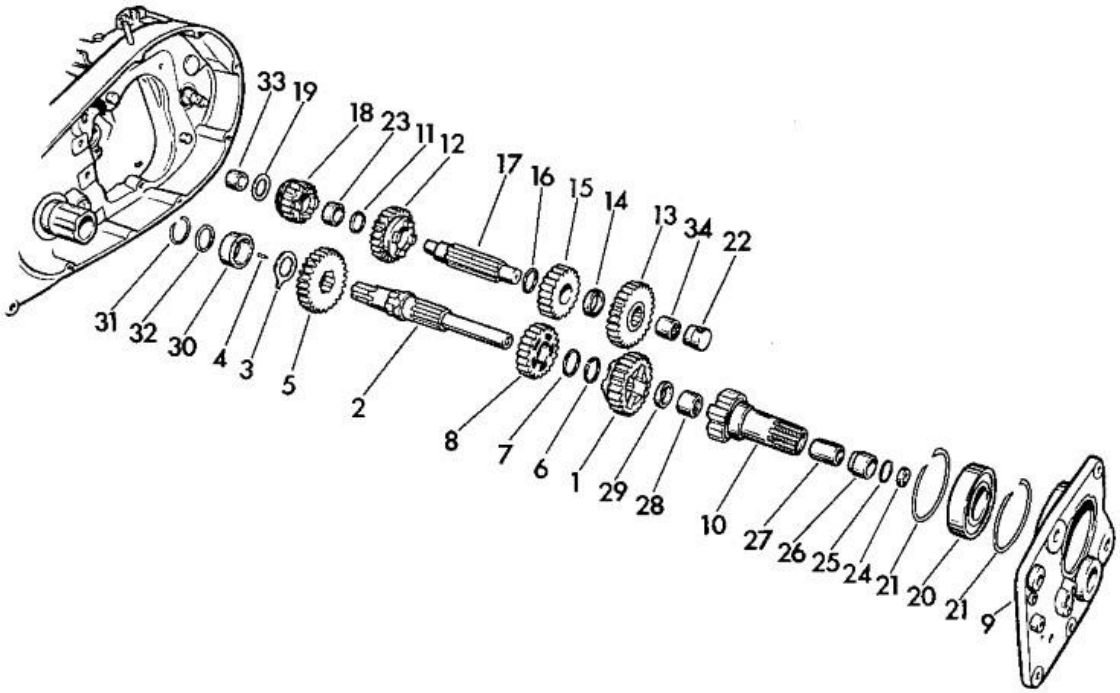
OSKRG Research/Restoration Bulletin #11

K & Sportster Transmission Gears, Mainshafts & Countershafts 1952-1972 vs6



1. Mainshaft second gear
2. Transmission mainshaft
3. Mainshaft thrust washer
4. Transmission mainshaft roller (23)
5. Mainshaft low gear
6. Mainshaft third gear retainer ring
7. Mainshaft third gear washer
8. Mainshaft third gear
9. Access cover
10. Clutch gear
11. Countershaft low gear washer
12. Countershaft third gear
13. Countershaft drive gear
14. Countershaft gear spacer
15. Countershaft second gear
16. Countershaft second gear thrust washer
17. Transmission countershaft
18. Countershaft low gear
19. Countershaft low gear washer
20. Mainshaft ball bearing
21. Mainshaft ball bearing snap ring (2)
22. Countershaft oiler plug
23. Countershaft low gear bushing
24. Clutch gear oil seal
25. Clutch hub nut "O" ring
26. Clutch gear oil seal extension
27. Clutch gear bushing
28. Clutch gear needle roller bearing
29. Mainshaft thrust washer
30. Mainshaft roller bearing race
31. Mainshaft roller bearing retainer ring
32. Mainshaft roller bearing washer
33. Countershaft bearing - closed end
34. Countershaft bearing - open end

Figure following name of part indicates quantity necessary for one complete assembly.

This OSKRG Bulletin as with all OSKRG Bulletins is a work in progress. This work is far from complete. Many images are still needed as well as feedback concerning errors or omissions. This Bulletin will be updated from time to time as additional data is collected or errors need to be corrected. Please either email additional information/images to graino@comcast.net or post them to http://www.harleykmodel.com/.

Countershaft Group

Parts Book	CS Drive Gear	Year	CS 2nd Gear	Year	CS 3rd Gear	Year	CS Low Gear	Year	Countershaft	Year
52-53	35695-52 (29T)	52-53Ks	35750-52 (18T)	52-53Ks	35709-52 (Per PB 26T) SHOP DOPE #345 25T or 26T	52-53Ks	35760-52 (22T per PB) SHOP DOPE #345 18T	52-53Ks	35613-52	52-53Ks
54	35695-52A (27T)	52-54Ks	35750-52A (22T)	52-53Ks	35709-52 (26T) SHOP DOPE #345 25T or 26T	52-53Ks	35759-54 Per 63PB 17T	54Ks	35613-54	54Ks
			35750-54A (21T)	54Ks	35709-54 (24T)	54Ks				
56	35695-52A (27T)	52-56Ks	35750-54B (21T)	Unknown	35709-54A (23T)	54-56Ks	35759-54 Per 63PB 17T	54-56Ks	35613-54	54-56Ks
			35750-54C (21T) Note: Two -54C Samples have 20T	54-56Ks			35760-52 (22T per PB) SHOP DOPE #345 18T	52-53Ks		
57	35695-52A (27T)	52-56Ks & Sportster	35750-54C (21T) Note: Two -54C Samples have 20T	54-56Ks & Sportster	35709-54A (23T)	54-56Ks 57XL	35760-54	57XL	35613-54	54-56Ks 57XL
58 Sup.	35695-58 (27T)	58 Sportster	35750-58 (20T)	58 Sportster					35613-58	58 Sportster
59	35695-58 (27T)	58-* XLH-XLCH	35750-58 (20T)	58-* XLH-XLCH	35709-54A (23T)	54-56Ks 57-* XLH-XLCH	35760-54	57-59 All Sportsters	35613-58	58-* XLH-XLCH
63	35695-58 (27T)	58-* XLH-XLCH	35750-58 (20T	58-* XLH-XLCH	35709-54A (23T)	54-56Ks 57-* XLH-XLCH	35760-54 (17T)	57-63 All Sportsters	35613-58	58-* XLH-XLCH
65	35695-58 (27T)	58-* XLH-XLCH	35750-58 (20T	58-* XLH-XLCH	35709-54A (23T)	54-56Ks 57-* XLH-XLCH	35760-54 (17T)	57-65 All Sportsters	35613-58	58-* XLH-XLCH
67	35695-58 (27T)	58-* XLH-XLCH	35750-58 (20T	58-* XLH-XLCH	35709-54A (23T)	54-56Ks 57-* XLH-XLCH	35760-54A (17T)	57-67 All Sportsters	35613-58	58-* XLH-XLCH
70	35695-58 (27T)	58-* XLH-XLCH	35750-58 (20T	58-* XLH-XLCH	35709-54A (23T)	54-56Ks 57-* XLH-XLCH	35760-54A (17T)	57-70 All Sportsters	35613-58	58-* XLH-XLCH
71	35695-58 (27T)	58-* XLH-XLCH	35750-58 (20T	58-* XLH-XLCH	35709-54A (23T)	54-56Ks 57-* XLH-XLCH	35760-54A (17T)	57-71 All Sportsters	35613-58	58-* XLH-XLCH
72	35695-58 (27T)	58-* XLH-XLCH	35750-58 (20T	58-* XLH-XLCH	35709-54A (23T)	54-56Ks 57-* XLH-XLCH	35760-54B (17T)	57-72 All Sportsters	35613-58	58-* XLH-XLCH

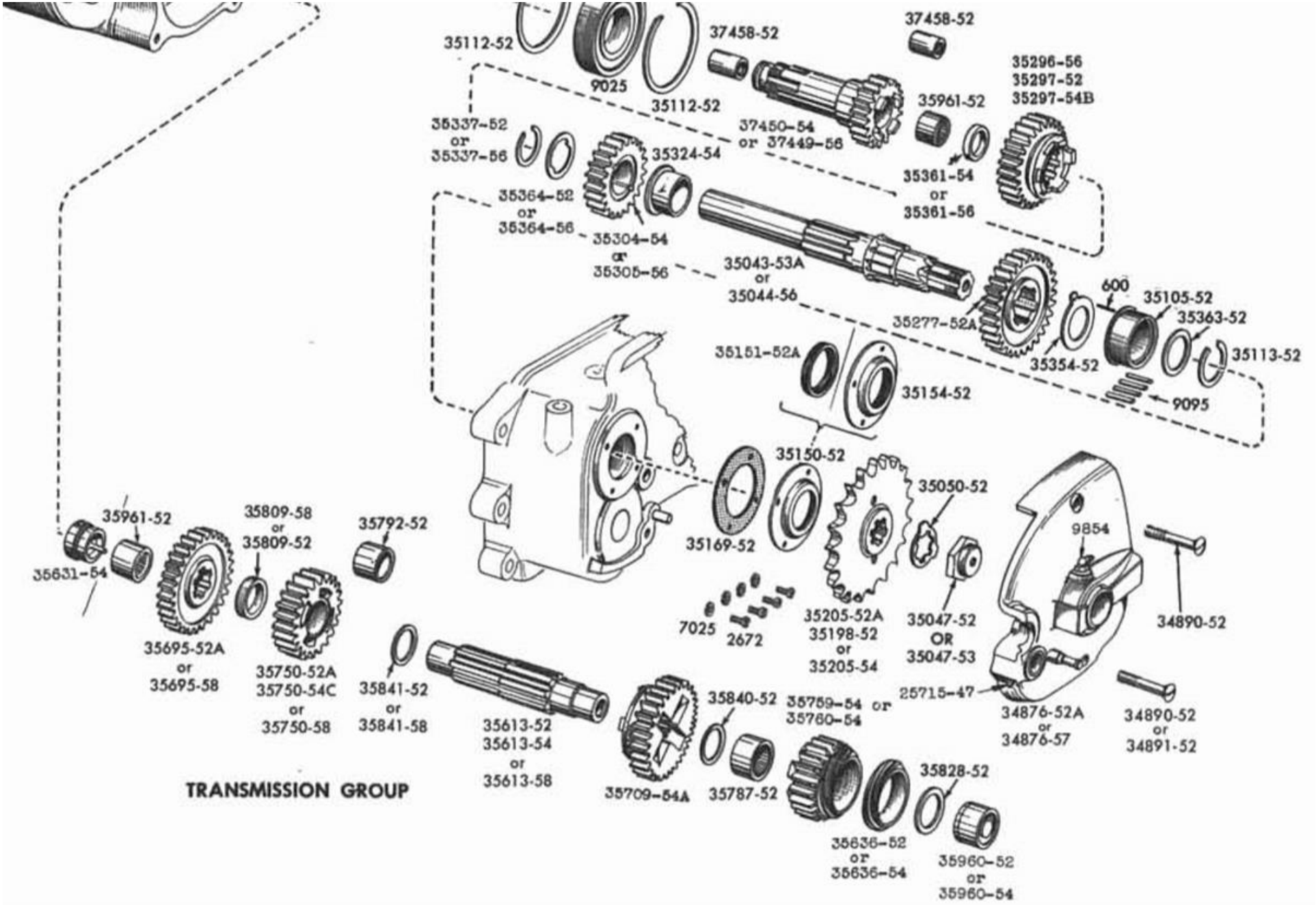
Mainshaft Group

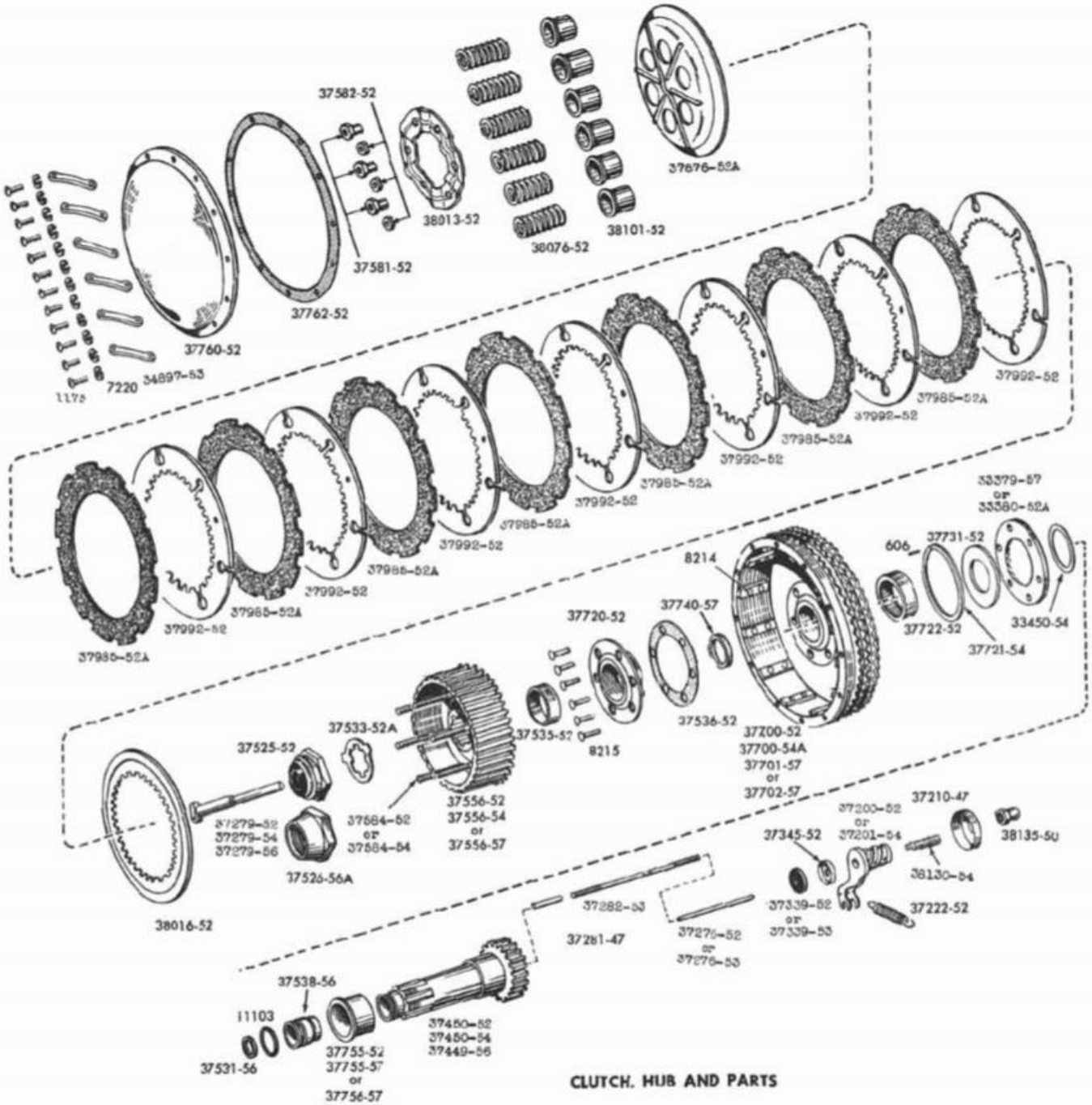
Parts Book	Clutch Gear	Year	MS 2nd Gear	Year	MS 3rd Gear	Year	MS Low Gear	Year	Mainshaft	Year
52-53	37450-52 Per 63PB Has 18T	52-53Ks	35297-52 (25T)	52-53Ks	35304-52 (21T)	52-53Ks	35277-52 (29T)	52-53Ks	35043-52	52K
									35043-53	53Ks
54	37450-54 Per 63PB Has 17T	54Ks	35297-54 (24T)	54Ks	35304-54 Per 63PB Has 20T	54Ks	35277-52A (29T) SHOP DOPE #345, Jan.15, 1954 modified 35277-52A gear with 27T.	All 54 & On	35043-53A	52-54Ks
						56PB 55K				
					35304-52A Set of gears MS & CS. Consist of 35304-54 & 35709-54A	52-53Ks				
56	37450-54 Per 63PB Has 17T	54-56Ks up to VIN 1465	35297-54 (24T)	54-55Ks	35305-56	56Ks	35277-52A (29T) Think PB in error about # of teeth based on Shop Dope #345, indicates replacement with 27T. Likely running change in early 54 model year.	All 54 & On	35043-53A	52-56Ks up to VIN 1465
	37450-56	Above 56K VIN 1465	35296-56 (23T)	56Ks	35304-52A Set of gears MS & CS. Consist of 35304-54 & 35709-54A	52-53Ks			35044-56	56Ks above VIN 1465
57	37449-56	Above 56K VIN 1465 & 57XL	35296-56 (23T)	56Ks All Sports	35305-56	56Ks All Sportster	35277-52A (29T)) Think PB in error about # of teeth based on Shop Dope #345, indicates replacement with 27T. Likely running change in early 54 model year.	All 54 & On	35044-56	56Ks above VIN 1465 & 57XL
			35297-54A PN shown in picture but not referenced in text.	??????	35304-52A Set of gears MS & CS. Consist of 35304-54 & 35709-54A	52-53Ks				
			35297-54B Set of main-shaft 2nd gears (24T)? Corrected in 64 Sup.	54-55Ks						
59	37449-56	56K above VIN 1465-59 KH, XL, XLH, XLCH	35296-56 (23T) (The 59PB is wrong about 35297-54B, says single gear with 23T.)	56Ks All Sports	35305-56	56Ks All Sportster	35277-52A (27T)	All 54 & On	35044-56	56K above VIN 1465-59 KH, XL, XLH, XLCH
63	37449-56 (17T)	56K above VIN 1465-63 KH, XL, XLH, XLCH	35296-56 (23T) (The 63PB is wrong about 35297-54B, says single gear with 24T.)	56Ks All Sports	35305-56 (20T)	56Ks All Sportster	35277-52A (27T)	All 54 & On	35044-56	56K above VIN 1465-63 KH, XL, XLH, XLCH
64 Sup.			35297-54B Mainshaft second & third gear set, catalog correction.	54-55Ks						
65	37449-56 (17T)	56K above VIN 1465-65 KH, XL, XLH, XLCH	35269-56 (23T) Believe this part number is in error, juxtaposing of the 6 & 9. Believe the 66 Supplement corrects this error.	56Ks All Sports	35305-56 (20T)	56Ks All Sportster	35277-52A (27T)	All 54 & On	35044-56	56K above VIN 1465-65 KH, XL, XLH, XLCH
66 Sup.			35269-56 Replaced by 35296-56							
67	37449-56 (17T)	56K above VIN 1465-66 KH, XL, XLH, XLCH & 67 XLCH	35296-56 (23T)	56Ks All Sports	35305-56 (20T)	56Ks All Sportster	35277-52A (27T)	All 54 & On	35044-56	56K above VIN 1465-66 KH, XL, XLH, XLCH & 67 XLCH
	37448-67 (17T)	67 XLH							35046-67	67 XLH
70	37449-56 (17T)	56K above VIN 1465-66 KH, XL, XLH, XLCH & 67-69 XLCH	35296-56 (23T)	56Ks All Sports	35305-56 (20T)	56Ks All Sportster	35277-52A (27T)	All 54 & On	35044-56	56K above VIN 1465-66 KH, XL, XLH, XLCH & 67-69 XLCH
	37448-67 (17T)	67-*XLH, 70-*XLCH							35046-67	67-*XLH, 70-*XLCH

Mainshaft

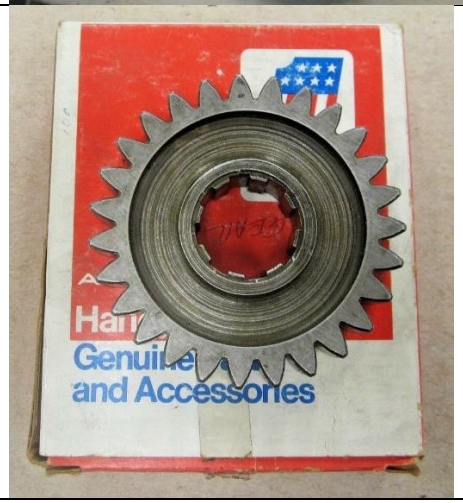
Parts Book	Clutch Gear	Year	MS 2nd Gear	Year	MS 3rd Gear	Year	MS Low Gear	Year	Mainshaft	Year
71	37449-56 (17T)	56K above VIN 1465-66 KH, XL, XLH, XLCH & 67-69 XLCH	35296-56 (23T)	56Ks All Sports	35305-56 (20T)	56Ks All Sportster	35277-52A (27T)	All 54 & On	35044-56	56K above VIN 1465-66 KH, XL, XLH, XLCH & 67-69 XLCH
	37448-67 (17T)	67-70 XLH, 70 XLCH							35046-67	67-70 XLH, 70-*XLCH
	37448-71 (17T)	71-*XLH & XLCH							35046-71	71-* XLH & XLCH
72	37449-56 (17T)	56K above VIN 1465-66 KH, XL, XLH, XLCH & 67-69 XLCH	35296-56 (23T)	56Ks All Sports	35305-56 (20T)	56Ks All Sportster	35277-52A (27T)	All 54 & On	35044-56	56K above VIN 1465-66 KH, XL, XLH, XLCH & 67-69 XLCH
	37448-67 (17T)	67-70 XLH, 70 XLCH							35046-67	67-70 XLH, 70-XLCH
	37448-71 (17T)	71-*XLH & XLCH							35046-71A	71-* XLH & XLCH

59 Parts Book





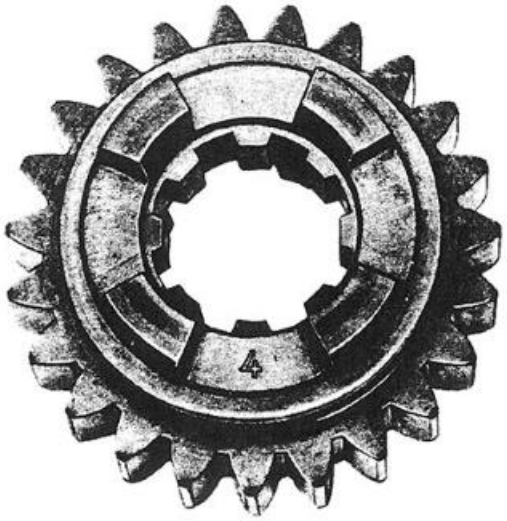
CLUTCH, HUB AND PARTS

Part Number CS Drive Gears	Identifying Characteristics	Side 1	Side 2
35695-52 (29T)	This CSDG is the only gear with 29T with the exception of the Mainshaft Low Speed Gear. The MSLSG will have a considerably larger center hole. Without samples of the earliest Countershaft PN 35613-52 and the earliest Mainshaft PN 35043-52 I am unable to provide dimensions of the center holes and number of center splines on the gear at this time.		
35695-52A (27T)	This CSD Gear is recognizable by its 27T and 6 center splines. It can be differentiated from its successor drive gear PN 35695-58 which also has 27T because the -58 will have 8 splines at its center. It can be told apart from the Mainshaft Low Speed Gear because the -52A CS Drive Gear has a center dimension at its widest of .874” and the MSLG will have a center at its widest of 1.183”.		
35695-58 (27T)	This CSDG is recognizable by its 27T and 8 splines at its center.		

CS 2nd Gears			
35750-52 (18T)	This is the only CS 2nd Gear with 18T. It looks similar to the MS 3rd Gear. The difference is no MS 3rd Gear will have 18T.		
35750-52A (22T)	This is the only CS 2nd Gear with 22T. It looks similar to the MS 3rd Gear. The CS 2nd Gear will have 4 voids. Some CS Low Gears have 22T but are easily distinguished from the CS 2nd Gear in that the CSLG has 4 dogs to engage the CS 3rd Gear.		
35750-54A (21T)	At this time I have a sample CS 2nd Gear that I am confident is either a -54A or -54B but am unable to determine which it is at this time. It has 21 teeth. It is not marked with a PN.		
35750-54B (21T)	At this time I have a sample CS 2nd Gear that I am confident is either a -54A or -54B but am unable to		

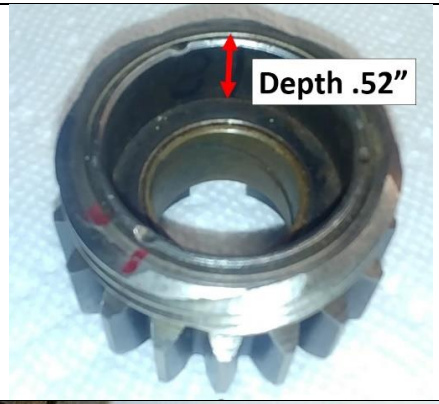
	determine which it is at this time. It has 21 teeth. It is not marked with a PN.		
35750-54C (21T) Note: All viewed samples have only 20T.	This CS 2nd Gear is PN marked. Parts Books say it has 21T, all samples seen to date have 20T. Has 4 voids and smooth oppposite side.		
35750-58 (20T)	This CS 2nd Gear is PN marked. Has 20T. Has 4 voids and smooth oppposite side.		
CS 3rd Gears			

35709-52 (26T)	The CS 3rd Gears look similar to the MS 2nd Gear. The -52 is the only CS 3rd Gear with 26T. SHOP DOPE #345 25T or 26T The gear pictured has 25 teeth as the Shop Dope indicates it could have. This gear can easily be mistaken for the MS gear 35297-52 which also has 4 dogs and 25 teeth. Currently have not been able to discern the difference between a 25 tooth -52 CS 3rd gear and the -52 MS 2nd gear. Same image being used for both at this time. This gear fits both the early CS and MS.		
35709-54 (24T)	The CS 3rd Gears look similar to the MS 2nd Gear. The -54 is the only CS 3rd Gear with 24T.		
SHOP DOPE #356 35709-54 (23T or 24T)	As a result of changes in material and heat treatment, the above two gears now in new motorcycle production and furnished on parts order are much huskier gears than were available earlier. The later, huskier gears are identified by the numeral 4 stamped between the driving dogs. Disregard other numbers that may be found stamped elsewhere on the gears. The first huskier gears produced have twenty four teeth; later the number of teeth will be reduced to twenty three. However, gear pitch diameter stays the same whether twenty-three or twenty-four teeth, and therefore one gear can be replaced with the other. Gears identified by the numeral 4, whether twenty-three or twenty-four teeth, are OK to use. The new gears went into new motorcycle assembly starting with number 55KH 1706. A few lower numbered motorcycles have the new 35709-54 C/S 3rd gear, but not the new 35297-54 M/S 2nd gear.		

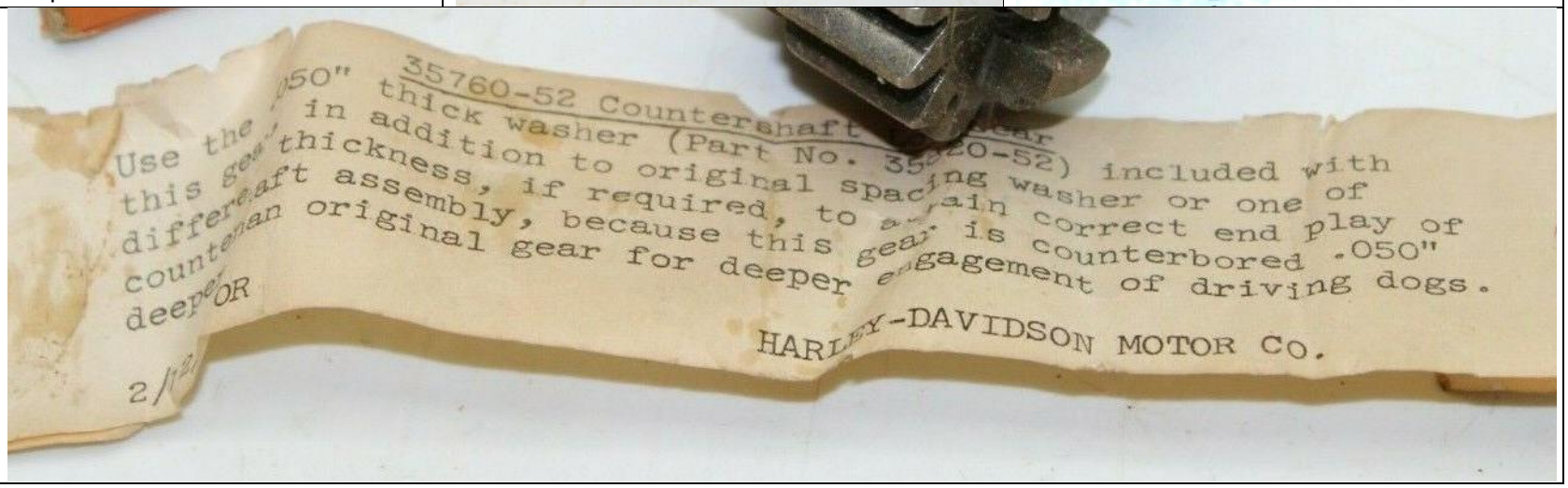
		 C/S 3rd Gear 35709-54	
35709-54A (23T)	The CS 3rd Gears look similar to the MS 2nd Gear. The -54A is the only CS 3rd Gear with 23T. It is also marked with its PN.		
CS Low Gears			

35760-52 (22T?)
Shop Dope #345 indicates it will have 18 teeth.

The CS Low Gear is easy to spot because it has 4 dogs on one side and the speedo drive gear on the other. The Parts Book says the -52 CSLG should have 22T. Shop Dope #345 indicates it will have 18 teeth. This eBay sample has 18T. The PBs indicate the other 4 versions of this gear all have 17T. I believe the version of the -52 shown is the deeper bored version noted below.



This note implies that even though there is no PN change an earlier version must have existed that was not bored as much.



35760-52 Countershaft Gear

Use the .050" thick washer (Part No. 35820-52) included with this gear in addition to original spacing washer or one of different thickness, if required, to attain correct end play of countershaft assembly, because this gear is counterbored .050" deeper than original gear for deeper engagement of driving dogs.

HARLEY-DAVIDSON MOTOR CO.

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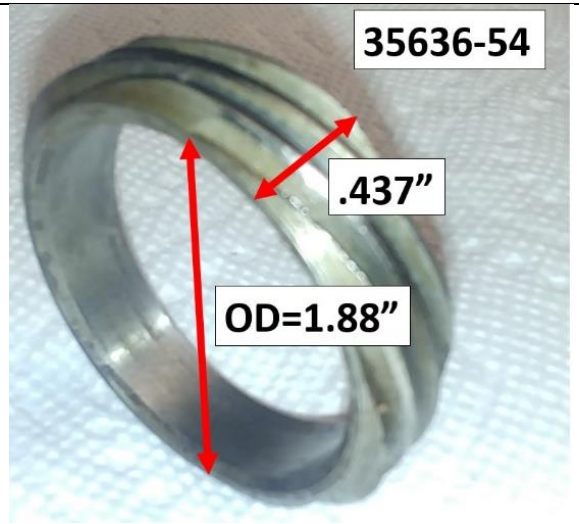
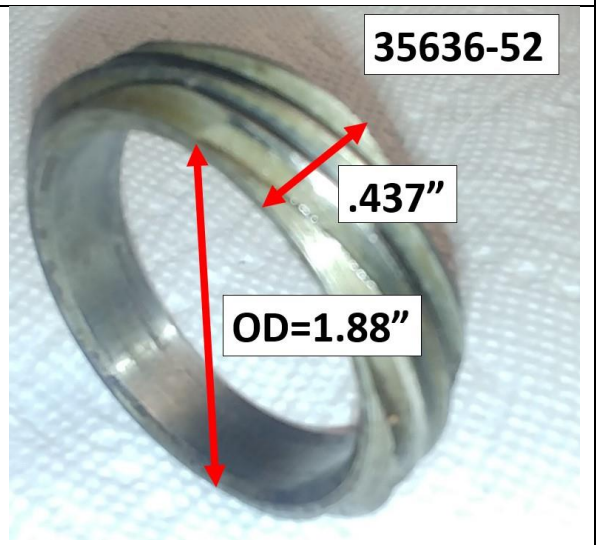
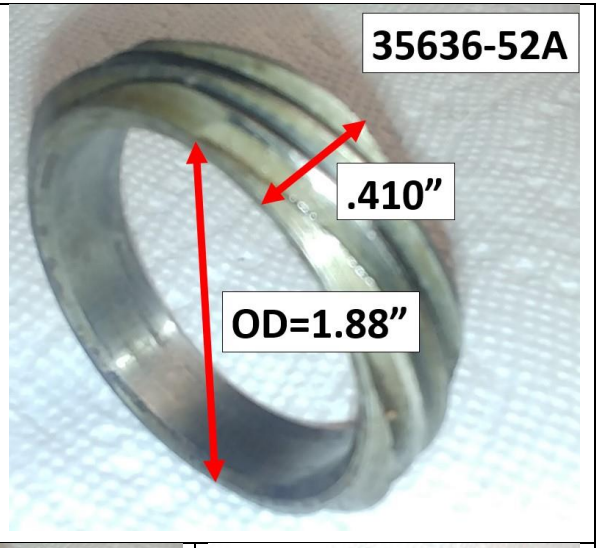
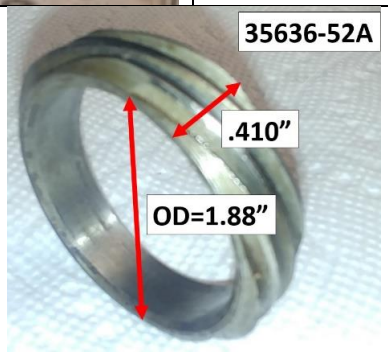
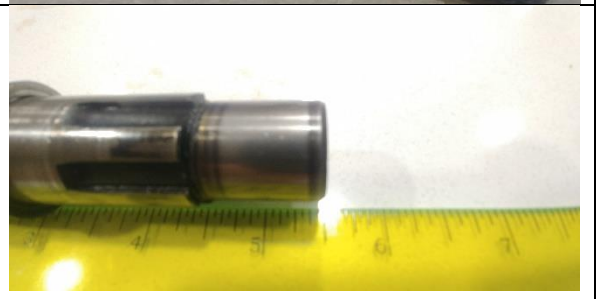
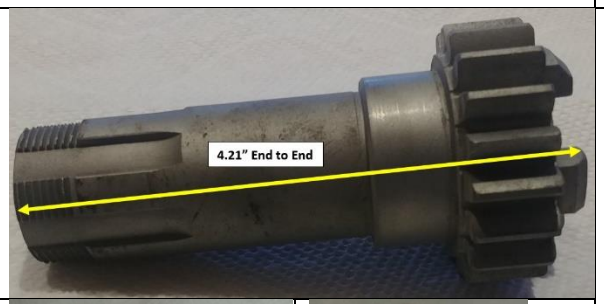
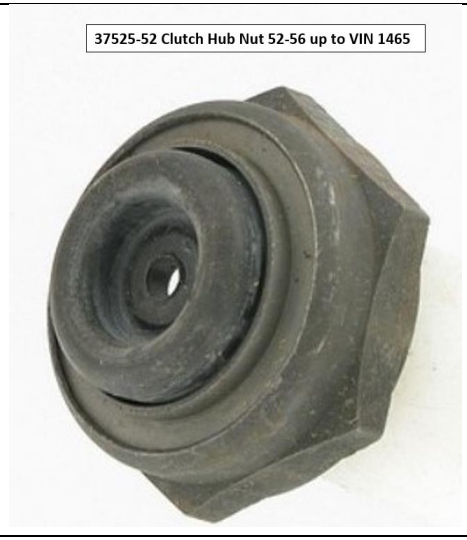
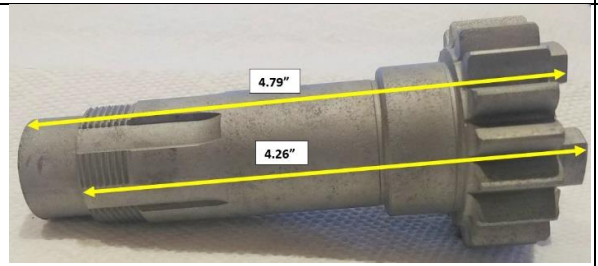
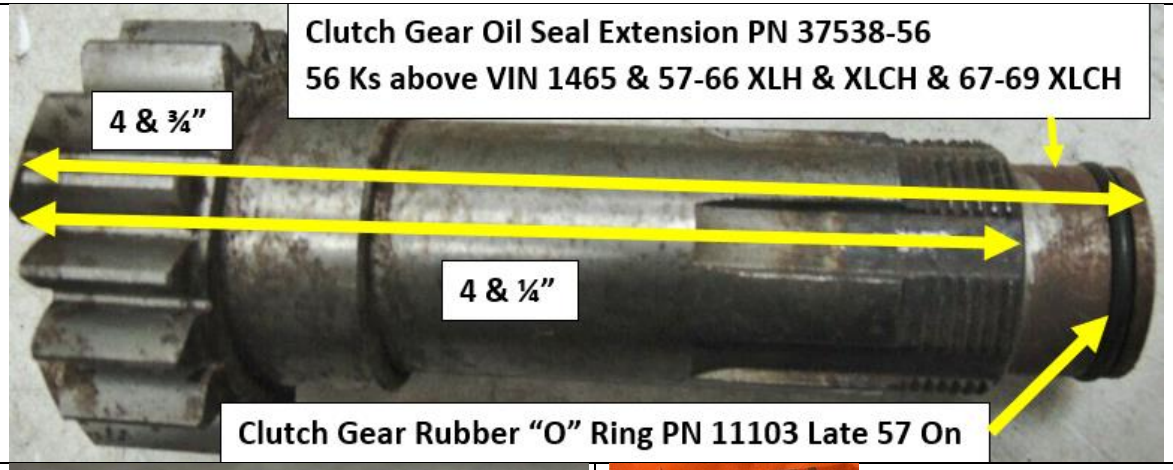
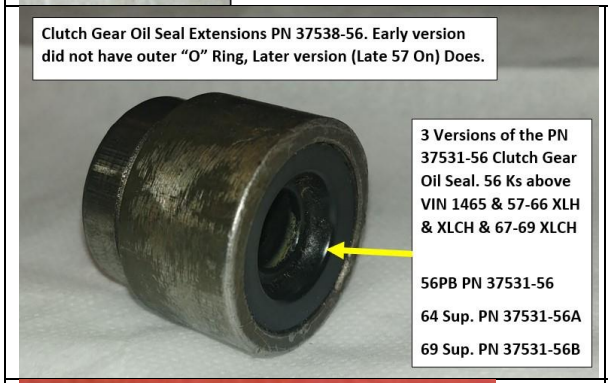
35759-54 (17T) The CS Low Gear is easy to spot because it has 4 dogs on one side and the speedo drive gear on the other. At this time without PN verifiable samples I am unable to distinguish between this 35759-54 CSLG and the 35760-54 CSLG. It can be distinguished from the 35760-52 CSLG due to that gears 18 or possiby 22 teeth. You can distinguish it from the 35760-54A or the 35760-54B versions because they use the -52A speedo drive gear that is not as wide as the 35636-54 speedo drive gear, .410”vs. .437”. The PBs indicate or imply that the 35636-54 speedo drive gear shown, only used with the 54-56Ks, is different from the 35636-52 gear used on both the 52-53 Ks & the 57-66 XLs & XLHs. At this time I can not identify any dimensional differences between these 2 speedo drive gears. It would make sense that the ramp or slope would be slightly different for this gear since the 54-56Ks used a 49 tooth instead of a 51 tooth rear sprocket. I have not as yet been able to adaquitly test their ramp in order to verify this ascertion.		
35760-54 (17T) The CS Low Gear is easy to spot because it has 4 dogs on one side and the speedo drive gear on the other. At this time without PN verifiable samples I am unable to distinguish between this 35760-54 CSLG and the 35759-54 CSLG. It can be distinguished from the 35760-52 CSLG due to that gears 18 or possiby 22 teeth. You can distinguish it from the 35760-54A or the 35760-54B versions because they use the -52A speedo drive gear that is not as wide as the 35636-52 speedo drive gear, .410”vs. .437”. The PBs indicate or imply that the 35636-54 speedo drive gear shown, only used with the 54-56Ks, is different from the 35636-52 gear used on both the 52-53 Ks & the 57-66 XLs & XLHs. At this time I can not identify any dimensional differences between these 2 speedo drive gears. It would make sense that the ramp or slope would be slightly different for this gear since the 54-56Ks used a 49 tooth instead of a 51 tooth rear sprocket. I have not as yet been able to adaquitly test their ramp in order to verify this ascertion.		

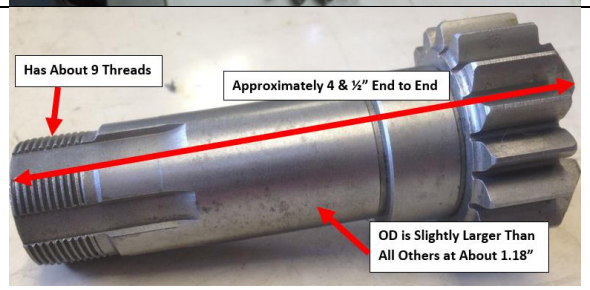
35760-54A (17T) The CS Low Gear is easy to spot because it has 4 dogs on one side and the speedo drive gear on the other. At this time without a PN verifiable sample of this gear I am unable to distinguish between this 35760-54A CSLG and the 35760-54B versions. We are able to distinguish between it and the earlier 35760-52, 35759-54 & the 35760-54. The -54A and -54B CSLGs both use the same speedo drive gear, 35636-52A. It appears to have the same ID and OD as the earlier 35636-52 & 35636-54 gears but its' width is less, .410" vs .437".			
35760-54B (17T) The CS Low Gear is easy to spot because it has 4 dogs on one side and the speedo drive gear on the other. At this time without a PN verifiable sample of this gear I am unable to distinguish between this 35760-54B CSLG and the 35760-54A versions. We are able to distinguish between it and the earlier 35760-52, 35759-54 & the 35760-54. The -54A and -54B CSLGs both use the same speedo drive gear, 35636-52A. It appears to have the same ID and OD as the earlier 35636-52 & 35636-54 but its' width is less, .410" vs .437". Its' recess depth also is deeper than all the other CSLG samples I have. Without a verifyable CSLG 35760-54A to compare its depth against I cannot say that this measurrement is a uniqely identifying feature only to the -54B version. All other CSLG samples measure approximately .315" in depth.			

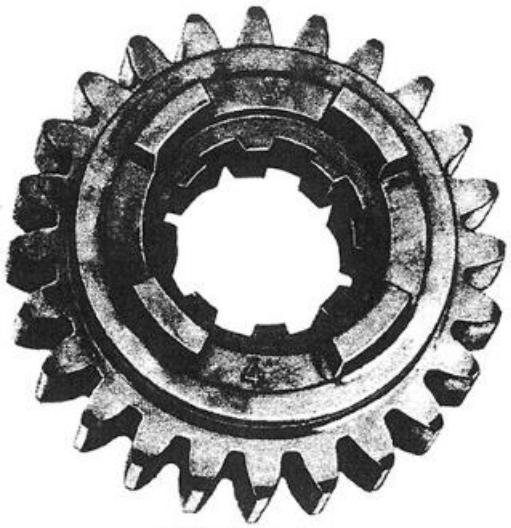
Countershafts			
35613-52	The -52 CS is unique in that it has no oiler holes. Its' right end is larger than all the other CS, it measures about .75". This is about .06" larger than the -54 and -58 shaft ends. It also is the only CS with a large hole in its' right end. The hole measures about .375".		
SHOP DOPE #356 35613-54 Early version below VIN 54KH 2040	When servicing the transmission of a motorcycle with number below 54KH 2040 inspect the countershaft 35613-54 with its gears removed. If an oil hole is found cross-drilled at 2nd gear position, discard shaft and replace with a later shaft that does not have this oil hole.		
	It is easy to identify since it is the only CS with two oiler holes. The second hole is where 2nd gear rides.		
35613-54 Later version equal to or above VIN 54KH 2040	This -54 Countershaft measures 5.5" in length and is easily distinguished from the -58 Countershaft. The -54 CS has 6 splines on the Drive Gear end 8 splines on the other end. The later -54 above VIN 54KH 2040 will only have one oiler hole where the low speed gear rides.The -58 CS will have 8 splines on both ends.		

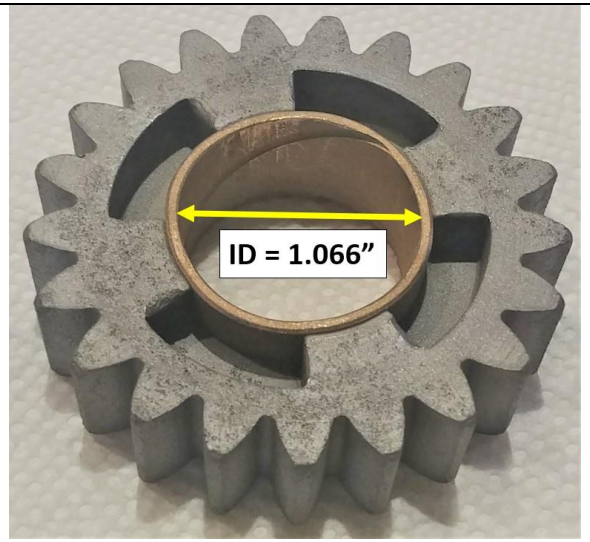
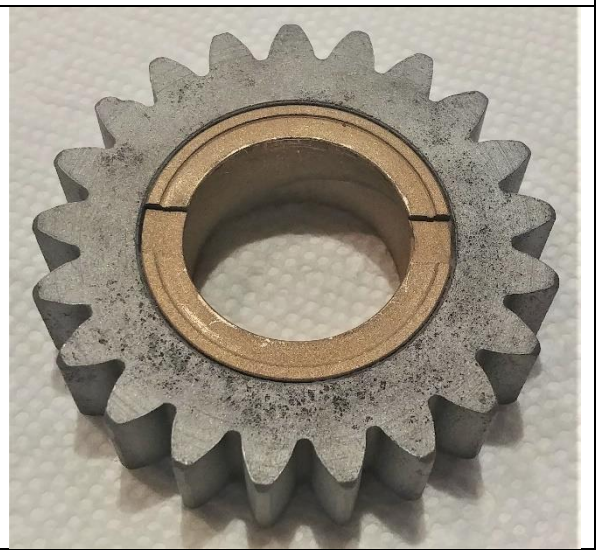
35613-58	This -58 Countershaft measures 5.5” in length and is easily distinguished from the -54 Countershaft. The -58 CS has 8 splines on the Drive Gear end 8 splines on the other end. The -54 CS will have 6 splines on the Drive gear end and 8 splines on the other end.		
35960-52 & 35960-54	These are the closed end CS Bushings. The righr side motor case was modified in a number of ways with the 54KH model year. One of the changes was a “beefing up” of the right side CS bearing race. This enlarging of the bearing race wall necesitated the smaller -54 bearing and a reduction in the CS right end shaft diameter.		
Part Number **Clutch Gears**	**Identifying Characteristics**	**Side 1**	**Side 2**
37450-52 (18T)	The -52 Clutch Gear can be easily distinguished from all the other Clutch Gears because it is the only Clutch Gear with 18T. It also is the only clutch gear with a bushing at both ends rather than a Torrington at one end.	  	

37450-54 (17T)	The -54 Clutch Gear has 17T and is approximately 4.25” in length. Its threaded end has about 7 threads. It was used up to 56K VIN 1465. It used the 37525-52 clutch hub nut. I believe the difference between it and the -52 Clutch Gear is the number of gear teeth and the -54 used a roller bearing at the gear end.			 **37525-52 used 52-56 up to VIN 1465**
37450-56	At this time I am uncertain as to whether the 37450-56 Clutch Gear is different from the 37499-56 gear. It could be that the only difference is the 37450-56 gear came with the early version of the Oil Seal Extension and the 37499-56 came with the later version that showed up in late 57? This early -56 clutch gear with the extension without the outer O ring started in 56 from VIN # 1465. It used the 37526-56 clutch hub nut.			 

37449-56 (17T)	The 37449-56 Clutch Gear has 17T and is approximately 4.25” in length. Its threaded end has about 7 threads. Believe a complete original 56K VIN 1465 on transmission should have an oil seal extension inserted into its’ threaded end. The extension should have a clutch gear oil seal inserted into its’ end. Starting in late 57 the extension should be the one shown to the right with the outer “O” ring. This Oil Seal Extension with the addition of the “O” ring in late 57 was accompanied by a change to a new “Clutch Hub Nut” PN 37536-56A that replaced the old nut PN 37536-56. The old nut, PN 37536-56 started with the 56K VIN 1465 and on.	   

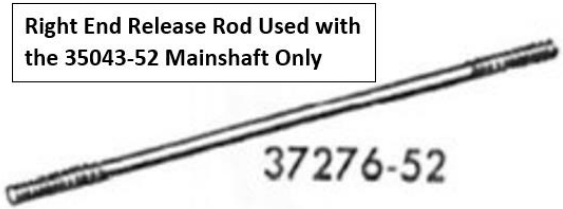
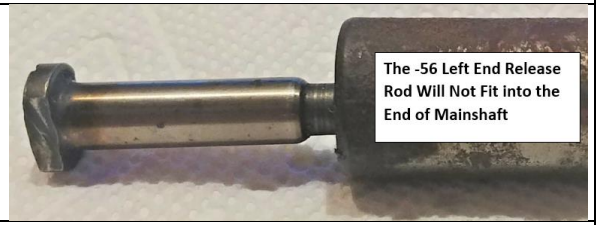
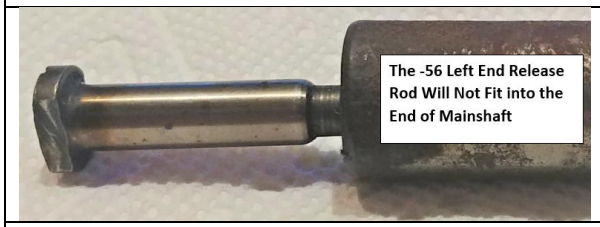
37448-67 (17T)	The -67 Clutch Gear can be easily distinguishe from all other Clutch Gears that also have 17T by its significant “grove” and longer length.		
37448-71 (17T)	The 37448-71 Gear looks similar to the -56 gear except it is about ¼” longer, has about 9 threads instead of the about 7 threads that the -56 gear has and is a few thousanths of an inch larger than all the others. A PN 37755-57 Clutch Sprocket Spacer will not fit over the -71 gear.		
MS 2nd Gears			
35297-52 (25T)	The 35297-52 MS 2nd Gear is unique in that it has 4 dogs and 25T. This gear can easily be mistaken for the CS gear 35709-52 which also has 4 dogs and possible according to a Shop Dope 25 teeth. Currently have not been able to discern the difference between a 25 tooth -52 CS 3rd gear and the -52 MS 2nd gear. Same image being used for both at this time. This gear fits both the early CS and MS.		

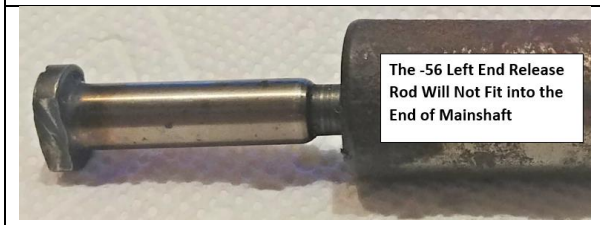
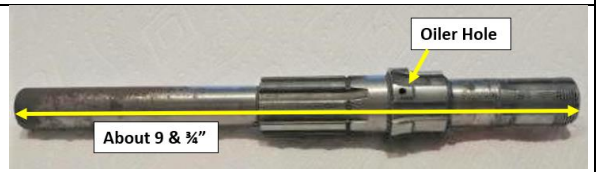
35297-54 (24T) Original Version	The 35297-54 MS 2nd Gear is unique in that it has 4 dogs (assumption, no samples to examine) and 24T.		
SHOP DOPE #356 35297-54 (23 or 24T) Later Version	As a result of changes in material and heat treatment, the above two gears now in new motorcycle production and furnished on parts order are much huskier gears than were available earlier. The later, huskier gears are identified by the numeral 4 stamped between the driving dogs. Disregard other numbers that may be found stamped elsewhere on the gears. The first huskier gears produced have twenty four teeth; later the number of teeth will be reduced to twenty three. However, gear pitch diameter stays the same whether twenty-three or twenty-four teeth, and therefore one gear can be replaced with the other. Gears identified by the numeral 4, whether twenty-three or twenty-four teeth, are OK to use. The new gears went into new motorcycle assembly starting with number 55KH 1706. A few lower numbered motorcycles have the new 35709-54 C/S 3rd gear, but not the new 35297-54 M/S 2nd gear.		
		 M/S 2nd Gear 35297-54	

35296-56 (23T)	The 35296-56MS 2nd Gear is unique in that it has 5 dogs, 23T and is not marked with a “4”.		
35297-54A	No samples available. 35297-54A PN shown in picture but not referenced in text.		
MS 3rd Gears			
35304-52 (21T)	The MS 3rd Gear 35304-52 is unique in that it has 21T and instead of having 5 voids like the later MS 3rd gears it only has 4. In addition, unlike some of the later versions, it does not have the 3 dots in the bottom of the voids. I believe these dots were used as a means to easily differentiate the MS 3rd gear from the CS 2nd gear. They look similar. The CS 2nd gears have 2 dots in their 4 voids. The -52 gear and the -54 gear were the only MS 3rd gears that used a bronze insert. The inserts are different for the -52 and the -54.		

35304-54 (20T)	The MS 3rd Gear 35304-54 can be distinguished from the other MS 3rd Gears in that it has 18T? The 63PB says it has 20T. The only picture sample available, pictured here has 18T. It does have 5 voids which is typical of all the later MS 3rd gears. It has a bronze sleave similar to but different from the -52 MS 3rd gear.		
35305-56 (20T)	The MS 3rd Gear 35305-56 may be distiguisable from the other MS 3rd Gears if in fact the -54 gear does have 18T. If so the -56 gear would be the only one with 20T, 5 voids and no bronze bushing.		
MS Low Gears			
35277-52 (29T)	No samples to evaluate at this time. If PBs are correct would expect it to have 29T. Do not at this time know how to differentiate it from the 29T, -52A MSLG.		

35277-52A (29T)? 27T Shop Dope #345 indicates this gear has 27T.	No samples to evaluate at this time. Based on Shop Dope #345, believe the 27 tooth MSLG was either a running change early in the 54 model year or a 54 model year change. I believe the 54, 56 & 57 PBs are in error indicating 29T. The MS Low Gear 35277-52A is distinguisable from the earlier version based on its unique number of teeth, 27. Based on the outer spine OD of a -53A Mainshaft believe the -52A MSLG will have a center at its widest of 1.183”. Repop Gear Shown.		

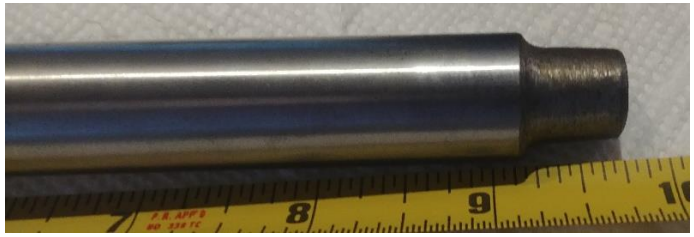
Mainshafts	**Identifying the Mainshafts is a work in progress. At this time I believe the key to IDing them will be their internal machining to accomadate the different left and right end clutch release rods.**		
35043-52	The -56 left end and the -53 right end clutch release rods will not fit. The -52 shaft has a unique right end release rod used only with the -52 shaft.		
			
			
35043-53	No verified samples to evaluate at this time. I believe that the release rod tests shown should identify the mainshaft as either a -53 or a -53A. At this time without samples I am unable to differentiate the two shafts. Believe it has a small oiler hole.		
			
			

35043-53A	No verified samples to evaluate at this time. I believe that the release rod tests shown should identify the mainshaft as either a -53 or a -53A. At this time without samples I am unable to differentiate the two shafts. Believe it has a small oiler hole.		 
35044-56	Believe it measures about 9 & 1/8th inchs and has an oiler hole. What identifies it from all others besides its' shorter length is its' "threaded shoulder" about .29" in on its' left end. Without a -53A verified mainshaft to compare it to I cannot say at this time that it is unique in length and threaded shoulder. Having said that I do believe the -56 is unique in length.	 	
35046-67	Believe it measures about 9 & ¾ inchs and has an oiler hole. The -67 left end release rod fits it snuggly, all other left end release rods are very loose fitting.		 
35046-71	No verified samples to evaluate at this time. Has no oiler hole or hole through its center since it does not use the release rods as did the 52 through 70 clutches. Of the post 70 Mainshafts I've examened I'm seeing two different lengths, 9" and about 9 & 1/8".		

35046-71A	No verified samples to evaluate at this time. Has no oiler hole or hole through its center since it does not use the release rods as did the 52 through 70 clutches. Of the post 70 Mainshafts I've examened I'm seeing two different lengths, 9" and about 9 & 1/8".		

Mainshaft Mystery Solved

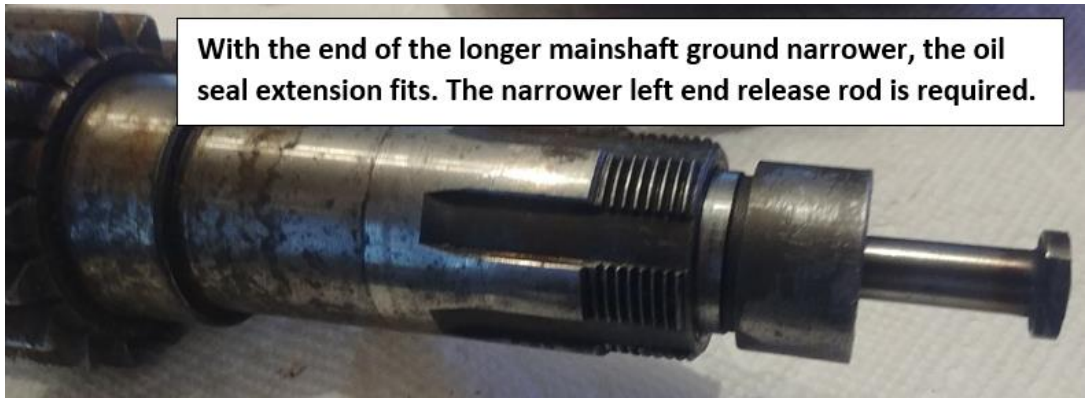
In my collection of old transmission parts, I have been examining I ran across a mainshaft that made no sense to me until recently, its' end had been ground down some.



It seemed odd to me why someone would do it and I did not give it much thought. Then I ran into another mystery, my 54K motor that I acquired and had on the bench. What I noticed was that the clutch gear was equipped with the early version of the oil seal extension. This extension didn't come into existence until VIN 1465 in the 56 Model year. This didn't seem odd since it was still a K transmission just updated. What did get my attention however was the left end release rod when I removed it. It looks like the -56 left end rod that started in 56 with VIN 1465 and on except it was narrower. Instead of the narrow end being about .24" it measures about .195". When I tried a -56 left end rod it did not fit, it was too fat.

Keep in mind that the Oil Seal Extension came into existence at the same VIN # in 56 as the -56 mainshaft. I think at this time that the -56 mainshaft is about ½" shorter than all the other shafts in order to make room for the oil seal extension and accommodates the -56 left end release rod that measures about .24" at the narrow end. So, what was I looking at? Then I remembered my mainshaft with the ground end. Following are images of the appropriate set up, the -56 mainshaft, oil seal extension and fatter left end release rod. These are followed by a

longer earlier mainshaft ground to accommodate the oil seal extension. These earlier shafts used the skinnier -52 or -54 left end release rod explaining the smaller OD rod I found on my "modified" 54K setup.

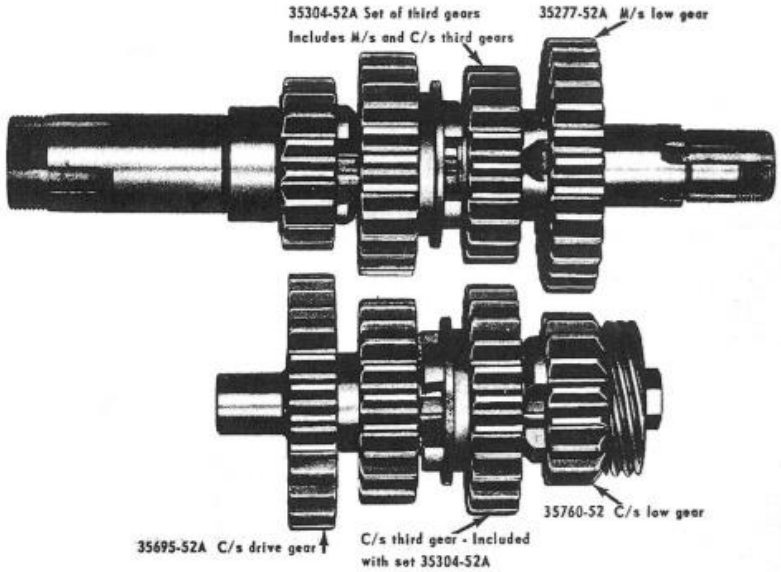


SERVICE SHOP DOPE

No. 345 January 15, 1954

SERVICING 1952 – 53 K – KK – KRM TRANSMISSIONS

(This Bulletin does not apply to 1954 KH transmissions)



Five of the transmission gears supplied for servicing 1952–53 K transmission have been made much stronger gears as a result of modification of teeth, and changes in material and heat treatment. (These *five* gears are indicated in illustration.) The other *three* gears applying to 1952–53 transmission have not been changed. These *three* gears are:

37450–52	Clutch gear
35297–52	M/s 2nd gear
35750–52	C/s 2nd gear

RECOMMENDATION

Whenever it becomes necessary to split the crankcase of a 1952–53 K – KK – KRM, whether because of transmission trouble or trouble elsewhere in engine base, replace the original *five* gears, in the positions indicated in illustration, with the later modified gears. It is also recommended that before delivering new or used K – KK – KRM motorcycles you may have in stock for sale, you consider applying this modification.

Bear in mind that the other *three* original gears in transmission are OK to use, provided they are not damaged or excessively worn, particularly their engaging slots and dogs. If the engaging edges of slots and dogs are found quite badly worn and rounded, as results from rough or speed shifting, it is hardly worthwhile to reassemble with gears in this condition, as after a further short period of service they are likely to start jumping engagement under load, making another repair job necessary.

WHAT PART NUMBERS APPLY TO FIVE MODIFIED GEARS?

35274-52 Set of five gears	35304-52A	Set of third gears – Includes two gears – M/s third gear and C/s third gear. Must be used as a pair.
	35277-52A	M/s low gear.
	35695-52A	C/s drive gear.
	35760-52	C/s low gear.

Only these later gears will be supplied in the future on parts orders for replacement gears for 1952-53 K. For example – if either 35709-52 C/s third gear, or 35304-52 M/s third gear is ordered from current K parts catalog (Issued Oct. 15th, 1952) 35304-52A set of third gears will be supplied. New parts catalog, in the making, will list gears as above.

HOW TO OBTAIN FIVE-GEAR COMBINATIONS

Order the same as you order other parts. Mail your order to the Parts Department (do not direct to Service Department). Order part no. 35274-52 Set of five gears. Parts will be supplied and charged for.

WHAT WILL THE FACTORY CONTRIBUTE TO THIS CONVERSION?

Gears replaced with the new *five-gear* combination in any new 1952-53 K – KK – KRM in stock, or any used K – KK – KRM with less than *7500* miles service, may be returned to factory for exchange for another new five-gear combination or for full credit, provided replaced gears are received at the factory before September 1, 1954. Applying to a motorcycle in use more than 7500 miles, gears replaced should not be returned to factory as they will not be accepted for either exchange or credit.

When returning gears replaced with the new combination, list them on a return instruction sheet. If returned with other parts, list gears on a separate instruction sheet and give the following information:

Engine number of motorcycle from which gears were removed.
Total mileage.
Date gears were replaced.
Exchange for later gears.
Allow credit.

Unless this information is complete, gears returned will not be exchanged or credited.

Bear in mind – *This offer expires September 1, 1954.* Only gears received at the factory before this date will be accepted for exchange or credit.

WHAT ABOUT NEW GEARS I MAY HAVE IN STOCK, WHICH ARE SUPERSEDED BY THE FIVE MODIFIED GEARS?

Return these new gears for exchange or credit, but check carefully before returning to be sure you are returning only the earlier gears. (Some of the later modified gears have already been shipped on parts orders).

Return the following:

35304–52	M/s third gear – 21 tooth gear, with straight bronze bushing staked on one side.
35277–52	M/s low gear – 29 tooth gear.
35695–52	C/s drive gear – 29 tooth gear.
35709–52	C/s third gear – 25 or 26 tooth gear.
35760–52	C/s low gear – 18 tooth gear.

When returning above described new gears for exchange or credit, itemize on a separate return instruction sheet, and give the following information:

New obsolete stock.
Exchange for later gears.
Allow credit.

Do not return the following, as they are latest modified gears.

M/s third gear – with 21 modified teeth and shouldered bronze bushing.
M/s low gear – with 27 teeth.
C/s drive gear – with 27 teeth.
C/s third gear – with 24 teeth.

When servicing a transmission that has seen considerable use, particularly one in which something is broken or one that has been jumping out of gear, inspect following parts closely to be sure they are in good condition:

Shifter forks	34291–52
Shifter fork rollers	34168–52
Shifter cam	34012–52
Shifter centering springs	34500–52

If something has broken or gears have been jumping out of engagement under load, one or both shifter forks may be bent or badly worn – shifter fork rollers may be broken or damaged – and shifter cam slots may be beaten up and indented.

If shifter centering springs are bright finished, replace with black springs. If pawl carrier support 34513–52 does not have 34485–52 centering spring retaining plugs, they should be installed.