

NOVO

PARTS LIST and Operating Instructions

Two and Four Cylinders
MODEL CW ENGINES

PARTS LIST
NO. CW-11-44

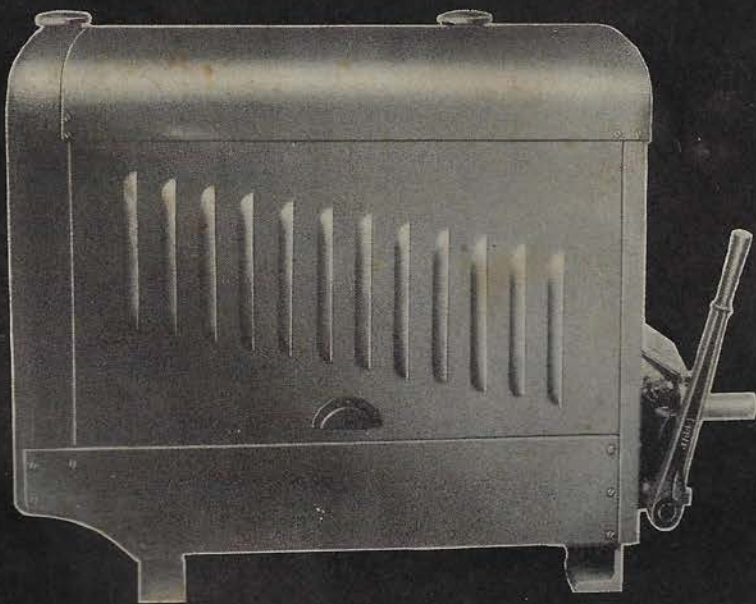


Fig. 1983. Novo 4-cylinder oilfield pumper engine with outside governor control and Twin Disc Clutch.



Fig. 1937. Model CW, 2-cylinder engine complete with house, flywheel with stub-shaft, and flywheel housing. Improved doors are easily removed giving complete accessibility to spark plugs and accessories.

NOVO ENGINE COMPANY



PLACING NEW ENGINE IN SERVICE

CHECKING: When placing a new engine in service, be certain it is complete and in correct working order. All engines are tested before shipment from the factory. Notwithstanding, the engine should be checked by the operator to make certain it is ready to run.

LUBRICATION: The most important precaution for the successful operation of any machine is proper lubrication. Buy oil of a recognized make to correspond with the recommendations of the engine manufacturer. Cheap oil is expensive. Do not use it in any piece of equipment. Shipping requirements make it necessary to drain engine of lubricating oil before shipment. Under no circumstances attempt to start the engine until the required amount of oil is placed in the crankcase. Disregarding this precaution would void the guarantee. It is well when an engine has stood for an extended period, in addition to putting in the required amount of lubrication oil for the crankcase, to remove the spark plug and pour a small amount of oil on top of the piston, also remove the tappet chamber cover and oil the tappets and valve stems. Then turn the crankshaft several times to insure all parts being thoroughly oiled before starting.

COOLING: Following next in importance to lubrication, is proper cooling. Make certain that the cooling system is full at all times, that there are no leaks and the hose is in good condition. If water leaks away or is permitted to evaporate down, serious damage can result. Use soft water if available, if not, operator should flush the system occasionally with clean water. It is good practice twice a year to add some softening compound to the water, operating the engine for a day, then drain, flush well and refill. If using hard water, this will help to prevent lime formation and clogging of the water passages in the engine and radiator. Do not add water to the cooling system of any overheated engine. Shut the engine down, allow it to cool and add water gradually.

WINTER WEATHER OPERATION: A light oil is recommended for cold weather operation. Keep the radiator partly covered to insure a water temperature of approximately 180 degrees Fahrenheit. It may be necessary in extreme cold weather to cover the oil pan with an insulating material to insure free flowing oil. Either use a non-freezing solution in the radiator or drain after every operating period. The following proportion of alcohol and water can safely be used:

Water	Alcohol	Temperatures
95%	5%	30 degrees above zero.
90%	10%	18 degrees above zero.
85%	15%	11 degrees above zero.
80%	20%	5 degrees above zero.
75%	25%	2 degrees above zero.
70%	30%	9 degrees below zero.
65%	35%	15 degrees below zero.
60%	40%	20 degrees below zero.
50%	50%	35 degrees below zero.

Add alcohol from time to time to make up for evaporation.

FUEL: The use of a recognized high grade of gasoline is recommended. This will decrease carbon deposit and give smoother operation to the engine. Keep the fuel tank clean and free of foreign substances, that might clog the carburetor or fuel line and cause trouble. Have one clean container to be used for the purpose of filling the fuel tank only. Keep covered when not in use. The shut-off cock at bottom of fuel tank has a screen to filter the fuel before going to carburetor. This cock should be removed now and then for cleaning of screen and draining of fuel tank. Particularly during cold weather operation, the tank should be drained of any water accumulation due to condensation. Make this a weekly routine during cold weather. Also note in cold weather it is better to operate with a full fuel tank as condensation occurs only on the exposed surface as the tank empties. The fuller the tank the less exposure there is to condensation.

AIR CLEANER: It is recommended that all engines be equipped with an air cleaner as being essential to long and satisfactory service. Either the felt or gauze type will be found efficient to handle ordinary operating conditions. However, where excessive dust conditions exist, a cleaner of the oil bath type is recommended. Air cleaner should be checked daily, oftener if necessary and the dust removed according to instructions of the cleaner manufacturers.

BEFORE STARTING THE ENGINE

Fill the crankcase with a good grade of lubricating oil. Capacity, model CW47 and CW66, three (3) quarts. Models CW95 and CW133, six (6) quarts*. For 90° and above use SAE No. 30, for 90° to 32° use SAE No. 20 and for 20° or lower use SAE No. 10. Remove cap from breather tube in gear case cover and pour oil into opening. Check oil level daily. The bayonet gauge or oil dipper stick is located on left side of crankcase. Replenish oil to high level mark on gauge whenever necessary. Drain and renew with fresh oil after every thirty-five (35) hours of operation. When operating the engine for the first time, it is recommended to drain and renew oil after the first eight (8) hours of operation.

Engine with speed reduction. Use high grade transmission oil SAE No. 160 for summer operation and No. 90 to No. 110 for winter use. Maintain oil level in gear case as indicated by dipper stick or level plug. Change oil every 2000 hours of service.

Close drain cock in lower hose connection (engines equipped with circulating pump, figure B2110, the drain cocks are in pump) remove radiator cap and fill cooling system with clean water. Capacity, models CW47 and CW66, ten (10) quarts, models CW95 and CW133, fourteen (14) quarts.

* Except CW95 engines used on Buoy Boat Hoists which have a capacity of seven (7) quarts.

Always Give Model and Serial Number of Engine and Outfit When Ordering Repairs



Remove fuel tank cap and fill tank. Capacity, models CW47 and CW66, four (4) gallons. Models CW95 and CW133, six and three-quarter (6¾) gallons.

As shipped from factory, spark plugs are in position and the magneto correctly wired to plugs.

TO START: Engine with switch in ignition line. Insert key and turn to open position before starting.

Place starting crank in position. Close choke valve of carburetor and give starting crank one or more quick quarter turns up on the suction stroke. Release choke valve and again crank engine to start. The matter of choking the carburetor air intake depends on conditions. Particularly during cold weather operation it may be necessary, after the engine has taken one or more explosions, to hold choke partially closed to warm it up before the choke is released to wide open adjustment. The operator will become familiar with starting conditions and readily acquire the necessary procedure.

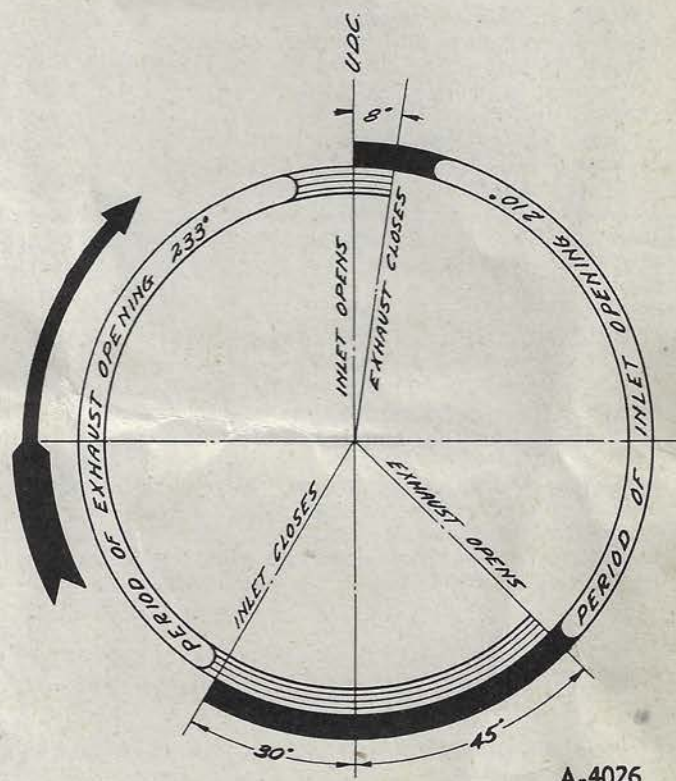
TO STOP: There is a button on magneto to push in, shorting the magneto to stop. If engine is equipped with switch, turn key to off position.

SPARK TIMING: Two cylinder model Fig. A4026. No. 1 cylinder is nearest radiator at starting end. In case wires have been disconnected, facing the distributor end of the magneto, the wire to spark plug of No. 1 cylinder connects to right hand or outside terminal of distributor cap. Wire to No. 2 cylinder connects to inside or left hand terminal

Four cylinder model Fig. A4026. To connect wiring for a four cylinder model, the firing order of the cylinders is one (1), three (3), four (4), two (2). Facing the distributor end of the magneto, the wire from the spark plug of No. 1 cylinder connects to the lower right hand terminal of the distributor. The rotor of the distributor turns clockwise, the wiring from No. 3 cylinder connects to lower left hand terminal. The wire from No. 4 cylinder to the upper left hand terminal and the wire from No. 2 cylinder to the upper right hand terminal.

To retune the spark in case the magneto has been removed or disconnected from the case. First turn the crankshaft in running direction to place the piston of No. 1 cylinder at upper dead center of the compression stroke. This is the firing position. The compression stroke may be determined by removing the spark plug from No. 1 cylinder and holding the thumb over the spark plug hole, at the same time turning the engine in running direction, the compression is noticed from within, continue turning until No. 1 piston is at upper dead center. At this position the starting crank pin in

the shaft will be straight up and down position. Next take the wire connected to the lower right hand terminal of the distributor and turning the magneto pinion by hand, clockwise rotation, note when the impulse trips and the spark occurs. Holding the magneto at this position, place the pinion in mesh with the gear on the engine, securing the magneto to the case. Then connect the wires as previously described. Recheck the timing to make certain the setting is correct. Should the spark occur before upper center or too early, disengage the magneto and set it back one tooth of the pinion. If it occurs later, after center, set it ahead one tooth, keeping in mind the magneto revolves in a clockwise direction.



VALVE TIMING AND TAPPET ADJUSTMENT: Before checking valve timing be certain the tappets are correctly set for clearance between the tappet and end of valve stem. This clearance should be 15 thousandths. Figure A4026 illustrates correct setting for both inlet and exhaust valves. Also note, if for any reason it has been necessary to remove either the cam gear, crankshaft pinion or magneto pinion, this train of gears have certain teeth marked enabling the operator to replace for correct timing. Keep valves and seats in good condition, check occasionally and regrind when necessary. Tappet clearance should be looked after periodically.



IGNITION: As standard, the magneto is equipped with an impulse coupling. This automatically retards the spark for starting. When the impulse trips, a full spark is developed at slow cranking speed of engine, thus providing for easy starting. As the engine speed increases, the retard feature of the impulse automatically cuts out and the spark is advanced to correct position for governor speed of the engine. For details of magneto care, refer to separate pamphlet of magneto instructions.

CARBURETOR: The carburetor is of the float feed type and is adjusted before leaving factory, for the most economical operation to develop maximum power with minimum fuel consumption. For details of carburetor care and adjustment refer to separate pamphlet of carburetor instructions.

SPARK PLUGS: Periodically the spark plugs should be cleaned and points adjusted for a gap of not to exceed .025 of an inch. The spark plug points will, as a result of service, burn away to the extent the gap will be increased and cause trouble, particularly when starting engine. The outside, exposed portion of the plug should be kept clean. Water on outside of the plug will cause a short and shut down or failure to start. It is a good plan to have an extra plug on hand for emergencies. We recommend the use of Champion No. 6-Com-62 hex spark plug or an exact equivalent as the correct type for this engine.

GOVERNOR: Figure B2381 and B2431. The governor is of the flyball type assembled on the cam gear. The weight actuating a plunger cup to control movement of butterfly valve in carburetor intake producing a constant speed. The Governor has an adjustable speed range from 1200 to 1800 RPM. Any constant speed is controlled by tension of the governor spring. Increasing the spring tension increases the engine speed. Decreasing the spring tension decreases the speed. The governor adjustment is set at the factory and should require no immediate adjustment.

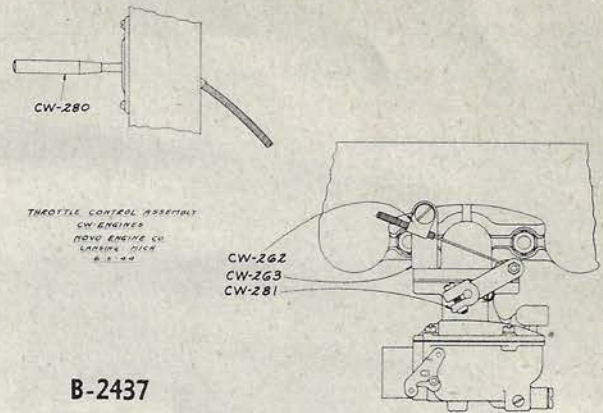


Figure B2437 illustrates a throttle control attachment for installations that require varying engine speed. This is commonly used in connection with hoist operations. **CLUTCH:** The clutch is a dry disc type. The only part requiring lubrication except at overhaul periods, is the throwout collar. Apply a small amount of lubricant once a day before starting.

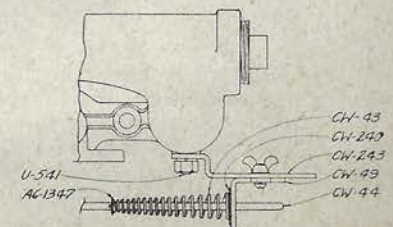
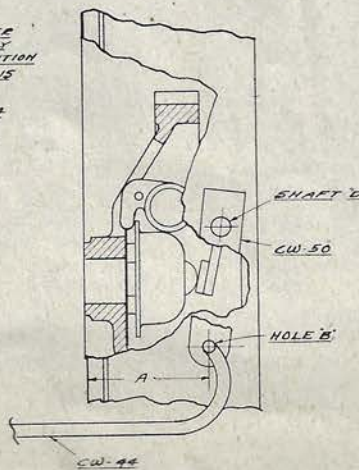
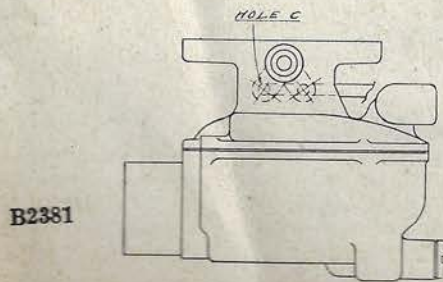
Lubricant. When it becomes necessary to lubricate the bearings use any high grade, soda base, short fibre grease gun lubricant which is recommended for use in connection with anti-friction bearings, having temperatures of 200° Fahrenheit. For individual requirements and special operating conditions, it is suggested to follow the recommendations of the manufacturer supplying the lubricant.

Adjustment. If the clutch does not pull, heats or operating lever jumps out, the clutch must be adjusted. Remove hand hole plate, turn clutch until adjusting lock pin can be reached, pull adjusting pin out and turn adjusting yoke to right or clockwise until operating lever requires a distinct pressure to engage. A new clutch requires several adjustments until discs are worn in.

INSTRUCTIONS FOR SETTING OBSOLETE TYPE GOVERNOR, USED ON ENGINES PREVIOUS TO SERIAL NUMBERS CW471458, CW663021, CW951839 AND CW133395

FOR RE-SETTING GOVERNOR WHEN REQUIRED

WITH GOVERNOR WEIGHTS AND SHAFT IN POSITION AS SHOWN TO GET WEIGHTS AND SHAFT IN THIS POSITION TWIST SHAFT 'D' COUNTERCLOCKWISE SET LEVER CW-50 SO THAT DIMENSION 'A' IS APPROXIMATELY TWO INCHES. WITH LEVER CW-50 IN THAT POSITION AND CARBURETOR LEVER SET AS SHOWN (THAT IS CARBURETOR BUTTERFLY WIDE OPEN) GOVERNOR ROD CW-94 SHOULD JUST SLIDE INTO BOTH HOLE 'B' AND HOLE 'C'. IF GOVERNOR ROD CW-94 DOES NOT SLIDE INTO HOLE 'B' AND 'C' FREELY CHANGE DIMENSION 'A' UNTIL IT DOES. JUST CHANGE DIMENSION 'A' NOT THE POSITION OF WEIGHTS OR SHAFT 'D'.



GOVERNOR SPEED CONTROL B2243.



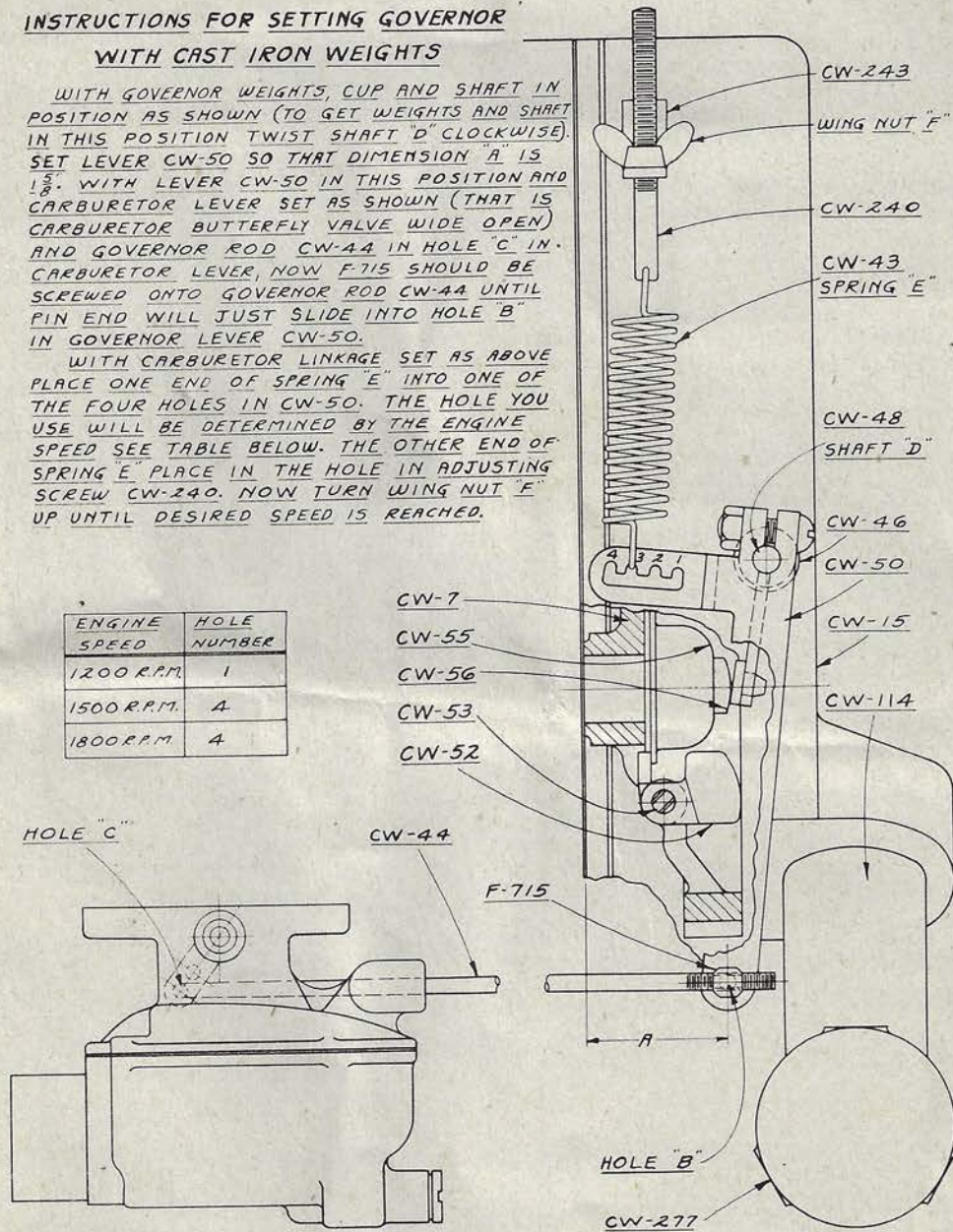
INSTRUCTIONS FOR SETTING LATE STYLE GOVERNOR WITH CAST IRON WEIGHTS AND TENSION SPRING. USED ON ENGINES AFTER SERIAL NUMBERS CW33-2621, CW47-1457, CW66-3020, CW95-1838 AND CW133-3294.

INSTRUCTIONS FOR SETTING GOVERNOR WITH CAST IRON WEIGHTS

WITH GOVERNOR WEIGHTS, CUP AND SHAFT IN POSITION AS SHOWN (TO GET WEIGHTS AND SHAFT IN THIS POSITION TWIST SHAFT "D" CLOCKWISE). SET LEVER CW-50 SO THAT DIMENSION "A" IS $1\frac{5}{8}$ ". WITH LEVER CW-50 IN THIS POSITION AND CARBURETOR LEVER SET AS SHOWN (THAT IS CARBURETOR BUTTERFLY VALVE WIDE OPEN) AND GOVERNOR ROD CW-44 IN HOLE "C" IN CARBURETOR LEVER, NOW F-715 SHOULD BE SCREWED ONTO GOVERNOR ROD CW-44 UNTIL PIN END WILL JUST SLIDE INTO HOLE "B" IN GOVERNOR LEVER CW-50.

WITH CARBURETOR LINKAGE SET AS ABOVE PLACE ONE END OF SPRING "E" INTO ONE OF THE FOUR HOLES IN CW-50. THE HOLE YOU USE WILL BE DETERMINED BY THE ENGINE SPEED SEE TABLE BELOW. THE OTHER END OF SPRING "E" PLACE IN THE HOLE IN ADJUSTING SCREW CW-240. NOW TURN WING NUT "F" UP UNTIL DESIRED SPEED IS REACHED.

ENGINE SPEED	HOLE NUMBER
1200 R.P.M.	1
1500 R.P.M.	4
1800 R.P.M.	4



B-2431

BEARINGS: The crankshaft is equipped with tapered roller bearings, which require very little adjustment. However, adjustment is required from time to time and is made evident by end play in the shaft. To take up end play in engine crankshaft, remove the bearing housings at rear end of the shaft and take off one or more paper shims until excessive end play is eliminated.

The engine operator should make it a point to check all bearings weekly.

The foregoing pertains to simple adjustments which will be required for satisfactory operation of your engine. Should any problem arise, get in touch with your local distributor or if necessary, write Novo Engine Company, Service Department, Lansing, Michigan.

Always Give Model and Serial Number of Engine and Outfit When Ordering Repairs



WARRANTY

Novo Engine Company will guarantee their pumps and parts thereof against defective material or workmanship for a period of six months from date of shipment, but not to exceed ninety days of service.

Transportation charges on parts returned, claimed defective, must be prepaid. If such parts are found defective, shall, at the Company's option, be repaired, replaced or credited. No claims will be allowed which, in the Company's opinion, result from pump or parts having been subjected to abuse or neglect or where failure has been caused by accident.

The warranty on accessories furnished with pumps is limited to the warranty of the accessory manufacturer.

The Novo Engine Company reserves the right to improve its products through changes in design or materials without being obligated to incorporate such changes in equipment previously manufactured.

When defective parts are repaired or replaced free of charge or credited, it is agreed the manufacturer is in no way liable for expenditures covering labor or otherwise that may be incurred in the adjustment of the claim covering defective parts.

INSTRUCTIONS FOR ORDERING PARTS

Always Give Model and Serial Number of Pump When Ordering Repairs.

This parts catalogue lists only standard pump parts. So many special items have been supplied to meet different customers' specifications, that it is impractical to list these special parts. However, any special parts originally furnished on engines can be supplied on request.

This parts list and prices shown hereon supersedes all other lists previously furnished.

Prices are subject to change without notice.

Unless otherwise agreed, all parts shipments are f.o.b. Lansing.

RETURN OF PARTS

All claims must be made within three days after date of receipt of shipment. Give our order number against which return is being made and state full details of what is being returned and why.

Transportation charges on return shipments must be prepaid. Return shipments should be tagged showing shipper's name and address.

Always Give Model and Serial Number of Engine and Outfit When Ordering Repairs

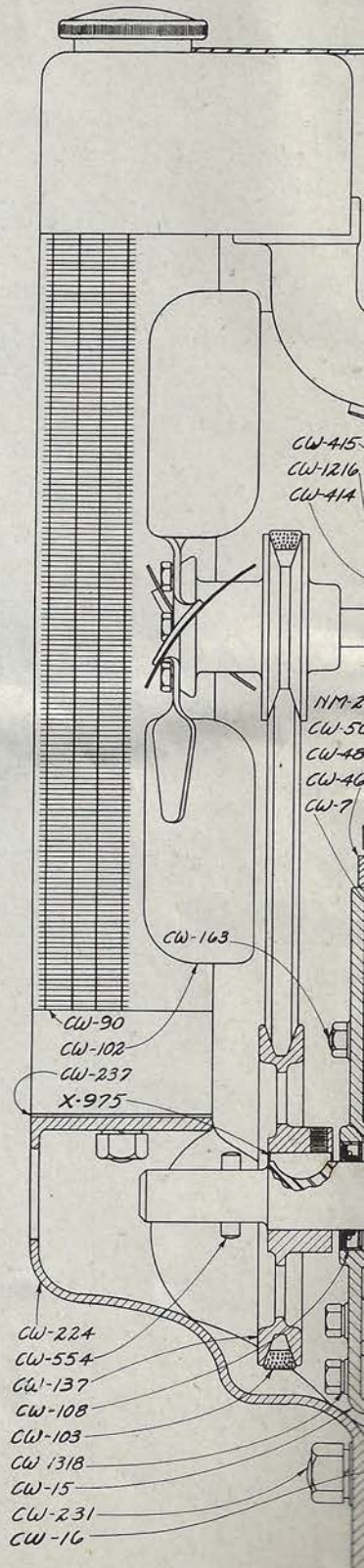
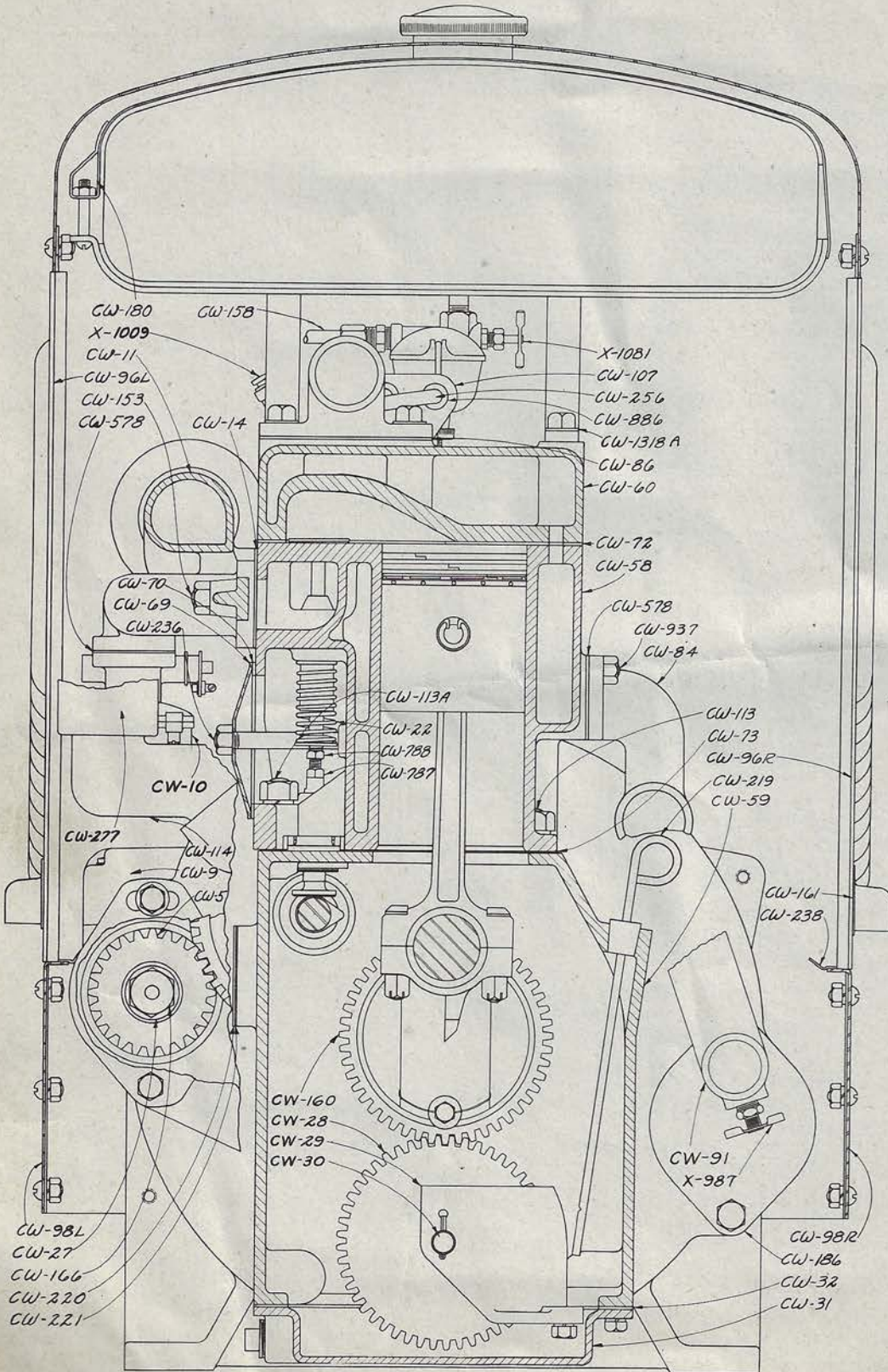


Prices Subject To 10% Increase

PART NO.	NAME OF PART	2 Cylinder			4 Cylinder		
		NO. USED	SYMBOL	PRICE	NO. USED	SYMBOL	PRICE
CW1	Piston only, 3 1/4" for CW66 and CW133	2	4C1	2.50	4	4C1	2.50
CW1A	Piston only, 2 3/4" for CW47 and CW95	2	NNU1A	2.25	4	NNU1A	2.25
CW1B	Piston Assembly with CW1, CW2, CW2A, CW3, and CW940, 3 1/4" for CW66 and CW133	2	100CW	4.20	4	100CW	4.20
CW1C	Piston Assembly with CW1A, CW2B, CW2C, CW3A, and CW940, 2 3/4" for CW47 and CW95	2	100NNUA	3.55	4	100NNUA	3.55
CW2	Piston ring, 3 1/4" for CW66 and CW133	4	2C2	.35	8	2C2	.35
CW2A	Piston ring oil, 3 1/4" for CW66 and CW133	2	5C2	.40	4	5C2	.40
CW2B	Piston ring, 2 3/4" for CW47 and CW95	4	NNU2	.25	8	NNU2	.25
CW2C	Piston ring oil, 2 3/4" for CW47 and CW95	2	1A2	.30	4	1A2	.30
CW3	Piston Pin for CW66 and CW133	2	UF3	.50	4	UF3	.50
CW3A	Piston Pin for CW47 and CW95	2	NNU3	.40	4	NNU3	.40
CW5	Magneto Pinion for Wico Model "A" Magneto	1	1CW5	1.80	1	1CW5	1.80
CW5A	Magneto Pinion for Bosch, Wico Model "C" and Fairbanks Morse Magneto	1	2CW5	2.05	1	2CW5	2.05
CW6	Crankshaft Pinion	1	1CW6	3.00	1	1CW6	3.00
CW7	Camshaft gear, used previous to CW471458, CW663021, CW951839 and CW1333295	1	1CW7	3.00	1	1CW7	3.00
CW7A	Camshaft gear, used after CW471457, CW663020, CW951838 and CW1333294	1	3CW7	4.82	1	3CW7	4.82
CW8	Connecting rod bushing	2	UF8	.15	4	UF8	.15
CW9	Wico Magneto	1	8CW9	26.00	1	9CW9	26.00
CW9A	American Bosch Magneto	1	2CW9	32.00	1	3CW9	38.50
CW9B	Fairbanks-Morse Magneto	1	10CW9	26.00	1	10CW9	26.00
CW10	Carburetor, Holley, for CW47 and CW66	1	8CW10	10.50	1	10CW10	10.50
CW10A	Carburetor, Holley, for CW95 and CW133	1	10CW10	10.50	1	10CW10	10.50
CW11	Manifold, used previous to CW471458, CW663021, CW951839 and CW1333295	1	2CW11	5.00	1	3CW11	10.00
CW11A	Manifold, used after CW471457, CW663020, CW951838, CW1333294	1	5CW11	5.60	1	6CW11	11.40
CW14	Manifold Gasket	1	1C14	.05	2	1C14	.05
CW15	Gear cover, used previous to CW471458, CW663021, CW951839 and CW1333295	1	1CW15	9.55	1	1CW15	9.55
CW15A	Gear cover, used after CW471457, CW663020, CW951838, and CW1333294	1	4CW15	8.82	1	4CW15	8.82
CW16	Gear cover plate assembled with CW163 studs	1	T15092	2.95	1	T15092	2.95
CW17	Flywheel Housing	1	1CW17	27.00	1	1CW17	27.00
CW18	Inlet Valve	2	1CW18	.50	4	1CW18	.50
CW19	Exhaust Valve	2	1CW19	1.00	4	1CW19	1.00



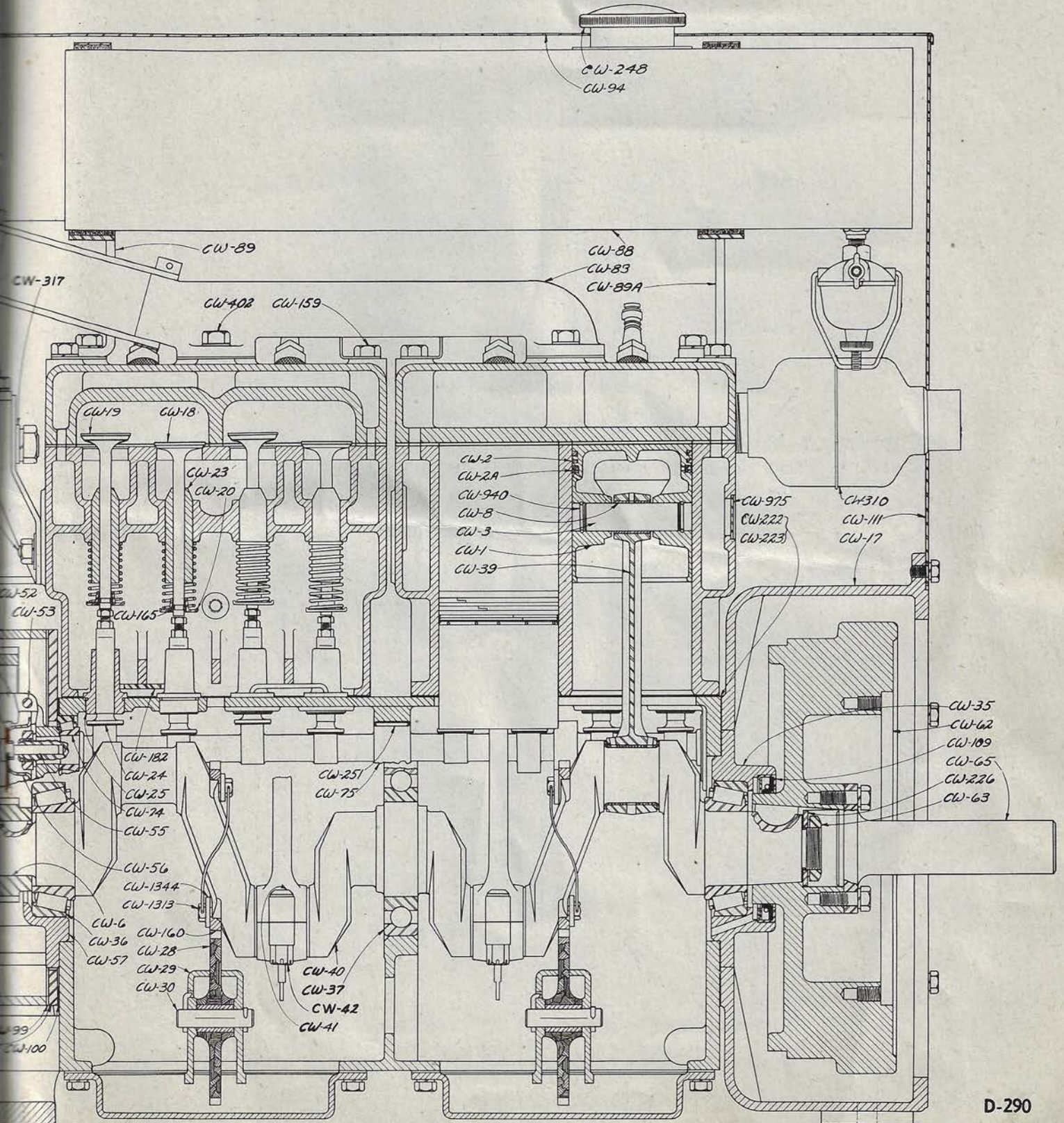
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Always Give Model and Serial Number of Engine and Outfit When Ordering Repairs



133 ENGINE

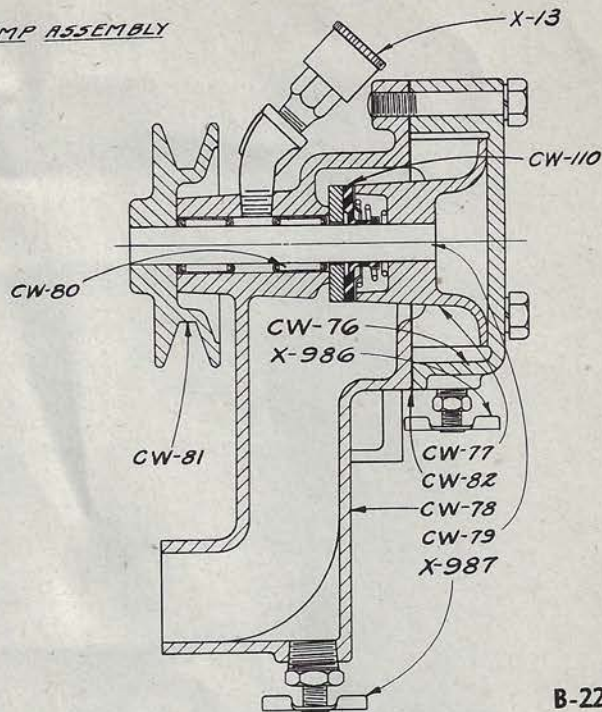
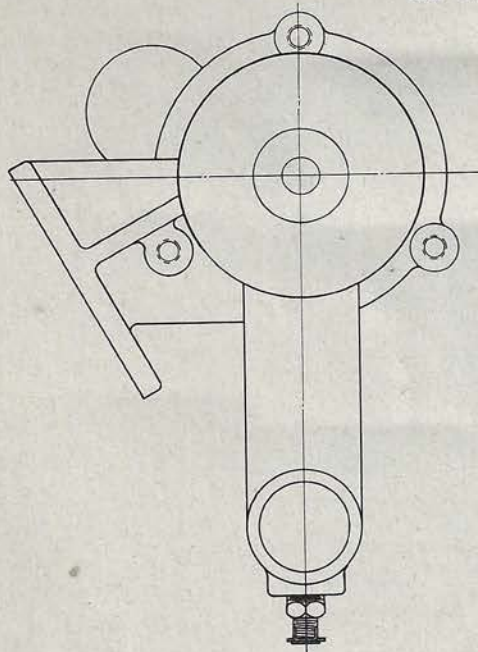


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Always Give Model and Serial Number of Engine and Outfit When Ordering Repairs



CW WATER PUMP ASSEMBLY



B-2255

Prices Subject To 10% Increase

PART NO.	NAME OF PART	2 Cylinder			4 Cylinder		
		NO. USED	SYMBOL	PRICE	NO. USED	SYMBOL	PRICE
CW99	Gear cover gasket	1	1CW99	.10	1	1CW99	.10
CW100	Gear cover plate gasket, obsolete, used previous to CW471049, CW661473, CW951277, and CW133669	1	1CW100	.10	1	1CW100	.10
CW100A	Gear cover plate gasket, used after CW471048, CW661472, CW951276, and CW133668	1	2CW100	.10	1	2CW100	.10
CW100B	Gear cover plate shim	1	3CW100	.10	1	3CW100	.10
CW101	Magneto flange gasket	1	1CW101	.05	1	1CW101	.05
CW102	Fan assembly	1	1CW102	6.70	1	2CW102	7.00
CW103	Fan belt, standard	1	1CW103	.95	1	1CW103	.95
CW103A	Fan belt, for fan and water pump only	1	2CW103	1.05	1	2CW103	1.05
CW103B	Belt for water pump only	1	3CW103	.85	1	3CW103	.85
CW103C	Fan belt for fan and generator	1	4CW103	2.15	1	4CW103	2.15
CW103D	Fan belt for fan, pump, and generator	1	5CW103	2.15	1	5CW103	2.15
CW107	Cable support	1	1CW107	.25	2	1CW107	.25
CW108	Oil seal for gear cover	1	2C108	1.55	1	2C108	1.55
CW109	Rear oil seal	1	1CW109	1.50	1	1CW109	1.50
CW110	Water pump seal	1	1CW110	.75	1	1CW110	.75
CW111	Housing rear sheet	1	1CW111	3.65	1	1CW111	3.65
CW113	Cylinder stud, short	3	2C113	.10	6	2C113	.10
CW113A	Cylinder stud, long	2	3C113	.10	4	3C113	.10
CW114	Breather Tube, Used Previous To CW471458, CW663021, CW951839 and CW1333295	1	3CW114	3.70	1	3CW114	3.70

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Prices Subject To 10% Increase

PART NO.	NAME OF PART	2 Cylinder			4 Cylinder		
		NO. USED	SYMBOL	PRICE	NO. USED	SYMBOL	PRICE
CW114A	Breather Tube, Used After CW471457, CW663020, CW951838 and CW1333294	1	5CW114	2.20	1	5CW114	2.20
*CW115	Air cleaner bracket	1	2CW115	.75	1	1CW115	.75
*CW116	Air cleaner tube	1	1CW116	.40	1	1CW116	.40
CW117	Governor Weight Bracket only used Previous to CW471458, CW663021, CW951839 and CW1333295	1	1C117	.05	1	1C117	.05
CW137	Fan drive sheave	1	1CW137	3.80	1	1CW137	3.80
*CW139	Air cleaner elbow	1	1CW139	2.20	1	1CW139	2.20
*CW140	Generator drive sheave	1	1CW140	3.00	1	1CW140	3.00
CW153	Manifold stud	2	1CW153	.10	4	1CW153	.10
CW158	Standard fuel line 3/16" (obsolete) specify size	1	1CW158	.30	1	4CW158	.50
CW158A	Fuel line for fuel pump	1	2CW158	.50	1	3CW158	.60
CW158B	Standard fuel line 5/16" specify size	1	8CW158	.50	1	9CW158	.80
CW159	Fuel tank bracket and cylinder head capscrews	6	1C159	.15	8	1C159	.15
CW160	Oil gear on crankshaft	1	1C160	1.50	2	1C160	1.50
CW161	Housing door handle	2	1CW161	.10	2	1CW161	.10
CW163	Stud for gear cover plate	2	1CW163	.15	2	1CW163	.15
CW165	Valve stem keepers	4	2CW165	.09	8	2CW165	.09
CW166	Magneto nut for Wico model "A" Magneto	1	2C166	.55	1	2C166	.55
CW166A	Magneto nut for Wico model "C" Magneto	1	2CW166	.55	1	2CW166	.55
CW166B	Magneto nut for American Bosch Magneto, obsolete	1	1A166	.25	1	1A166	.25
CW166C	Magneto nut for American Bosch Magneto	1	2A166	1.20	1	2A166	1.20
CW166D	Magneto nut for Fairbanks Morse Magneto	1	4CW166	.85	1	4CW166	.85
*CW178	Spark plug wrench with handle	1	1C178	.55	1	1C178	.55
CW180	Upper fuel tank strap	2	1CW180	.65	2	1CW180	.65
CW182	Valve tappet guide clamp	2	1CA182	.15	4	1CA182	.15
CW186	Cover for starter opening	1	1CW186	.45	1	1CW186	.45
*CW194	Distributor shaft gear	1	1CW194	2.40	1	1CW194	2.40
*CW215	Distributor adapter	1	1CW215	3.45	1	2CW215	4.00
*CW216	Fuel pump plunger	1	1CW216	1.50	1	1CW216	1.50
*CW218	Generator bracket	1	1CW218	2.95	1	1CW218	2.95
CW219	Oil Gauge assembly	1	1CW219	.50	1	2CW219	.50
CW220	Fuel pump opening cover	1	1CW220	.30	1	1CW220	.30
CW221	Fuel pump opening gasket	1	1CW221	.05	1	1CW221	.05
CW222	Main bearing shim, thin	3	1CW222	.05	3	1CW222	.05
CW222A	Main bearing shim, rear	1	2CW222	.05	1	2CW222	.05
CW223	Main bearing shim, thick	1	1CW223	.05	1	1CW223	.05
CW224	Radiator support	1	1CW224	12.00	1	1CW224	12.00
*CW225	Rear engine support for engines less flywheel housing, obsolete	1	1CW225	2.95	1	1CW225	2.95
*CW225A	Rear engine support for engines with starter less flywheel housing	1	2CW225	5.00	1	2CW225	5.00
*CW225B	Rear engine support for engines less flywheel housing	1	3CA225	5.40	1	3CA225	5.40
CW226	Crankshaft washer	1	1CW226	.20	1	1CW226	.20
CW231	Front engine support stud	2	1CW231	.35	2	1CW231	.35
*CW232	Rear end plate used with standard rear support foot, obsolete	1	1CW232	.85	1	1CW232	.85

Always Give Model and Serial Number of Engine and Outfit When Ordering Repairs



Prices Subject To 10% Increase

PART NO.	NAME OF PART	2 Cylinder			4 Cylinder		
		NO. USED	SYMBOL	PRICE	NO. USED	SYMBOL	PRICE
CW236	Valve tappet box cover stud	1	1CW236	.10	2	1CW236	.10
CW237	Radiator gasket	1	1CW237	.30	1	1CW237	.30
CW238	Hood spring clip	4	1CW238	.15	4	1CW238	.15
CW240	Governor adjusting nut, obsolete	1	1CW240	.30	1	1CW240	.30
CW240A	Governor spring follower for variable speed control, obsolete	1	2CW240	.90	1	2CW240	.90
CW240B	Governor spring follower, used previous to CW471458, CW663021, CW951839 and CW1333295	1	3CW240	.10	1	3CW240	.10
CW240C	Governor spring adjusting screw, used after CW471457, CW663020, CW951838 and CW1333294	1	4CW240	.20	1	4CW240	.20
CW243	Speed control bracket, used previous to CW471458, CW663021, CW951839 and CW1333295	1	3CW243	.10	1	3CW243	.10
CW243A	Governor spring anchor, used after CW471457, CW663020, CW951838 and CW1333294	1	6CW243	.15	1	6CW243	.15
CW244	Governor spring housing assembly, (obsolete)	1	1CW244	1.00	1	1CW244	1.00
CW244A	Governor spring housing assembly, (variable speed control) obsolete	1	2CW244	3.00	1	2CW244	3.00
*CW247	Name plate	1	1CW247	.25	1	1CW247	.25
CW248	Fuel tank and radiator cap	2	1CW248	.75	2	1CW248	.75
*CW249	Instrument panel for electric equipment (Auto-Lite)	1	1CW249	1.20	1	1CW249	1.20
*CW249A	Bracket for Bosch Switch	1	2CW249	.75	1	2CW249	.75
*CW249B	Instrument panel for electric equipment (Rochester)	1	6CW249	1.20	1	6CW249	1.20
*CW250	Exhaust manifold plug	1	1CW250	.50	1	1CW250	.50
CW251	Camshaft center bearing	1	1CW251	.75	1	1CW251	.75
CW252	Governor spring locknut	1	1CW252	.30	1	1CW252	.30
*CW253	Wire, ignition switch to ammeter	1	1CW253	.35	1	1CW253	.35
*CW253A	Wire, starter switch to ammeter	1	2CW253	.35	1	2CW253	.35
*CW253B	Wire, ignition switch to coil, coil to distributor, ammeter to generator and ground	4	3CW253	.25	4	3CW253	.25
*CW254	Distributor shaft	1	1CW254	1.15	1	1CW254	1.15
CW255	Throttle lever spacer, obsolete	1	1CW255	.50	1	1CW255	.50
CW256	Magneto cable, short	1	2CW256	.50	1	2CW256	.50
*CW256A	Magneto cable, long	1	3CW256	.60	4	4CW256	.70
CW256B	Magneto cable for Bosch or Fairbanks-Morse Magneto	1	6CW256	.70	4	6CW256	.70
*CW257	Distributor cable, short, also used with Bosch two cylinder Magneto	1	1CW257	.50	2	3CW257	.60
*CW257A	Distributor cable, long, also used on Bosch and Fairbanks-Morse Magneto	1	2CW257	.60	2	4CW257	.70
*CW258	Coil cable	1	1CW258	.50	1	2CW258	.70
*CW259	Carburetor overflow	1	1CW259	.45	1	1CW259	.45
CW260	Governor control wire nut for outside control, used previous to CW471458, CW663021, CW951839 and CW1333295	1	1CW260	.45	1	1CW260	.45
CW261	Governor control assembly for outside control, used previous to CW471458, CW663021, CW951839 and CW1333295	1	2CW261	1.60	1	3CW261	1.60

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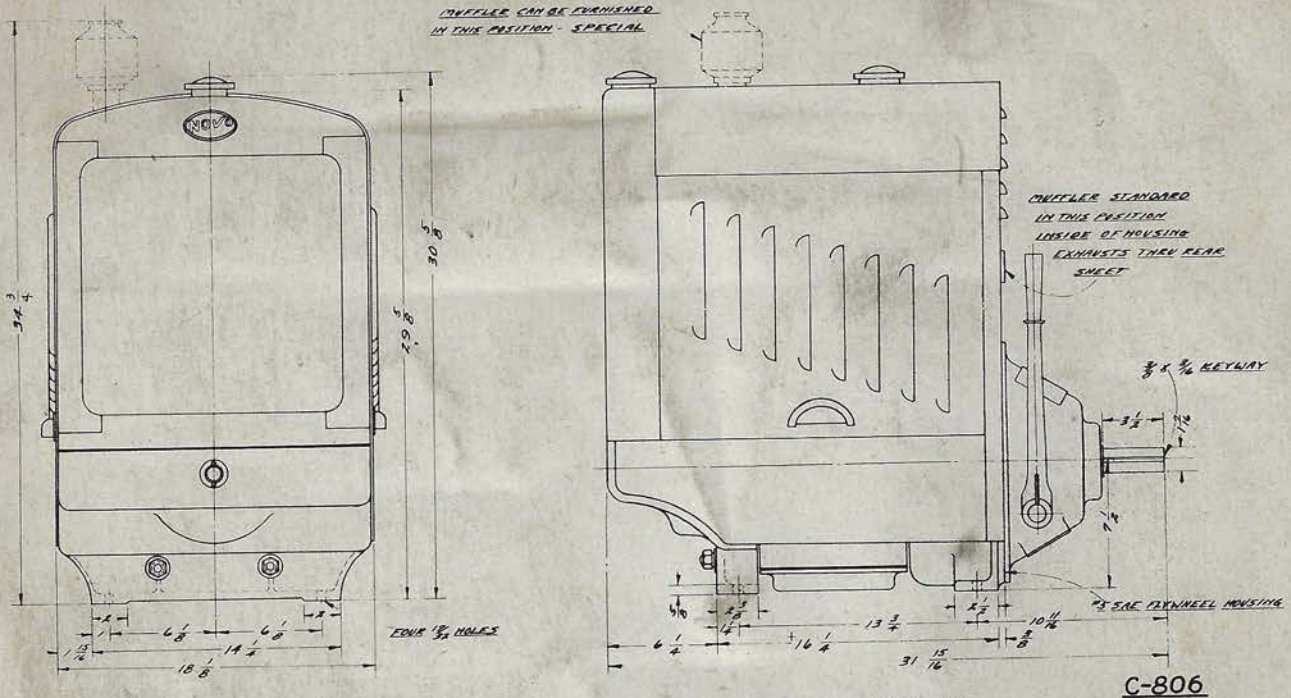
Prices Subject To 10% Increase

PART NO.	NAME OF PART	2 Cylinder			4 Cylinder		
		NO. USED	SYMBOL	PRICE	NO. USED	SYMBOL	PRICE
CW262	Governor control cable clip for outside control	1	1CW262	.30	1	1CW262	.30
CW263	Governor control cable bracket for outside control, used previous to CW471458, CW663021, CW951839 and CW1333295	1	1CW263	.65	1	1CW263	.65
CW263A	Governor control cable bracket for outside control, used after CW471457, CW663020, CW951838 and CW1333294	1	2CW263	.45	1	2CW263	.45
CW264	Starter motor cable	1	2CW264	.90	1	3CW264	1.20
CW277	Breather and oil filler cap, used previous to CW471458, CW663021, CW951839 and CW1333295	1	2CW277	.85	1	2CW277	.85
CW277A	Breather and oil filler cap, Used after CW471457, CW663020, CW951838 and CW1333294	1	6CW277	2.80	1	6CW277	2.80
CW280	Governor control assembly for outside control, used on two cylinder engines after CW471457, and CW663020	1	1CW280	1.64	..	.....	.....
CW280A	Governor control assembly for outside control, used on four cylinder engines after CW951838 and CW1333294 .....	..	.....	.....	1	2CW280	1.64
CW281	Floating lever assembly for variable speed control, used after CW471457, CW663020, CW951838 and CW1333294	1	1CW281	.50	1	1CW281	.50
CW298	Cylinder head capscrew washer	8	1CW298	.05	8	1CW298	.05
*CA305	Counterweight	2	1CA305	.60	..	.....	.....
*CA306	Counterweight capscrew	2	1CA306	.18	..	.....	.....
CW310	Muffler	1	1CW310	1.89	1	1CW310	1.89
*CW311	Distributor cover	1	1CW311	1.25	..	.....	.....
*CW317	Fan washer	1	1CW317	.05	1	1CW317	.05
CW402	Cylinder head capscrew, four additional used with fuel pump.....	3	HHU402	.15	10	HHU402	.15
CW414	Fan bracket	1	NNU414	.20	1	NNU414	.20
CW415	Fan adjusting screw	1	NNU415	.30	1	NNU415	.30
*F433	Generator bracket stud	4	RF433	.10	4	RF433	.10
U541	Governor housing stud, used only previous to CW471458, CW663021, CW951839 and CW1333295	1	UF541	.10	1	UF541	.10
CW554	Starting crank pin	1	LF554	.05	1	LF554	.05
CW578	Carburetor and water flange gasket..	2	RRU578	.05	3	RRU578	.05
*U665	Choke wire	1	RU665A	.10	1	FFU665A	.20
F715	Throttle rod pin, used after CW471457, CW663020, CW951838 and CW1333294	1	RF715	.30	1	RF715	.30
*F717	Foot and engine support stud.....	4	EF717	.25	4	EF717	.25
*F724	Rear foot stud	2	EF724	.25	2	EF724	.25
CW787	Valve adjusting screw nut	4	UF787	.05	8	UF787	.05
CW788	Valve adjusting screw	4	UF788	.05	8	UF788	.05
CW886	Rubber Ferrule	2	RF886	.05	4	RF886	.05
CW937	Stud, water inlet	2	FFU937	.08	4	FFU937	.08
CW940	Piston pin snap ring	4	UF940	.05	8	UF940	.05

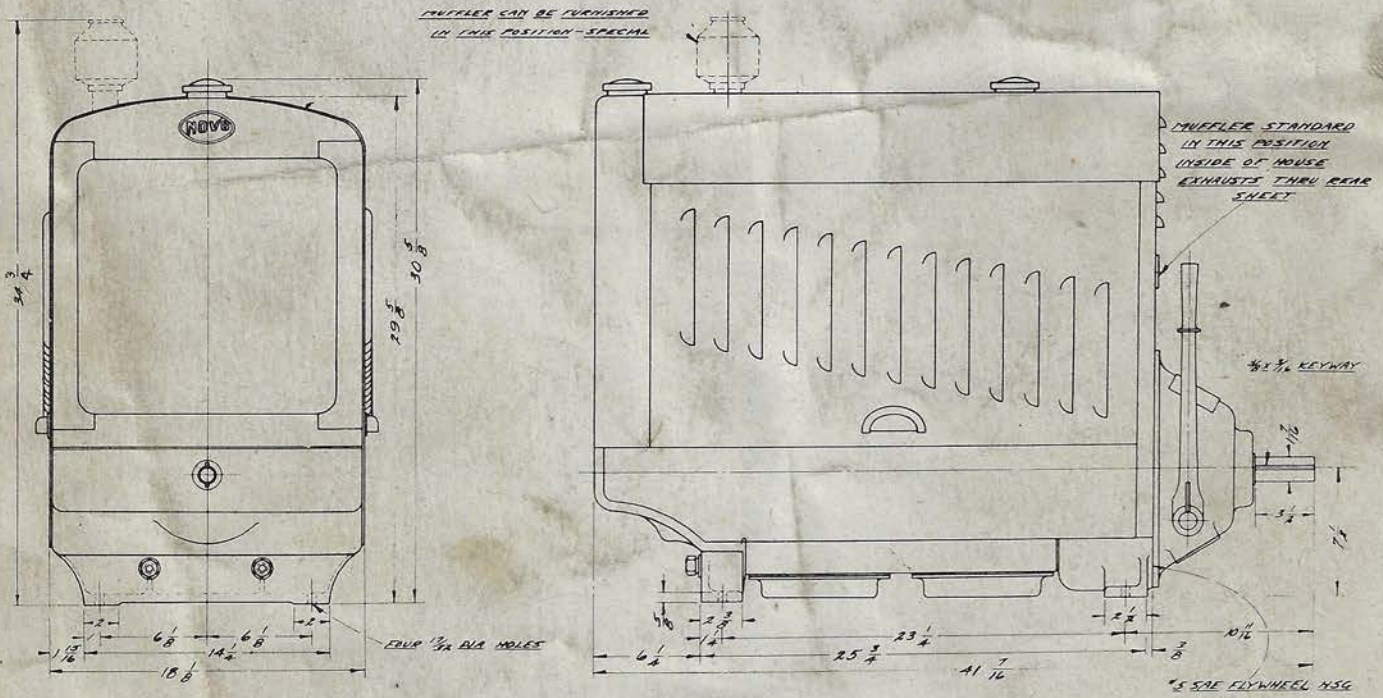
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DIMENSIONS

Single and Two Cylinder Models CW-47, CW-66



Four Cylinder Models CW-95, CW-133



SPECIFICATIONS

Model	CW-47	CW-66	CW-95	CW-133
Bore and Stroke	2 3/4 x 4	3 1/4 x 4	2 3/4 x 4	3 1/4 x 4
Number of Cylinders	2	2	4	4
R.P.M. Range (Recommend not over 1200 R.P.M.)		1200 to 1800		
Horsepower	5-7	8-11	10-15	16-22
Piston Displacement, cu. in.	47	66	95	133
Firing Order			1-3-4-2	1-3-4-2
Spark Plug Size	18M	18M	18M	18M
Lubrication		Positive Novo	Gear Oil	
Cooling System Capacity	10 qt.	10 qt.	14 qt.	14 qt.
Oiling System Capacity	3 qt.	3 qt.	6 qt.	6 qt.
Gasoline Tank Capacity	4 gal.	4 gal.	6 3/4 gal.	6 3/4 gal.

PARTS LIST
NO. CW-11-44