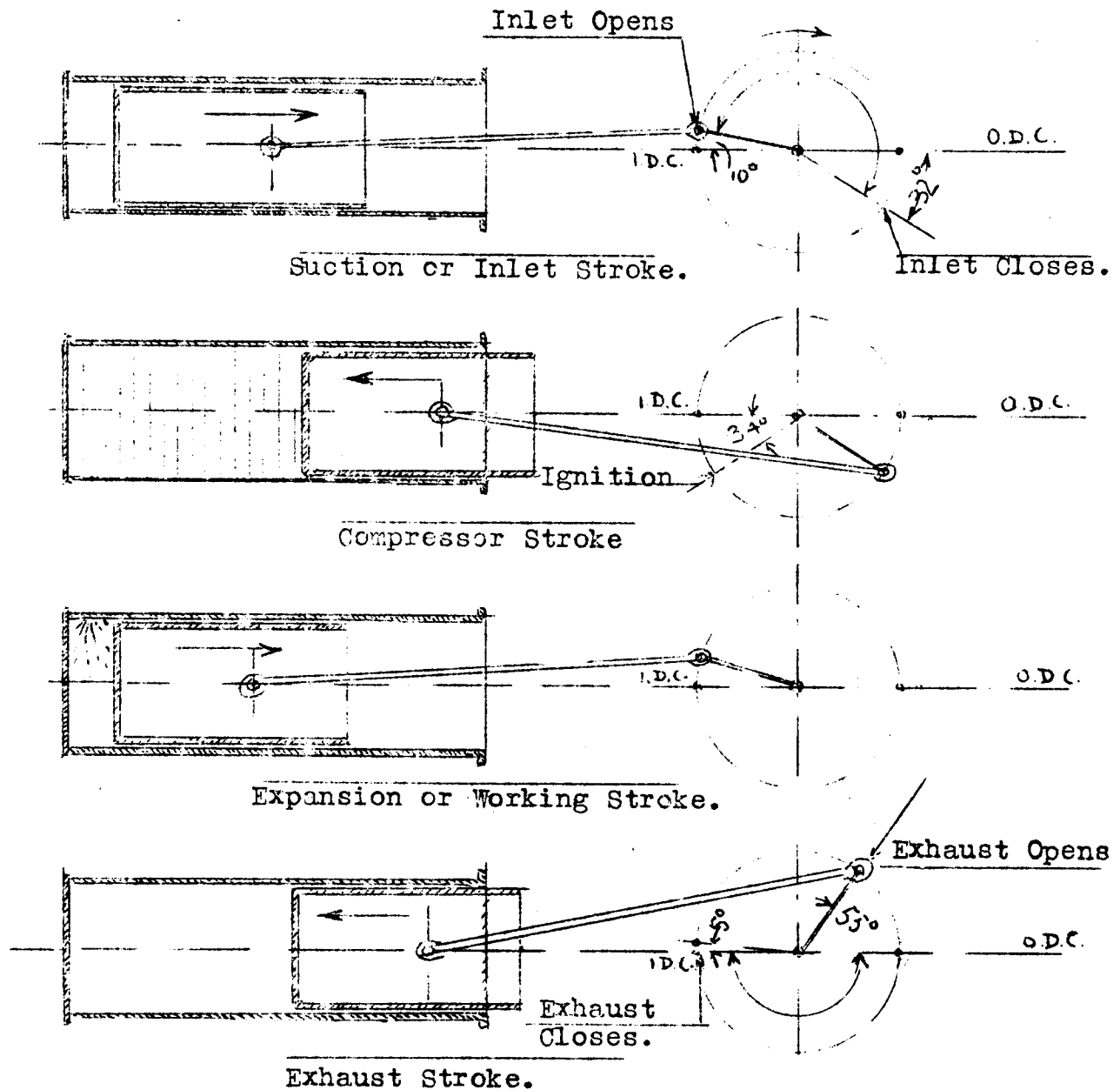
All air pipes and fittings should be assembled using litharge with glycerine or shellac to insure tight joints, thus preventing air losses.

Effect of Altitude. All Western engines are rated at sea level. When operating at a considerable altitude, the air charge drawn into the cylinder with every stroke is proportionally less, due to the lighter atmospheric pressure, thereby reducing the quantity of the fuel that can be burned and, consequently reducing the normal and maximum horsepower output of the engine. The anticipated decrease in horsepower output will range from 3% to 3½% for every thousand feet above sea level.

VALVE TIMING DIAGRAM

of Western Gas Engines illustrating each stroke.

Note: I.D.C. means inner dead center; O.D.C. outer dead center.



## INSTRUCTIONS FOR STARTING AND OPERATING.

The inner dead center is the position at which the piston is the closest to the cylinder head.

### S t a r t i n g .

1. Start air compressor and fill tank to about 150 lbs. pressure.
2. Relieve compression, in case of a duplex engine on both cylinders, by moving compression relief rods 373 towards crankshaft.
3. Turn spark advancer handle 477 horizontally - mark "S" (starting) up.
4. See that cables from magneto to spark plugs are disconnected, as otherwise when turning the flywheel to starting position the engine might fire and injure the operator.
5. Turn flywheel to starting position, i.e. about 10° past inner dead center.
6. Connect cables from magneto to spark plugs.
7. Supply all oil holes with lubricating oil - rocker shafts 391, (recent engines use grease on rocker shafts), eccentric rod end pins 256, inlet lever pins 330, exhaust lever roller pins 365, governor control pins 768, 769, 839, 842, and inlet valve stems. Following applies to  $8\frac{3}{4}$ ,  $10\frac{1}{4}$  single cylinder engines: Rocker arm pin 432, inlet cut out rod end pin 425, 427, inlet valve hook pin 431.
8. Be sure that all oil lines from feed lubricator are full of oil. Turn lubricator crank 10 to 12 times. When starting the engine for the first time or after a long shut down, disconnect all oil tubes at the extreme ends and turn lubricator crank until oil begins to run from all tubes freely.
9. Open main water circulating valve.
10. If there is an air intake cover provided on mixing box, do not forget to open it.
11. See that the cylinder drain cocks 954 underneath the cylinders are closed.
12. Starting the engine for the first time, when gas port adjusting valve 692 in mixing box is not adjusted, open it approximately half way by means of lever 714; for final adjustment see paragraph 27 if gas valve was adjusted, do not touch it.
13. Open valve <sup>at</sup> air storage tank.
14. Open quickly air cock at engine.

15. Crack open the gas cock 982 and begin to turn engine by hand or compressed air, and gradually open gas cock wider until engine begins to fire steadily.
16. Shut off air cock at engine.
17. Pull compression relief rods 373 into full compression position.
18. Turn spark advancer handles 477 up - Mark "R" (running) up.
19. Open wide gas cock 982.
20. Close valve at air storage tank.
21. Put on load.

R u n n i n g.

22. About every eight hours oil rocker shafts 391, eccentric rod end pins 256, inlet lever pins 300, exhaust lever roller 364 and pin 365, governor control pins 768, 839 and 842, and inlet valve stem.
23. Fill sight feed lubricator as needed. Clean force feed oil tank once a month or as often as needed.
24. The first two hundred hours of running a new engine let the oil flow freely to all feeds. After this time gradually cut down the oil supply to above 15 drops per minute to each of the cylinder feeds, about 25 drops to the wrist pins, 20-30 drops to the main bearings, 25-30 drops to the crank pins, 3 drops to the cams, 3 drops to exhaust valves and 5 drops to the governor feeds. Governor should be oiled carefully on account of the high R.P.M. Drop oiler on top of governor housing should deliver 5 drops per minute, as this oil is running down and lubricates the gears. Drop oiler on gear shaft bearing should deliver about 3-5 drops per minute. Grease cups on governor housing should be screwed down a couple of turns every eight hours.

Blue smoke in the exhaust usually denotes excessive lubrication of the cylinders. Proper lubrication however depends to a great extent upon quality of oil, load of the engine and temperature of the cooling water and air and the condition of water jackets with reference to scale; therefore, the exact amount of lubrication should be left to the judgment and experience of the operator.

25. About once every week put a drop of oil in magneto oiler.
26. Regulate cooling water so that the discharge temperature if possible does not exceed 110-120° F. However engine can run with water discharge temperature of 135 to 140° F., but higher water temperature increases depositing of scale in the water jackets and requires more cylinder lubrication.

Inspect water jackets regularly to be sure that they are free from scale and clean out all deposit; particularly examine carefully lower part of cylinder jackets.

27. The gas valve 692 in the mixing box is put in so that when its pointer is on notch 0, the gas inlet is wide open; moving the mixture control handle 714 with the pointer to the right gradually cuts down the gas; with the pointer on notch 5, the gas is shut off entirely.

The necessary adjustment is made by moving handle 714 so as to obtain the maximum load and lowest gas consumption. Once adjusted the gas valve 692 has to be readjusted only if the pressure or heat value of the gas changes.

28. To adjust the R.P.M. of the engine, turn the hand wheel 856 on the governor of the duplex engines or screw down nuts 848 on the single cylinder engines.

#### S h u t t i n g   D o w n .

29. Close gas cock 982.
30. Just before engine stops push compression relief rods 373 towards crank end.
31. Turn horizontally spark advancer handles 477.
32. Disconnect cables from magneto to spark plugs.
33. Close valve in the water supply line to the engine, or in the suction line of the water pump if there is one.
34. When shutting down for the season or any length of time, just after closing fuel valve, pour about a pint of lubricating oil down the inlet valve of each cylinder. This will form a coating of oil on the interior working parts, preventing them from rusting during the idle time. Close air cover. Also see that exhaust pipe opening is properly covered to prevent moisture entering.

#### H A N D Y   R E F E R E N C E .

#### S t a r t i n g .

35. Engine will hardly turn over against compression and will not get enough speed to begin firing:
  - a. Insufficient air pressure.
  - b. The air starter valve 511 opens too late, it should open about 10° after inner dead center. Move the trip finger 520 on the eccentric rod to the left.



36. Engine turns over once and then kicks back:
- a. Compression is probably unrelieved, see par.2.
  - b. On starting air admission is too early. Move the air starting trip finger 520 to the right so that air starter valve will open about  $10^{\circ}$  after inner dead center.
37. Engine does not fire:
- a. The mixture is not right. The most frequent case is that gas admission is too great: either gas valve 692 is turned on to a too rich mixture, or gas pressure is too high - reduce opening of gas cock 982. The pressure in the gas supply line to gasometer should be such as to bring the pressure between gasometer and mixing box as near as possible to atmospheric pressure.
  - b. Make sure that gas is in the line.
38. One of the cylinders does not fire - ignition out of order:
- a. The cable between magneto and spark plug may be broken.
  - b. Spark plug may be fouling. Clean it thoroughly, replace porcelain if it is cracked or put in a new spark plug. See that the gap between points is not over  $1/64$ ".
  - c. If spark plug is short circuited by water or if trace of water appears within the cylinder, the source should be traced immediately, as a water leak into the cylinder is a serious drawback to the production of power, the successful running of the engine in a general way, and the lubrication of the pistons and cylinders particularly.
  - d. Magneto does not generate a spark. Clean spark plug, adjust gap between plug points, connect plug to magneto cable and lay it on the engine cylinder, then trip magneto: a spark should be seen on the plug points if magneto is all right. See also that spark plug trip travel is not less than  $36^{\circ}$ . In case of failure of magneto to give a spark, remove the cover from the back of the magneto and examine breaker points; if they are dirty, clean them with a special file or a piece of fine emery or sand paper; if either point is badly worn, it must be replaced with a new one. The gap between breaker bars should be  $.020$ ". Sometimes the magneto is lagging on account of gumming up of the magneto bearing; clean bearing with kerosene. If magneto still fails to generate a spark, write

the factory for instructions. Do not pry into the magneto mechanism, as it is of delicate construction and rather expensive.

### R u n n i n g.

#### 39. Ignition out of order:

- a. Proceed same way as explained above about ignition troubles when starting.
- b. Spark plug may begin to foul on account of lubricating oil when engine is running idle over long periods. Take out spark plug and replace it with a clean one. In a duplex engine this can be done without stopping engine, but be sure to RELIEVE COMPRESSION PRESSURE in cylinder by blocking up exhaust valve. Then replace spark plug in second cylinder, proceeding in the same way.

#### 40. Engine does not pull full load, lacks pep:

- a. Valves are sticking. This usually can be remedied by using kerosene on valve stems while engine is running. If such is not possible shut engine down and remove valve for cleaning.
- b. Valves are leaking. This may be detected by whistling noise through the valves. Take off intake box and regrind inlet and exhaust valves. It is advisable to check over the valves at least once every three months and grind them properly.
- c. Exhaust valve take up bolt 366 is out of adjustment. the clearance between take up bolt 366 and valve stem 291 when valve is closed, should be  $1/64$ ". Check this clearance occasionally. (when Hot)
- d. Piston is blowing. Remove piston. If any of the rings are broken or worn out, they must be replaced. Should any one of the rings be tight in the groove, it should be loosened up with kerosene. Should the ring grooves in the piston be worn excessively, it is advisable to have them turned slightly wider and refitted with wider rings. The rings should be spotted to cylinder and fit snugly, but freely in grooves.
- e. Spark advance not correct: in the factory the spark is set at  $34^{\circ}$  before inner dead center. However, some gases produce a very sluggish explosion in which case it is advisable to change the spark setting from the standard to  $35-36^{\circ}$  before dead center. To advance the spark, move magneto trip 465 on the eccentric rod slightly towards the inlet valve. Too early spark will produce a knocking sound inside the cylinder and engine will lose power. Knocks caused by too early spark should be avoided also on account of excessive wear and tear produced by them in the running mechanism.

41. Engine hunts:

- a. The air or gas valves in the mixing box may stick. Take out valve 692, clean it with kerosene, also the inside of the box sleeve. Do not change adjustment of gas and air leads - as they are set right in the factory and cannot get out of order.
- b. Do not oil mixing box valves as this will cause sticking so that the governor may be unable to act and engine will run away. To prevent it, clean mixing box valves with kerosene from time to time.
- c. Governor spring may be broken.
- d. The acting mechanism between governor and mixing box may be out of alignment, in a duplex engine the bearings on the cross shaft 714 may be tight. Disconnect pin 707 and work the mixing box by hand, eliminate excessive friction resistance in the mechanism.

ADDITIONAL REMARKS PERTAINING TO LIQUID FUEL ENGINES.

In general follow the same instructions as given above for gas engines, substituting and adding the following special paragraphs. See cut attached for reference (parts not listed.)

S t a r t i n g.

10-A. Open air cover 461.

12-A. Prime the vaporizer reservoir 437 by pouring gasoline or distillate into reservoir until fuel appears on the fuel gauge 450. Keep fuel and water injection valves closed.

Pour a small amount of gasoline or distillate into air passage pipe 459.

15-A. Open fuel valve - lower 443 - and wait until engine begins to fire regularly.

Paragraph 19 does not apply to liquid fuel engines.

R u n n i n g.

27-A. Water Injection. Should be used only on loads from three-fourths and up. If an excessive knocking sound develops at the moment of ignition, open water inlet valve 431, crack water injection valve - upper 443 - and gradually open it until knocking is reduced. Do not try to eliminate it altogether, for by doing so engine will lose power. Furthermore, an excessive amount of water effects greatly the lubrication and will increase wear and tear on the cylinders, pistons and piston rings.

Fuel Adjustment. Open fuel valve - lower 443 - only as wide as really necessary; the engine gives the best results with a minimum amount of fuel and water and all the air possible. Too much fuel will show a black exhaust smoke and cause a loss of power, while not enough sometimes backfires into the vaporizer.

Air Adjustment. When air heater is used, great care should be exercised in adjusting the proportion of hot and cold air properly. An excessive amount of hot air requires an increase of injection water to prevent knocking. The proper adjustment depends upon the quality of fuel used - its specific gravity, flash and burning points, and chemical composition, and can be found only by gradually changing the proportion. It is not advisable to use fuel heavier than 38° Be., and having flash point above 100° F.

#### S h u t t i n g D o w n .

- 29-A. First shut off water injection valves - upper 443. Allow engine to fire several charges, then turn off fuel valves - lower 443.

#### HANDY REFERENCE.

- 40-A. Engine does not pull load, lacks pep.

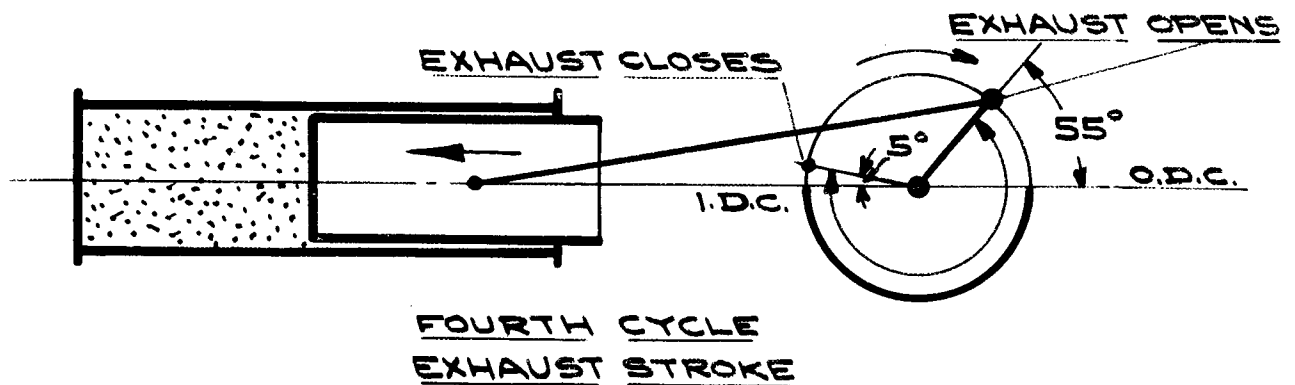
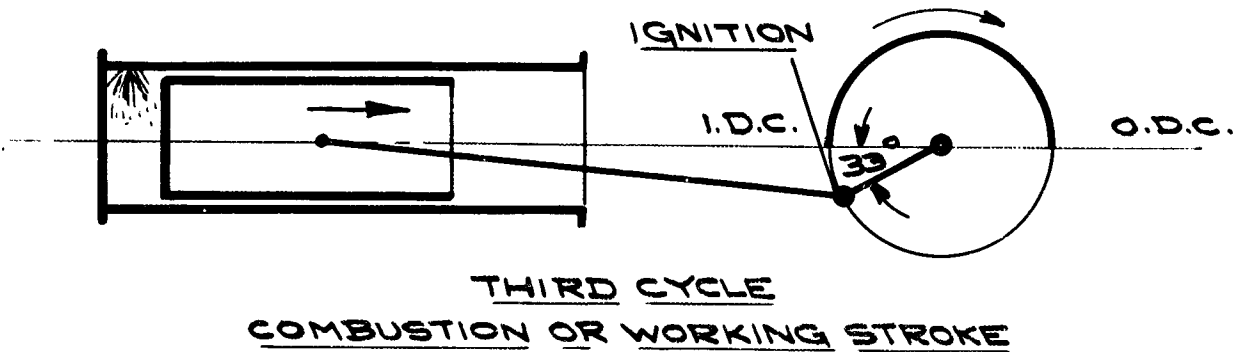
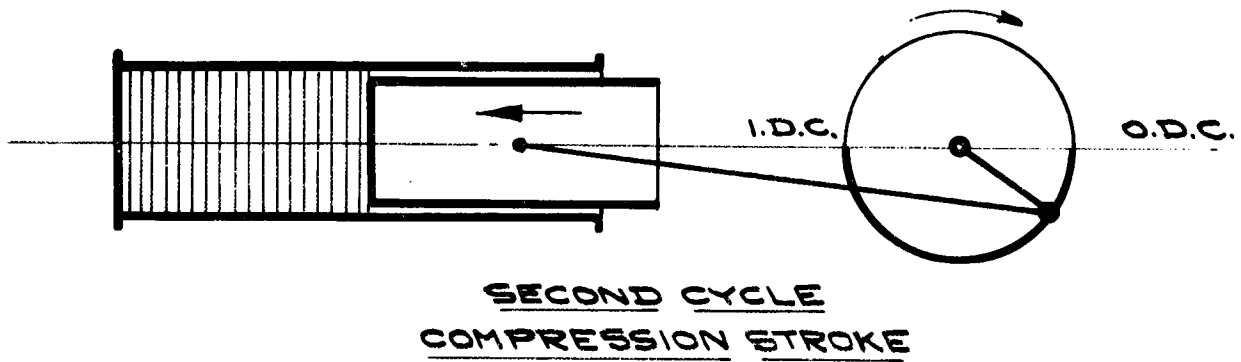
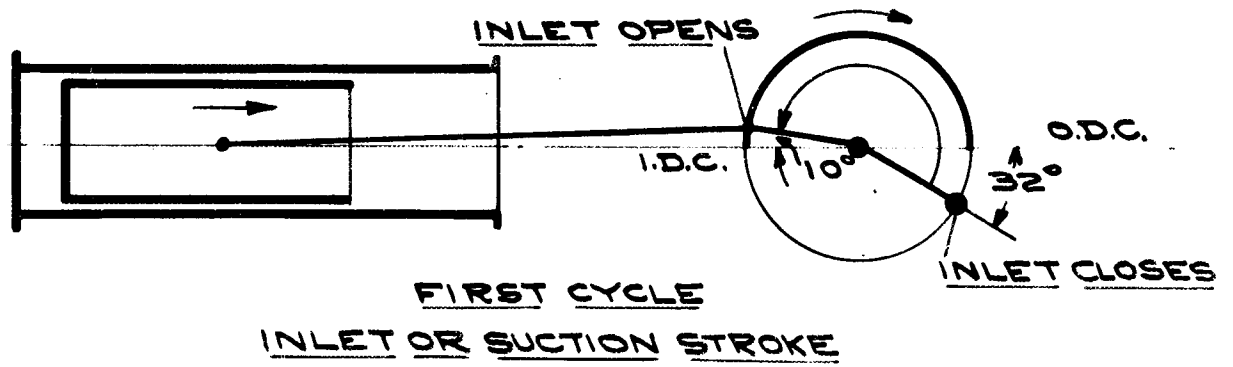
Add f. When engine lacks power with the proper setting of the spark and fuel compression, the trouble is probably in the fuel supply.

First ascertain whether fuel pump delivers the fuel to the vaporizer, working pump by hand until fuel can be seen in glass 450. Should this not be the case, check over fuel pump, remove plunger 468 and clean valves. See that the steel balls 470 and 472 are seating properly, look for air leaks in suction pipe. Sometimes the fuel supply pipe from the tank is clogged. For best results, have fuel tank close to engine and a few inches lower than the fuel pump to prevent possibility of fuel leaking into engine.

If fuel pump works properly and still no fuel goes into the engine, the hole leading into the vaporizer is obstructed. Remove air passage 456 and clean the fuel hole by inserting a wire.

Engine will run unsteady also, if fuel contains water. Remove water from fuel tanks and vaporizer.

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For additional information write the factory.



## VALVE TIMING DIAGRAM

AS APPLIED TO

WESTERN GAS ENGINES.

ILLUSTRATING EACH CYCLE OR STROKE

NOTE:- I.D.C. = INNER DEAD CENTER  
O.D.C. = OUTER DEAD CENTER

WESTERN MACHINERY CO.  
LOS ANGELES, CALIF.

**C-16**

16

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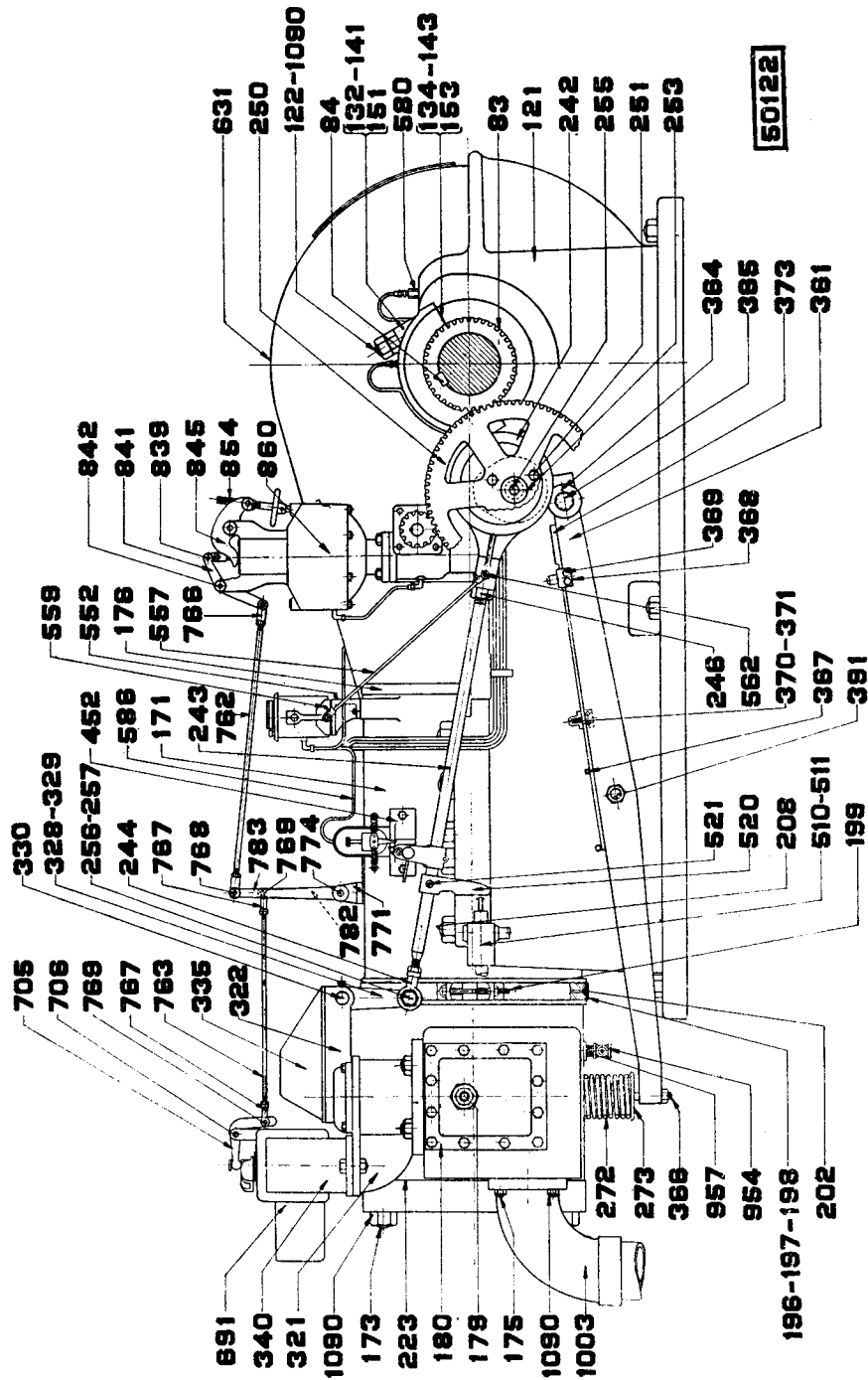


Fig. No. 1. Gas Engine. Right Hand Side View. (Cylinder Size 12<sup>1</sup>/<sub>4</sub>-17)

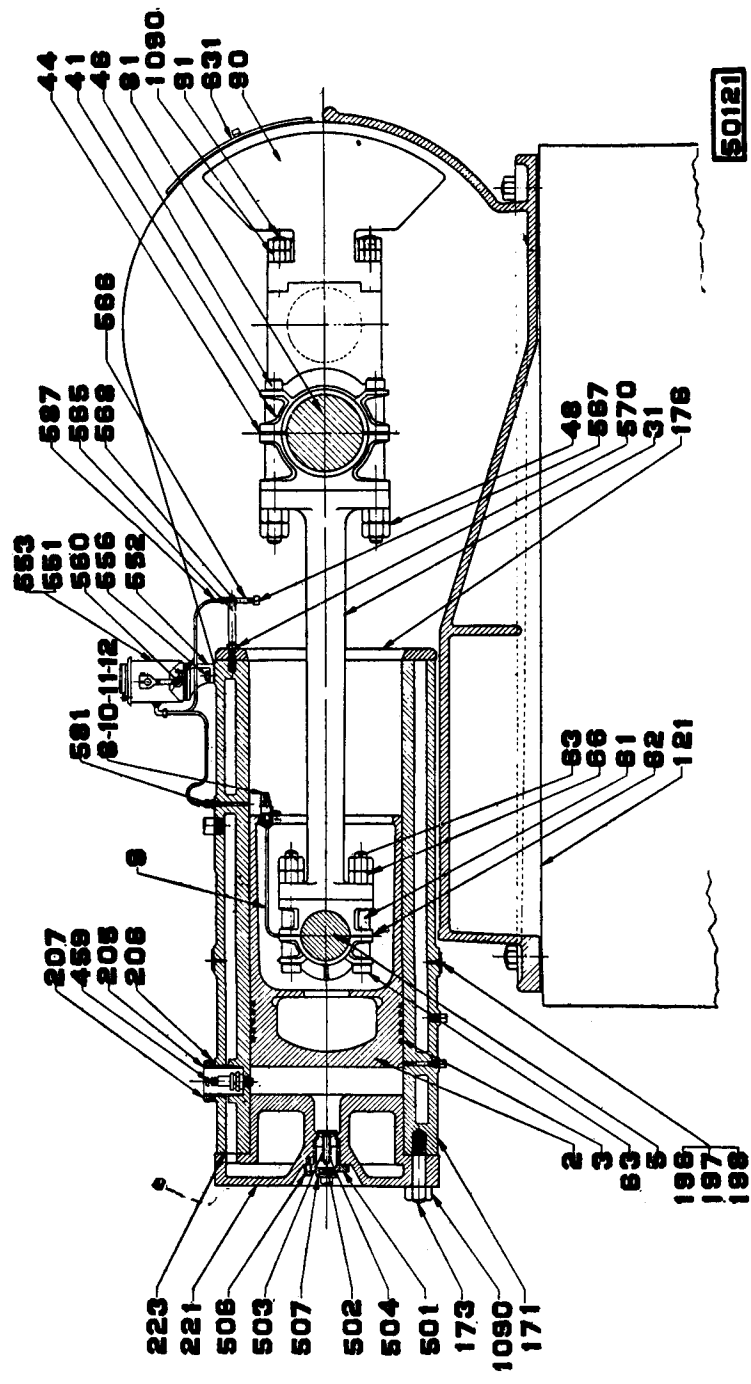
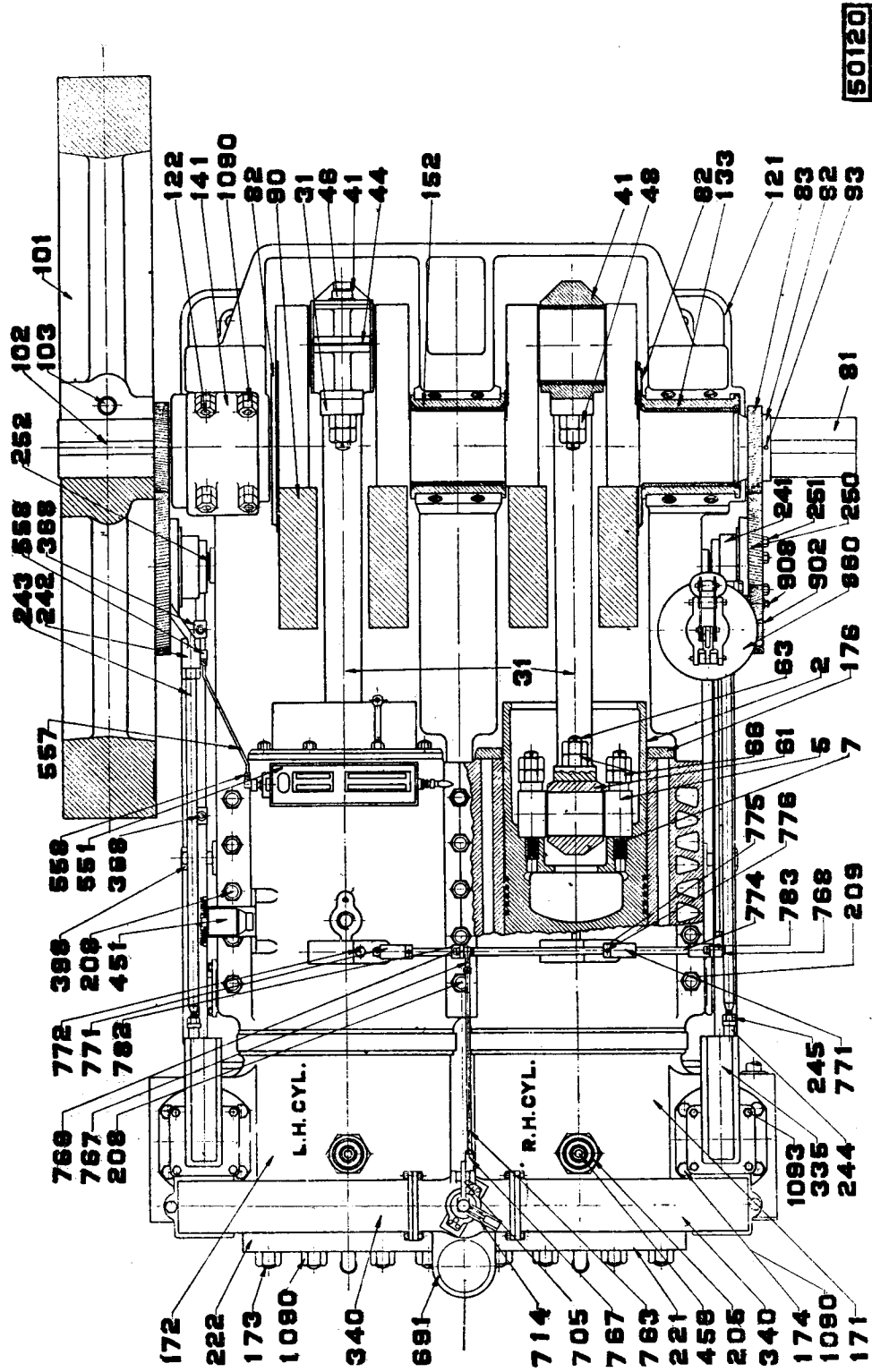


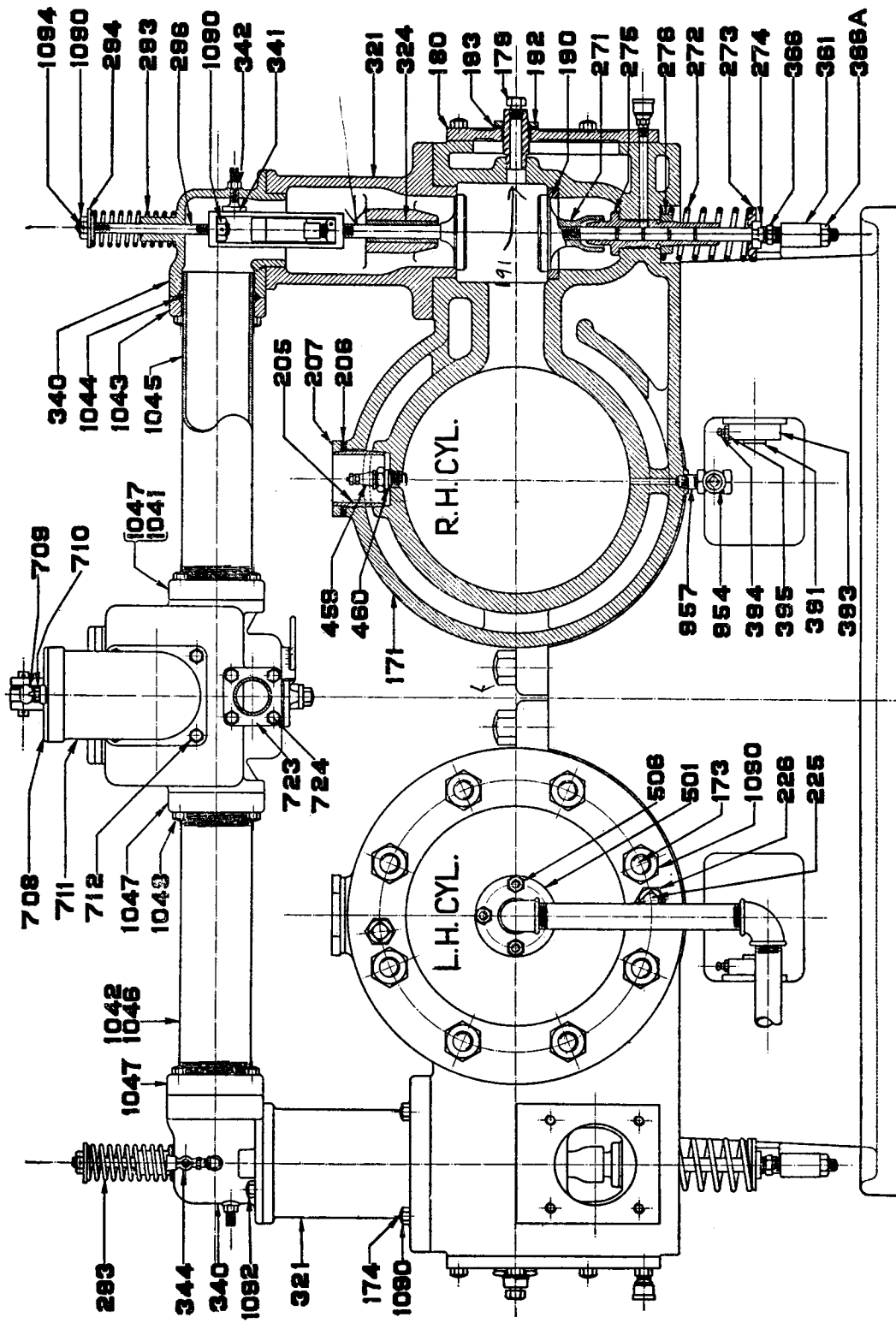
Fig. No. 5. Longitudinal Section Through Piston.



50120

Fig. No. 2. Gas Engine. Top View.





Right Hand

Left Hand

Fig. No. 3A—"Western" Gas Engine Cylinder Head End.  
 (Cylinder Size 10<sup>3</sup>/<sub>4</sub>"-14<sup>1</sup>/<sub>4</sub>")  
 For Parts of Mixing Box See Price Sheet No. 22

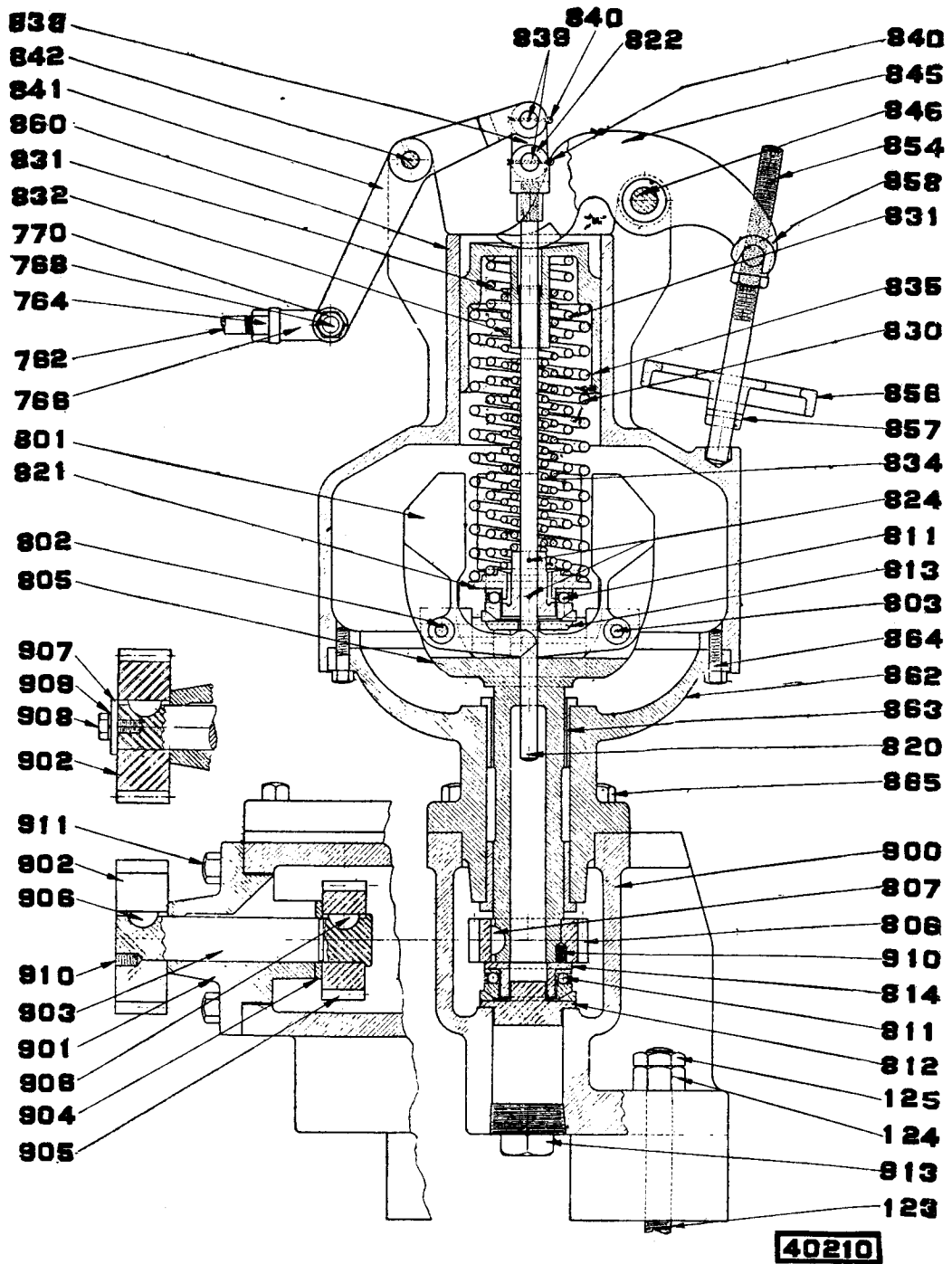


Fig. No. 6. "Western" Governor (Old Type BU) (Cyl. Size 10 $\frac{1}{4}$ -17)  
New Type 40210

For Parts See Price Sheet No. 28.

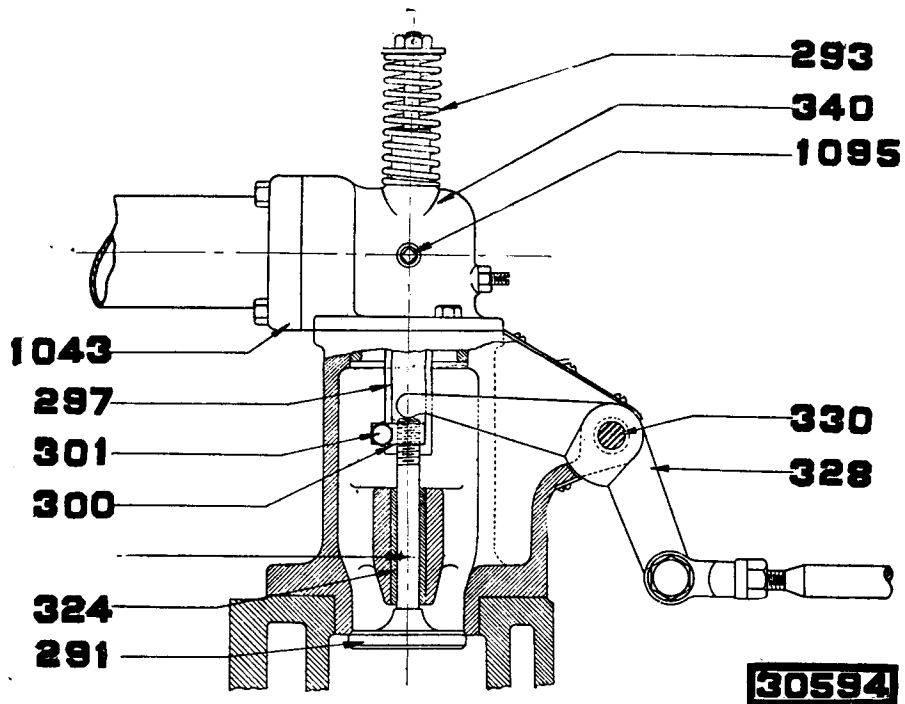


Fig. No. 13. Gas Inlet Box (Showing old type valve)

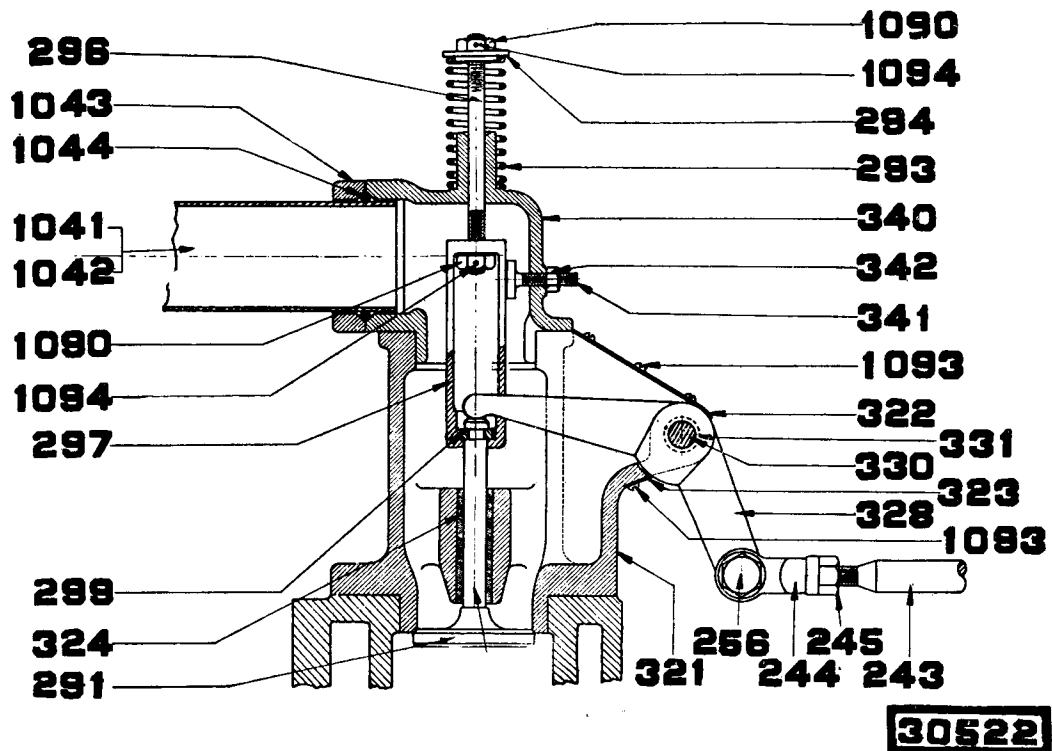


Fig. No. 14. Gas Inlet Box (New Type Valve)  
 10<sup>1</sup>/<sub>4</sub> Duplex, 12<sup>1</sup>/<sub>4</sub>, 14<sup>1</sup>/<sub>4</sub> S. & D.

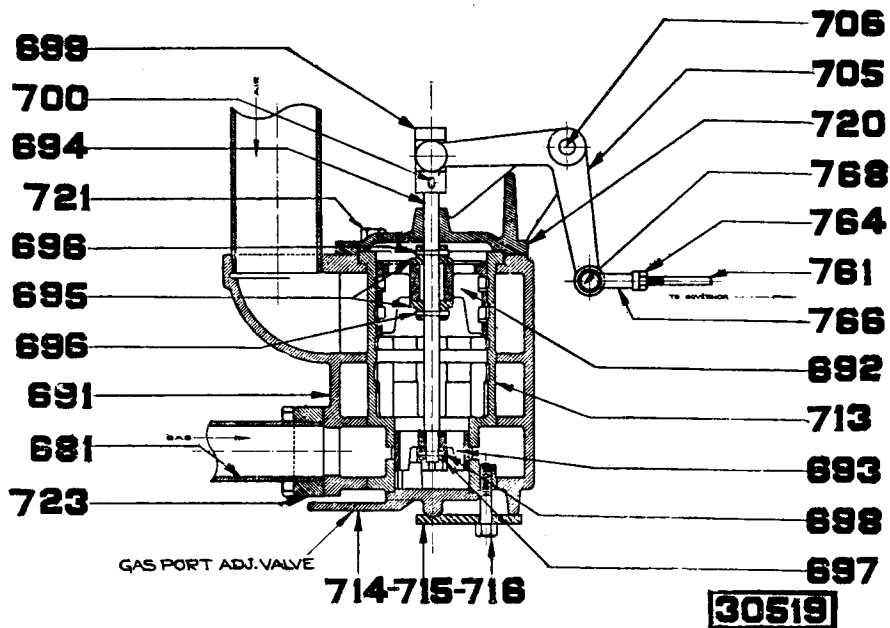


Fig. No. 11. Gas Mixing Box.  
 Old Type DD580  
 New Type 30519 (10 $\frac{1}{4}$ -13 Duplex)  
 New Type 30130 (14 $\frac{1}{4}$  Duplex)  
 For Parts See Price Sheet No. 22.

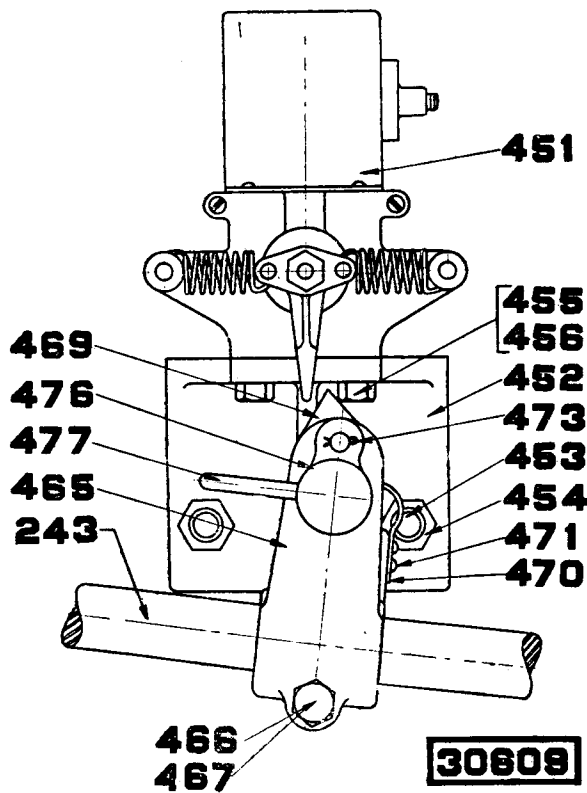
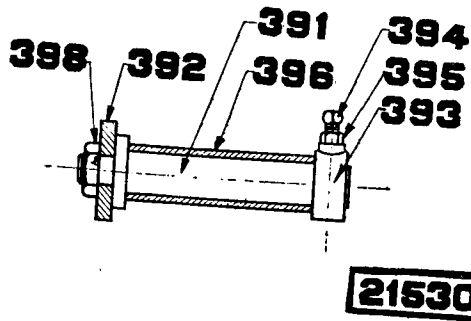
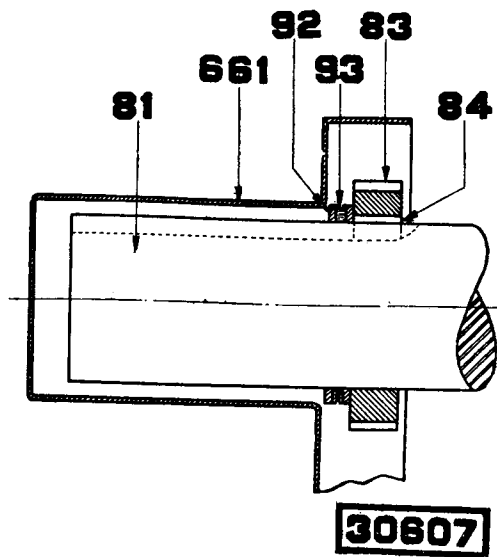


Fig. No. 12. Magneto and Trip Arm.



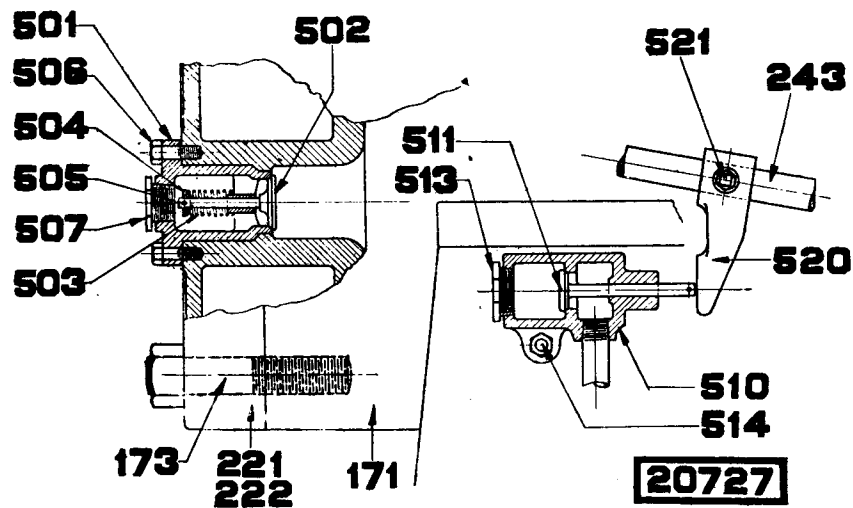
**21530**

Fig. No. 15. Rocker Shaft for Exhaust Lever.



**30607**

Fig. No. 16. Crank Shaft End Cover and Pinion.



**20727**

Fig. No. 17. Air Starter Arrangement for Head and Side of Cylinder.

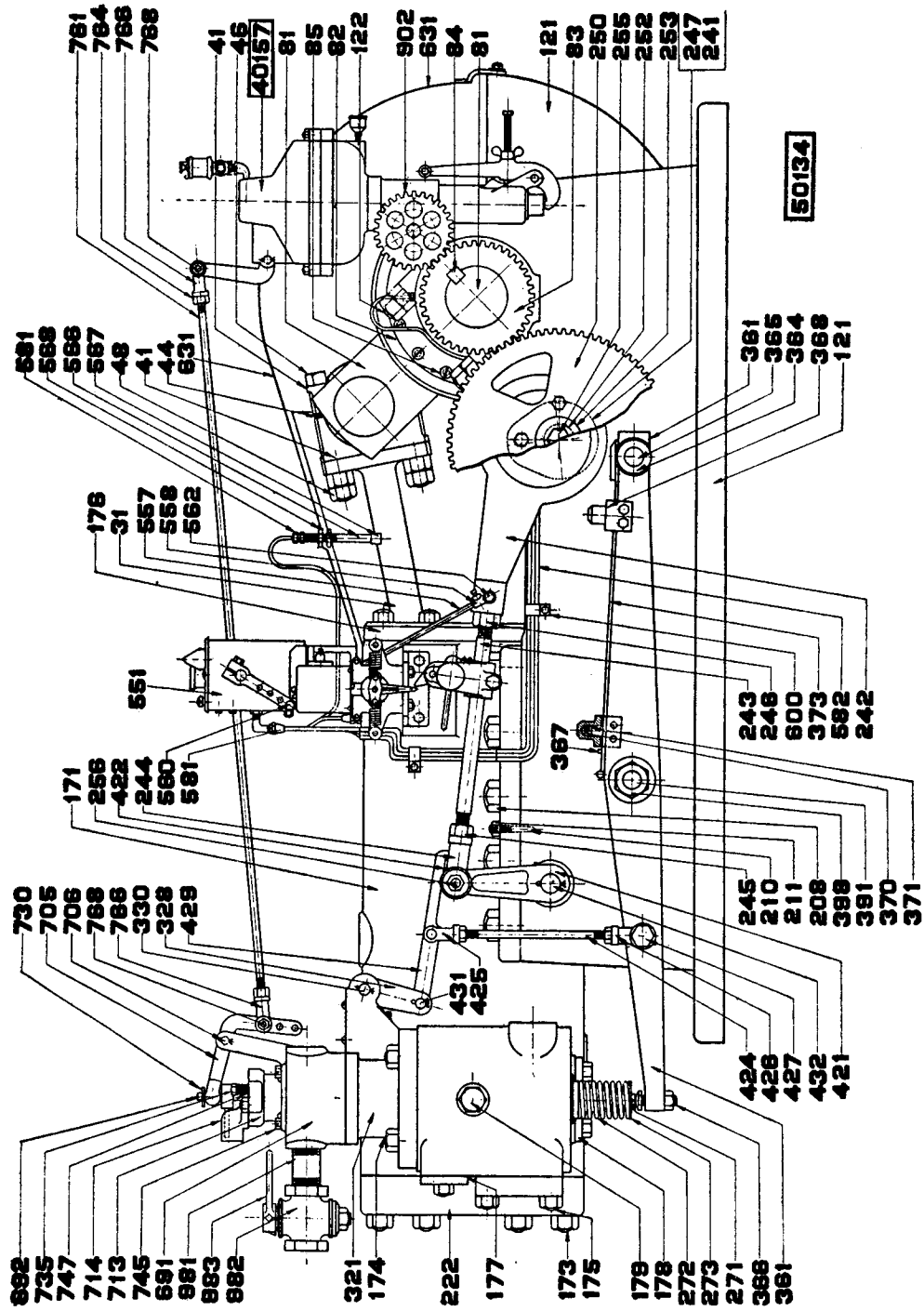
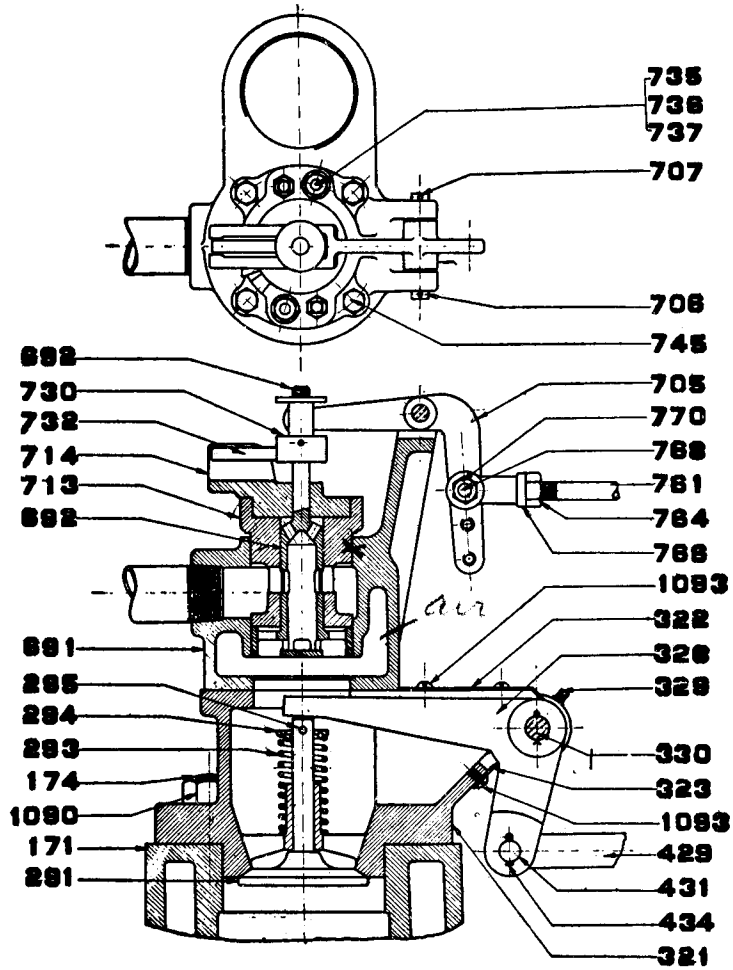
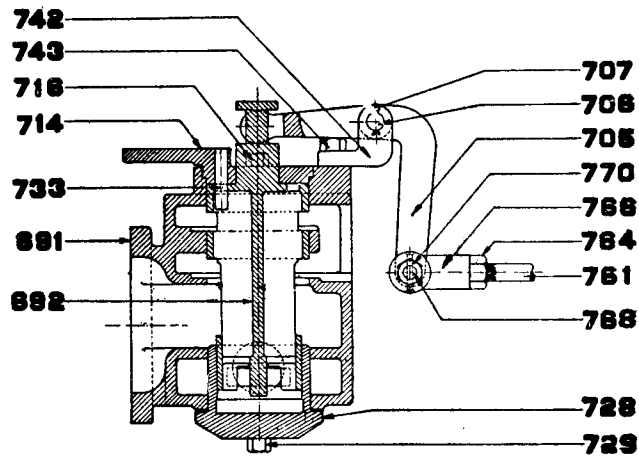


Fig. No. 4. "Western" Gas Engine. (Cylinder Size 8<sup>3</sup>/<sub>4</sub>-10<sup>1</sup>/<sub>4</sub>)



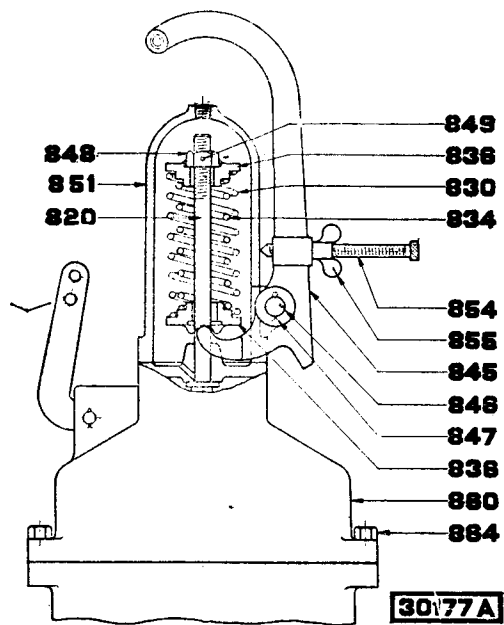
**40158**

Fig. No. 9. "Western" Gas Mixing Box and Inlet Box.  
 (8 $\frac{3}{4}$ -10 $\frac{1}{4}$  Single Cylinder)  
 Old Type G701  
 New Type 40158  
 For Parts See Price Sheets No. 13 and 21.



**40142**

Fig. No. 10. "Western" Gas Mixing Box.  
 Old Type CG701.  
 New Type 40142 (12 $\frac{1}{4}$ -13 Single Cyl.)  
 New Type 40176 (14 $\frac{1}{4}$  Single Cyl.)  
 For Parts See Price Sheet No. 21.



“Western” Governor Speeding Arrangement  
 (12¼-13 Single Cyl.)  
 Type 30177A

For Parts See Price Sheet No. 27.

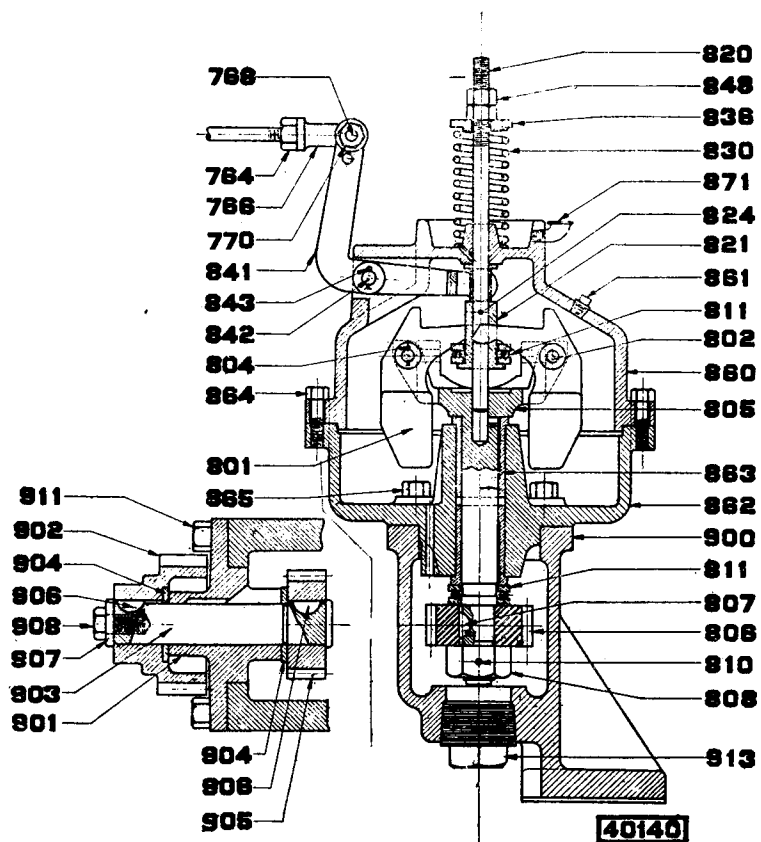
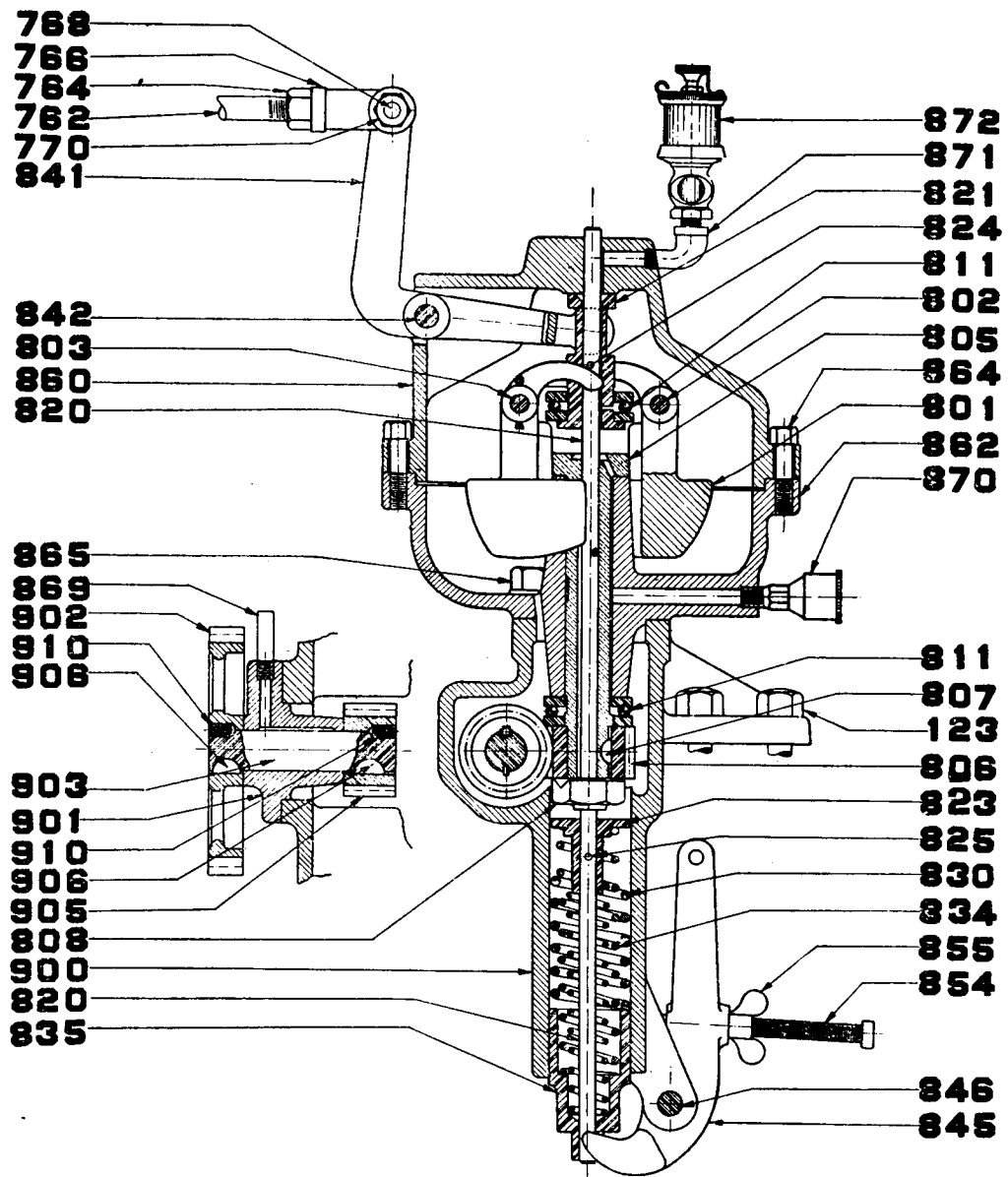


Fig. No. 7. “Western” Governor. (12¼-13 Single Cyl.)  
 Old Type U300  
 New Type 40140

For Parts See Price Sheet No. 26.





**40157**

Fig. No. 8. "Western" Governor (8<sup>3</sup>/<sub>4</sub>, 10<sup>1</sup>/<sub>4</sub> Single Cylinder)  
 Old Type U400  
 New Type 40157

For Parts See Price Sheet No. 25.

## HOW TO ORDER REPAIR PARTS.

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When ordering repair parts for "WESTERN" Duplex Gas Engines be sure and state on your order the serial number, type and bore, which will be found on the name-plate attached to the cylinder. If, for any reason the name-plate has been lost, the serial number can be found stamped on the ends of the crankshaft, or the hubs of the flywheels.

Every individual piece, screw, washer or spring has an individual number, and it is absolutely necessary that you specify the correct number with its name as given in the index. To do this, compare the parts for which repairs are required with the drawings. After finding the parts on the drawings which show the item numbers, turn to the index where you can find corresponding item number and name, price and other information.

Kindly give item and new part number, also name of part. The type of your engine is specified in the part list either by S, D, S&D, or T.D., which are designated as follows:

S - Single Cylinder Engine  
D - Duplex, 2 Cylinder Engine  
S&D - Single or Duplex Engine  
TD - Twin Duplex, 4 Cylinder Engine

Engine types and sizes are as follows:

$8\frac{3}{4}$ " Bore	}	Type S
$9\frac{1}{4}$ " "		Single Cylinder only.
$10\frac{1}{4}$ " Bore	}	Type S or D
$12\frac{1}{4}$ " "		Single or
13 " "		Duplex
$14\frac{1}{4}$ " "		1 or 2
17 " "		Cylinders.

When parts are shown as S&D they can be used on both single or duplex engines. When S or D only appear they are not interchangeable. For example, if you have a  $9\frac{1}{4}$ " cylinder, 30 H.P. engine #7000 and want piston rings, refer to drawings on Fig.#5, you will note piston rings are shown and covered by item #3. With this in mind turn to Parts Price List, and listed under item #3 are all sizes of piston rings. The  $9\frac{1}{4}$ " ring is covered by part #11332 and the selling price is \$1.50 each.

Your order to us should read -

1 - Piston Ring #11332 Item 3,  
for  $9\frac{1}{4}$ " - 30 H.P. Engine #7000

It is very important that the engine number be specified.

HOW TO ORDER REPAIR PARTS - CONT'D. P-2.

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All repairs are sold on a cash with order basis, or C.O.D. unless credit has been established prior to receipt of orders. All prices are F.O.B. our factory Los Angeles and lists are subject to change without notice.

As we have not built engines smaller than  $8\frac{3}{4}$ " bore since 1917 prices will be furnished on application covering  $6\frac{1}{4}$ ",  $7\frac{1}{4}$ ", and  $8\frac{1}{4}$ " bore Type S Single Cylinder Engines.

Any suggestions you may give covering the new type price list will be appreciated as we realize it is quite a departure from the old one you may now have. This price list will be issued in printed form at a later date, also a separate list is to follow covering parts that apply only to distillate engines and engines built prior to 1915.

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In practically all cases our engines are rated as follows:

BORE	TYPE "S"	TYPE "D"
$8\frac{3}{4}$	25	-
$9\frac{1}{4}$	30	-
$10\frac{1}{4}$	40	80
$12\frac{1}{4}$	50	100
13	60	120
$14\frac{1}{4}$	80	160
17	100	200

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
1			PISTON GROUP.		
2	30286SC	G475SC	Piston Complete with Items	8 $\frac{3}{4}$	S
	30287SC	"	3,4,10 to 19 Inc. & 66	9 $\frac{1}{4}$	S
	30284SC	"	(but not Wrist Pin)	10 $\frac{1}{4}$	S&D
	30288SC	"	"	12 $\frac{1}{4}$	S&D
	30393SC	"	"	13	S&D
	30249FSC	"	"	14 $\frac{1}{4}$	S&D
	30703ASC	"	"	17	S&D
	30286S	G475S	Piston with Items 7 & 66 only	8 $\frac{3}{4}$	S
	30287S	"	"	9 $\frac{1}{4}$	S
	30284S	"	"	10 $\frac{1}{4}$	S&D
	30288S	"	"	12 $\frac{1}{4}$	S&D
	30393S	"	"	13	S&D
	30249FS	"	"	14 $\frac{1}{4}$	S&D
	30703AS	"	"	17	S&D
3	10129	G476	Piston Ring	8 $\frac{3}{4}$	S
	11332	"	"	9 $\frac{1}{4}$	S
	11333	"	"	10 $\frac{1}{4}$	S&D
	13778	"	"	12 $\frac{1}{4}$	S&D
	11675	"	"	13	S&D
	11331	"	"	14 $\frac{1}{4}$	S&D
	10377A	"	"	17	S&D
4		G477	Dowel Pin for 3	8 $\frac{3}{4}$ -17	S&D
5	10892	G478	Wrist Pin (Solid)	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	10861	"	" "	10 $\frac{1}{4}$	S
	10616C	D393	" "	10 $\frac{1}{4}$	D
	20397	"	" "	12 $\frac{1}{4}$ -13	S&D
	20392	"	" "	14 $\frac{1}{4}$	S&D
	20120A	"	" "	17	S&D
6	10898	G481	Washer for 7	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	10791	"	"	10 $\frac{1}{4}$	S&D
	10824	"	"	12 $\frac{1}{4}$ -13	S&D
	10638	"	"	14 $\frac{1}{4}$	S&D
			(Not used on 17 Size)		
7	67-200	G479	Wrist Pin Stud	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	66-200	"	"	10 $\frac{1}{4}$	S&D
	109-200	"	"	12 $\frac{1}{4}$ -13	S&D
	128-200	"	"	14 $\frac{1}{4}$	S&D
	159-200	-	"	17	S&D
66			Wrist pin Stud Nut	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
			"	12 $\frac{1}{4}$ -13	S&D
			"	14 $\frac{1}{4}$	S&D
			"	17	S&D
8	10825S	G483S	Wrist Oiler Wick Carrier	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
	20622S	EG483S	Comp.Items 8 to 19 Inc.	12 $\frac{1}{4}$ -17	S&D
	10825	G483	Wick Carrier-Oiler for 5 (Less Pipe) (Brass)	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
	20622	"	Wick Carrier-Oiler for 5 (Less Pipe) (Aluminum)	12 $\frac{1}{4}$ -17	S&D

Sheet #1A (10-16-26)

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Typ
9		G485	Wick Carrier Pipe	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
		"	" " "	10 $\frac{1}{4}$	S&D
		D400	" " "		
		"	WITH Bushing #19	12 $\frac{1}{4}$ -13	S&D
		"	" " "	14 $\frac{1}{4}$	S&D
		"	" " "	17	S&D
10		G487	Felt Wick for 8	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
11	11171	G649	Steel Wiper for 8	12 $\frac{1}{4}$ -17	S&D
12		G486	Brass Nipple for 8		
		"	" " " } Used	8 $\frac{3}{4}$	S
		"	" " " } only	9 $\frac{1}{4}$	S
		"	" " " } with	10 $\frac{1}{4}$	S&D
		"	" " " } Solid	12 $\frac{1}{4}$	S&D
		"	" " " } Wrist	13	S&D
		"	" " " } Pins.	17	S&D
13		D407	Elbow (Oil Pipe to WristPin)	12 $\frac{1}{4}$ -17	S&D
14		D406	Nipple " " " "	12 $\frac{1}{4}$ -17	S&D
15		D405	Coupling " " " "	12 $\frac{1}{4}$ -17	S&D
16		G402	Solderless Connection (Oil Pipe to Wrist Pin)	12 $\frac{1}{4}$ -17	S&D
17		G488	Screw for Holding Wiper #10	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
		"	" " " " #11	12 $\frac{1}{4}$ -17	S&D
18			Screw for Holding Carrier #8	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
			" " " " #8	12 $\frac{1}{4}$ -17	S&D
19			Bushing for #9	12 $\frac{1}{4}$ -17	S&D
30			CONNECTING ROD GROUP		
31	20472	G65	Connecting Rod	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	20461	"	" " "	10 $\frac{1}{4}$	S
	20277	"	" " "	10 $\frac{1}{4}$	S&D
	20434	"	" " "	12 $\frac{1}{4}$ -13	S&D
	20318	"	" " "	14 $\frac{1}{4}$	S&D
	20170A	"	" " "	17	S&D
40			CRANK PIN BEARING GROUP.		
	20478S	G69S	Crank Pin Bearing Complete	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	20462S	"	Items 41, 44, 45, 46, 47, 48	10 $\frac{1}{4}$	S
	30194	BD67S	" " "	10 $\frac{1}{4}$	D
	30172S	"	" " "	12 $\frac{1}{4}$ -13	S&D
	30173S	"	" " "	14 $\frac{1}{4}$	S&D
	20176S	-	" " "	17	S&D

(Advise if wick oiler felt is used when ordering.)

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
41	20478	G69	Crank Pin Brg. 2 Halves only	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	20462	"	" " " " "	$10\frac{1}{4}$	S
	30194	BD67	" " " " "	$10\frac{1}{4}$	S&D
	30172	"	" " " " "	$12\frac{1}{4}$ -13	S&D
	30173	"	" " " " "	$14\frac{1}{4}$	S&D
	20176	"	" " " " "	17	S&D
44	10893	G70	Shims for 41 (Specify	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	10863	"	" " " " Thickness)	$10\frac{1}{4}$	S
	10466A	BD70	" " " " "	$10\frac{1}{4}$	D
	106785	"	" " " " "	$12\frac{1}{4}$ -13	S&D
	10693	"	" " " " "	$14\frac{1}{4}$	S&D
	10138A	-	" " " " "	17	S&D
45		X404LH	Dowel Pin for 41	$8\frac{3}{4}$ -17	S&D
46	10886	G71	Bolt for 41	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	10854	"	" " " " "	$10\frac{1}{4}$	S
	10470	BD71	" " " " "	$10\frac{1}{4}$	D
	10412	"	" " " " "	$12\frac{1}{4}$ -13	S&D
	10413	"	" " " " "	$14\frac{1}{4}$	S&D
	10147C	-	" " " " "	17	S&D
47	-	-	Cotter Pin for 46	$8\frac{3}{4}$ -17	S&D
48		-	Hex Nut for 46	$8\frac{3}{4}$ - $9\frac{1}{4}$	S&D
			" " " " "	$12\frac{1}{4}$ -13	S&D
			" " " " "	$14\frac{1}{4}$	S&D
			" " " " "	17	S&D
60			WRIST PIN BEARING GROUP.		
	20479S	G75S	Wrist Pin Bearing Assembled	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	20464AS	"	Items 61, 62, 63, 65, 66, 67	$10\frac{1}{4}$	S
	30193ES	BD66S	" (No Wrist Pin	$10\frac{1}{4}$	D
	20246DS	"	" " " " "	$12\frac{1}{4}$ -13	S&D
	20247ES	"	" " " " "	$14\frac{1}{4}$	S&D
	20161AS	-	" " " " "	17	S&D
			(Advise if wick Oiler Felt is used when ordering.)		
61	20479	G75	Wrist Pin Brg. 2 Halves only	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	20464A	"	" " " " "	$10\frac{1}{4}$	S
	30193E	BD66	" " " " "	$10\frac{1}{4}$	S&D
	20246D	"	" " " " "	$12\frac{1}{4}$ -13	S&D
	20247	"	" " " " "	$14\frac{1}{4}$	S&D
	20161A	"	" " " " "	17	S&D
62	10894	G77	Shims for 61 (Specify	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	10862	"	" " " " Thickness)	$10\frac{1}{4}$	S
	10465	BD78	" " " " "	$10\frac{1}{4}$	S&D
	10784	"	" " " " "	$12\frac{1}{4}$ -13	S&D
	10692C	"	" " " " "	$14\frac{1}{4}$	S&D
	10139A	-	" " " " "	17	S&D

Sheet #3.

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
63	10887	G78	Bolt for 61	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	10855	"	" "	10 $\frac{1}{4}$	S
	10489E	BD79	" "	10 $\frac{1}{4}$	D
	10414D	"	" "	12 $\frac{1}{4}$ -13	S&D
	10425B	"	" "	14 $\frac{1}{4}$	S&D
	10185A	"	" "	17	S&D
64	-	G81	Wrist Pin Oiler Felt	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
65	10798	X404LH	Dowel Pin for 61	8 $\frac{3}{4}$ -17	B&D
66			Hex Nut for 63	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
			" "	10 $\frac{1}{4}$ -13	S&D
			" "	14 $\frac{1}{4}$	S&D
			" "	17	S&D
67			Cotter. Pin for 63	8 $\frac{3}{4}$ -17	S&D
80			CRANKSHAFT GROUP		
81	20471S	G100	Crankshaft Assembled with	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	20463S	"	Items 82 and 85	10 $\frac{1}{4}$	S
	20579C	BG100	" "	12 $\frac{1}{4}$ -13	S
	20785S	"	" "	14 $\frac{1}{4}$	S
	20340CS	D100S	Crankshaft Assembled with	10 $\frac{1}{4}$	D
	20437ES	"	Items 82, 85, 90, 91 & 1090	12 $\frac{1}{4}$ -13	D
	20103HS	"	" "	14 $\frac{1}{4}$	D
	20991AS	"	" "	17	D
	30737S	TD100S	Crankshaft (Both Halves) No Counterweights Used	12 $\frac{1}{4}$ -13	TD
	30734S	"	Assembled with Items 82, 85, 87, 98	14 $\frac{1}{4}$	TD
	30737S	TD100S	Crankshaft (Both Halves) Counterweights Used	12 $\frac{1}{4}$ -13	TD
	30734S	"	Assembled with Items 82, 85, 87, 90, 91, 98, 1090	14 $\frac{1}{4}$	TD
	-	-	This type used on twin duplex engines since 8/5/24		
82	20454C	G566	Crank Pin Oiler Ring	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
	20371D	"	" " " "	12 $\frac{1}{4}$ -17	S&D
83	11940A	G470	Pinion (Cam Drive)	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	11507A	"	" " "	10 $\frac{1}{4}$	S
	10712	"	" " "	12 $\frac{1}{4}$ -13	S
	20372	D380	" " "	14 $\frac{1}{4}$	S
	10713	"	" " "	10 $\frac{1}{4}$	D
	10712 $\frac{1}{2}$	"	" " "	12 $\frac{1}{4}$ -13	D
	20372	"	" " "	14 $\frac{1}{4}$ -17	D
	20148	TD380	" " " (Split)	12 $\frac{1}{4}$ -13	TD
	20151	"	" " "	14 $\frac{1}{4}$ -17	TD

Sheet #4.

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
84	104-205	G471	Key for 83	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	122-205	"	"	10 $\frac{1}{4}$	S
	137-205	"	"	12 $\frac{1}{4}$ -13	S
	153-205	D381	"	14 $\frac{1}{4}$	S
	137-205	"	"	10 $\frac{1}{4}$	D
	152-205	"	"	12 $\frac{1}{4}$ -13	D
	153-205	"	"	14 $\frac{1}{4}$ -17	D
	10543	-	" (Special)	12 $\frac{1}{4}$ -13	TD
10544	-	"	14 $\frac{1}{4}$ -17	TD	
85		X503C	Cap Screws for 82	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
			" "	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
86			Taper Pin for 83 (Split	12 $\frac{1}{4}$ -13	TD
			" " " Pinion)	14 $\frac{1}{4}$ -17	TD
			Screws " " "	12 $\frac{1}{4}$ -17	TD
87	10566	TD661	Tie Bolt for 81	12 $\frac{1}{4}$ -13	TD
	10567	"	" "	14 $\frac{1}{4}$	TD
	-	-	" "	17	TD
88	11214	DL06	Oil Ring Spacer	10 $\frac{1}{4}$	D
	10270B	"	" "	12 $\frac{1}{4}$ -13	S&D
	10316B	"	" "	14 $\frac{1}{4}$	S&D
	12228	TD106	" " (Split)	12 $\frac{1}{4}$ -13	TD
	12227	"	" "	14 $\frac{1}{4}$	TD
90	20431B	DL01	Counterweights	10 $\frac{1}{4}$	D
	20438A	"	"	12 $\frac{1}{4}$ -13	D
	20363E	"	"	14 $\frac{1}{4}$	D
	20138A	"	"	17	D
91	97-200	X1629S	Stud for 90	10 $\frac{1}{4}$	D
	114-200	X1829S	"	12 $\frac{1}{4}$ -13	D
	126-200	X2033S	"	14 $\frac{1}{4}$ -17	D
1090			Hex Nut for 91	10 $\frac{1}{4}$	D
			" "	12 $\frac{1}{4}$ -13	D
			" "	14 $\frac{1}{4}$ -17	D
92	11173	BD107	Retaining Ring for 83	10 $\frac{1}{4}$	S
	11172	"	" "	10 $\frac{1}{4}$ -13	D
	11124	"	" "	14 $\frac{1}{4}$ -17	D
93		X608	Set Screw for 92	8 $\frac{3}{4}$ -17	D
94	11317		Key Guard (to order)	10 $\frac{1}{4}$	S
			" " Cap Screw	10 $\frac{1}{4}$	S
98			Hex Nut for 87	12 $\frac{1}{4}$ -14	D



Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
100			FLYWHEEL GROUP.		
101	20147C	G200	Flywheel with	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	20184C	"	103 and 104	$10\frac{1}{4}$	S
	30270K	BD200	"	$10\frac{1}{4}$	D
	20640	"	"	$12\frac{1}{4}$ -13	S
	30149E	D200	"	$12\frac{1}{4}$ -13	D
	30714	"	"	$12\frac{1}{4}$ -13	D
	30153C	G200	"	$14\frac{1}{4}$	S
	30151G	D200	"	$14\frac{1}{4}$	D
	30745	"	"	$14\frac{1}{4}$ -17	TD
102	99-205	G202	Straight Key for 101	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	124-205	"	"	$10\frac{1}{4}$	S
	134-205	"	"	$10\frac{1}{4}$	D
	134-205	"	"	$12\frac{1}{4}$ -13	S
	151-204	D204	Big Key for 101	$12\frac{1}{4}$ -13	D
	151-204	"	"	$14\frac{1}{4}$ -17	S&D
103	46-202	G203	Bolt for 101	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	57-202	"	"	$10\frac{1}{4}$	S
	66-202	D202	"	$10\frac{1}{4}$	D
	66-202	"	"	$12\frac{1}{4}$ -13	S
	71-202	"	"	$12\frac{1}{4}$ -13	D
	71-202	"	"	$14\frac{1}{4}$ -17	D
	72-202	"	"	$14\frac{1}{4}$ -17	S
104			Hex Nut for 103	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
			"	$10\frac{1}{4}$	S
			"	$10\frac{1}{4}$	D
			"	$12\frac{1}{4}$ -13	S
			"	$12\frac{1}{4}$ -17	D
120			BEDPLATE GROUP.		
121	30139B	G20	Bedplate with Caps, Studs, and Nuts	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	30144C	"	"	$10\frac{1}{4}$	S
	30142D	D20	"	$10\frac{1}{4}$	D
	30360A	BG20	"	$12\frac{1}{4}$ -13	S
	30317C	BD20	"	$12\frac{1}{4}$ -13	D
	30496	BG20	"	$14\frac{1}{4}$	S
	30102J	D20	"	$14\frac{1}{4}$	D
	30497A	-	"	17	D
122	71-200	X1426S	Stud Main Brg. to 121	$8\frac{3}{4}$ - $10\frac{1}{4}$	S
	74-200	X1429S	"	$10\frac{1}{4}$	D
	98-200	X1632S	"	$12\frac{1}{4}$ -13	S&D
	116-200	X1840S	"	$14\frac{1}{4}$	S&D
	122-200	-	"	17	S&D
1090			Hex Nut for 122	$8\frac{3}{4}$ - $10\frac{1}{4}$	S&D
			"	$12\frac{1}{4}$ -13	S&D
			"	$14\frac{1}{4}$ -17	S&D
123			Capscrew - Gov. to 121	$8\frac{3}{4}$ - $10\frac{1}{4}$	S
	46-200		Stud	$10\frac{1}{4}$	D
	41-200		"	$12\frac{1}{4}$ -17	S&D

Sheet #5A.

Item No.	New Part No.	Old Part No.	Description	Cyl Size	Type
124			Hex Nut for Stud 123	10 $\frac{1}{4}$	D
125			Hex Nut for Stud 123	12 $\frac{1}{4}$ -17	S&D
130			MAIN BEARING GROUP		
131			RIGHT HAND END BEARING		
132	20317A	G21	Cap	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	20485A	"	"	10 $\frac{1}{4}$	S
	10250B	D21	"	10 $\frac{1}{4}$	D
	20436C	"	"	12 $\frac{1}{4}$ -13	S&D
	20356C	"	"	14 $\frac{1}{4}$	S&D
	20140A	-	"	17	S&D
133	20475	G32	Shell -2Halves*Babbitted (Sold only in pairs)	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	20235	"	"	10 $\frac{1}{4}$	S
	20339D	D32	"	10 $\frac{1}{4}$	D
	20127D	"	"	12 $\frac{1}{4}$ -13	S&D
	20206A	"	"	14 $\frac{1}{4}$	S&D
	20175A	-	"	17	S&D
134	10896	G26	Liner for 132 (Maple) Note: On following shims Specify Thickness.	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	10874	G26	Shims for 132 (Steel)	10 $\frac{1}{4}$	S
	20760	D28	Shims for 132 (Steel)	10 $\frac{1}{4}$	D
	20704	"	" " "	12 $\frac{1}{4}$ -13	S&D
	20718	"	" " "	14 $\frac{1}{4}$	S&D
	11339A	-	" " "	17	S&D
135			Dowel Pin for 132	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
140			Left Hand End Bearing		
141	20317A	G21	Cap	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	20485A	"	"	10 $\frac{1}{4}$	S
	10250B	D21	"	10 $\frac{1}{4}$	D
	20436C	"	"	12 $\frac{1}{4}$ -13	S&D
	20356C	"	"	14 $\frac{1}{4}$	S&D
	20140A	"	"	17	S&D
142	20475	G32	Shell- 2 halves babbitted (Sold only in pairs)	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	20235	"	"	10 $\frac{1}{4}$	S
	20339D	D32	"	10 $\frac{1}{4}$	D
	20127D	"	"	12 $\frac{1}{4}$ -13	S&D
	20206A	"	"	14 $\frac{1}{4}$	S&D
	20175A	"	"	17	S&D
143			L.H.Shims - Same as 134		
144			L.H. Dowel Pin - Same as 135		

Item	New No. Part No.	Old Part No.	Description	Cyl. Size	Type
150			CENTER BEARING.		
151	10251B	D23	Cap	10 $\frac{1}{4}$	D
	20435B	"	"	12 $\frac{1}{4}$ -13	D
	20354B	"	"	14 $\frac{1}{4}$	D
	20141A	-	"	17	D
152	20242C	D33	Shell- 2 Halves Babbitted (Sold only in pairs)	10 $\frac{1}{4}$	D
	20128D	"	"	12 $\frac{1}{4}$ -13	D
	20205F	"	"	14 $\frac{1}{4}$	D
	20175A	"	"	17	D
Note: On following shims specify thickness desired.					
153	20759	D27	<u>Shim for 151</u>	10 $\frac{1}{4}$	D
	20705	"	"	12 $\frac{1}{4}$ -13	D
	20719	"	"	14 $\frac{1}{4}$	D
	11546A	-	"	17.	D
170			CYLINDER GROUP.		
171 and 172	30159S	G110S	Cylinder Complete Items 171,179 Inc.	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	30162S	"	190, 271, 277 Inc.	10 $\frac{1}{4}$	S&D
	40107S	D110S	Cylinder Complete Items 171, 180 Inc. 271,277 Inc.	12 $\frac{1}{4}$	S&D
	40133S	"	1090, 92	13	S&D
	40109S	D110S	<sup>173 174 176 179 180 190</sup> Cylinder Complete Items	14 $\frac{1}{4}$	S&D
	40209S	"	171, 3.6, 9, 80, 90, 207 Inc. 1090-92	17	S&D
	30327S	BD159S	Cylinder Band Complete Items 196,201 Inc.	12 $\frac{1}{4}$ -13 14 $\frac{1}{4}$ -17	S&D S&D
173	69-200	X1419S	Stud Cyl. Head	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	95-200	X1612S	"	10 $\frac{1}{4}$	S&D
	113-200	X1825S	"	12 $\frac{1}{4}$ -13	S&D
	124-200	X2025S	"	14 $\frac{1}{4}$	S&D
	160-200	-	"	17	S&D
1090			Hex Nut for 173	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
			"	10 $\frac{1}{4}$	S&D
			"	12 $\frac{1}{4}$ -13	S&D
			"	14 $\frac{1}{4}$	S&D
			"	17"	S&D
174	27-200	X1012S	Stud Inlet Box	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
	68-200	X1414S	"	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
	111-200	-	"	17	S&D
1090			Hex Nut for 174	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
			"	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
			"	17	S&D

Sheet #7.

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
175	28-200 20-200	X1013S -	Stud Exh. Flange "	$8\frac{3}{4}$ - $14\frac{1}{4}$ 17	S&D S&D
1090			Hex Nut for 175	$8\frac{3}{4}$ -17	S&D
176	20482 20483 10812 10814 11166 20358 10177	G128 " " " " " "	Cylinder End Plates " " " " " " "	$8\frac{3}{4}$ $9\frac{1}{4}$ $10\frac{1}{4}$ $12\frac{1}{4}$ $13\frac{1}{4}$ $14\frac{1}{4}$ 17	S S S&D S&D S&D S&D S&D
1092			Cap Screws for 176 " "	$8\frac{3}{4}$ - $9\frac{1}{4}$ $10\frac{1}{4}$ -13 $14\frac{1}{4}$ -17	S S&D S&D
177	10733A	G142	Front End Plate at Ex.Box	$8\frac{3}{4}$ - $10\frac{1}{4}$	S&D
1092			Cap Screw for 177	$9\frac{3}{4}$ - $10\frac{1}{4}$	S&D
178	10733A 20456	G111 "	Bottom Plate at Ex. Box " "	$8\frac{3}{4}$ - $9\frac{1}{4}$ $10\frac{1}{4}$	S S&D
1092			Cap Screw for 178	$8\frac{3}{4}$ - $10\frac{1}{4}$	S&D
179	10644	G149	Indicator Plug	$8\frac{3}{4}$ -17	S&D
180	20441A 20621 20353A	CG150 " "	Side Plate at Ex. Box " "	$12\frac{1}{4}$ 13 $14\frac{1}{4}$ -17	S&D S&D S&D
1092			Cap Screw for 180	$12\frac{1}{4}$ -17	S&D
190	10738 10735 10647 10146A	G141 " BG141 "	Exh. Valve Seat " " "	$8\frac{3}{4}$ - $9\frac{1}{4}$ $10\frac{1}{4}$ $12\frac{1}{4}$ - $14\frac{1}{4}$ 17	S S&D S&D D
191	10698	G664	Bushing for 179	$12\frac{1}{4}$ -17	S&D
192			Lock Nut for 191	$12\frac{1}{4}$ -17	S&D
193			Packing for 191	$12\frac{1}{4}$ -17	S&D
194	10611A	G643	Washer for 191	13	S&D
196	30327A	BD159	Cyl. Band only	$12\frac{1}{4}$ -17	S&D
197	20225	BD160	Cyl. Band End	$12\frac{1}{4}$ -17	S&D
198			R.H. Rivet for 187 to 196	$12\frac{1}{4}$ -17	S&D
199		X828B	Adj. Bolt for 196	$12\frac{1}{4}$ -17	S&D
200		X8N	Hex Nut for 199 Sheet #3.	$12\frac{1}{4}$ -17	S&D

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
201	11327A	G709	Spacer for 199	12 $\frac{1}{4}$ -17	S&D
202		D165	Rubber Packing Ring for 196	12 $\frac{1}{4}$ -13	S&D
		"	"	14 $\frac{1}{4}$	S&D
		"	"	17	S&D
205			Spark Plug Stuffing Box Nipple	14 $\frac{1}{4}$ -17	S&D
206			Rubber Gasket for 205	14 $\frac{1}{4}$ -17	S&D
207			Lock Nut for 205	14 $\frac{1}{4}$ -17	S&D
208			Cap Screw Cyl. to Bed	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
		X1612C	"	10 $\frac{1}{4}$ -13	S&D
		X2016C	"	14 $\frac{1}{4}$	S&D
	158-200		Stud Cyl. to Bed (Outside)	17	S&D
	157-200		"	17	S&D
209			Hex Nut for Stud 208	17	S&D
210		D130	Taper Pin Cyl. to Bed (Threaded)	8 $\frac{3}{4}$ -17	S&D
211			Nut for 210	8 $\frac{1}{4}$ -17	S&D
220			CYLINDER HEAD GROUP.		
221	30299	G121	Cyl. Head	8 $\frac{3}{4}$	S
	30299 $\frac{1}{2}$	"	"	9 $\frac{1}{4}$	S
	30295	"	"	10 $\frac{1}{4}$	S
	20433	D119	" with Back Out bolts	10 $\frac{1}{4}$	D
	30285	"	"	12 $\frac{1}{4}$	S&D
	30396	"	"	13	S&D
	30245	"	"	14 $\frac{1}{4}$	S&D
	20260	"	"	17	S&D
Note: When ordering heads specify lengths of spike and if air starter is used.					
223	Asbestos		Gasket for 221 (Not Cut)	8 $\frac{3}{4}$ -17	S&D
225			Bolt Backout for 221	12 $\frac{1}{4}$ -17	S&D
226			Hex Lock Nut for 225	12 $\frac{1}{4}$ -17	S&D

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
240	CAM GEAR GROUP				
241	30301	G495	Cam and Eccentric R.H.	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	30246	"	"	$10\frac{1}{4}$	S&D
	30289	"	"	$12\frac{1}{4}$ -13	S&D
	30273	"	"	$14\frac{1}{4}$ -17	S&D
242	20480	G496	Eccentric Strap	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	20466	"	"	$10\frac{1}{4}$	S
	20410A	D492	"	$10\frac{1}{4}$	D
	20409A	"	"	$12\frac{1}{4}$ -13	S&D
	30256	"	"	$14\frac{1}{4}$ -17	S&D
243	10882	G497	Eccentric Rod (Specify	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	10844	"	" " Length)	$10\frac{1}{4}$	S
	10767A	D494	" " "	$10\frac{1}{4}$	D
	10766	"	" " "	$12\frac{1}{4}$ -13	S&D
	10625	"	" " "	$14\frac{1}{4}$	S&D
	10625 $\frac{1}{2}$	-	" " "	17	S&D
244	10636	G498	Eccentric Rod End	$8\frac{3}{4}$ - $14\frac{1}{4}$	S&D
	10636 $\frac{1}{2}$	-	" "	17	S&D
245			L.H. Hex Nut for 243	$8\frac{3}{4}$ - $14\frac{1}{4}$	S&D
			" "	17	S&D
246			Hex Nut for 243	$8\frac{3}{4}$ -13	S&D
			"	$14\frac{1}{4}$ -17	S&D
247	30246 $\frac{1}{2}$	D491	Cam & Eccentric L.H.	$10\frac{1}{4}$	D
	30289 $\frac{1}{2}$	D490	"	$12\frac{1}{4}$ -13	D
	30273 $\frac{1}{2}$	"	"	$14\frac{1}{4}$ -17	D
250	11506A	G250	Gear - Cam Drive	$8\frac{3}{4}$ - $10\frac{1}{4}$	S&D
	11508A	"	"	$12\frac{1}{4}$ -13	S&D
	11337A	"	"	$14\frac{1}{4}$ -17	S&D
251			Cap Screw for 250	$8\frac{3}{4}$ -17	S&D
252			Gear Studs (when ordering specify type used)		
	20476	G251	Straight	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	20422	BD252	Eccentric	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	20444	G251	Straight	$10\frac{1}{4}$	S&D
	20420	BG252	Eccentric	$10\frac{1}{4}$	S&D
	20445	G251	Straight	$12\frac{1}{4}$ -13	S&D
	20419	BG252	Eccentric	$12\frac{1}{4}$ -13	S&D
	20359	G251	Straight	$14\frac{1}{4}$ -17	S&D
	20418	BG252	Eccentric	$14\frac{1}{4}$ -17	S&D
253	10627B	G254	Gear Stud Cap	$8\frac{3}{4}$ -17	S&D
254			Dowel for 253	$8\frac{3}{4}$ -17	S&D
255			Cap Screw for 253	$8\frac{3}{4}$ -17	S&D
			Sheet #10.		

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
256	10843A	G499	Ecc. Rod End Pin	$8\frac{3}{4}$ - $14\frac{1}{4}$	S&D
	10843 $\frac{1}{2}$		"	17	S&D
257			Lock Nut for 256	$8\frac{3}{4}$ -17	S&D
270			EXHAUST VALVE GROUP		
271	20473	G134	Exhaust Valve	$8\frac{3}{4}$ - $9\frac{1}{4}$	S
	20865	EG134	" (Advise if skirt is used)	$10\frac{1}{4}$	S&D
	20773	"	"	$12\frac{1}{4}$ - $14\frac{1}{4}$	S&D
	20182A	"	"	17	S&D
272	10606	G135	Exhaust Valve Spring	$8\frac{3}{4}$ - $10\frac{1}{4}$	S&D
	10607D	"	"	$12\frac{1}{4}$ - $14\frac{1}{4}$	S&D
	13169	-	"	17	S&D
273	10739	G136	Washer Spring Seat	$8\frac{3}{4}$ - $10\frac{1}{4}$	S&D
	10653	"	"	$12\frac{1}{4}$ - $14\frac{1}{4}$	S&D
	10144A	"	"	17	S&D
274	25-201	X506LH	Pin Retainer for 272	$8\frac{3}{4}$ - $10\frac{1}{4}$	S&D
	10652	G137	Split Collar for 272	$12\frac{1}{4}$ - $14\frac{1}{4}$	S&D
	10134A	"	"	17	S&D
275	11505	G139	Exhaust Valve Guide	$8\frac{3}{4}$ - $10\frac{1}{4}$	S&D
	20777	BG139	"	$12\frac{1}{4}$ - $14\frac{1}{4}$	S&D
	10121A	"	"	17	S&D
276	10736A	G140	Exhaust Valve Guide Nut	$8\frac{3}{4}$ - $10\frac{1}{4}$	S&D
	10646B	"	"	$12\frac{1}{4}$ - $14\frac{1}{4}$	S&D
			"	17	S&D
290			INLET VALVE GROUP		
291	10610	BG361	Inlet Valve with Stem	$8\frac{3}{4}$ - $10\frac{1}{4}$	S
			Following Valves with Recessed Stems:		
	20836C	ED632	Inlet Valve	$10\frac{1}{4}$	D
	20837D	"	"	$12\frac{1}{4}$ -13	S&D
	20838D	"	"	$14\frac{1}{4}$	S&D
	20168A	"	"	17	S&D
293	10602	G337	Inlet Valve Spring	$8\frac{3}{4}$ - $10\frac{1}{4}$	S
	10603A	D639	"	$10\frac{1}{4}$	D
	10603	"	"	$12\frac{1}{4}$ -13	S&D
	10760	"	"	$14\frac{1}{4}$	S&D
	10500A	-	"	17	S&D
294	10817A	G338	Washer Spring Seat for 293	$8\frac{3}{4}$ - $10\frac{1}{4}$	S
	10706A	D640	"	$10\frac{1}{4}$	D
	10706A	"	"	$12\frac{1}{4}$ -13	S&D
	11165	"	"	$14\frac{1}{4}$	S&D
	10144A	"	"	17	S&D
295	17-201	X404LH	Pin Retainer for 294	$8\frac{3}{4}$ - $10\frac{1}{4}$	S

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
296	11206S	D636S	Extension Rod with Nuts and Cotters	10 $\frac{1}{4}$	
	10707BS	D636S	" "	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
297	11453D	CD635	Tiepiece (Tapered)	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
299	11451B	-	Inlet Valve Split Washer (Tapered)	10 $\frac{1}{4}$ -13	S&D
	11452B	-	"	14 $\frac{1}{4}$	S&D

Following parts only for repairs after 12/15/25.

(Specify diameter of valve stem and head)

			Used with valve having stem recessed only.		
297	11453C	CD635	Tiepiece (not tapered)	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
299	11451A	BD667	Inlet Valve Split Washer	10 $\frac{1}{4}$ -13	S&D
	11452	"	" "	14 $\frac{1}{4}$	S&D

Used with valve having stem threaded and recessed.

291	20758DS	DD632S	Inlet Valve Assembled with Nut, Split Washer & Cotter	10 $\frac{1}{4}$	D
	20754S	"	"	12 $\frac{1}{4}$ -13	S&D
	11345S	"	"	14 $\frac{1}{4}$	S&D
297	11346C	BD635	Tiepiece (not tapered)	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
298	11366C	BD662	Valve Stem Nut (Threaded)	10 $\frac{1}{4}$ -13	S&D
	11347	"	" "	14 $\frac{1}{4}$	S&D
299	11348	D667	Inlet Valve Split Washer	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D

Used with Valve having stem threaded only.

291	20164B	BD632	Inlet Valve	10 $\frac{1}{4}$	D
	20165D	"	" "	12 $\frac{1}{4}$ -13	S&D
	10651D	"	" "	14 $\frac{1}{4}$	S&D
297	10708	D635	Tiepiece (not tapered)	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
300	10755GS	D662S	Inlet Valve Stem Clamp with Screw & Washer Assembled	10 $\frac{1}{4}$ -13	S&D
	10756GS	"	" "	14 $\frac{1}{4}$	S&D
301	11314	D663	Screw for 300	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
302			Spring Washer for 300	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D

Sheet #12-A

(10-16-26)



No.	Part No.	Part No.	Description	Size	
320			INLET BOX GROUP.		
	20125AS	BG360S	Inlet Box Assembled Items 291,3,4,5,321,2,3,8,9,330 1090,93	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
	20272GS	D641S	Inlet Box Assembled Items	10 $\frac{1}{4}$	D
	20231ES	"	291,6,7,9,321,2,3,4,8,9,	12 $\frac{1}{4}$ -13	S&D
	20251ES	"	330,1,1090,93	14 $\frac{1}{4}$	S&D
320A			To fit inlet box with elbow )	10 $\frac{1}{4}$	D
320B			#340 & parts 293,4,6,341,2 )	12 $\frac{1}{4}$ -13	S&D
320C			making complete assembly add)	14	S&D
	10190BS	-	Inlet Box Assembled Items 291,321,2,4,8,9,330,1,4, 345,6,7,8, with Cap Screws	17	S&D
	Asbestos		Inlet to Exh. Box Gasket	8 $\frac{3}{4}$ -17	S&D
321	20125A	DG360	Inlet Box only	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
	20272G	D641	" " with Items 324,331	10 $\frac{1}{4}$	D
	20231E	"	" " " "	12 $\frac{1}{4}$ -13	S&D
	20251E	"	" " " "	14 $\frac{1}{4}$	S&D
	10190B		" " with Items 324	17	S&D
322	10858	G331	Top Cover for 321	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
	10838	D292	" " " "	10 $\frac{1}{4}$	D
	"	"	" " " "	12 $\frac{1}{4}$ -13	S&D
	10839	"	" " " "	14 $\frac{1}{4}$	S&D
	20191B		" " " "	17	S&D
1093			Machine Screws for 322	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
			" " " "	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	D
			Cap Screws for 322	17	S&D
323	11361	G710	Lower Cover for 321	8 $\frac{3}{4}$ -14 $\frac{1}{4}$	S&D
1093			Screws for 323	8 $\frac{3}{4}$ -14 $\frac{1}{4}$	S&D
324	10834B	D642	Inlet Valve Stem Bushing	10 $\frac{1}{4}$	D
	"	"	" " " "	12 $\frac{1}{4}$ -13	S&D
	10639	"	" " " "	14 $\frac{1}{4}$	S&D
	10105C		" " " "	17	S&D
328	20465	G340	Inlet Lever	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
	10462B	D301	" " " "	10 $\frac{1}{4}$	D
	"	"	" " " "	12 $\frac{1}{4}$ -13	S&D
	20360	"	" " " "	14 $\frac{1}{4}$	S&D
	10106CS		" " with Roller, Pin & Bushings	17	S&D
329			Set Screw 328 to 330	8 $\frac{3}{4}$ -14 $\frac{1}{4}$	S&D
			" " " "	17	S&D
1090			Hex Nut for 329	8 $\frac{3}{4}$ -14 $\frac{1}{4}$	S&D
			" " " "	17	S&D
330	10859	G341	Pin for 328	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
	10691A	D303	" " " "	10 $\frac{1}{4}$	D
	"	"	" " " "	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
	10679A		" " " "	17	S&D
331	10640A	D304	Bushing for 330	10 $\frac{1}{4}$	D
	"		" " " "	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
	11519B		" " " "	17	S&D
332	10849A	G2	Air Passage (old Type)	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
1092		G3	" " Cap Screw	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
333			Cup for Lub. 291	12 $\frac{1}{4}$ -17	S&D

Item No.	New Part No.	Old Part No.	Description	Cyl Size.	Type
334	10104A		Inlet Box Cover Bushing	17	S&D
335	10191B		Inlet Box Cover Lid	17	S&D
335A			Oil Cup for 335	17	S&D
340	20577A	BD622	Inlet Box Elbow	10 $\frac{1}{4}$	D
	20576B	"	"	12 $\frac{1}{4}$ -13	S&D
	20575A	"	"	14 $\frac{1}{4}$	S&D
	10582A	"	"	17	S&D
			Capscrew 340 to 321 See 1090.		
341	11363	D630	Tie Piece Squaring Pin	10 $\frac{1}{4}$	D
	"	"	"	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
342		D631	Hex Nut for 341	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
343		D628	Street Elbow	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
344		D627	Priming Cup	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
345	12689		Inlet Lever Roller	17	S&D
346	12851		Inlet Lever Roller Bushing	17	S&D
347	100-201		Inlet Lever Roller Pin	17	S&D
348			Cotter Pin	17	S&D
360			EXHAUST LEVER GROUP. (for Throttle Governor)		
361	30298S	G180S	Exhaust Levers Assembled	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	30296S	"	Items 361,4,5,6,7,8,9	10 $\frac{1}{4}$	S
	20344ES	D184S	" 370,1,3	10 $\frac{1}{4}$	D
	20440BS	"	"	12 $\frac{1}{4}$ -13	S&D
	20319D	"	"	14 $\frac{1}{4}$ -17	S&D
			No's.362 to 363C not shown on cuts.Used with Hit & Miss Gov.		
362	10897A	G181	Exh. Lever Hook Plate (OS)1"	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	"	"	" 2"	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
363	10851	G182	Bolt for 362 (O.S.)	8 $\frac{3}{4}$ -14 $\frac{1}{4}$	S&D
363A		G183	Nuts for 363 (O.S.)	8 $\frac{3}{4}$ -14 $\frac{1}{4}$	S&D
363B		G184	Hook Plate & Trip Blade Set		
"		G190	Screw (O.S.)	8 $\frac{3}{4}$ -14 $\frac{1}{4}$	S&D
363C		G185	Hex Nuts for 363B (O.S.)	8 $\frac{3}{4}$ -14 $\frac{1}{4}$	S&D
364	10885	G186	Exh.Lever Roller	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	10793	"	"	10 $\frac{1}{4}$	S&D
	10792	"	"	12 $\frac{1}{4}$ -13	S&D
	10614	"	"	14 $\frac{1}{4}$ -17	S&D
365	10885A	G187	Pin for 364	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	10794	"	"	10 $\frac{1}{4}$ -13	S&D
	10613B	"	"	14 $\frac{1}{4}$ -17	S&D
366	10714C	G188	Exh.Valve Take Up Bolt	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
	11329	D189	"	10 $\frac{1}{4}$	D
	11329	"	"	12 $\frac{1}{4}$ -13	S&D
	10631	"	"	14 $\frac{1}{4}$ -17	S&D
366A		G183	Exh.Valve Take Up Bolt Nut	8 $\frac{3}{4}$ -13	S&D
		"	"	14 $\frac{1}{4}$ -17	S&D
367	16-201	X402LH	Comp.Relief Rod Stop Pin	8 $\frac{3}{4}$ -17	S&D
368	10473C	D62	Comp.Relief Rod Guide Eap	8 $\frac{3}{4}$ -13	S
	10473C	"	"	14 $\frac{1}{4}$ -17	S&D

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
369			Capscrew for 368	8 $\frac{3}{4}$ -17	S&D
370	10476	D63	Spring for 368	8 $\frac{3}{4}$ -17	S&D
371	10475	D64	Button for 368	8 $\frac{3}{4}$ -17	S&D
373	10888B	G50	Compression Relief Rod & Handle	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	10782	"	"	10 $\frac{1}{4}$	S&D
	10783	"	"	12 $\frac{1}{4}$ -13	S&D
	10633F	"	"	14 $\frac{1}{4}$ -17	S&D
374	10632	G51	Handle for 375 RH	8 $\frac{3}{4}$ -17	S&D
375			Rivet 374,373	8 $\frac{3}{4}$ -17	S&D
390			ROCKER SHAFT GROUP (For Ex.Lever Fulcrum)		
391	10868	G560	Rocker Shaft with Washer (Item 392)	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
	10768	D626	"	10 $\frac{1}{4}$	D
	"	"	"	12 $\frac{1}{4}$ -13	S&D
	10660	"	"	14 $\frac{1}{4}$ -17	S&D
392	10769B	G551	Washer for 391	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	10769B	"	"	10 $\frac{1}{4}$	S&D
	10769B	"	"	12 $\frac{1}{4}$ -13	S&D
	10661A	"	"	14 $\frac{1}{4}$ -17	S&D
393	10662B	G561	Collar for 391	8 $\frac{3}{4}$ -17	S&D
394			Setscrew for 393	8 $\frac{3}{4}$ -17	S&D
395			Hex Lock Nut for 394	8 $\frac{3}{4}$ -17	S&D
396	10612	D36	Bushing for 391	10 $\frac{1}{4}$	D
	"	"	"	12 $\frac{1}{4}$ -17	S&D
397		G35	Oiler Nipple for 391 Grease Cup for 391	8 $\frac{3}{4}$ -17 8 $\frac{3}{4}$ -17	S&D S&D
398			Hex Nut for 391	8 $\frac{3}{4}$ -13 14 $\frac{1}{4}$ -17	S&D S&D
399	10907 10908	079	Gov. Trip Stud	8 $\frac{3}{4}$ -9 $\frac{1}{4}$ 10 $\frac{1}{4}$	S S
420			ROCKER ARM- INLET CUTOUT GROUP		
421	20468	G540	Rocker Arm Assembled with Items 422, 423	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
422	10868B	G541	Hook Plate for 421	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
423	-		Machine Screw 422 to 421	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
424	10846 10845	G505	Inlet Cut Out Rod	8 $\frac{3}{4}$ -9 $\frac{1}{4}$ 10 $\frac{1}{4}$	S S
425	10865	G506	Upper Rod End for 424	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
426	10866	G507	Lower Rod End for 424	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
427	10870	G509	Lower End End Pin	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
428			Hex Lock Nut for 427	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
429	10875B	G515	Inlet Lever Hook	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	10869B	"	Assembled with Pin " "	10 $\frac{1}{4}$	S
431	84-201	G516	Inlet Valve Hook Pin Items 328 to 429	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
432	159-201	G545	Rocker Arm Pin	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
433		G546	Washer for 432	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
434	-		Cotter for 433	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
450			IGNITION GROUP		
451			Magneto (Specify Type on Eng.)	8 $\frac{3}{4}$ -17	S&D
452	20199	G301	Mag. Bracket for 451	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
	20645	BG310	"	12 $\frac{1}{4}$ -13	S&D
	20391	"	"	14 $\frac{1}{4}$	S&D
	10303A	"	"	17	S&D
453	12-200		Stud 452 to Cyl.	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
	25-200		"	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
	38-200		"	17	S&D
454			Hex Nut for 453	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
			"	12 $\frac{1}{4}$ -17	S&D
455			Cap Screw for 451, 452	8 $\frac{3}{4}$ -17	S&D
456			Washer for 455	8 $\frac{3}{4}$ -17	S&D
457			Spark Plug Cable- Short Length with Terminals (Specify Length)	8 $\frac{3}{4}$ -17	S&D
458			Spark Plug Cable - Long Length with Terminals (Specify Length)	8 $\frac{3}{4}$ -17	S&D
459		G317	Spark Plug Splitdorf #10865	8 $\frac{3}{4}$ -17	S&D
			Stitt	8 $\frac{3}{4}$ -17	S&D
			Hercules	8 $\frac{3}{4}$ -17	S&D
			H.D. Bosch	"	"
460	20467S	G525S	Gasket for 459	8 $\frac{3}{4}$ -17	S&D
	20380CS	D504S	Trip Arm Assembled	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
			Items 465 to 477 Inc.	10 $\frac{1}{4}$ -17	S&D
465	20467	G525	Magneto Trip Arm	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
	20380C	D504	"	10 $\frac{1}{4}$	S&D
	"	"	"	12 $\frac{1}{4}$ -17	S&D

Sheet #16.

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
466			Cap Screw for 466	$8\frac{3}{4}$ -10 $\frac{1}{4}$	S
			"	10 $\frac{1}{4}$	D
			"	12 $\frac{1}{4}$ -17	S&D
467			Hex Lock Nut for 466	$8\frac{3}{4}$ -17	S&D
468		G534	Spark Advance Set Ball	$8\frac{3}{4}$ -17	S&D
469		G528	Trip Block	$8\frac{3}{4}$ -17	S&D
470	10668A	G529	Trip Flat Spring	$8\frac{3}{4}$ -17	S&D
471			Machine Screw for 470	$8\frac{3}{4}$ -17	S&D
472	49-201		Trip Arm Pin	$8\frac{3}{4}$ -17	S&D
473			Cotter For 472, 477	$8\frac{3}{4}$ -17	S&D
474	10681	G535	Spark Adv. Spring	$8\frac{3}{4}$ -17	S&D
475			Washer for 477	$8\frac{3}{4}$ -17	S&D
476	10680	G533	Spark Advancer with Handle	$8\frac{3}{4}$ -17	S&D
477	10690	G640	Assembled, for 476	$8\frac{3}{4}$ -17	S&D
500			AIR STARTING GROUP		
	20379S	D261S	Valve Cage Assembled (for Cyl. Head) Items 501, 2, 3, 4, 5, 7, 8	$8\frac{3}{4}$ -17	S&D
501	20379	D261	Valve Cage for Cyl. Head	$8\frac{3}{4}$ -17	S&D
502	10700	G336	Valve for 501	$8\frac{3}{4}$ -17	S&D
503	10600	G337	Valve Spring for 502	$8\frac{3}{4}$ -17	S&D
504	10699	G338	Washer- Spring Seat for 503	$8\frac{3}{4}$ -17	S&D
505	9-201		Pin Retainer for 504	$8\frac{3}{4}$ -17	S&D
506			Cap Screw- 501 to Cyl. Head	$8\frac{3}{4}$ -17	S&D
507			Reducing Bushing for 501	$8\frac{3}{4}$ -17	S&D
	20375	D259S	Air Starter Body Assembled (Side of Eng.) Items 510, 1, 2, 3, 8	$8\frac{3}{4}$ -17	S&D
510	20375	D259	Air Starter Body	$8\frac{3}{4}$ -17	S&D
511	10677	D260	Valve for 510	$8\frac{3}{4}$ -17	S&D
512	-		Cotter for 511	$8\frac{3}{4}$ -17	S&D
513			Reducing Bushing	$8\frac{3}{4}$ -17	S&D
514	12-200		Stud - 510 to Cyl. Sheet #17.	$8\frac{3}{4}$ -17	S&D

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
515			Hex Nut for 514	8 $\frac{3}{4}$ -17	S&D
520	10817S	D258S	Air Starter Trip Finger	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
	"	"	Assembled Items 520, 1,2	10 $\frac{1}{4}$	D
	"	"	"	12 $\frac{1}{4}$ -13	S&D
	20398S	"	"	14 $\frac{1}{4}$ -17	S&D
521			Set Screw for 520	8 $\frac{3}{4}$ -17	S&D
522			Hex Lock Nut for 521	8 $\frac{3}{4}$ -17	S&D
550	-	G410	Madison Kipp 6 Feed Oiler	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
			" " 8 " "	12 $\frac{1}{4}$ -17	S&D
			" " 9 " "	14 $\frac{1}{4}$ -17	S&D
			" " 10 " "	14 $\frac{1}{4}$ -17	S&D
			(Specify R. or L. When Ordering)		
552	20443	G411	Bracket Support for 551	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
			(6 Feed)		
	20388	D336	" " (8 Feed)	12 $\frac{1}{4}$ -17	S&D
	21067	BD336	" " (9 Feed)	12 $\frac{1}{4}$ -17	S&D
	21082		" " (10 Feed)	12 $\frac{1}{4}$ -17	S&D
			(Specify No. of Feeds on Oiler)		
553			Capscrew 551, 552	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
			" "	12 $\frac{1}{4}$ -17	S&D
554			Washer for 553	8 $\frac{3}{4}$ - <del>10<math>\frac{1}{4}</math></del> <sup>17</sup>	S&D
555			Hex Nut for 553	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
			"	12 $\frac{1}{4}$ -17	S&D
556			Capscrew 552 to Cyl.	8 $\frac{3}{4}$ -17	S&D
557	10891A	G422	Oiler Drive Rod	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	10860A		" "	10 $\frac{1}{4}$	S
	10820	G347	" "	10 $\frac{1}{4}$	D
	10819		" "	12 $\frac{1}{4}$ -13	S&D
	10696		" "	14 $\frac{1}{4}$	S&D
558	10637		Pod End for 557	8 $\frac{3}{4}$ -17	S&D
559			Set Screw for 558	8 $\frac{3}{4}$ -17	S&D
560			Cap Screw- Upper Pin for 558	8 $\frac{3}{4}$ -17	S&D
561			Hex Nut for 560	8 $\frac{3}{4}$ -17	S&D
562		G434	Lower Pin for 558	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S

Sheet #18.

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
565	10827A	D358	Wrist Pin Oiler Bracket	10 $\frac{1}{4}$	D
	10697B		" "	12 $\frac{1}{4}$ -13	S&D
	(d)		" "	14 $\frac{1}{4}$	S&D
			" "	17	S&D
566			Threaded Nipple for 565	10 $\frac{1}{4}$	D
			" "	12 $\frac{1}{4}$ -17	S&D
		G402	" "	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
567		G398	Std. Pipe Cap (Drilled) for	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
			" " 566	12 $\frac{1}{4}$ -17	S&D
568			Std. Pipe Lock Nut for 566	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S&D
			" "	12 $\frac{1}{4}$ -17	S&D
569			Street Ell. for 567	10 $\frac{1}{4}$	D
			" "	12 $\frac{1}{4}$ -17	S&D
570			Hex Lock Nut for 565	10 $\frac{1}{4}$	D
			" "	12 $\frac{1}{4}$ -13	S&D
			" "	14 $\frac{1}{4}$ -17	S&D
580	11100	D666	Crank Oiler Pipe Coupling	10 $\frac{1}{4}$	D
	"		" "	12 $\frac{1}{4}$ -17	S&D
581			Oiler Tubing Coupling (Solderless)	8 $\frac{3}{4}$ -17	S&D
582			Copper Tubing	8 $\frac{3}{4}$ -17	} LI
583			for all	8 $\frac{3}{4}$ -17	
584			Lubricating Oil Lines	8 $\frac{3}{4}$ -17	
590			Single End Flared Union	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
591			Tee for M.B.Cap	8 $\frac{3}{4}$ -17	D
592			Close Nipple Cap	10 $\frac{1}{4}$ -17	S&D
593			Pipe Plug Cap	10 $\frac{1}{4}$ -17	S&D
600			Brass Clamps for Copper Tubing	8 $\frac{3}{4}$ -17	S&D
610			Cap Screw for Clamps	8 $\frac{3}{4}$ -17	S&D
630			CRANK HOOD GROUP		
631	20267A	G95	Crank Hood	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	30416		" "	10 $\frac{1}{4}$	S
	30407A	BD85	" " R. or L.	10 $\frac{1}{4}$	D
	30188F		" " R.H.	12 $\frac{1}{4}$ -13	S&D
	"		" " L.H.	11 12 $\frac{1}{4}$ -13	D
	30426B		" " R.H.	14 $\frac{1}{4}$	S&D
	"		" " L.H.	14 $\frac{1}{4}$	D
	30509B		" " R.H.	17	S&D
	"		" " L.H.	17	S&D

Sheet #19.

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
632			Cap Screw for 631	8 $\frac{1}{4}$ -10 $\frac{1}{4}$	S
633			Std. Washer for 632	8 $\frac{1}{4}$ -10 $\frac{1}{4}$	S
634			#1 Clamp for Hood	10 $\frac{1}{4}$ -17	D
635			Machine Screw for 634	10 $\frac{1}{4}$ -17	D
636		D92	Crank Hood Clamp	10 $\frac{1}{4}$	D
			" "	12 $\frac{1}{4}$ -17	S&D
637			Rivet for 636	10 $\frac{1}{4}$ -17	S&D
638			Cap Screw - Clamps to Bed	10 $\frac{1}{4}$ -17	S&D
639			Cap Screw- Hood to Bed	10 $\frac{1}{4}$ -17	S&D
640			Washer for 639	10 $\frac{1}{4}$ -17	S&D
641			Capscrew- Hood to Cyl.	10 $\frac{1}{4}$ -17	S&D
642			Washer for 641	10 $\frac{1}{4}$ -17	S&D
660			GEAR GUARD GROUP		
661	20702	CD252	Gear Guard R.H.	10 $\frac{1}{4}$	D
	20703		" " L.H.	10 $\frac{1}{4}$	D
	20722	CG243	" " "	12 $\frac{1}{4}$ -13	S
	20716	CD252	" " R.H.	12 $\frac{1}{4}$ -13	D
	20715		" " L.H.	12 $\frac{1}{4}$ -13	D
	20714		" " R.H.	14 $\frac{1}{4}$	S
	20659		" " R.H.	14 $\frac{1}{4}$	S&D
	20670A		" " L.H.	14 $\frac{1}{4}$	D
	11529A		" " R.H.	17	D
	11634A		" " L.H.	17	D
662	-		Con. Plate for Part #20703	10 $\frac{1}{4}$	D )
			" " " 20715	12 $\frac{1}{4}$ -13	D )
			" " " 20670	14 $\frac{1}{4}$	D )
663			Pl. for fastening 2 Halves of Part #20722	12 $\frac{1}{4}$ -13	S )
665			R. H. Rivet for 663	12 $\frac{1}{4}$ -13	S )
667			R. H. Machine Screw for 662	10 $\frac{1}{4}$ -17	S )
668		D255	Gear Guard Bracket	12 $\frac{1}{4}$ -17	D )
669			R. H. Rivet for 668	12 $\frac{1}{4}$ -17	D )
670			Cap Screw 661 to Bed	10 $\frac{1}{4}$ -17	S&D)



Item No.	New Part No.	Old Part No.	Description
690			GAS MIXING BOX - TYPE 40158. Used on 8 $\frac{1}{4}$ , 9 $\frac{1}{4}$ , & 10 $\frac{1}{4}$ Standard Single Cylinder Engines
			Assembled- Items listed below
691	30480	G701	Mixing Box Body
692	20750	G702	" " Valve
705	20603A	U355	" Valve Lever
706	73-201		Pin for 705
707			Cotter Pin for 706
713	20751	G712	Sleeve- Liner for 692
714	11364A	G703	Gas Port Adjusting Lever
730	11431A		Valve Collar
731			Pin 730 to 692
732			Stud - Lever for 692
735			Cap screw for 713
736			Standard Washer for 735
737		D63	Split Washer for 735
745	11936		Hold Down Bolts
747	10476	D63	Adjusting Lever Spring
690			GAS MIXING BOX- TYPE 40142. Used on 12 $\frac{1}{4}$ - 13 STANDARD SINGLE CYLINDER ENGINES
			Assembled- Items listed below
691	30436	CG701	Mixing Box Body
692	20646	G702	" " Valve
705	20603A	U355	" Valve Lever
706	73-201		Pin for 705
714	20647	G703	Gas Port Adjusting Lever
728	20648	G704	Bottom for 691
729			Cap Screw for 728
733			Pin - Drive into 714
735			Cap Screw for 713
736			Std. Washer for 735
737		D63	Split Washers for 735
738			Hex Nut for 735
742	11207		Lever Bracket
743			Cap Screw for 742
			GAS MIXING BOX- TYPE 40176. Used on 14 $\frac{1}{4}$ STANDARD SINGLE CYLINDER ENGINES.
			Assembled- Items listed below
691	30568	G701	Mixing Box Body
692	20800	G702	" " Valve
705	20602A	U355	" " Lever
706	86-201		Pin for 705
707			Cotter Pin for 706
713	20799	G712	Sleeve- Liner for 691
714	10830	G703	Gas Port Adjusting Lever
728	11609	G704	Bottom for 691
732	6-200		Stud Lever for 692
735			Cap screw for 713
736			Std. Washers for 735
737			Split Washers for 735
740			Stud 691 for Elbow
741			Hex Nut for 740

Item No.	New Part No.	Old Part No.	Description
			GAS MIXING BOX-- TYPE 30519 Used on 10 $\frac{1}{4}$ , 12 $\frac{1}{4}$ , 13 Duplex Engines.
			Assembled-- Items listed below
691	30305A	DD580	Mixing Box Body
692	10930D	CD602	" " Valve
693	10151F	BD604	Gas Mixing Valve
694	10929	BD605	Spindle Tie 693 to 592
695	10155D		Collar for 692
696			Taper Pin 695 to 694
697	10156B	D651	Collar for 693
698			Taper Pin for 697
699	10186	D607	Spindle End
700			Pin Rivet 699 to 694
705	10125D	BD609	Mixing Valve Lever
706	86-201		Pin for 705
707			Cotter Pin for 706
708	10931		Air Intake Cap
709			Capscrew-- Hinge for 708
713	20496	DD585	Sleeve-- Liner for 691
714	20202B	CD586	Gas Port Adjusting Lever
715	10932A	ED583	Clamping Bar for 714
716			Capscrew for 715
720	20497		Top Plate for 691
721			Cap Screw for 720

			GAS MIXING BOX-- Type 30130 Used on 14 $\frac{1}{4}$ Duplex Engines.
			Assembled-- Items listed below
691	30125B	DD580	Mixing Box Body
692	10152D	CD602	Mixing Box Valve
693	10151	BD604	Gas Mixing Valve
694	10157B	BD605	Spindle 693 to 694
695	10155D	D650	Collar for 692
696			Taper Pin 695, 4
697	10156B	D651	Collar for 693
698			Taper Pin for 697
699	10126	D607	Spindle End
700			Pin - Rivet 699, 694
705	10125	BD609	Mixing Valve Lever
706	86-201		Pin for 705
707			Cotter Pin for 706
709			Thumbscrew-- Hinge for 708
710			Hex Nut for 709
712		BD591	Capscrew 711 to 691
713	20194	DD585	Sleeve-- Liner for 691
714	20202B	CD586	Gas Port Adjusting Screw
715	13358C	ED583	Clamping Bar for 714
716			Cap Screw for 715
720	20123D	CD581	Top Plate for 691
721			Cap Screw for 720 to 691
723	10168	BD594	Gas Intake Flange
724			Cap Screw for 720

Sheet #22.

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
GAS MIXING BOX - Type 30191 Used on 17" Duplex Engine.					
Assembled- Items listed below					
691	30941		Mixing Box Body		
692	20789A		" " Valve		
705	10125D		" Valve Lever		
706	86-201		Pin for 705		
707			Cotter Pin for 706		
713	21413		Sleeve Liner for 691		
714	10513		Gas Port Adjusting Lever		
<del>750</del>			MIXING BOX CONTROL GROUP		
761	13-202	G650	Reach Rod - Gov. to Mix.	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	12-202		" " Box.	10 $\frac{1}{4}$	S
	14-202		" " "	12 $\frac{1}{4}$ -13	S
	15-202		" " "	14 $\frac{1}{4}$	S
	(D)		" " "	17	S
762	17-202	D543	Reach Rod - Gov. to Cross	10 $\frac{1}{4}$	D
	16-202		" " Shaft	12 $\frac{1}{4}$ -17	D
763	6-202	D560	Reach Rod - Cross Shaft		
			to Mix.Box	10 $\frac{1}{4}$ -13	D
	7-202		" " "	14 $\frac{1}{4}$	D
	5-202		" " "	17	D
764			Hex Nut for 761, 762	8 $\frac{3}{4}$ -17	S&D
765			Hex Nut for 763	8 $\frac{3}{4}$ -17	D
766	11360	G222	Reach Rod End for 761,2	8 $\frac{3}{4}$ -17	S&D
767	10669	D563	Reach Rod End for 763	8 $\frac{3}{4}$ -17	S&D
768	10670	0541	Bolt Pin for 766	8 $\frac{3}{4}$ -17	S&D
769	10263	D557	Bolt Pin for 767	10 $\frac{1}{4}$ -17	D
770			Hex Lock Nut for 768, 9	8 $\frac{3}{4}$ -17	S&D
771	20355A	D553	Gov. Reach Bracket Brg.	8 $\frac{3}{4}$ -17	D
	20223	TD553	" " for 774	8 $\frac{3}{4}$ -17	D
772	12-200		Stud 771 to Cyl.	8 $\frac{3}{4}$ -17	D
773			Hex Nut for 772	8 $\frac{3}{4}$ -17	D
774	10829	D549	Gov. Reach Lever Shaft	10 $\frac{1}{4}$	D
	10831		" " "	12 $\frac{1}{4}$ -13	D
	10695		" " "	14 $\frac{1}{4}$	D
	(D)		" " "	17	D
	12223		" " "	12 $\frac{1}{4}$ -13	D
	12224		" " "	14 $\frac{1}{4}$ -17	D

Sheet #23.

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
775	10642B	G552	Set Collar for 774	10 $\frac{1}{4}$ -17	D
776			Set Screw for 775	10 $\frac{1}{4}$ -17	D
778	12222	TD695	Sleeve Coupling for 774	12 $\frac{1}{4}$ -17	D
779			Taper Pin for 778	12 $\frac{1}{4}$ -17	D
780	10384	TD659	Bushing for 771	12 $\frac{1}{4}$ -17	D
781			Set Screw for 780	12 $\frac{1}{4}$ -17	D
782	10657A	D556	Reach Lever to Mix. Box	10 $\frac{1}{4}$ -17	D
783	10656E	D545	Reach Lever to Gov.	10 $\frac{1}{4}$ -17	D
784			Set Screw for 782, 783	10 $\frac{1}{4}$ -17	D
785			Taper Pin for 782, 783	10 $\frac{1}{4}$ -17	D

Item No.	New Part No.	Old Part No.	Description
			GOVERNOR -- TYPE 40157 Used on 8 $\frac{1}{4}$ , 9 $\frac{1}{4}$ , 10 $\frac{1}{4}$ , Standard Single Cylinder Engines.
801	20763	U402	Assembled - Items listed below
802	50-201	X1616HH	Governor Weight
804			" " Pin Cotter Pin for 802 Gov. Yoke Assembled - Items 805,6,7,8,9,11
805	20762	U405	Gov. Yoke
806	11375A	U406	Yoke Pinion
807			Woodruff Key
808			Hex Nut for 806 to 805
809			Lock Washer for 808
811			Strom Thrust Bearing Gov. Spindle Assembled Items 820, 1, 3, 5
820	11378	U442	Spindle
821	11377	U443	Spindle Collar
823	11261	BU33	Spring Sleeve
824			Pin - Rivet 821, 821
825			Pin - Rivet 823, 820
830	11381	U448	Gov. Spring - Outer
834	11379	U446	Gov. Spring - Inner
835	10904	026	Gov. Piston (Spring Seat)
841	20603A	U353	Acting Lever
842	73-201		Pin - Fulcrum for 841
843			Cotter Pin for 842
845	20488	046	Speed Regulating Lever
846	69-201		Pin - Fulcrum for 845
847			Cotter Pin for 846
854	10901	049	Adjusting Screw for 845
855			Wing Nut for 854
860	20760	U437	Gov. Housing - Upper
862	20765	U430	Stand (Lower Gov. Housing)
864			Cap Screw 862-860
869			Pipe Nipple
870			Grease Cup
871			St. Ell
872			Royal S.T. Oiler Gov. Bearing Assembled Items 901,2,3,5,6,10,11,12
900			Gov. Gear Housing
901	20489	018	Bearing for Cross Shaft
902	20243	023	Drive Gear
903	11376	U423	Drive Shaft
905	11375	U406	Drive Shaft Pinion
906			Woodruff Key for 902
910			Bristo Set Screw
911			Stud 901 to 900
912			Hex Nut for 911

Item No.	New Part No.	Old Part No.	Description
			GOVERNOR - TYPE 40140 Used on 12 $\frac{1}{4}$ - 13 Standard Single Cylinder Engines.
			Assembled - Items listed below
801	11268	U302	Gov. Weights
802	51-201	BU341	Gov. Weight Pin - Long
803	44-201	BU340	Gov. Weight Pin - Short
804			Cotter Pins for 802, 803 Gov. Yoke Assembled Items 805,6,7,8,10,11
805	20604	U305	Gov. Yoke
806	11144	U306	Gov. Yoke Pinion
807			Woodruff Key for 806
808			Hex Nut for 806, 805
810			Pin - Lock for 808
811			Strom Thrust Bearing Gov. Spindle Assembled Items 820, 821, 824
820	11146	U342	Spindle
821	11145	U343	Spindle Collar
824			Pin Rivet for 821, 820
830	11147	U348	Gov. Spring Outer
836	11143	U300	Spring Seat
841	20603A	U353	Acting Lever
842	73-201		Pin - Fulcrum for 841
843			Cotter Pin for 842
848			Hex Nut - Speed Reg. Adjuster
860	20665	BU337	Gov. Housing - Upper
861			Pipe Plug for 860
862	20664A	BU330	Stand (Lower Gov. Housing)
863	10205	BU37	Bushing for 862
864			Capscrew 862, 860
900	30401	U14R	Gov. Gear Housing Gov. Bearing Assembled Items 901,2,3,4,5,6,10,11
901	10274B	U16R	Bearing for Cross Shaft
902	10723	BU21	Drive Gear
903	10726	BU23	Drive Shaft
904	10658	BU24	Drive Shaft Washer
905	10108A	BU25	Drive Shaft Pinion
906			Woodruff Key for 902
907	11752		Washer End Plate
908			Capscrew for 907
909			Spring Washer for 908
910			Bristo Setscrew
911			Capscrew for 901, 900

Item No.	New Part No.	Old Part No.	Description
			GOVERNOR - TYPE 30177A Used on 12 <sup>1</sup> / <sub>4</sub> - 13 Oilfield Engine.
			Assembled - Items listed below
801	11268	U302	Gov. Weights
802	51-201	BU341	Gov. Weight Pin- Long
803	44-201	BU340	Gov. Weight Pin- Short
804			Cotter Pin for 802,3 Gov. Yoke Assembled Items 805,6,7,8,10,11
805	20604	U305	Gov. Yoke
806	11144	U306	Gov. Yoke Pinion
807			Woodruff Key for 806
808			Hex Nut for 806, 805
810			Pin - Lock for 808
811			Strom Thrust Bearing Gov. Spindle Assembled Items 820, 821, 824
820	21244	U342	Spindle
821	11145	U343	Spindle Collar
824			Pin Rivet 821, 820
830	12654	U348	Gov. Spring Outer
834	12655		Gov. Spring Inner
836	12634	U300	Spring Seat
841	20603A	U353	Acting Lever
842	73-201		Pin Fulcrum for 841
843			Cotter Pin for 842
845	21243		Speed Reg. Lever
846	86-201		Pin - Fulcrum for 845
847			Cotter Pin for 846
848			Hex Nut Speed Reg. Adj.
849			Cotter Pin - Lock for 848
851	21242		Gov. Spring Housing
854	10730	U75	Adj. Screw for 845
855			Wing Nut for 854
860	20665		Gov. Housing Upper
861			Pipe Plug for 860
862	20664A	BU330	Stand (Lower Gov. Housing)
863	10205	BU37	Bushing for 862
864			Capscrew 862, 860
900	30401	U14R	Gov. Gear Housing Gov. Bearing Assembled Items 901,2,3,4,5,6,10,11
901	10274B	U16R	Bearing for Cross Shaft
902	10723	BU21	Drive Gear
903	10726	BU23	Drive Shaft
904	10658	Bu24	Drive Shaft Washer
905	10108A	BU25	Drive Shaft Pinion
906			Woodruff Key for 902
907	11750		Washer End Plate
908			Capscrew for 907
909			Spring Washer for 908
910			Bristo Set Screw
911			Capscrew for 901, 900

Item No.	New Part No.	Old Part No.	Description
GOVERNOR - TYPE 40210			
Used on 14 $\frac{1}{4}$ "-17 Standard Single Cylinder Engines, and 10 $\frac{1}{4}$ ", 12 $\frac{1}{4}$ ", 15, 14 $\frac{1}{4}$ ", & 17 Duplex Engines.			
Assembled- Items listed below			
801	20105A	U1	Governor Weights
802	52-201		" " Pin - Long
803	44-201		" " " - Short
804			Cotter Pin for 802, 803 Governor Yoke Assembled Items 806, 5, 7, 8, 11
805	20106G	U5	Gov. Yoke
806	10110C	U6	Gov. Yoke Pinion
807			Woodruff Key for 806
808			Hex Nut
811	1108U		Strom Thrust Bearing
812	11135	DU9	Lower Support for 811
813	11137	CU10	Upper Washer for 811
814	11136	U90	Lower Washer for 811 Gov. Spindle Assembled Items 820, 21, 22, 24
820	10417A	BU42	Spindle
821	11138A	CU43	" Collar
822	10750	BU86	Yoke End
824			Pin - Rivet 821, 820
830	10686E	U46	Gov. Spring Outer
831	10685B	U47	" " Inner
832	10684B	U48	" " "
834	10682B	U49	" " "
835	20250E	BU41	Gov. Piston (Spring Seat)
838	10748B	U89	Acting Lever Link
839	68-201	DU66	Pin for 838
840			Cotter Pin for 839
841	20411	CU55	Acting Lever
842	74-201	U60	Pin - Fulcrum for 841
843			Cotter Pin for 842
845	20251A	BU67	Speed Reg. Lever
846			Pin Fulcrum for 845
847			Cotter Pin for 846 Gov. Hand Wheel Assembled Items 854, 856, 857
854	10730	U75	Adjusting Screw for 845
855			Lock Nut for 854
856	1196A	BU78	Handwheel - Adjuster for 845
857			Pin - Lock for 856
858	10731A	U77	Trunnion Block for 845
860	20119D	U37	Gov. Housing (Upper)
861			Pipe Plug for 860
862	20177B	U30	Stand (Lower Gov. Housing)
863	10643B	U31	Bushing for 862
864			Cap Screw for 862 to 860 Governor Bearing Assembled Items 901, 2, 3, 4, 5, 6, 10, 11 for 14 $\frac{1}{4}$ " and 17" Standard Engines Sheet #28.



Item No.	New Part No.	Old Part No.	Description
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GOVERNOR - TYPE 40210 CONT'D.

901	10721B	U16	Bearing for Cross Shaft		
902	10724	BU21	Drive Gear		
903	10727	BU23	" Shaft		
904	10658	BU24	" " Washer		
905	10108A	BU25	" " Pinion		
906			Woodruff Key for 902		
911			Capscrew for 901 to 900		
			Gov. Bearing Assembled		
			Items 901, 2, 3, 4, 5, 6, 10, 11,		
			for 10 $\frac{1}{4}$ , 12 $\frac{1}{4}$ , 13, 14 $\frac{1}{4}$ & 17		
			Duplex Engines		
901	10274C	U16R	Bearing for Cross Shaft		
902	10723	BU21	Drive Gear		
903	10726	BU23	" Shaft		
904	10658	BU24	" " Washer		
905	10108A	BU25	" " Pinion		
906			Woodruff Key		
911			Capscrew for 901 to 900		
900	30400		Gov. Gear Housing	14 $\frac{1}{4}$ -17	S&D
900	30401A	BU14	" " "	12 $\frac{1}{4}$ -13	D
900	30115	U14	" " "	10 $\frac{1}{4}$	D

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
EXHAUST PIPING -TO ORDER ONLY					
1001	10458	G145	Exhaust Flange	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
	10459		"	10 $\frac{1}{4}$	S&D
	10461A		"	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
	13096		"	17	S&D
1002		G148	Asbestos Gasket (Not Cut)	8 $\frac{3}{4}$ -17	S&D
	20630	A214	4 x 5 Flanged Exhaust Elbow	10 $\frac{1}{4}$	S&D
	20633	A193	5 x 5 " " "	12 $\frac{1}{4}$ -13	S&D
1003	20652B	A192	5 x 6 Flanged Exhaust Elbow	14 $\frac{1}{4}$	S&D
	10198A	A196	6 x 6 " " "	17	S&D
1040	MANIFOLD GAS MIXTURE GROUP.				
1041	11658	CD600	R.H. Pipe Mix.Box to Inlet	10 $\frac{1}{4}$	D
	11659	"	" " Box	12 $\frac{1}{4}$ -13	D
	11660	"	" " "	14 $\frac{1}{4}$	D
1042	20862	CD601	L.H. Pipe Mix.Box to Inlet	10 $\frac{1}{4}$	D
	20873	"	" " Box	12 $\frac{1}{4}$ -13	D
	20872	"	" " "	14 $\frac{1}{4}$	D
1043	11189	D624	Inlet Box Ell.Slip Joint	10 $\frac{1}{4}$	D
	11190	"	" " "	12 $\frac{1}{4}$ -13	D
	10166B	"	" " "	14 $\frac{1}{4}$	D
1044		BD625	Rd. Rubber Packing for 1043	10 $\frac{1}{4}$	D
		"	" " "	12 $\frac{1}{4}$ -13	D
		"	" " "	14 $\frac{1}{4}$	D
MISCELLANEOUS					
1070	11754		Oil Catcher for Ex.Lever		
			1. R.H.	10 $\frac{1}{4}$ -13	D
	11754 $\frac{1}{2}$		" L.H.	10 $\frac{1}{4}$ -13	D
	13472		" R.H.	14 $\frac{1}{4}$	D
	13472 $\frac{1}{2}$		" L.H.	14 $\frac{1}{4}$	D
1090			Hex Nut for 329	8 $\frac{3}{4}$ -17	S&D
			" 296	10 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
			" 174,175	8 $\frac{3}{4}$ -17	S&D
			" 122,173	10 $\frac{1}{4}$	D
			" 122	12 $\frac{1}{4}$ -13	S&D
			" 174	12 $\frac{1}{4}$ -13	S&D
			" 122	12 $\frac{1}{4}$ -13	S&D
			" 91	10 $\frac{1}{4}$	D
			" 173	10 $\frac{1}{4}$	S&D
			" 173	12 $\frac{1}{4}$ -13	S&D
			" 174	17	S&D
			" 122	14 $\frac{1}{4}$	S&D
			" 91	14 $\frac{1}{4}$ -17	D

Item No.	New Part No.	Old Part No.	Description	Cyl. Size	Type
1090			MISCELLANEOUS CONT'D.		
			Hex Nut for 122	17	S&D
			" " 173	14 $\frac{1}{4}$	S&D
			" " 173	17	S&D
1092			Cap Screw for 178	10 $\frac{1}{4}$	S&D
			" " 180	12 $\frac{1}{4}$ -17	S&D
			" " 177	8 $\frac{3}{4}$ -9 $\frac{1}{4}$	S
			" " 176	10 $\frac{1}{4}$	S&D
			" " 176	10 $\frac{1}{4}$ -13	S&D
			" " 176	14 $\frac{1}{4}$ -17	S&D
			" " Inlet Box		
			" " To Ell	10 $\frac{1}{4}$	D
			" " "	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
			" " 332	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
1093			Screw for 322	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
			" " 322	10 $\frac{1}{4}$	D
			" " 322	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
			" " 323	8 $\frac{3}{4}$ -14 $\frac{1}{4}$	S&D
1094			Cotter for 296	10 $\frac{1}{4}$	D
			" " 296	12 $\frac{1}{4}$ -14 $\frac{1}{4}$	S&D
1095			Pipe Plug for 296	10 $\frac{1}{4}$	D
			" " 296	12 $\frac{1}{4}$ -17	S&D
1096			Union Ell " 361	14 $\frac{1}{4}$ -17	S&D
1097			St. Ell for Exhaust Valve		
			" " Oiler	8 $\frac{3}{4}$ -10 $\frac{1}{4}$	S
			" " "	12 $\frac{1}{4}$ -17	S&D
1098			Pipe Bushing "	10 $\frac{1}{4}$	S
1099			Nipple for Exhaust Valve		
			" " Oiler	10 $\frac{1}{4}$	D
			" " "	12 $\frac{1}{4}$ -17	S&D

"WESTERN" HIT & MISS GOVERNOR, TYPE "O".  
Size  $8\frac{3}{4}$ ,  $9\frac{1}{4}$  &  $10\frac{1}{4}$  Single Cylinder Engines.  
(See Fig. #100)

<u>Part No.</u>	<u>No. Reqd.</u>	<u>Description</u>
01S	1	Governor Assembled Complete
01	1	Governor Housing (Upper)
02	1	Governor Housing Cap
03	2	Governor Housing Cap Screws
04	1	Governor Housing Grease Cup
06	2	Governor Weights
07	2	Governor Weight Pins
08	4	Governor Weight Pin Cotters
010S	1	Governor Yoke with Pinion Assembled Parts 010 to 012 Inc.
010	1	Governor Yoke
011	1	Governor Yoke Pinion
	1	Governor Yoke Pinion Key
012	2	Governor Yoke Pinion Set Screws
016	1	Governor Gear Housing (Lower)
019	2	Governor Gear Bearing to Housing Cap Screw
018S	1	Governor Gear Bearing Assembled Parts 018, 020 to 024, Inc.
018	1	Governor Gear Bearing
020	1	Governor Shaft
021	1	Governor Shaft Pinion
	1	Governor Shaft Pinion Key
022	2	Governor Shaft Pinion Set Screws
023	1	Governor Drive Gear
024	2	Governor Drive Gear Set Screws
026	1	Governor Spindle Guide
027	1	Governor Spring No. 1 (Long)
028	1	Governor Spring No. 2 (Short)
032S	1	Governor Spindle with Spring Assembled Parts 032 to 038 Inc.
032	1	Governor Spindle
033	1	Governor Spindle Sleeve
034	1	Governor Spindle Sleeve Pin
035	1	Governor Spindle Sleeve Spring
036	1	Governor Spindle Sleeve Washer
037	1	Governor Spindle Sleeve Nut
038	1	Governor Spindle Sleeve Nut Pin
040S	1	Governor End Bearing Cap Assembled Parts 040, 041 and 042
040	1	Governor End Bearing Cap
041	1	Governor End Bearing Ball.
042	1	Governor End Bearing Bushing

"WESTERN" HIT & MISS GOVERNOR, TYPE "O"  
CONT'D.  
Size  $8\frac{1}{4}$ ,  $9\frac{1}{4}$  &  $10\frac{1}{4}$  Single Cylinder Engines.  
(Fig. #100)

<u>Part No.</u>	<u>No. Reqd.</u>	<u>Description</u>
046	1	Governor Adjusting Lever
047	1	Governor Adjusting Lever Pkn
048	2	Governor Adjusting Lever Pin Cotters
049	1	Governor Adjusting Screw
050	1	Governor Adjusting Screw Wing Nut
054	1	Governor Spindle Rod End
055	1	Governor Spindle Rod End Set Screw
056	1	Governor Spindle Rod End Set Screw Lock Nut
058S	1	Governor Trip Rod Assembled Parts 058 and 059
058	1	Governor Trip Rod ) Sold only
059	1	Governor Trip Rod Nut ) Assembled.
060	1	Governor Trip Rod End
061	1	Governor Trip Rod End Nut
062	1	Governor Trip Rod End Pin
063	2	Governor Trip Rod End Pin Cotters
068	1	Governor End Spring Housing
069	1	Governor End Spring Housing Cap
070	1	Governor End Spring Housing Pin
071	2	Governor End Spring Housing Pin Cotters
072	2	Governor End Springs
076S	1	Governor Trip Bearing Assembled Parts 076, 077 and 078 using 1" Blade ( $8\frac{3}{4}$ - $9\frac{1}{4}$ ) using 2" Blade ( $10\frac{1}{4}$ )
076	1	Governor Trip Bearing for 1" Blade ( $8\frac{3}{4}$ - $9\frac{1}{4}$ ) for 2" Blade ( $10\frac{1}{4}$ )
077	1	Governor Trip Blade 1" Wide ( $8\frac{3}{4}$ - $9\frac{1}{4}$ ) 2" Wide ( $10\frac{1}{4}$ )
078	4	Governor Trip Blade Rivets
079	1	Governor Trip Stud for Bearing with 1" Blade ( $8\frac{3}{4}$ - $9\frac{1}{4}$ ) for Bearing with 2" Blade ( $10\frac{1}{4}$ )
080	1	Governor Trip Stud Cotters
082	4	Governor to Engine Cap Screws
	1	Bristo Set Screw Wrench