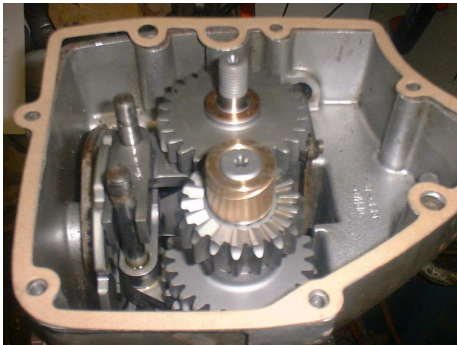


1. Fit **selector 3** to the sliding dog and fit both to the mainshaft
2. Fit the first gear onto the layshaft.
3. Fit the first gear onto the mainshaft
4. Fit thick thrust washer on layshaft.



5. Insert selector rods through the selector forks and locate within gearbox casing. Lightly oil shafts to assist installation.
6. Fit original Velocette bush to end of the layshaft.
7. Prior to fitting cover, return camplate to neutral position, utilising operation slot with gear selector mechanism. Check neutral position is selected, by free rotation of sleeve gear and mainshaft.



Fit end cover gasket, with gasket cement, if preferred.

8. Replace end cover, gently tapping, if required to ensure mainshaft engagement with end cover bearing. With mainshaft in position, selector rods located correctly, and also the gear change rocker shaft with the slot in the striking plate assembly aligned, seat the cover into position.



9. Replace the 7 bolts and lockwashers that retain the end cover in position and tighten them fully, in rotation, to ensure even pressure on the casing.
10. Replace the nut (1/2" BSF) on the right hand end of the mainshaft, and tighten whilst holding the cruciform end with a spanner of the correct size.



11. Fit the end cover, using a new gasket and jointing compound, if preferred.
12. Take the complete assemble kickstart assembly and check that the 3 thrust pins are in position, within the kick start ratchet. Insert the thrust washer (original) in the kickstart assembly, making sure it is square to the pins.
13. Move the gearbox to a horizontal position and insert kickstart assembly.
14. No gasket is required, but it may be preferable to use jointing compound.
15. Fit and tighten 3 retaining bolts.



The gearbox is now fully assembled and ready for use.

Check the general operation of the gearbox.

Check with neutral selected, that both sleeve gear and mainshaft rotate freely and do not bind.

Select each gear in turn and prove operation of both gear operation and selection.

Check operation of both up and down gear selections.

If any undue stiffness in rotation or gear selection is found, or if gear selection cannot be made, further investigation will be required, as it is most probably that the assembly is incorrect.

Please note : The new mainshaft has 1/2" BSF threads on both ends. Ensure the correct nuts are fitted

Providing the gearbox operation proves to be free, it is ready to be installed into the bike.

General Notes and Operation

Whilst taking every consideration in the manufacture of these gear clusters, it has come to light that the tolerances of the original Velocette castings leave a lot to be desired.

For this reason, it is possible that all 5 speed gear kits may require slight modification, for example, fettling on assembly to the gearbox.

Quaifes state “The new Quaife 5 speed internals are quite complex and your customers should be advised that a high degree of mechanical knowledge will be required for fitment. We do not foresee any fitting problems will be encountered, where gearkits are assembled by a competent mechanic”.

To date the following areas have been areas of concern, and it has been found the tolerances vary considerably.

1. The distance between the selector rods. From our findings, the centres between the two rods vary up to 0.040”. This affects the operation of the new selectors. It is therefore recommended to fit the selector rods into the empty case and slide the selectors onto them. Ensure there is clearance to the bottom of the “U” of all the selectors. If there is no clearance, then this should be modified to accommodate this.

2. Dummy Kickstart Bearing Housings. On racing gearboxes, where it is preferred not to use a kickstarter, the various dummy housings on the market vary considerably. This needs to be carefully checked, so that on assembly, no movement is allowed on the Layshaft. The plain bearing and thrust of the original kickstart requires to be replicated as close as possible, so no lateral movement of the Layshaft occurs. In the original kickstart assembly, the maximum clearance is around 0.001/2”.

It has been found, that with some of the dummy kickstart bearing housings, that use a standard ballrace, that these have no method in limiting Layshaft movement. If this type is to be fitted, a method of limiting Layshaft movement will be required.

3.Striking Pawl Pivot Pin. The original Velocette pin onto which the new striking pawl has to fit varies considerably in diameter. It is quite likely the new striking will not fit over the existing pin. If this occurs, either another plate will have to be found, with the correct diameter pin or the pin modified to fit.

I have looked through various Parts List for this component, but cannot find any change occurred, so cannot explain this difference.

4.Selector Rods. It has been found that the selector rods are quite often bent. Check straightness, by placing on flat surface. If in doubt replace.

5. Position of Camplate to Selector Rod Bores. Again, the selector rod position in the casing, appears to vary. To check this, place the selector rods in the casing, with the camplate installed. Slide the selectors onto the rod and engage into the camplate. Ensure there is no tightness between the face of the selector and the camplate. Modify, by fettling the selector face to ensure clearance.

6.Cases. In relation to item 5. above, it has been found that it is very important to ensure the gearbox case and lid align correctly. We have come aware that where a gearbox is assembled from odd parts, it is very likely that the lid and case will not align with each other. The worst case to date is a misalignment of some 3/64”!!

It would appear that the lid and case were inlined bored as pairs. The only solution is match cases with lids for the best alignment of selector rods and bearing bores.

Operation

We have no operational recommendations, apart from that following the first installation of the gearbox, we recommend a period of light operation of some 100 miles to allow the gearbox gear selector mechanism to bed down.

After this period we recommend for the gearbox oil to be changed and then the original manufacturer's service intervals to be adhered.

Quaife recommend for a synthetic oil to be used, and recommend Silktrans SYN5 75W/90. The oil capacity remains unchanged at 1 pint (0.56 litres). This is available from us in 1 Litre bottles, if required.

We hope the gear cluster provides many miles of service and enjoyment from your Velocette motorcycle, as indeed it is our intention to preserve the operation of this fine motorcycle.

If however, problems are incurred, please do not hesitate to contact us, for advice or assistance. If after reading these notes, you feel this job is greater than you first realised, and would like our help, again, please contact us to arrange our fitting service.

Spares

Item	Description	Part No.	Price
1.	Mainshaft Bearing	B23	
2.	Sleeve Gear Bearing	B22	
3.	Layshaft Bearing	B22/2	
4.	Layshaft Bush	BK85/2	
5.	Selector Rods	BK90/2	
6.	Pawl Spring	GC24/2	
7.	Cover Gasket	B43/2	
8.	Mainshaft Bearing Cover Gasket	B98	
9.	1ltr SYN5 75W/90 oil	DDSL11	
10.	½” BSF Nyloc nuts	BK106	
11.	End Cover Bolts (set of 10 hex S.Steel c/w plain & spring Washers)	DDSL12	
12.	End Cover Bolts (set of 10 cap head S.Steel c/w plain and spring washers)	DDSL13	
13.	Fill, Drain and Level Plugs S.Steel	DDSL14	
14.	K/start R/Spring anchor peg S.Steel	BK73/2	

All prices quoted are each. Prices exclusive of VAT and delivery.

**Delivery Packing Note**

Customer Gear Cluster type.....

Contents

***Part of an Assembly**

Part No.	Description	A	B	Road	Delivered	Rec'd
DDSL/1V1/02	M/S - NEEDLE ROLLER TYPE - ROAD RACE *	1	1	1		
DDSL/1V1/07	5TH GEAR M/S SLEEVE GEAR 16T - ROAD RATIO			1		
DDSL/1V1/35	5TH GEAR M/S SLEEVE GEAR 18T - RACE A	1				
DDSL/1V1/37	5TH GEAR M/S SLEEVE GEAR 18T - RACE B		1			
DDSL/1V1/018	5TH GEAR M/SHAFT BEARING ROAD & RACE *	2	2	2		
DDSL/1V1/825	5TH GEAR M/S INTERNAL CIRCLIP ROAD & RACE	1	1	1		
DDSL/1V1/04	2ND GEAR MAIN SHAFT- 24T - ROAD RATIO			1		
DDSL/1V1/29	2ND GEAR MAIN SHAFT- 23T - RACE RATIO A & B	1	1			
DDSL/1V1/180	EX CIRCLIP - M/S - LAYSHAFT ROAD & RACE	4	4	4		
DDSL/1V1/06	4TH GEAR MAIN SHAFT 19T - ROAD RATIO			1		
DDSL/1V1/33	4TH GEAR MAIN SHAFT 19T - RACE RATIO A & B	1	1			
DDSL/1V1/05	3RD GEAR MAIN SHAFT 21T - ROAD RATIO			1		
DDSL/1V1/31	3RD GEAR MAIN SHAFT 23T - RACE RATIO A & B	1	1			
DDSL/1V1/15	BUSH 3RD/4TH GEARS M/ SHAFT - ROAD & RACE	1	1	1		
DDSL/1V1/14	SLIDER - 1ST/3RD GEARS M/S -ROAD & RACE	1	1	1		
DDSL/1V1/03	1ST GEAR M/S 26T - ROAD & RACE	1	1	1		
DDSL/1V1/17	BUSH 1ST GEAR M/S - ROAD & RACE	1	1	1		
DDSL/1V1/08	LAYSHAFT - ROAD & RACE	1	1	1		
DDSL/1V1/09	1ST GEAR LAY SHAFT 18T - ROAD & RACE	1	1	1		
DDSL/1V1/11	3RD GEAR LAYSHAFT - 26T - ROAD RATIO			1		
DDSL/1V1/32	3RD GEAR LAYSHAFT - 25T - RACE RATIO A & B	1	1			
DDSL/1V1/12	4TH GEAR LAYSHAFT - 28T - ROAD RATIO			1		
DDSL/1V1/34	4TH GEAR LAYSHAFT - 24T - RACE RATIO A & B	1	1			
DDSL/1V1/10	2ND GEAR LAYSHAFT - 23T - ROAD RATIO			1		
DDSL/1V1/30	2ND GEAR LAYSHAFT - 20T - RACE RATIO A & B	1	1			
DDSL/1V1/16	BUSH 2ND GEAR LAYSHAFT - ROAD & RACE	1	1	1		
DDSL/1V1/13	5TH GEAR LAYSHAFT - 27T - ROAD RATIO			1		
DDSL/1V1/36	5TH GEAR LAYSHAFT - 25T - RACE RATIO A	1				
DDSL/1V1/38	5TH GEAR LAYSHAFT - 26T - RACE RATIO B		1			
DDSL/1V1/1167	OIL SEAL - 5TH GEAR M/S - ROAD & RACE *	1	1	1		
DDSL/1V1/19	SHORT SPACER 5TH GEAR -M/S ROAD & RACE	2	2	2		
DDSL/1V1/18	LONG SPACER 5TH GEAR -M/S ROAD & RACE	1	1	1		
DDSL/1V1/20	THRUST WSHR 3/4TH GEARS M/S ROAD & RACE	2	2	2		
DDSL/1V1/39	SPACER 1 ST GEAR - LAY SHAFT - ROAD & RACE	1	1	1		
DDSL/1V1/21	CAMPLATE NORMAL - ROAD & RACE (IN PLACE OF DDSL1V1/22)	1	1	1		
DDSL/1V1/22	CAMPLATE REVERSE - ROAD & RACE (IN PLACE OF DDSL1V1/21)	1	1	1		
DDSL/1V1/23	RATCHET PLATE - ROAD & RACE VERSIONS	1	1	1		
DDSL/1V1/24	SPLINED CAMPLATE CENTRE - ROAD & RACE *	1	1	1		
DDSL/1V1/25	RATCHET ARM CLAW - ROAD & RACE VERSIONS	1	1	1		
DDSL/1V1/26	No.1 SELECTOR FORK - 4TH/5TH GEARS M/S- ROAD & RACE VERSIONS	1	1	1		
DDSL/1V1/27	No.2 SELECTOR FORK - 2ND GEAR LAYSHAFT - ROAD & RACE VERSIONS	1	1	1		
DDSL/1V1/28	No.3 SELECTOR FORK - 1ST/3RD GEARS M/S- ROAD & RACE VERSIONS	1	1	1		