



FIG. 1

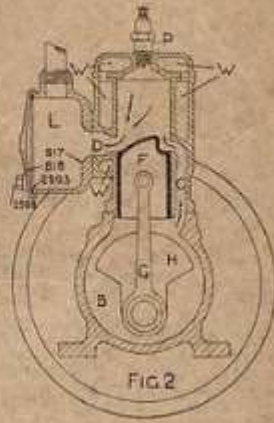


FIG. 2

System of Working.

The **Engine** contains only three working parts, viz.: the piston "F," the connecting rod "G," and the crankshaft "H."

The **Action of the Engine** is as follows:—When the flywheel is turned, the piston "F," on its upward stroke, creates a vacuum in the crank case "B." When it approaches the position shown in Fig. 1, the lower edge of the piston uncovers the suction port "A." To this port is attached the carburettor, and the charge of air and petrol vapour is drawn thence and into the crank case "B."

The rotation being continued, the mixture is compressed in the crank case, the downward motion of the piston closing the suction port "A," thus sealing the crank case.

When the piston approaches the bottom position, as shown in Fig. 2, the top edge uncovers first the exhaust port "D," and then the transfer port "C." The bulk of the burnt gases from the previous explosion is immediately released through the exhaust port, the fresh charge already compressed in the crank case is forced through the transfer port, and being deflected up the cylinder by the specially shaped top of the piston, sweeps the remaining burnt gases out and fills the cylinder with fresh gas for the next explosion.

On the upward stroke of the piston the charge contained in the cylinder will be compressed, and when the piston reaches the position shown in Fig. 1 the mixture will be ignited by the spark which occurs at this moment at the points of the sparking plug "P." The resulting explosion drives the piston downwards and the cycle of operation continues.

Both the cylinder and the cylinder head are water cooled, the water spaces being indicated by "W."

To the cylinder is attached the large expansion chamber "L," in which the exhaust gases expand quickly, thus relieving the back pressure in the cylinder. The exhaust pipe is attached to this chamber.

The **Carburettor** consists of the body (1224) which is bolted to the suction port of the engine. In the body slides the throttle (1225) which is slotted to clear the jet (3812). The top of the jet comes nearly to the centre of the choke—this may be seen if the air cap (3471) be removed. The throttle is moved by the action of the governor transmitted through the rocking shaft (3407) and is controlled by the throttle spring (3473).

The **Action of the Carburettor** is as follows:—Air is drawn by the suction of the engine through the holes in the air cap, through the choke, past the jet, drawing the petrol therefrom in

a fine spray. This is a rich mixture and is diluted to correct strength by extra air drawn past the outside of the choke. The quantity of extra air is regulated by screwing the air sleeve (3470) in or out—outwards increases the space between it and the coned end of the throttle and admits extra air. Hold the air cap stationary whilst doing this.

NOTE: In the N3 marine engine, air sleeve and cap are one piece, there being no governor.

It will be seen that as the governor closes the throttle, due to a rise in speed or decrease of load, and there is less suction on the petrol, the extra air is automatically restricted. This keeps a correct mixture at all times whatever the load on the engine may be and ensures accurate governing under all conditions.

Once correctly set for the brand of petrol used, the air sleeve need never be touched, unless there is a great variation of temperature.

The float chamber contains the needle valve and float which maintain the petrol at the correct level. A spring on the float engages in a groove in the needle.

Under the float chamber is the filter for trapping dirt and water.

Installing.

A concrete bed should be used. Foundation bolts are provided for setting in the bed. When finally bolting the engine down, grout the bed in with cement.

The top water pipe must throughout its length slope definitely upwards from engine to water tank.

The petrol tank should be so fixed that the bottom is 5 to 12 inches above the carburettor.

The petrol pipe must be so arranged that there is a constant flow down to the carburettor. A pipe with intermediate rises in it is a sure cause of air locks. A coil (with vertical axis) in the petrol pipe makes it flexible and is an advantage.

The exhaust pipe should be as short and straight as possible, if over 10 feet long or more than 2 bends are necessary, it should be increased to 1½-in. gas pipe. Easy bends must always be used. Never use elbows in an exhaust pipe.

Water is a product of combustion, so the exhaust should be below the level of the engine to ensure drainage. When this is inconvenient a drain should be provided in the lowest part of the exhaust pipe. The silencer on the end of the pipe should be horizontal or inclined downwards.

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When a cast-iron pot silencer is used, it should be placed so that the drain plug can be removed to let the condensed water escape. Where possible, a permanent drain pipe should be fitted.

Marine Installations.—The exhaust outlet should not be below the water line. To prevent water entering the engine the pipe must be carried up in a swan neck well above the engine. The circulating water should enter the swan neck 3-ins. from top on the outlet side. From this point the exhaust pipe must slope downwards to the outlet.

The greatest care must be taken that there is no chance of water entering the engine. In some cases a by-pass pipe from the exhaust to the side of the boat is of assistance.

Instructions for Starting.

Turn on the petrol and flood the carburettor. Wrap starting strap round pulley on dynamo or engine, engaging the hole in strap on the pin. The engine rotates clockwise looking at flywheel. Give a strong pull on the strap.

If there is a starting handle, give a few turns; then give one or two really sharp turns, repeating two or three times if necessary.

If the engine does not start, flood once more only and try again.

If a start is not obtained, do not flood any further, but remove sparking plug, laying it on top of the cylinder head holding it by the insulated cable in such a position that the terminal is not touching the cylinder head. Then turn the engine and observe whether the plug sparks correctly. Check the spark gap. It must not be wider than the gauge on the magneto spanner. After further trial, clean it with petrol or replace it with a new plug.

If the plug is not found to be faulty, it is possible that the mixture is over-rich. Leave the plug out, turn off petrol and give a good number of turns with the starting handle; replace plug and try again. Do not use great force in tightening the plug—use the spanner gently.

If no spark can be obtained, see that H.T. lead is correctly in place in the magneto and check the opening of the magneto points by means of the gauge attached to the magneto spanner.

Consult magneto booklet for causes of failure in magneto.

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Other Causes of Failure:—

Choked jet. Remove carburettor filter and clean, take out jet, remove screw in base and shake out dirt. Suck air through jet. See that float chamber and passage to base of jet are clean.

Persistent flooding. Dirt under the needle or float spring shifted from groove in needle.

Remove crank case drain plug (2988) and drain the crank case. If petrol is present, it is due to excessive flooding. Turn off petrol, take out sparking plug again, and turn engine for a minute or so to remove liquid petrol, replace both plugs and make a fresh start. See that float spring is in groove in needle.

Water on sparking plug points caused by condensation. Dry the plug. Persistent water may be caused by a leaky or blown cylinder head joint.

Magneto timing shifted. See page 9.

Unsuitable fuel. Drain crankcase and carburettor (by removing the jet). Test with petrol from your car or other independent source.

Note.—In the majority of cases, failure to start is due to excessive flooding.

If the engine will not start after one, or at the most, two floodings, there is some other reason for it, probably faulty ignition, and any further flooding will result only in the crank case receiving liquid petrol, causing a mixture so rich as to prevent firing.

Two sharp turns are worth a hundred at medium speed only.

Owing to the density of ordinary petrol, difficulty is sometimes experienced in starting up small petrol engines in cold weather.

A good plan is to remove the sparking plug, dip it in petrol and set it alight for a few seconds. Then replace it while hot, when it will usually be found that the engine will start readily.

Running.

Speed is regulated by the governor automatically, and the mixture will be maintained at the correct strength, whatever the position of the throttle, by the cone and air sleeve which are accurately proportioned for this purpose. These are very carefully set during the tests which every engine has to pass before despatch, and the air sleeve should on no account be altered until the engine has been tried.

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Owing, however, to variations in the quality of petrol, some slight adjustment may be necessary to obtain the best results, but this must not be attempted until the engine has run a few minutes to allow the petrol to find its own level, this having been raised by the preliminary flooding. Four stroking, *i.e.* firing at every alternate revolution only, may occur during the first few minutes, due to a temporary excess of petrol. Should it continue when the engine is under load, the mixture is too rich, and should be weakened by screwing the air sleeve outwards. Remember to hold the air cap stationary whilst the sleeve is being adjusted.

In N3 Marine Engines, air cap and sleeve are combined in one piece.

Four stroking will also be caused by an excess of oil being used, and this will be shown at once by a large amount of blue smoke being emitted from the exhaust, the remedy being obvious.

Four stroking may be caused if the exhaust or transfer port is partially choked. The engine will also show loss of power.

If the mixture is too weak it will cause back-firing in the carburettor, in which case the air sleeve must be screwed inwards until the engine runs steadily.

If back-firing is persistent, even with the air sleeve screwed well in, it is probable that the jet is choked, or that the petrol supply is restricted. In this case remove the filter chamber and clean the filter, and, if necessary, the jet and float chamber.

The smallest amount of water in the petrol will cause this trouble.

When the engine has no load at all, the running may not be quite even.

Notice that the **Throttle** slides freely; test it by pushing the throttle in, when the spring should return it.

It sometimes happens that moisture accumulates in the cylinder, this being open to the atmosphere if the piston is left at the bottom of its stroke, since in this position the exhaust port is open. The damp will almost invariably find its way on to the plug points, thus preventing the spark from occurring. It is always advisable to examine the plug if the engine has stood idle for any length of time.

If the engine loses power it indicates:—

- 1.—Choked exhaust.—Remove expansion chamber cover (818) and scrape carbon from cylinder exhaust port.
- 2.—Choked exhaust pipe.—Test by removing plug (2988) in expansion chamber whilst the engine is working. If output goes up it shows at once that the exhaust system is choked.

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A good method of cleaning is to heat the pipe in a forge and burn away the deposit. See that any bends in the pipe are clear.

- 3.—Choked transfer port or carbon deposit in cylinder.—See "Cleaning."
- 4.—Poor compression, due to stuck or worn piston rings.

Stopping.

Stop the engine by turning off the petrol in preference to cutting out the magneto.

Don't stop by pulling off H.T. lead. This may damage the magneto.

After a short experience of operating a lighting or pumping plant, it is easy to judge how long the engine should run and to measure into the petrol tank approximately the correct quantity of "petrol." If this is done there is no need to be at hand when the engine should be stopped.

Lubrication.

We use and recommend **Yacuum Mobiloil "A."** Mix 1/3-pint in a two-gallon can of petrol, shaking up well before filling tank. Use a funnel with a petrol filter.

Other good oils are Double Shell, Price's Motorine M. and Duckham's Adcol N.P.2.

This quantity of oil is correct for normal load. On very light loads for long periods up to 1/2-pint of oil may be necessary, since the quantity of petrol (and therefore of oil) per revolution drawn into the engine is less than on full load.

The governor casing should be replenished according to the amount the engine is run. Test with the dipstick.

Note. Oil must not be poured into petrol tank, but into the can and well shaken up before use.

Occasionally a drop of oil should be put on the governor rocking shaft.

Water Tank.

The water in the cooling tank must be kept at least one inch above the top water pipe, and in frosty weather it must be drained from the water jacket of the engine by means of the 3-way cock. This should always be done during the winter months unless the engine-room is heated. Use soft water.

Alternatively the tank may be filled with a mixture of glycerine and water (proportion 1 : 3). This mixture will not freeze and we can recommend it.

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Cleaning.

After draining out the water, remove the cylinder head also the expansion chamber cover. Then carefully remove all carbon deposit on the cylinder head, cylinder, the piston top, and the exhaust port. Clean out the expansion chamber and clean the silencer.

To dismantle the engine, remove cylinder head, governor case and crankcase door, unscrew crank pin bolt, remove washer and extract rollers (13). This is easily accomplished with a bent wire.

Now place crank pin just below half-stroke position, at right hand side of crankcase and with screwdriver in slot on top of piston, turn clockwise one half revolution. The big end of connecting rod will then come right off crank pin and pass to the left hand side of crankcase. The piston and connecting rod can then be lifted out of the cylinder, first removing carbon deposit from cylinder walls.

See that the rings are free in their grooves. If necessary remove them and scrape clean.

Poor compression indicates that the piston rings have become stuck in their grooves or are worn. If the gap between ends exceeds 1/32-in when the ring is placed in the cylinder, a new ring should be fitted.

Test the gudgeon pin for slackness, a new small end bush and possibly a new pin may be required.

The gudgeon pin is a light drive fit in the piston and may be driven out either way. It is prevented from scoring the cylinder walls by a spring ring.

Scrape carbon from top of connecting rod and out of lubrication holes.

Scrape the inside of piston free of carbon.

When decarbonising, be sure that both exhaust and transfer ports are thoroughly cleaned, the transfer port plug being removed to give access to the latter. Wash out crankcase with paraffin before re-assembling.

To assemble, reverse the procedure, but be careful that the piston is placed in the cylinder with the vertical side of the deflector towards the exhaust port; the action of turning it bringing it into its working position opposite the transfer port. When replacing cylinder head, note that there is a recess in the head to clear the deflector.

When replacing the crankcase door, see that the hole in the disc engages the crankpin bolt. Care must be taken that the moving parts of the governor assembly are clean and slide freely.

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Joints of the correct material and thickness must be used. Do not take apart the crankshaft unless absolutely necessary.

To Dismantle the Crankshaft:—

Undo flywheel nut and withdraw flywheel. Loosen it by tapping on end of shaft with a brass or copper punch smaller in diameter than the shaft so that the thread on the crankshaft is not damaged. If there is a pulley on the flywheel remove this first. Remove capnut (722) and flywheel cone collet.

Replace the flywheel nut, screwing it half on the shaft (this will prevent damage to the threads) and with a punch, gently drive the crankshaft out of the crankcase. If the roller bearing (LRJ 20) requires renewal, the outer ring may be removed by taking out the grub screw (3576) and driving the housing liner (1018) towards the crankcase. When replacing see that the recess in the liner is in position under the grub screw. Two holes through the crank web permit the roller bearing to be removed from the shaft.

Re-assembling is done in the reverse manner observing the following points:—

See that all parts are perfectly clean and oil them as they are replaced. Always use joints of correct thickness.

Old ball bearings should have all dirt removed by washing in petrol and be oiled.

The flywheel cone collet must slide easily on the crankshaft.

The flywheel nut must be tight. Drive nut home by striking the spanner with a hammer. It is most important that the flywheel should not become loose.

The N Type Circulating Pump.

On marine engines and lighting plants a diaphragm pump is provided for water circulation. It is driven at a low speed by spur gears.

The pump must be detached before removing the case containing the driving mechanism. The pump shaft is a tight fit in the crankcase door. When assembling it should be fitted to this first. The gear wheel and cam are located on this shaft by a "circlip" which is removed by springing it open and sliding off the shaft. The cam reciprocates the operating plunger. The diaphragm is between the pump body and the governor or pump case. On the other side of the diaphragm, in the pump

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body is the mushroom plunger with spring inside it. The pump contains suction and delivery ball valves under the valve chamber plug.

Maintenance of the Pump. The use of an efficient filter on the suction side of the pump is strongly advised. If the pump fails due to dirt under the valves, the pump should be removed and valve chamber and valves cleaned. If the diaphragm should puncture and fail, water will be ejected from the vent hole in the governor or pump case just behind the diaphragm. It is a matter of a few minutes only to replace a diaphragm and if a spare is not to hand, as a temporary measure, a diaphragm can be quickly contrived from a piece of rubber sheet or leather.

Always, after starting the engine, test that the pump is working by feeling the temperature of the cylinder. During the time the engine is working an occasional inspection should be made to see that all is in order.

After every 100 hours of running, the diaphragm should be examined. If showing signs of failure it should be replaced.

Re-Timing Magneto.

Remove chaincase, slack off magneto sprocket and remove magneto cover.

On the flywheel will be found a mark "T.D.C." (top dead centre) corresponding to the piston at the top of the stroke and a second mark "M" 1/4 to 1/2-ins. before "T.D.C." Place "M" on top and turn the magneto make and-break until the points are just breaking. Then tighten the sprocket nut.

On the N.3 engine the male portion of the magneto coupling provides for this adjustment.

Slack off the bolt securing the coupling and gently prize the latter away from the gear case. Replace the magneto, time it, remove the magneto and tighten the coupling.

Check the timing to make sure the coupling has not slipped. The magneto can then be permanently fixed in place.

Dynamos.

Ball bearings require attention every twelve months. Remove the caps and fill the races with soft grease.

If there is any sparking at the brushes, make sure that they are not sticking in their guides. After a considerable amount of running the brushes may need replacement. The new brushes should be bedded down on to the commutator by passing a piece of glass cloth beneath them, with the cloth side

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against the commutator. If the ends of the strip of cloth are now taken in either hand, with the cloth passing half-way around the commutator, it may be drawn backwards and forwards a few times, which will quickly hollow out the face of the brush to a good fit on the commutator. If the sparking cannot be stopped by cleaning the commutator and brushes, it is advisable to call in a *competent* electrician.

Keep the machine clean. Frequently blowing through the field coils and armature with a pair of bellows will keep them free from dust.

When new brushes are required it is best to send to us for them, as it is most important that the correct grade of brush is used.

Switchboards.

Before carrying out any work on the engine, switches must be in the "off" position. If dynamo or wiring are having attention, fuses also should be withdrawn.

Never run the plant with the dynamo switch "OFF."

In the event of failure in the electrical system, withdraw and examine fuses. If these have fused, renew with the correct size of fuse wire. Other electrical repairs should be undertaken by a competent electrical engineer.

A switchboard diagram is inside the case.

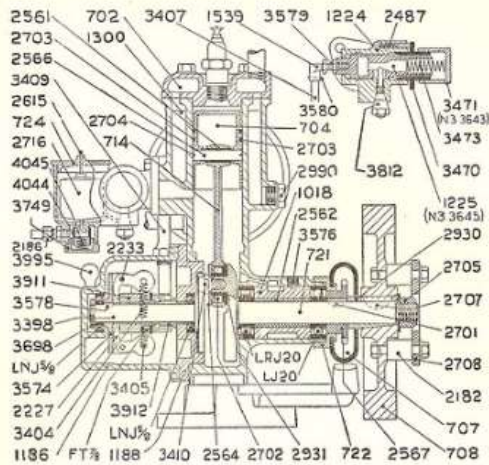
Spare Parts.

Please read carefully.

Always give engine type and number which will be found on the nameplate and crank case. This is most important to ensure that the correct parts are sent. Order by both name and number unless telegraphing, when number only may be used. Give address very clearly, also nearest station when ordering parts too large to be sent parcel post. **Cash with order unless approved ledger account has been opened. If desired we will send C.O.D.** Prices include postage in the case of the smaller parts; heavy parts sent carriage forward are marked "rail."

Type N2 are stationary engines and plants. Type N4 (Marine Lighting Plants) and N3 (Marine Engines) have circulating pumps and certain parts are modified. Consult the diagrams.

*In all correspondence quote
Engine Number.*

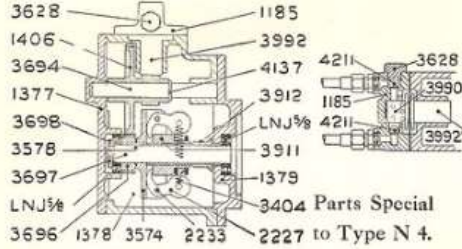


Type N 2. Engine with governor.

£ s. d.	Part No.	Description	(rail)
3 10 0	1300	Cylinder head	(rail)
8 6	702	Transfer port plug and washer	
1 0	2990	Water jacket plug and washer	
4 0	2988	Crankcase drain plug and washer	
2 0	817	Expansion chamber	
2 6	818	cover	
1 6	2988	plug and washer	
8 6	2993	C.A. washer	
1 3	704	Piston	
2 0	2703	rings (2)	
1 0	2565	Gudgeon pin	
12 6	2704	connecting rod	
1 6	714	Connecting rod complete	
1 6	2561	top bush	
5 0	2981	crankpin race	
2 6	2702	rollers only (13)	
2 6	2564	Crankpin washer	
2 0	3410	bolt	
1 10 0	721	Crankshaft	
9 3	LRJ20	roller bearing	
6 6	LJ20	ball	
2 0	2562	distance sleeve	
4 6	1018	housing liner	
4 6	3576	grab screw	

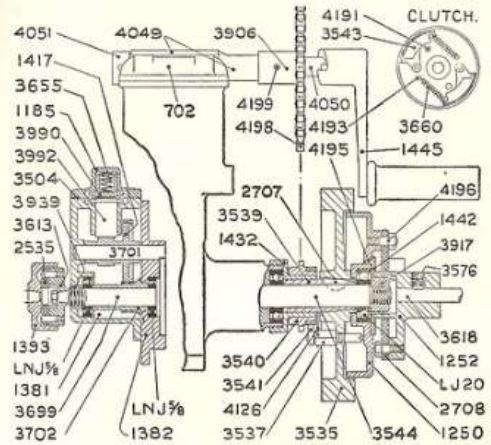
£ s. d.	Part No.	Description	(rail)
4 6	722	Bearing cap nut	
5 0	2367	Crankshaft sprocket (for mag. drive)	
3 4	2701	key	
1 0 0	708	Flywheel	
3 6	2930	cone collet	
6 6	2707	key	
4 6	2705	spring washer	
9 6	2705	nut	
6 0	989	Pulley 3-ins. dia. x 1 1/2-ins. width	
4 0	3382	special holding bolt	
8 6	1188	Crankcase door	
12 6	1184	Governor case	
1 6	3995	diaphragm	
8 6	3398	shaft	
6 6	3698	nut	
3 0	(each) LN 1 1/2	ball bearings (2)	
2 6	3911	sleeve	
2 6	FT 3/8	ball thrust	
5 0	3374	body	
6 6	3378	key	
1 6	(each) 2227	weights (2)	
6 6	(set) 2233	pins (2)	
4 6	(set) 3577	washers (4)	
1 6	(pair) 3404	springs (2)	
6 6	(pair) 3405	shafts (2)	
3 6	3912	Governor shaft distance piece	
4 0	3407	rocking shaft	
3 6	3409	bearing	
17 6	1224	Carburettor body	
2 0	724	Float chamber cover	
6 6	1225	Throttle	
6 6	3473	spring	
6 6	3579	adjusting screw and nut	
2 0	1539	control arm	
4 6	3590	pin	
2 6	3470	Air sleeve	
6 6	2187	plunger and spring	
2 6	3471	cap	
2 0	3812	Jet	
2 6	2716	Float (with spring clip)	
1 0	2615	needle	
1 0	2186	Union for petrol pipe	
2 0	3749	Filter chamber	
2 0	4045	Filter strainer	
6 6	4044	spring	
3 10 0		Magneto (clockwise rotation)	
7 6	2709	chain	
5 0	2568	sprocket	
7 6	707	chain case	
1 6	2988	oil plug and washer	
1 6	2999	H.T. wire and terminal	
15 0	961	Sub base for engine and magneto	
12 6	3580	Exhaust silencer, steel tube type	
1 6	821	pipe flange	
15 0	4200	Water tank	(rail)
1 0	4201	pipes—engine top	
1 0	4202	bottom	
1 0	4203	tank top	
1 0	4204	bottom	
1 0	(each) 4205	Rubber hose (2)	
6 6	(pair) 4206	clips	
8 0	4207	Three-way cock	
10 0	2533	Petrol tank and filler	

£ s. d.	Part No.	Description
1 6	2197	Petrol tank filler cap
7 6	4174	tap and filter
3 0	2715	Starting strap
5 0	2998	Spark plug
2 6	1308	Joints per set
Cylinder head 3d., Crankcase door 1d., Governor case 1d., Exhaust port 4d., Carburettor 1d., Filter 3d., Exhaust pipe flanges 2d. each, Governor case cover (N4 only) 1d.		
3 6	(set) 2182	Dynamo coupling studs (2)
3 0	2708	flexible disc
6 0	709	coupling
6 0	3576	set screw
6 0	2995	brushes
5 0	713	Starting pulley
15 0	909	Switchboard case
8 4	4209	outlet fuse (2)
2 0	2996	cover
3 0	1216	switch
2 6	4210	switch



(with circulating pump and governor).

£ s. d.	Part No.	Description
10 0	1379	Crankcase door
1 2 4	1378	Governor case
8 6	1377	cover
1 6	3817	dipstick
12 6	3697	shaft
3 6	3408	nut
3 4	3912	distance piece
2 6	3696	spur wheel
6	3578	key
4 6	3694	Pump shaft
6 4	1406	gear and cam
4	4137	locating circlip
2 6	3992	plunger in governor case
1 6	3504	diaphragm
1 0	3990	mushroom in pump
1 0	3635	spring
8 6	1185	body
6	4211	ball valves (2-1/2-ins. rustless)
4	3628	valve chamber plug and washer
1 0 (each)	4197	water nipples, cyl. and head (2)
2 6	4212	pipe with union nuts



Parts Special to Type N 3.

Marine Engine with circulating pump and no governor.

£ s. d.	Part No.	Description
1 0 (set)	4188	Cylinder head studs (4)
1 0	4189	cap nuts (4)
5 0	1544	Carburettor distance piece
7 6	3643	throttle (with slow running by-pass)
4 0	3643	Air cap (incorporates the sleeve)
6 0	3616	Throttle operating cam and spindle
1 6	1341	lever
1 0	4190	universal joint
1 10 0	3544	Crankshaft
8 6	1432	bearing cap nut
1 0 3	3535	Flywheel
4 6	3589	cone collet
9	3917	nut
1 5 (each)	3537	studs for shoe and pawl (2)
3	4193	pins for shoe springs (2)
3	4192	stop pin for pawl (2)
3	4191	clutch shoe (2)
3 0	3543	Clutch shoe (lined ferodo)
1 0	4194	lining and rivets
1 0 (pair)	3660	springs (2)
12 4	1250	drum
6 4	LJ20	ball bearing
2 6	1432	thrust washer
6 (set)	4195	screws (3)
1 6	4196	coupling studs (with nuts & washers) (4)

Q. N. D.	Part No.	Description
5 0	2798	Coupling flexible disc
6 0	1252	propeller shaft
1 1	3576	grub screw
8 6	1382	Crankcase door
18 6	1381	Pump case
1 6	3955	" " dipstick
For other pump parts see N4.		
1 6 (each)	4197	Water unions, cyl and head. (2)
2 0	4213	" pipe with union nuts
2 6	3701	Pump cam steel shaft
6 6	4417	gear and cam
8 6	3959	Mag. drive shaft and disc
3 0	LN J1	" " " ball bearings (2)
1 6	3989	Mag. drive shaft nut
3 6	3702	Pump pinion and oil thrower
6 0	3540	Starting gear lower sprocket
7 6	4198	" " chain
5 6	3986	" " " wheel
6	4199	" " " pin
2 0	4059	" " shaft
1 0	4051	" " collar and pin
4 0	4019	" " bracket
5 6	1443	" " handle
1 0 (each)	3541	" " pawls on flywheel
6 (each)	4126	" " springs (2)
8 0	976	Base, engine and magneto
2 0	1393	Magneto coupling (on mag.)
1 6	2535	" " leather disc.
2 0	3613	" " (on engine)
2 6	2385	" " screw and washer
2 0	4172	Joints per set
Cylinder head 9d. Crankcase door 6d. Gearcase 6d.		
Carburettor 2d. each. Exhaust port 4d. Exhaust pipe flange 2d.		
1 2 6	3618	Propeller shaft (5-ft.), per ft. extra 2/6
1 5 0	1519	Propeller (state dia. and pitch)
1 0	3814	" nut and split pin
7 6	3816	Stern tube (12-ins.), per ft. extra 3/-
7 6	1291	" " inboard bearing
1 0	3692	" " " lock nut
2 0	3691	" " " gland nut
1 0	4164	" " " packing
2 6	3927	" " " greaser
7 6	1292	" " outboard bearing
15 0	4165	Exhaust pipe 1-in. O.D. (5-ft.), per ft. extra 2/-
2 6 (each)	1495	" " union nut (2)
3 0	1293	" " skinfitting body
1 6	3554	" " washer
1 6	1291	" " locknut
3 0	1290	Water inlet skinfitting body
1 0	3821	" " washer
8 6	4166	" " seacock
6	4167	" " handle
12 6	1289	" " filter body
3 0	3553	" " gauze
2 0	4168	" " cap
1 0	2186	" " pipe union
3 0	4169	Water pipe (3-ft.), per ft. extra 9d.
4 6	4170	Petrol pipe (5-ft.), per ft. extra 9d.
2 6	4171	Magneto switch, copper
15 0	4173	Petrol Tank, Marine
2 6	3647	" " filter cap and chain
7 6	4174	" " tap and filter
1 6	1531	" " filter bowl

TOOLS.

Q. N. D.	Part No.	Description
9	2387	Spanner 1/2-in.
1 0	2381	" 1-in. x 1/2-in.
1 3	2383	" 1-in. x 3/4-in.
1 6	2285	" 1-in. x 7/8-in.
1 0	2291	Grub screw key 1-in.
2 0	823	Cylinder head remover
2 0	4175	Propeller extractor nut