

BOOK No. 68/152

PRICE 2/-

## INSTRUCTION BOOK AND SPARE PARTS LIST



TYPES D & DK

## PETROL AND PETROL- PARAFFIN ENGINES

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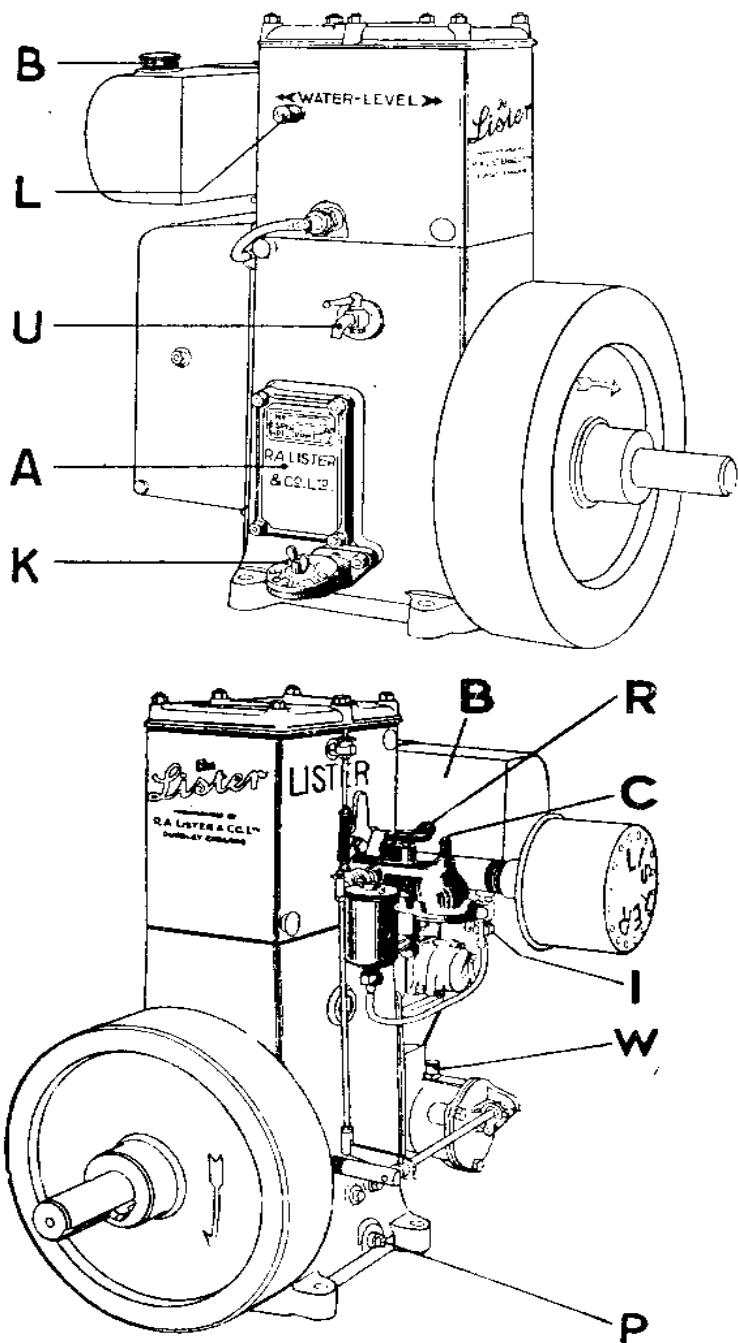
R. A. LISTER & CO. LTD.,  
DURSLEY · GLOUCESTERSHIRE  
ENGLAND

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**INSTALLATION.** Fix the engine level and accessible. Arrange cooling tank with the bottom pipe level and the top pipe a continuous upward slope. If a longer exhaust pipe is necessary use  $1\frac{1}{2}$ " bore pipe or larger and turn downward from the engine.

**COOLING.** Fill water tank, radiator or hopper. If engine is tank cooled see that three-way cock is turned so that water can flow from tank into engine cylinder jacket. Add water as necessary to maintain water level.



'Oil' under the magneto also the lubricator 'W' and pour a teaspoonful of oil into each hole. Fill lubricator 'W' with oil, fill greaser 'L' with brown grease giving it a few turns. Fill fuel tank 'B' using a fine gauze strainer and see that igniton cable is connected to sparking plug.

**TO START PETROL ENGINE.** Turn on fuel tap 'I,' pull flywheel in opposite direction to arrow until compression is felt. Turn fuel regulator 'R' to start position, then while turning the starting handle place a finger on the Air valve 'C' to give the necessary rich mixture. After the engine has started turn down the fuel regulator as far as possible without slowing the engine. Every notch reduces fuel consumption and carbon deposit.

**EXHAUST.** Should be colourless. Black smoke indicates too much fuel, blue smoke too much lubricating oil. Clean cut the exhaust pipes when decarbonising.

\* **LUBRICATION** For petrol engines use Listroil L2 in winter and L3 in summer. For petrol-paraffin engines always use Listroil L3.

Where Listroil is not available, use SAE 30 oil in Temperate Climate and SAE 40 oil in Tropical Climate.

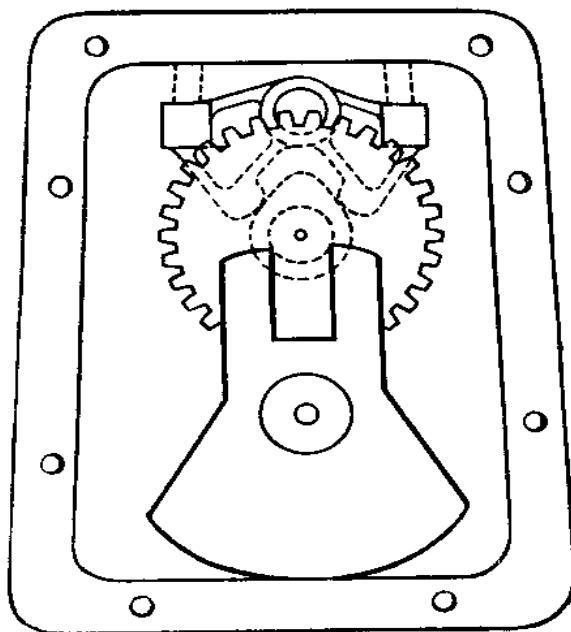
Every three months drain off lubricating oil through plug 'T.' Remove door 'A' and clean out crankcase. Do this every month if engine is running on paraffin.

Always keep the engine sump, Lubricator 'W' and Greaser 'L' filled.

**STARTING.** New or Over-hauled Engine. Remove door 'A' and filler cap 'K' pour lubricating oil \* into crankcase until the filler is full. Fill the timing gear trough through hole on the left inside crankcase. Turn Crank to front end of Splash Tray and pour oil over Big End Bearing, particularly into two holes in Connecting Rod Boss, rocking the Shaft at the same time. This will provide the initial lubrication for the Big End Bearing. Further oil as necessary should be added through filler 'K' and oil should always be visible in this filler. Remove plug marked

**TO START PETROL PARAFFIN ENGINE.** Drain the float chamber by the small tap and turn fuel tap 'I' to petrol and start as above. Allow to run for a few minutes on petrol to warm up before turning fuel tap to paraffin. If the engine misfires place finger on air valve 'C' to allow engine to pick up speed.

**TO STOP.** Turn fuel regulator down as far as it will go and turn off the fuel tap 'I.' Always drain water from cylinder jacket through tap 'U' if there is a possibility of frost.



**IGNITION AT FAULT.** Clean sparking plug points and re-set gap to .020" and test. Use sparking plugs such as Lodge BBL or equivalent. If a good spark is not seen read magneto Instruction Book.

**COMPRESSION.** Loss of compression may be due to a valve sticking open or carbon on the valve seat. Pour a little paraffin around each valve stem. Compress each valve spring in turn with a screwdriver or suitable tool and slip it off allowing the valve to close with a snap. Alternatively the loss of compression may be due to no tappet clearance, piston rings stuck in grooves, cylinder worn or cylinder head nuts slack.

**KNOCKING.** May be caused by worn bearings, carbon deposit on the piston and cylinder head, overheating, overload, pre-ignition or loose flywheel.

**DECARBONISING.** This is recommended every three months. Drain water system, remove top covers, sparking plug and radiator fan (if fitted), disconnect throttle rod and fuel pipe. Slide out rocker shaft, removing rockers, push rods and valve stem caps. Remove nuts and washers which secure the cylinder head and lift slightly, free gasket with a thin bladed knife then lift off. Remove five nuts holding main bearing housing to the crankcase. Crankshaft, flywheel and housing can be removed, while supporting the piston and connecting rod, which may then be withdrawn through the top of the cylinder.

Remove all carbon, grind in valves if pitted and replace all parts. Fit the flat side of the connecting rod next to the crank web. The cylinder gasket if damaged must be renewed. Tighten cylinder head nuts evenly and adjust tappet clearance to .031" when cold. After running engine, retighten cylinder head nuts and check tappet clearance.

**TIMING VALVES.** Turn crankshaft to T.D.C., assemble timing case with cam at the top position as illustrated, the timing case may then be bolted to the crankcase.

If the timing case has been dismantled, turn camshaft with cam at the top, turn trailing shaft with fork at the top and engage gears. Fit spiral gear to end of trailing shaft.

**TIMING IGNITION.** Turn flywheel until ignition mark on rim is at the top. Loosen magneto sprocket and turn magneto spindle in the normal direction until the contacts just commence to separate; push the sprocket back on the spindle and tighten nut.

## SPARE PARTS LIST

When ordering always give engine and specification numbers, description of part, and part number.

This list is subject to revision without notice.

1 Complete set of Joints for "D" Type Petrol Engines  
(Ordering Ref. List SP 274) comprises :—

Description	Material. Part No.	Description	Material. Part No.
1. Joint—Gov. Casing End Cover ...	... Paper D149	1. Joint—Sparkling Plug ...	... Copper 291/2265*
1. " Water Jacket Drain Tap ...	... Fibre 5197	1. " Starting Handle Bracket ...	... Paper D80
1. " Float Chamber Fixing Plug ...	... Fibre 5197	1. " Timing Case ...	... Paper D90
1. " Petrol Tank Supply Tap ...	... Fibre 5197	1. " Petrol Tank Strainer ...	... Fibre 12406
1. " Timing Case Oiling Plug ...	... Fibre 5197*	* Joints marked thus—for Decarbonising Only.	
2. " Fan Pulley Grease Plug (Rad. Co. only) Fibre	D320	Complete set of Joints for 'D' Type Paraffin Engines	
1. " Float Chamber to Carburettor ...	Fibre D198*	comprises parts as List SP 274 together with :—	
1. " Carburettor Flange ...	Cork D98	Description	
1. " Crankcase Door ...	... Fibre D98	1. Joint—Float Chamber Drain Tap ...	... Fibre 12420
1. " Water Jacket Plug ...	... Fibre 3306	1. " Vaporiser to Cylinder ...	... Asbestos 1/1066
1. " Oil Filler ...	... Fibre D247	1. " Paraffin Tank Strainer ...	... Fibre 12406
1. " Main Bearing Housing ...	... Paper D87	1. " Supply Tap ...	... Fibre 5197
1. " Cylinder Head ...	... C & A D91*	<b>OVERSIZE PARTS.</b>	
1. " Valve Rocker Cover Fibre	D88*	Pistons, Piston Rings and Cylinders (Crankcases) can be supplied : :010", .026" and .040" oversize.	

**STANDARD ROTATION.**—When viewing the Engine from Starting Handle end, Starting Handle turns clockwise and Flywheel rotates in the opposite direction.

Reverse rotation can be supplied to order, in which case the letter "R" will be added to the Engine Specification No. stamped on the number plate.

e.g. 1½ HP Hopper Cooled Engine Clockwise Rotation Spec. 27DH.

1½ HP Hopper Cooled Engine Anti-clockwise Rotation Spec. 27DHR.

**PLATE 1**

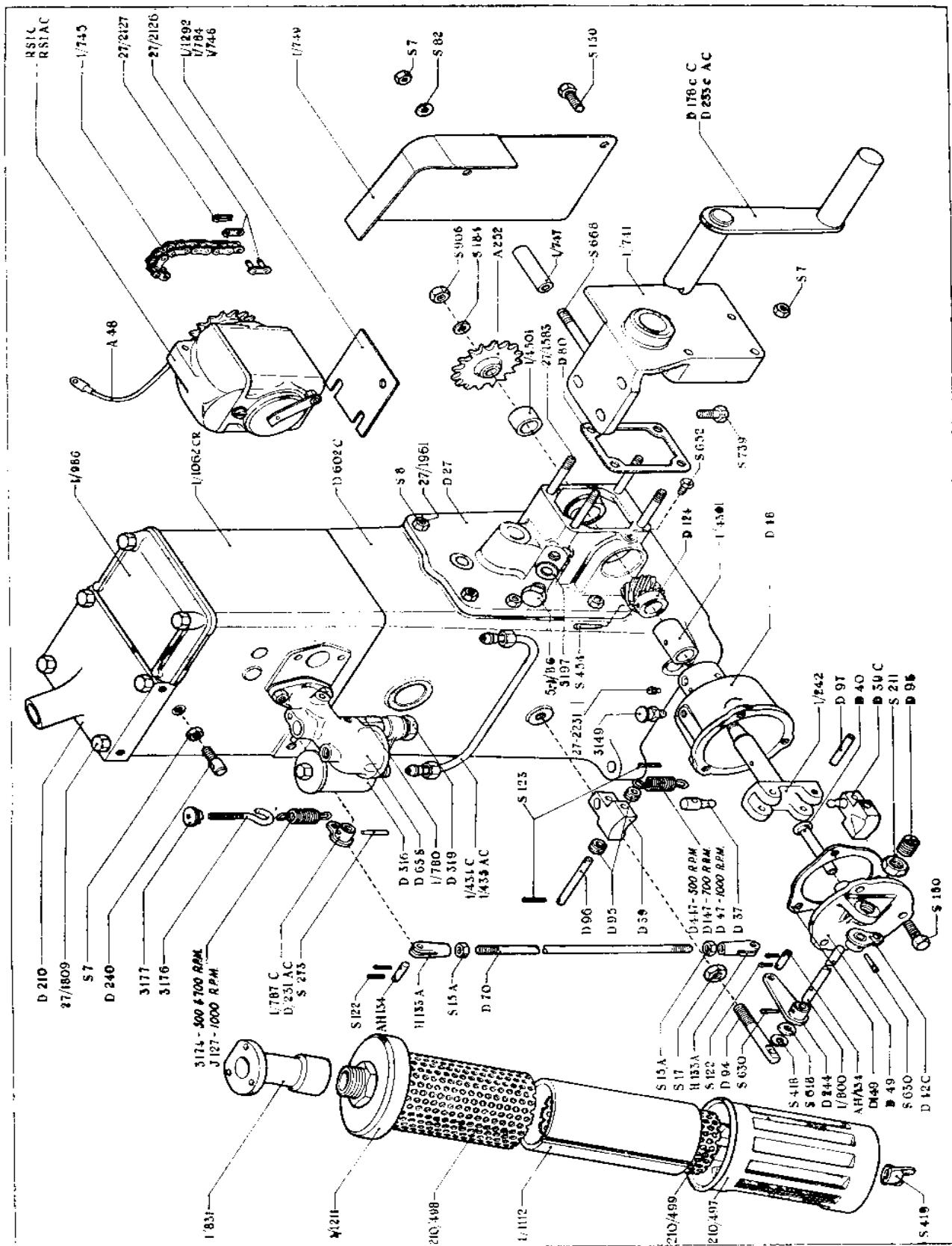


PLATE 1

FOR ILLUSTRATION OF THESE PARTS REFER TO PAGE 4

Order Part No.	No.	Order Part No.	No.	Order Part No.	No.
AIR FILTER (Felt pattern Lister) Assembly	1/830c	1	Governor Rod bare, C. or A.C.	"	1/800
Connection on Carburettor ..	1/831	1	Lever Governor End comprising Lever D42,	"	1
Felt Sleeve for Filter ..	1/1112	1	Roller 3172, Pin D107	"	D42C
GOVERNOR for 700 R.P.M.	D267/3	1	Lever Crankcase End	"	D244
Complete for 1000/1250 R.P.M.	D268/3	1	Taper Pin (Size 1)	"	S630
(Comprising the following parts):			Rod Adjustable Support on End Cover	"	2
Casing with Bush 1/4301	D48B	1	" " Lock Nut	"	D93
Bush long ..	1/4301	1	" " Support (fixed) on Crankcase	"	1
" short ..	1/4501	1	" " Lock Nut for fixed Support	"	S17
Casing Lubricator ..	3149	1	" " Spring Washer for Governor Rod	"	S418
Casing End Cover ..	D49	1	Plain	"	S618
Joint for "	D149	1	" Outside Spring for 700 R.P.M.	"	2
Set Screw "	S150	3	" " 1000 R.P.M.	"	3174
Governor Shaft ..	1/242	1	" " 1100 to 1250 R.P.M.	"	1
Spiral Gear on Governor Shaft ..	D124	1	Spring Adjusting Hook 3/16" Whit.	"	T192
Taper Pin for Spiral Gear (No. 1) ..	S454	1	" " Nut	"	3176
Governor Weights 500/1250 R.P.M.	D39c	2	Throttle Connecting Rod complete	"	1
With Operating Pins			" Fork	"	D70c
Weight Operating Pin	500 R.P.M.	..	" " Lock	"	H133A
"	700 R.P.M.	..	" " Nut	"	2
Weight Spring	1000 R.P.M.	..	1/815A	2	Fittings
" Spindle ..	D37	2	" AH134	2	on
" Spring Pin ..	D447	2	" S122	4	D70c
" Roller ..	D147	2			
" Split Pin for Roller Spring Pin ..	D47	2			
Governor Push Rod ..	D97	2			
Dowel Screw for Casing ..	D96	2			
Taper Reamer for No 1 Taper Pin ..	D95	4			
GOVERNOR FITTINGS					
Governor Rod c/w Levers.	(Clockwise Petrol)	1/840	1		
" "	(Anticlock Petrol)	1/841	1		
" "	(Clockwise Paraffin)	1/841	1		
" "	(Anticlock Paraffin)	1/840	1		

**PLATE 1 (Continued)**

**FOR ILLUSTRATION OF THESE PARTS REFER TO PAGE 4**

	Order Part No.	Order Part No.	Order Part No.	Order Part No.
Connecting Link for Chain	"	27-2126	1	
Spring Clip for Connecting Link	"	27-2127	1	
<b>Magneto Chain Guard</b>	"	1/749	1	
Distance Piece for Chain Guard	"	1/747	1	
Stud	"	S668	1	
Washer	"	S82	3	
Nut	"	S7	1	
Set Screw	"	S150	1	
Shim for Adjustment of Chain	.015"	1/746	—	
"	.018"	1/784	—	
"	.036"	1/1292	—	
<b>Magneto Cable</b> (with Brass End 3244)	"	A48/13	1	
Bracket for Magneto and Starting Handle	"	1/741	1	
Set Screw—Magneto to Bracket	"	S739	3	
<b>STARTING HANDLE</b>				
Starting Handle complete for standard (Rt. Hand) Rotation — comprising: Clutch D177, Tube D178, Spindle D179 and Crank D180	"	D178c	1	
Starting Handle complete for reversed (Left Hand) Rotation — comprising: Clutch D233, Tube D178, Spindle D179, Crank D180	"	D233c	1	
Starting Handle Bracket Paper Joint	"	D80	1	
"	" Nut	S7	4	
<b>MISCELLANEOUS</b>				
INSTRUCTION and Spare Parts Book	..	Book 68	1	
JOINTS—Complete Set	..	As List No.	SP274	—
<b>SPANNERS</b>				
Spanner 3/16" x 1 1/4"	"	"	"	S323
" 5/16" x 3/8"	"	"	"	S151
Box Spanner for Sparking Plug	"	"	"	3352
" " Cylinder Head Nuts	"	"	"	D12
<b>SPARKING PLUG</b>				
Sparkling Plug Lodge B.B.L.	"	"	"	A97
" Joint	"	"	"	291-2265
<b>WATER TANK AND FITTINGS</b>				
Water Tank 24 Gall. (temp.) 16" x 33"	"	"	"	A405
" 50 Gall. (tropical) 23" x 33"	"	"	"	3405
3-Way Cock long. Screwed one end	"	"	"	S386
3" Pipe 2" long.	"	"	"	S512
3" Nipple (Plain)	"	"	"	S373
Hose Pipe 6" long 1" Bore (Top)	"	"	"	27/2353
" " 4" long 1" Bore (Bottom)	"	"	"	27/2339
1" " Clips for 1" Bore Hose	"	"	"	H95
1" " Reducing Bush (Temperate)	"	"	"	S376
1" " " (Tropical)	"	"	"	S376
3" Spring Bend 120° Scr. one end (Bottom)	"	"	"	27/2354
3" " 150° " (Top)	"	"	"	27/2352
<b>Thermostat</b>	For D.K.	Petrol	Paraffin	8-2-181
1 1/4" Bore Hose 6" long				27/1756
Clips for ditto				3404
1" Spring Bend 120°	Tank Cooled	Engines		S174
1" " 150°	1" " long			S244
1" Bore Hose 6" long				27/2353

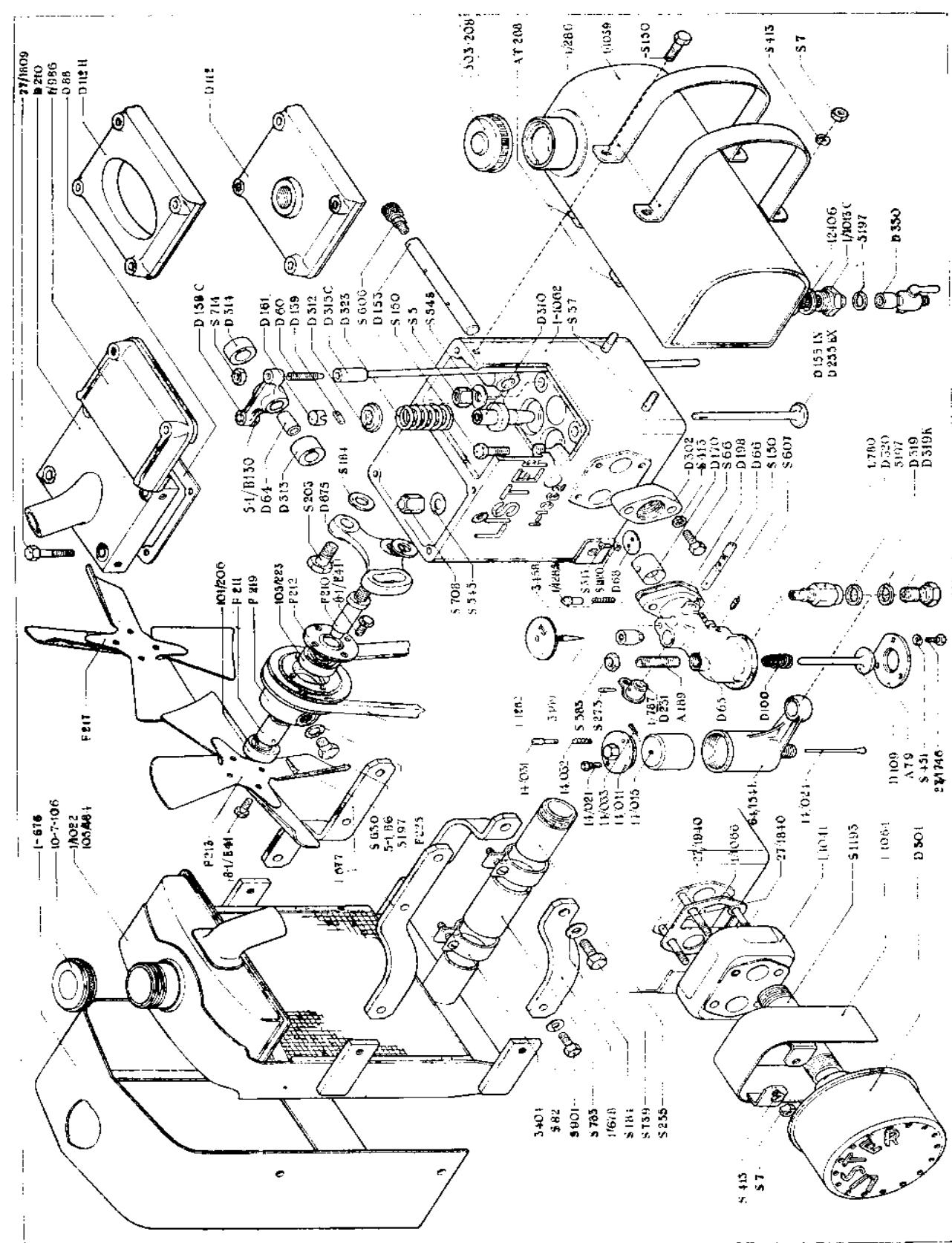


PLATE 2

**PLATE 2**

**FOR ILLUSTRATION OF THESE PARTS REFER TO PAGE 7**

	Order Part No.	No.	Order Part No.	No.	Order Part No.	No.
<b>CARBURETTOR.</b> Complete with Float Chamber.						
For Clockwise Petrol Engine	"	1/802	"	1/804	"	..
" Anticlock "	"	1/1252	"	1/1254	"	..
" Clockwise Paraffin Engine	"	..	"	..	"	..
" Anticlock "	"	..	"	..	"	..
Comprising the following parts:						
Carburettor Body (bare)	"	D655	"	D109	"	..
Air Valve	"	..	"	D100	"	..
" " Spring Adjuster	"	..	"	A189	"	..
" " Lock Nut	"	..	"	S583	"	..
Plate (seat)	"	..	"	A79	"	..
" Screws	"	..	"	27/1746	3	..
" Studs (for Air Cleaner fitting)	"	..	"	..	..	..
" Nuts (for Air Cleaner fitting)	"	..	"	27/1961	3	..
" " Spring Washer (for Air Cleaner fitting)	"	..	"	S8	3	..
Choke Tube	"	..	"	S451	3	..
Petrol Regulator with Head	"	..	"	D170	1	..
" Bush	"	..	"	1/1282	1	..
" Plunger	"	..	"	3469	1	..
" Spring	"	..	"	1/1285	1	..
Jet	"	..	"	3458	1	..
" Locking Screw	"	..	"	1/780	1	..
Throttle Plate	"	..	"	S607	1	..
" Screw	"	..	"	D68	1	..
" Spindle	"	..	"	S543	2	..
Lever—For R.H. Rotation Petrol Engine	"	..	"	S1120	2	..
" for L.H. Rotation Petrol Engine	"	1/787	1	E66	1	..
" for R.H. Rotation Petrol-Paraffin Engine	"	..	"	D231	1	..
" for L.H. Rotation Petrol-Paraffin Engine	"	..	"	D231	—	..
"	..	1/787	—			..
<b>CYLINDER HEAD</b>						
Cylinder Head with the following fittings only						
Stud for Fuel Tank Strap	"	..	"	..	..	1/1062S
Valve Guide	"	..	"	..	..	S37
Spring Anchor Pin (Petrol)	"	..	"	..	..	D310
" " (Paraffin)	"	..	"	..	..	D240
" Nut	"	..	"	..	..	1/1065
" Nut	"	..	"	..	..	S7

Order Part No.	No.	Grub Screw for Radiator Support Boss ..	3104	1
		Cylinder Head Water Jacket Cover Set Screw ..	27/1809	6
		Plug (when Radiator not fitted) ..	27/1968	1
<b>FUEL TANK AND FITTINGS</b>				
		Fuel Tank ..	..	..
		" Filler Cap ..	..	..
		" Felt Pad ..	..	..
		" Strap ..	..	..
		" Set Screw ..	..	..
		" Spring Washer ..	..	..
		" Nut ..	..	..
		" Strainer ..	..	..
		" Joint ..	..	..
		" Funnel with Strainer ..	..	..
		For Petrol Engine only ..	..	..
		Petrol Tap ..	..	..
		" Joint ..	..	..
		" Pipe with Unions ..	..	..
		For Clockwise Rotation D Type ..	..	..
		" Anti-clock ..	..	..
		For Petrol-Paraffin Engine only. From Engine No. 18704. ..	..	..
		Petrol Container ..	..	..
		" Filler Cap ..	..	..
		" Bracket ..	..	..
		" Bolt ..	..	..
		" Nut ..	..	..
		" Washer ..	..	..
		" and Paraffin Taps ..	..	..
		" Tap Joints ..	..	..
		" Pipe ..	..	..
		For Clockwise Rotation DK Type ..	..	..
		" Anti-clock ..	..	..
		Paraffin Pipe ..	..	..
		For Clockwise Rotation DK Type ..	..	..
		" Anti-clock ..	..	..
		Fuel Two-Way Tap ..	..	..
<b>CYLINDER HEAD FITTINGS</b>				
		Cylinder Head Gasket ..	..	..
		Washer for holding down studs ..	..	..
		7/16" Hex. Cap Nut for Cylinder Studs S535 ..	S545	5
		7/16" Plain Nut ..	S708	3
		Valve Push Rod ..	S529	2
		Cylinder Exhaust Flange (for 1" bore pipe) Set Pin for ..	D315C	2
		Spring Washer ..	D302	1
		Cylinder Head Valve Rocker Cover (Tank Cooled Type)	S66	2
		" Water Jacket Cover (Tank Cooled Type)	S413	2
		" Water Jacket Cover ..	1/986	1
		D112	1	1
		D112H	1	1
		" (Rad. Cooled Type)	D210	1
		" Joint (combined)	D88	1
		Grub Screw for Anchor Pin hole (clockwise) " " " " (anti-clockwise)	S607	1
		S150	1	1

**PLATE 2 (Continued)**

FOR ILLUSTRATION OF THESE PARTS REFER TO PAGE 7

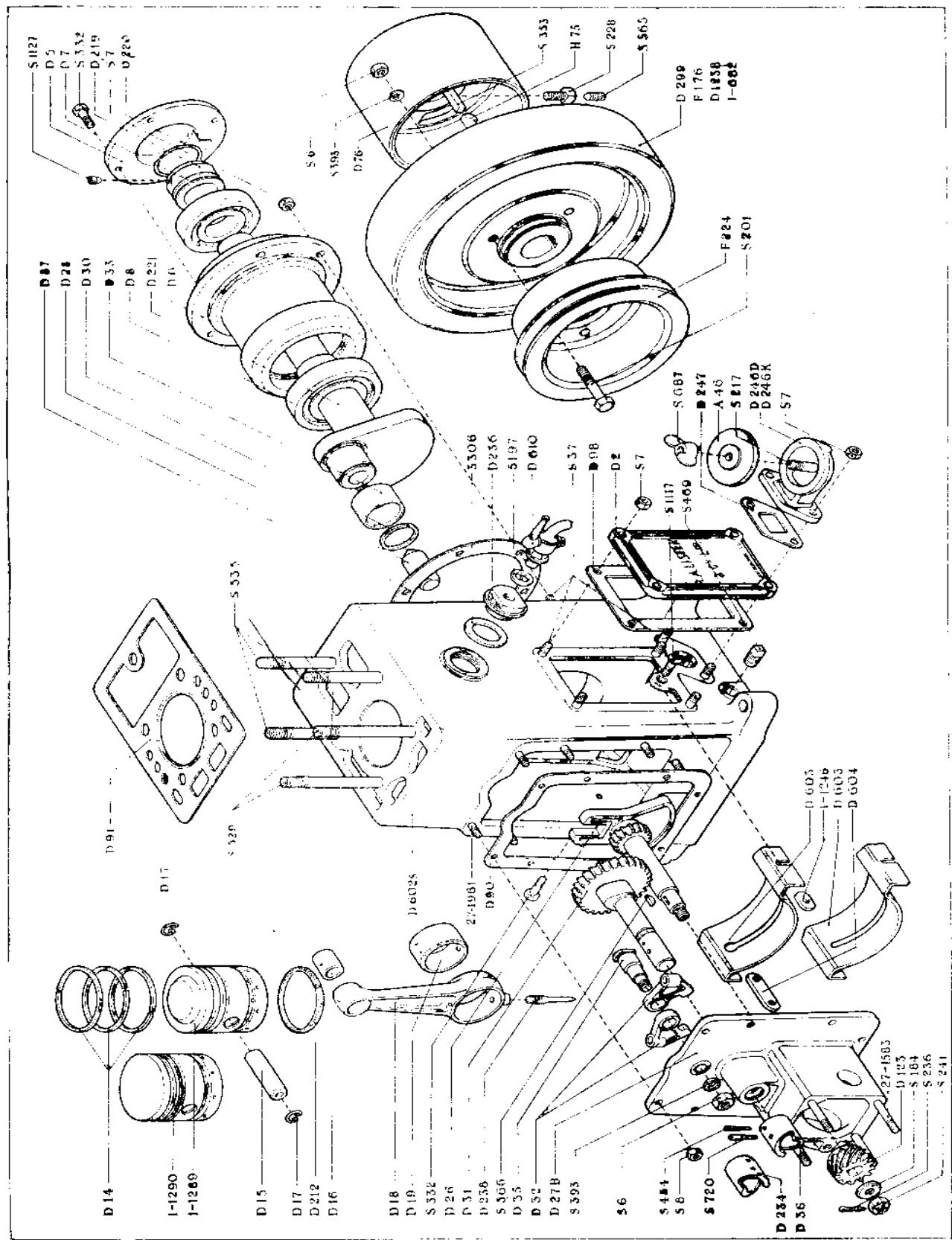


PLATE 3

Order No.	Part No.	Order No.	Part No.	Order No.	Part No.
<b>CAM ROCKER LEVERS</b>					
Assembly complete	D32c	1		" "	Oil Splash Guard Bolt (C case Door Side)
Inlet Rocker Lever	D32	1		" "	Clamp
Exhaust "	D32	1		" "	Plate
Spindle for	D35	1		" "	Crankcase Door
Spring Washer for Spindle	S393	1		" "	Joint
Nut for Spindle	S6	1		" "	Nut
<b>CAMSCHAFT (Comprising Shaft with Starting Clutch)</b>				" "	Oil Drain Plug
Assembly complete for R.H. Starting Engines L.H.	D31c	1		" "	Oil Filler with Stud for Petrol Engines
" " bare	D31c	1		" "	" Stud for Petrol Engines
Starting Clutch for R.H. Starting Engines L.H.	D31	1		" "	Paraffin
" " Taper Pin (No. 3) for Starting Clutch	D36	1		" "	Stud for Petrol Engines
" " (No. 1)	D234	1		" "	Paraffin
" " Reamer for No. 1 Taper Pin	S720	1		" "	Joint
" " No. 3 "	S454	1		" "	Nut
	S751	—		" "	Lid
	S753	—		" "	Wing Nut
<b>CONNECTING ROD</b>				" "	Crankcase Drain Tap for water
Connecting Rod complete comprising Bush (small end) specially drilled and reamed for spares	D18c	1		" "	Joint Washer for Drain Tap
" " (big end)	D16	1		" "	Crankcase Water Drain Tap Adaptor Joint
" " (upper long pattern)	D19	1		" "	Drain Tap Adaptor Plug
	D238	1		" "	Frost Plate
<b>CRANKSHAFT</b>					
Crankshaft with Sleeve D33, Split Ring D30 on Crank Pin				D221	1
Crankshaft for 1 k.w. plant with Sleeve D33					
Split Ring D30 on Crank Pin				D483	1
<b>Oil Thrower Ring</b>					
" " Spring Ring					D219
" " Screw					1
Ball Bearing, flywheel end (small)				D7	1
" " crank pin end (large)				D8	1
<b>Housing</b>				D6	1
" " Paper Joint				D87	1
" " Nut				S7	5
" " End Cover				D5	1
" " Set Pin				S332	4
" " Driving Pin for Trailing Shaft				D28	1
Crankshaft Sleeve				D33	1
" " Split Ring				D30	1

PLATE 3 (Continued)

FOR ILLUSTRATION OF THESE PARTS REFER TO PAGE 11

	Order Part No.	Order Part No.	Order Part No.	Order Part No.
<b>FLYWHEEL</b>				
Flywheel 12" Dia. 2 H.P. Hopper or Tank Cooled	D299	1		
" " 13" Dia. 1½ H.P. Hopper or Tank Cooled	F176	1		
" " 14" Dia. 1½ H.P. with Coupling Facings (for Direct Coupled Lighting Plant) and Radiator Cooled	D1238	1		
Flywheel Key	1/682	1		
			H75	1
<b>GUDGEON PIN</b>				
Gudgeon Pin Retaining Spring	..	..	D15	1
" " "	..	..	D17	2
<b>PISTON</b>				
Piston, D type only (Standard)	..	..	1/1289	1
" DK " " (Standard)	..	..	1/1290	1
" Ring (Standard)	..	..	D14	3
" Scraper Ring (Standard)	..	..	D212	1
<b>PULLEY</b>				
Pulley 3½" dia. x 5" Face	..	..	D71	1
" 4" dia. x 5"	..	..	D72	1
" 5" dia. x 4½"	..	..	D76	1
" 6" dia. x 4½" Face	..	..	D73	1
" 7" dia. x 6"	..	..	D175	1
" 8" dia. x 5"	..	..	D75	1
Set Screw for Pulleys, 5" dia. and over	..	..	S739	1
<b>TIMING CASE</b>				
Complete (Comprising D31 Camshaft; D32C Cam, Rocker Assembly, D267 Governor Complete 700 r.p.m. or D268 Governor Complete 1000 r.p.m., Magneto and Starting Handle Bracket 1/741, D26C Trailing Shaft Complete) —	For 500 R.P.M.	..	1/782	1
do.	For 700 R.P.M.	..	1/761/5	1
do.	For 1000 R.P.M.	..	1/762/5	1
Timing Case, with Studs and Bush	..	..	D27B	1
" Joint	..	..	D90	1
Bush for Timing Case (Magneto Side)	..	..	1/4501	1
Oiling Plug	..	..	5-1/B6	1
" " Joint	..	..	5197	1
Plug for Oil Drain Hole	..	..	D52	1
Stud for Starting Handle Bracket	..	..	27/1583	4
<b>TRAILING SHAFT</b>				
Trailing Shaft complete with Spiral Gear	D26c	1		
" " (with Drive Plate shrunk on only)	D26	1		
Spiral Gear	..	..	D123	1
Key for Spiral Gear (Woodruff No. 6)	..	..	S566	1
Washer	..	..	S184	1
Slotted Nut	..	..	S241	1
Split Pin for Nut	..	..	S236	1

27/1809

1/986

D240

S7 1/10625 3176 1/127 3174 S66 D301 A79 S8 D655 D319 D316 D302 D70 1/435 1/434 D315C D32 — D31R, D31 —

S150

D153

S606

D312

D323

D310

D155IN

D255EX

A97

291-2265

D91

D14

1—1289

D212

D236

D18C

3306

D98

1/682, D299

S7

D2

D123

A252

1/242

D4501

D27B

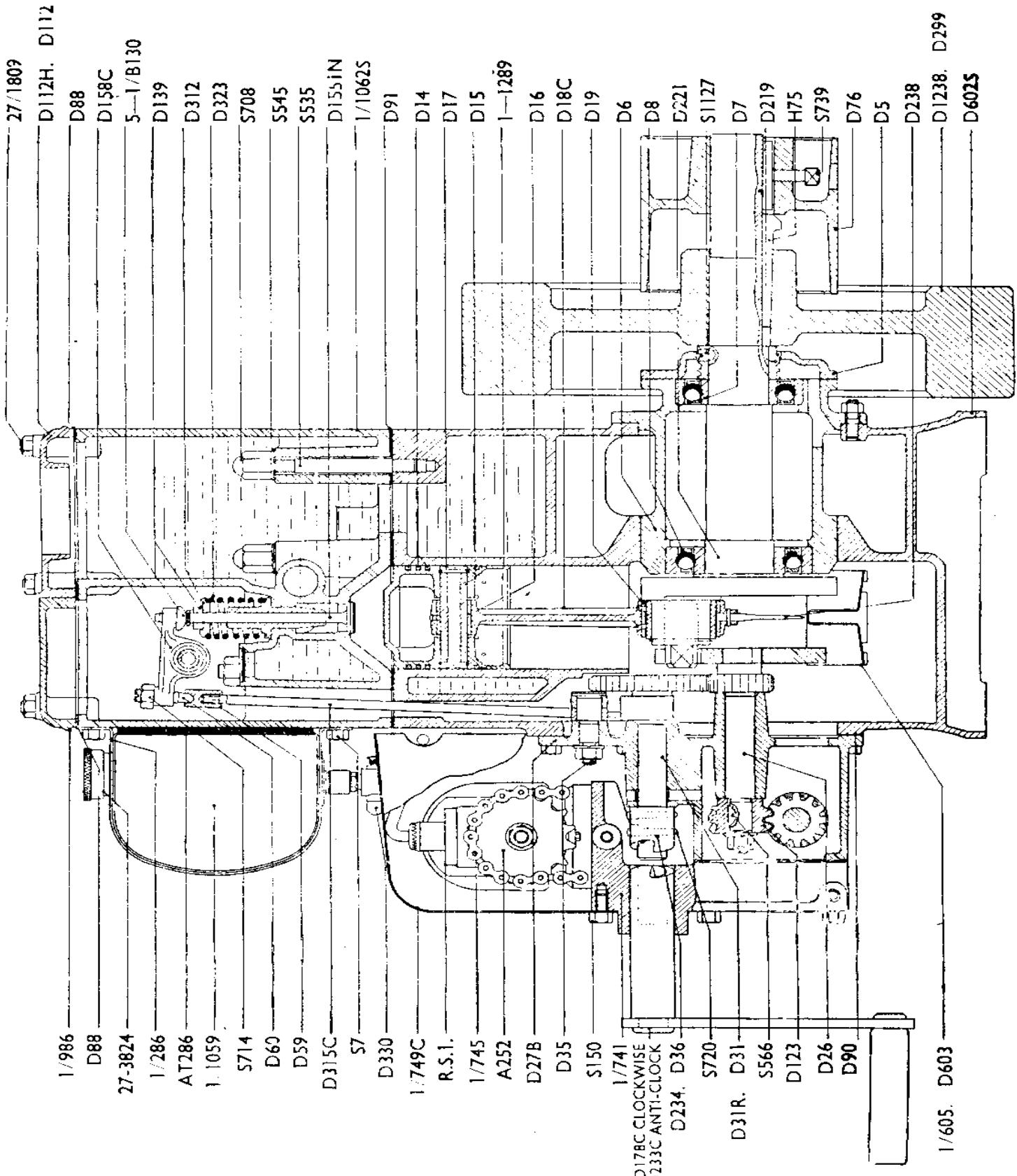
S687

A46

D2465

D124

D602S



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