

# Norton

motorcycles

A DIVISION OF NORTON VILLIERS LTD.

# COMMANDO

## WORKSHOP MANUAL

### 1970 MODELS ONWARDS

## MODELS

**Fastback**

**Roadster**

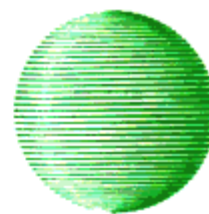
**Interpol**

**Interstate**

**'SS'**

**Hi-rider**

**'S' Type**



rocbo.net

# WORKSHOP MANUAL

FOR

# Norton

# COMMANDO

MODELS:

FASTBACK  
ROADSTER  
INTERPOL  
"SS"  
HI RIDER  
FASTBACK L.R.  
INTERSTATE

FROM 1970

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Part No. 063419

## INCHES TO MILLIMETRES (DECIMALS OF)

| 1/1000 |       | 1/100  |       | 1/10   |       |
|--------|-------|--------|-------|--------|-------|
| inches | mm.   | inches | mm.   | inches | mm.   |
| ·001   | ·0254 | ·01    | ·254  | ·1     | 2·54  |
| ·002   | ·0508 | ·02    | ·508  | ·2     | 5·08  |
| ·003   | ·0762 | ·03    | ·762  | ·3     | 7·62  |
| ·004   | ·1016 | ·04    | 1·016 | ·4     | 10·16 |
| ·005   | ·1270 | ·05    | 1·270 | ·5     | 12·70 |
| ·006   | ·1524 | ·06    | 1·524 | ·6     | 15·24 |
| ·007   | ·1778 | ·07    | 1·778 | ·7     | 17·79 |
| ·008   | ·2032 | ·08    | 2·032 | ·8     | 20·32 |
| ·009   | ·2286 | ·09    | 2·286 | ·9     | 22·86 |

| Fractions |       |       | Decimals | mm.     |
|-----------|-------|-------|----------|---------|
|           |       | 1/64  | ·015625  | ·3969   |
|           | 1/32  |       | ·03125   | ·7937   |
|           |       | 3/64  | ·046875  | 1·1906  |
| 1/16      |       |       | ·0625    | 1·5875  |
|           |       | 5/64  | ·078125  | 1·9844  |
|           | 3/32  |       | ·09375   | 2·3812  |
|           |       | 7/64  | ·109375  | 2·7781  |
| 1/8       |       |       | ·125     | 3·1750  |
|           |       | 9/64  | ·140625  | 3·5719  |
|           | 5/32  |       | ·15625   | 3·9687  |
|           |       | 11/64 | ·171875  | 4·3656  |
| 3/16      |       |       | ·1875    | 4·7625  |
|           |       | 13/64 | ·203125  | 5·1594  |
|           | 7/32  |       | ·21875   | 5·5562  |
|           |       | 15/64 | ·234375  | 5·9531  |
| 1/4       |       |       | ·25      | 6·3500  |
|           |       | 17/64 | ·265625  | 6·7469  |
|           | 9/32  |       | ·28125   | 7·1437  |
|           |       | 19/64 | ·296875  | 7·5406  |
| 5/16      |       |       | ·3125    | 7·9375  |
|           |       | 21/64 | ·328125  | 8·3344  |
|           | 11/32 |       | ·34375   | 8·7312  |
|           |       | 23/64 | ·359375  | 9·1281  |
| 3/8       |       |       | ·375     | 9·5250  |
|           |       | 25/64 | ·390625  | 9·9219  |
|           | 13/32 |       | ·40625   | 10·3187 |
|           |       | 27/64 | ·421875  | 10·7156 |
| 7/16      |       |       | ·4375    | 11·1125 |
|           |       | 29/64 | ·453125  | 11·5094 |
|           | 15/32 |       | ·46875   | 11·9062 |
|           |       | 31/64 | ·484375  | 12·3031 |
| 1/2       |       |       | ·5       | 12·700  |

## FRACTIONS TO DECIMALS – DECIMALS OF INCH TO MILLIMETRE

| Fractions |       |       | Decimals | mm.     |
|-----------|-------|-------|----------|---------|
|           |       | 33/64 | ·515625  | 13·0969 |
|           | 17/32 |       | ·53125   | 13·4937 |
|           |       | 35/64 | ·546675  | 13·8906 |
| 9/16      |       |       | ·5625    | 14·2875 |
|           |       | 37/64 | ·578125  | 14·6844 |
|           | 19/32 |       | ·59375   | 15·0812 |
|           |       | 39/64 | ·609375  | 15·4781 |
| 5/8       |       |       | ·625     | 15·875  |
|           |       | 41/64 | ·640625  | 16·2719 |
|           | 21/32 |       | ·65685   | 16·6687 |
|           |       | 43/64 | ·671875  | 17·0656 |
| 11/16     |       |       | ·6375    | 17·4625 |
|           |       | 45/64 | ·703125  | 17·8594 |
|           | 23/32 |       | ·71875   | 18·2562 |
|           |       | 47/64 | ·734375  | 18·6531 |
| 3/4       |       |       | ·75      | 19·05   |
|           |       | 49/64 | ·765625  | 19·4469 |
|           | 25/32 |       | ·78125   | 19·8437 |
|           |       | 51/64 | ·796875  | 20·2406 |
| 13/16     |       |       | ·8125    | 20·6375 |
|           |       | 53/64 | ·828125  | 21·0344 |
|           | 27/32 |       | ·84375   | 21·4312 |
|           |       | 55/64 | ·859375  | 21·8281 |
| 7/8       |       |       | ·875     | 22·225  |
|           |       | 57/64 | ·890625  | 22·6219 |
|           | 29/32 |       | ·90625   | 23·0187 |
|           |       | 59/64 | ·921875  | 23·4156 |
| 15/16     |       |       | ·9375    | 23·8125 |
|           |       | 61/64 | ·953125  | 24·2094 |
|           | 31/32 |       | ·96875   | 24·6062 |
|           |       | 63/64 | ·984375  | 25·0031 |
| 1         |       |       | ·5       | 25·4    |

**WIRE GAUGES****DRILL SIZES (INCHES)**

| No. of Gauge | Imperial Standard Wire Gauge |             |
|--------------|------------------------------|-------------|
|              | Inches                       | Millimetres |
| 1            | .300                         | 7.620       |
| 2            | .276                         | 7.010       |
| 3            | .252                         | 6.400       |
| 4            | .232                         | 5.892       |
| 5            | .212                         | 5.384       |
| 6            | .192                         | 4.876       |
| 7            | .176                         | 4.470       |
| 8            | .160                         | 4.064       |
| 9            | .144                         | 3.657       |
| 10           | .128                         | 3.251       |
| 11           | .116                         | 2.946       |
| 12           | .104                         | 2.641       |
| 13           | .092                         | 2.336       |
| 14           | .080                         | 2.032       |
| 15           | .072                         | 1.828       |
| 16           | .064                         | 1.625       |
| 17           | .056                         | 1.422       |
| 18           | .048                         | 1.219       |
| 19           | .040                         | 1.016       |
| 20           | .036                         | .914        |
| 21           | .032                         | .812        |
| 22           | .028                         | .711        |
| 23           | .024                         | .609        |
| 24           | .022                         | .558        |
| 25           | .020                         | .508        |
| 26           | .018                         | .457        |
| 27           | .0164                        | .416        |
| 28           | .0148                        | .375        |
| 29           | .0136                        | .345        |
| 30           | .0124                        | .314        |

| Number | Size  |
|--------|-------|
| 1      | .2280 |
| 2      | .2210 |
| 3      | .2130 |
| 4      | .2090 |
| 5      | .2055 |
| 6      | .2040 |
| 7      | .2010 |
| 8      | .1990 |
| 9      | .1960 |
| 10     | .1935 |
| 11     | .1910 |
| 12     | .1890 |
| 13     | .1850 |
| 14     | .1820 |
| 15     | .1800 |
| 16     | .1770 |
| 17     | .1730 |
| 18     | .1695 |
| 19     | .1660 |
| 20     | .1610 |
| 21     | .1590 |
| 22     | .1570 |
| 23     | .1540 |
| 24     | .1520 |
| 25     | .1495 |
| 26     | .1470 |

| Number | Size  |
|--------|-------|
| 27     | .1440 |
| 28     | .1405 |
| 29     | .1360 |
| 30     | .1285 |
| 31     | .1200 |
| 32     | .1160 |
| 33     | .1130 |
| 34     | .1110 |
| 35     | .1100 |
| 36     | .1065 |
| 37     | .1040 |
| 38     | .1015 |
| 39     | .0995 |
| 40     | .0980 |
| 41     | .0960 |
| 42     | .0935 |
| 43     | .0890 |
| 44     | .0860 |
| 45     | .0820 |
| 46     | .0810 |
| 47     | .0785 |
| 48     | .0760 |
| 49     | .0730 |
| 50     | .0700 |
| 51     | .0670 |
| 52     | .0635 |

| Letter | Size |
|--------|------|
| A      | .234 |
| B      | .238 |
| C      | .242 |
| D      | .246 |
| E      | .250 |
| F      | .257 |
| G      | .261 |
| H      | .266 |
| I      | .272 |
| J      | .277 |
| K      | .281 |
| L      | .290 |
| M      | .295 |
| N      | .302 |
| O      | .316 |
| P      | .323 |
| Q      | .332 |
| R      | .339 |
| S      | .348 |
| T      | .358 |
| U      | .368 |
| V      | .377 |
| W      | .386 |
| X      | .397 |
| Y      | .404 |
| Z      | .413 |

| No. of Gauge | Brown and Sharpe's American Wire Gauge |             |
|--------------|--|-------------|
|              | Inches                                 | Millimetres |
| 1            | .289                                   | 7.348       |
| 2            | .258                                   | 6.543       |
| 3            | .229                                   | 5.827       |
| 4            | .204                                   | 5.189       |
| 5            | .182                                   | 4.621       |
| 6            | .162                                   | 4.115       |
| 7            | .144                                   | 3.664       |
| 8            | .128                                   | 3.263       |
| 9            | .114                                   | 2.906       |
| 10           | .102                                   | 2.588       |
| 11           | .091                                   | 2.304       |
| 12           | .081                                   | 2.052       |
| 13           | .072                                   | 1.827       |
| 14           | .064                                   | 1.627       |
| 15           | .057                                   | 1.449       |
| 16           | .051                                   | 1.290       |
| 17           | .045                                   | 1.149       |
| 18           | .040                                   | 1.009       |
| 19           | .035                                   | .911        |
| 20           | .032                                   | .811        |
| 21           | .028                                   | .722        |
| 22           | .025                                   | .643        |
| 23           | .023                                   | .573        |
| 24           | .020                                   | .511        |
| 25           | .018                                   | .454        |
| 26           | .016                                   | .404        |
| 27           | .014                                   | .360        |
| 28           | .012                                   | .321        |
| 29           | .011                                   | .285        |
| 30           | .010                                   | .254        |

## PINTS (IMPERIAL) TO LITRES

|   | 0    | 1    | 2     | 3     | 4     | 5     | 6     | 7     | 8     |
|---|------|------|-------|-------|-------|-------|-------|-------|-------|
| — | —    | .568 | 1.136 | 1.705 | 2.273 | 2.841 | 3.410 | 3.978 | 4.546 |
| 1 | .142 | .710 | 1.279 | 1.846 | 2.415 | 2.983 | 3.552 | 4.120 | 4.688 |
| 2 | .284 | .852 | 1.420 | 1.989 | 2.557 | 3.125 | 3.694 | 4.262 | 4.830 |
| 3 | .426 | .994 | 1.563 | 2.131 | 2.699 | 3.267 | 3.836 | 4.404 | 4.972 |

## GALLONS (IMPERIAL) TO LITRES

|    | 0       | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       |    |
|----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|
| —  | —       | 4.546   | 9.092   | 13.638  | 18.184  | 22.730  | 27.276  | 31.822  | 36.368  | 40.914  | —  |
| 10 | 45.460  | 50.005  | 54.551  | 59.097  | 63.643  | 68.189  | 72.735  | 77.281  | 81.827  | 86.373  | 10 |
| 20 | 90.919  | 95.465  | 100.011 | 104.557 | 109.103 | 113.649 | 118.195 | 122.741 | 127.287 | 131.833 | 20 |
| 30 | 136.379 | 140.924 | 145.470 | 150.016 | 154.562 | 159.108 | 163.654 | 168.200 | 172.746 | 177.292 | 30 |
| 40 | 181.838 | 186.384 | 190.930 | 195.476 | 200.022 | 204.568 | 209.114 | 213.660 | 218.206 | 222.752 | 40 |
| 50 | 227.298 | 231.843 | 236.389 | 240.935 | 245.481 | 250.027 | 254.473 | 259.119 | 263.605 | 268.211 | 50 |
| 60 | 272.757 | 277.303 | 281.849 | 286.395 | 290.941 | 295.487 | 300.033 | 304.579 | 309.125 | 313.671 | 60 |
| 70 | 318.217 | 322.762 | 327.308 | 331.854 | 336.400 | 340.946 | 345.492 | 350.038 | 354.584 | 359.130 | 70 |
| 80 | 363.676 | 368.222 | 372.768 | 377.314 | 381.860 | 386.406 | 390.952 | 395.498 | 400.044 | 404.590 | 80 |
| 90 | 409.136 | 413.681 | 418.227 | 422.773 | 427.319 | 431.865 | 436.411 | 440.957 | 445.503 | 450.049 | 90 |

## MILES TO KILOMETRES

|    | 0       | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       |    |
|----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----|
| —  | —       | 1.609   | 3.219   | 4.828   | 6.437   | 8.047   | 9.656   | 11.265  | 12.875  | 14.484  | —  |
| 10 | 16.093  | 17.703  | 19.312  | 20.922  | 22.531  | 24.140  | 25.750  | 27.359  | 28.968  | 30.578  | 10 |
| 20 | 32.187  | 33.796  | 35.406  | 37.015  | 38.624  | 40.234  | 41.843  | 43.452  | 45.062  | 46.671  | 20 |
| 30 | 48.280  | 49.890  | 51.499  | 53.108  | 54.718  | 56.327  | 57.936  | 59.546  | 61.155  | 62.765  | 30 |
| 40 | 64.374  | 65.983  | 67.593  | 69.202  | 70.811  | 72.421  | 74.030  | 75.639  | 77.249  | 78.858  | 40 |
| 50 | 80.467  | 82.077  | 83.686  | 85.295  | 86.905  | 88.514  | 90.123  | 91.733  | 93.342  | 94.951  | 50 |
| 60 | 96.561  | 98.170  | 99.780  | 101.389 | 102.998 | 104.608 | 106.217 | 107.826 | 109.436 | 111.045 | 60 |
| 70 | 112.654 | 114.264 | 115.873 | 117.482 | 119.092 | 120.701 | 122.310 | 123.920 | 125.529 | 127.138 | 70 |
| 80 | 128.748 | 130.357 | 131.967 | 133.576 | 135.185 | 136.795 | 138.404 | 140.013 | 141.623 | 143.232 | 80 |
| 90 | 144.841 | 146.451 | 148.060 | 149.669 | 151.279 | 152.888 | 154.497 | 156.107 | 157.716 | 159.325 | 90 |

## MILES PER GALLON (IMPERIAL) TO LITRES PER 100 KILOMETRES

|     |       |     |       |     |       |     |       |     |      |     |      |    |      |    |      |    |      |    |      |
|-----|-------|-----|-------|-----|-------|-----|-------|-----|------|-----|------|----|------|----|------|----|------|----|------|
| 10  | 28.25 | 15  | 18.83 | 20  | 14.12 | 25  | 11.30 | 30  | 9.42 | 35  | 8.07 | 40 | 7.06 | 50 | 5.65 | 60 | 4.71 | 70 | 4.04 |
| 10½ | 26.90 | 15½ | 18.22 | 20½ | 13.78 | 25½ | 11.08 | 30½ | 9.26 | 35½ | 7.96 | 41 | 6.89 | 51 | 5.54 | 61 | 4.63 | 71 | 3.98 |
| 11  | 25.68 | 16  | 17.66 | 21  | 13.45 | 26  | 10.87 | 31  | 9.11 | 36  | 7.85 | 42 | 6.73 | 52 | 5.43 | 62 | 4.55 | 72 | 3.92 |
| 11½ | 24.56 | 16½ | 17.12 | 21½ | 13.14 | 26½ | 10.66 | 31½ | 8.97 | 36½ | 7.74 | 43 | 6.57 | 53 | 5.33 | 63 | 4.48 | 73 | 3.87 |
| 12  | 23.54 | 17  | 16.61 | 22  | 12.84 | 27  | 10.46 | 32  | 8.83 | 37  | 7.63 | 44 | 6.42 | 54 | 5.23 | 64 | 4.41 | 74 | 3.82 |
| 12½ | 22.60 | 17½ | 16.14 | 22½ | 12.55 | 27½ | 10.27 | 32½ | 8.69 | 37½ | 7.53 | 45 | 6.28 | 55 | 5.13 | 65 | 4.35 | 75 | 3.77 |
| 13  | 21.73 | 18  | 15.69 | 23  | 12.28 | 28  | 19.09 | 33  | 8.56 | 38  | 7.43 | 46 | 6.14 | 56 | 5.04 | 66 | 4.28 | 76 | 3.72 |
| 13½ | 20.92 | 18½ | 15.27 | 23½ | 12.02 | 28½ | 9.91  | 33½ | 8.43 | 38½ | 7.34 | 47 | 6.01 | 57 | 4.96 | 67 | 4.22 | 77 | 3.67 |
| 14  | 20.18 | 19  | 14.87 | 24  | 11.77 | 29  | 9.74  | 34  | 8.31 | 39  | 7.24 | 48 | 5.89 | 58 | 4.87 | 68 | 4.16 | 78 | 3.62 |
| 14½ | 19.48 | 19½ | 14.49 | 24½ | 11.53 | 29½ | 9.58  | 34½ | 8.19 | 39½ | 7.15 | 49 | 5.77 | 59 | 4.79 | 69 | 4.10 | 79 | 3.57 |

## POUNDS PER SQUARE INCH TO KILOGRAMS PER SQUARE CENTIMETRE

|    | 0     | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     |    |
|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|
| —  |       | 0·070 | 0·141 | 0·211 | 0·281 | 0·352 | 0·422 | 0·492 | 0·562 | 0·633 | —  |
| 10 | 0·703 | 0·773 | 0·844 | 0·914 | 0·984 | 1·055 | 1·125 | 1·195 | 1·266 | 1·336 | 10 |
| 20 | 1·406 | 1·476 | 1·547 | 1·617 | 1·687 | 1·758 | 1·828 | 1·898 | 1·969 | 2·039 | 20 |
| 30 | 2·109 | 2·179 | 2·250 | 2·320 | 2·390 | 2·461 | 2·531 | 2·601 | 2·672 | 2·742 | 30 |
| 40 | 2·812 | 2·883 | 2·953 | 3·023 | 3·093 | 3·164 | 3·234 | 3·304 | 3·375 | 3·445 | 40 |
| 50 | 3·515 | 3·586 | 3·656 | 3·726 | 3·797 | 3·867 | 3·937 | 4·007 | 4·078 | 4·148 | 50 |
| 60 | 4·218 | 4·289 | 4·359 | 4·429 | 4·500 | 4·570 | 4·640 | 4·711 | 4·781 | 4·851 | 60 |
| 70 | 4·921 | 4·992 | 5·062 | 5·132 | 5·203 | 5·273 | 5·343 | 5·414 | 5·484 | 5·554 | 70 |
| 80 | 5·624 | 5·695 | 5·765 | 5·835 | 5·906 | 5·976 | 6·046 | 6·117 | 6·187 | 6·257 | 80 |
| 90 | 6·328 | 6·398 | 6·468 | 6·538 | 6·609 | 6·679 | 6·749 | 6·820 | 6·890 | 6·960 | 90 |

## POUNDS TO KILOGRAMS

|    | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      |    |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
| —  |        | 0·454  | 0·907  | 1·361  | 1·814  | 2·268  | 2·722  | 3·175  | 3·629  | 4·082  | —  |
| 10 | 4·536  | 4·990  | 5·443  | 5·987  | 6·350  | 6·804  | 7·257  | 7·711  | 8·165  | 8·618  | 10 |
| 20 | 9·072  | 9·525  | 9·979  | 10·433 | 10·886 | 11·340 | 11·793 | 12·247 | 12·701 | 13·154 | 20 |
| 30 | 13·608 | 14·061 | 14·515 | 14·968 | 15·422 | 15·876 | 16·329 | 16·783 | 17·237 | 17·690 | 30 |
| 40 | 18·144 | 18·597 | 19·051 | 19·504 | 19·953 | 20·412 | 20·865 | 21·319 | 21·772 | 22·226 | 40 |
| 50 | 22·680 | 23·133 | 23·587 | 24·040 | 24·494 | 24·948 | 25·401 | 25·855 | 26·308 | 26·762 | 50 |
| 60 | 27·216 | 27·669 | 28·123 | 28·576 | 29·030 | 29·484 | 29·937 | 30·391 | 30·844 | 31·298 | 60 |
| 70 | 31·751 | 32·205 | 32·659 | 33·112 | 33·566 | 34·019 | 34·473 | 34·927 | 35·380 | 35·834 | 70 |
| 80 | 36·287 | 36·741 | 37·195 | 37·648 | 38·102 | 38·555 | 39·009 | 39·463 | 39·916 | 40·370 | 80 |
| 90 | 40·823 | 41·277 | 41·731 | 42·184 | 42·638 | 43·091 | 43·545 | 43·998 | 44·452 | 44·906 | 90 |

## FOOT POUNDS TO KILOGRAMMETRES

|    | 0      | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      |    |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|
| —  |        | 0·138  | 0·277  | 0·415  | 0·553  | 0·691  | 0·830  | 0·968  | 1·106  | 1·244  | —  |
| 10 | 1·383  | 1·521  | 1·659  | 1·797  | 1·936  | 2·074  | 2·212  | 2·350  | 2·489  | 2·627  | 10 |
| 20 | 2·765  | 2·903  | 3·042  | 3·180  | 3·318  | 3·456  | 3·595  | 3·733  | 3·871  | 4·009  | 20 |
| 30 | 4·148  | 4·286  | 4·424  | 4·562  | 4·701  | 4·839  | 4·977  | 5·116  | 5·254  | 5·392  | 30 |
| 40 | 5·530  | 5·668  | 5·807  | 5·945  | 6·083  | 6·221  | 6·360  | 6·498  | 6·636  | 6·774  | 40 |
| 50 | 6·913  | 7·051  | 7·189  | 7·328  | 7·466  | 7·604  | 7·742  | 7·881  | 8·019  | 8·157  | 50 |
| 60 | 8·295  | 8·434  | 8·572  | 8·710  | 8·848  | 8·987  | 9·125  | 9·263  | 9·401  | 9·540  | 60 |
| 70 | 9·678  | 9·816  | 9·954  | 10·093 | 10·231 | 10·369 | 10·507 | 10·646 | 10·784 | 10·922 | 70 |
| 80 | 11·060 | 11·199 | 11·337 | 11·475 | 11·613 | 11·752 | 11·890 | 12·028 | 12·166 | 12·305 | 80 |
| 90 | 12·443 | 12·581 | 12·719 | 12·858 | 12·996 | 13·134 | 13·272 | 13·411 | 13·549 | 13·687 | 90 |

## MILLIMETRES TO INCHES

| mm. | 0      | 10     | 20      | 30      | 40      | 50      | 60      | 70      | 80      | 90     |
|-----|--------|--------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0   |        | ·39370 | ·78740  | 1·18110 | 1·57480 | 1·96851 | 2·36221 | 2·75591 | 3·14961 | 3·5433 |
| 1   | ·03937 | ·43307 | ·82677  | 1·22047 | 1·61417 | 2·00788 | 2·40158 | 2·79528 | 3·18891 | 3·5826 |
| 2   | ·07874 | ·47244 | ·86614  | 1·25984 | 1·65354 | 2·04725 | 2·44095 | 2·83465 | 3·22835 | 3·6220 |
| 3   | ·11811 | ·51181 | ·90551  | 1·29921 | 1·69291 | 2·08662 | 2·48032 | 2·87402 | 3·26772 | 3·6614 |
| 4   | ·15748 | ·55118 | ·94488  | 1·33858 | 1·73228 | 2·12599 | 2·51969 | 2·91339 | 3·30709 | 3·7007 |
| 5   | ·19685 | ·59055 | ·98425  | 1·37795 | 1·77165 | 2·16536 | 2·55906 | 2·95276 | 3·34646 | 3·7401 |
| 6   | ·23622 | ·62992 | 1·02362 | 1·41732 | 1·81103 | 2·20473 | 2·59843 | 2·99213 | 3·38583 | 3·7795 |
| 7   | ·27559 | ·66929 | 1·06299 | 1·45669 | 1·85040 | 2·24410 | 2·63780 | 3·03150 | 3·42520 | 3·8189 |
| 8   | ·31496 | ·70866 | 1·10236 | 1·49606 | 1·88977 | 2·28347 | 2·67717 | 3·07087 | 3·46457 | 3·8582 |
| 9   | ·35433 | ·74803 | 1·14173 | 1·53543 | 1·92914 | 2·32284 | 2·71654 | 3·11024 | 3·50394 | 3·8976 |

## MILLIMETRES TO INCHES (DECIMALS OF)

| 1/1000 |         | 1/100 |        | 1/10 |        |
|--------|---------|-------|--------|------|--------|
| mm.    | inches  | mm.   | inches | mm.  | inches |
| 0·001  | ·000039 | 0·01  | ·00039 | 0·1  | ·00394 |
| 0·002  | ·000079 | 0·02  | ·00079 | 0·2  | ·00787 |
| 0·003  | ·000118 | 0·03  | ·00118 | 0·3  | ·01181 |
| 0·004  | ·000157 | 0·04  | ·00157 | 0·4  | ·01575 |
| 0·005  | ·000197 | 0·05  | ·00197 | 0·5  | ·01969 |
| 0·006  | ·000236 | 0·06  | ·00236 | 0·6  | ·02362 |
| 0·007  | ·000276 | 0·07  | ·00276 | 0·7  | ·02756 |
| 0·008  | ·000315 | 0·08  | ·00315 | 0·8  | ·03150 |
| 0·009  | ·000354 | 0·09  | ·00354 | 0·9  | ·03543 |

## INCHES TO MILLIMETRES

| Inches | 0     | 10    | 20    | 30    | 40     |
|--------|-------|-------|-------|-------|--------|
| 0      |       | 254·0 | 508·0 | 762·0 | 1016·0 |
| 1      | 25·4  | 279·4 | 533·4 | 787·4 | 1041·4 |
| 2      | 50·8  | 304·8 | 558·8 | 812·8 | 1066·8 |
| 3      | 76·2  | 330·2 | 584·2 | 838·2 | 1092·2 |
| 4      | 101·6 | 355·6 | 609·6 | 863·6 | 1117·6 |
| 5      | 127·0 | 381·0 | 635·0 | 889·0 | 1143·0 |
| 6      | 152·4 | 406·4 | 660·4 | 914·4 | 1168·4 |
| 7      | 177·3 | 431·8 | 685·8 | 939·8 | 1193·8 |
| 8      | 203·2 | 457·2 | 711·2 | 965·2 | 1219·2 |
| 9      | 228·6 | 482·6 | 736·6 | 990·6 | 1244·6 |

# THREADS

## U.N.E.F.

| Dia.        | No of thds. |
|-------------|-------------|
| 1/4 in.     | 32          |
| 5/16 in.    | 32          |
| 3/8 in.     | 32          |
| 7/16 in.    | 28          |
| 1/2 in.     | 28          |
| 9/16 in.    | 24          |
| 5/8 in.     | 24          |
| 11/16 in.   | 24          |
| 3/4 in.     | 20          |
| 13/16 in.   | 20          |
| 7/8 in.     | 20          |
| 15/16 in.   | 20          |
| 1 in.       | 20          |
| 1-1/16 in.  | 18          |
| 1-1/8 in.   | 18          |
| 1-3/16 in.  | 18          |
| 1-1/4 in.   | 18          |
| 1-5/16 in.  | 18          |
| 1-3/8 in.   | 18          |
| 1-7/16 in.  | 18          |
| 1-1/2 in.   | 18          |
| 1-9/16 ins. | 18          |
| 1-5/8 in.   | 18          |
| 1-11/16 in. | 18          |

## U.N.F.

| Dia.      | No. of thds. |
|-----------|--------------|
| 1/4 in.   | 28           |
| 5/16 in.  | 24           |
| 3/8 in.   | 24           |
| 7/16 in.  | 20           |
| 1/2 in.   | 20           |
| 9/16 in.  | 18           |
| 5/8 in.   | 18           |
| 3/4 in.   | 16           |
| 7/8 in.   | 14           |
| 1 in.     | 12           |
| 1-1/8 in. | 12           |
| 1-1/4 in. | 12           |
| 1-3/8 in. | 12           |
| 1-1/2 in. | 12           |
|           |              |
|           |              |

## U.N.C.

| Dia.      | No. of thds. |
|-----------|--------------|
| 1/4 in.   | 20           |
| 5/16 in.  | 18           |
| 3/8 in.   | 16           |
| 7/16 in.  | 14           |
| 1/2 in.   | 13           |
| 9/16 in.  | 12           |
| 5/8 in.   | 11           |
| 3/4 in.   | 10           |
| 7/8 in.   | 9            |
| 1 in.     | 8            |
| 1-1/8 in. | 7            |
| 1-1/4 in. | 7            |
| 1-3/3 in. | 6            |
| 1-1/2 in. | 6            |
| 1-3/4 in. | 5            |
| 2 in.     | 4-1/2        |

## B.A.

| No. | Dia. of bolt | Thds. per inch |
|-----|--------------|----------------|
| 0   | ·2362        | 25·4           |
| 1   | ·2087        | 28·2           |
| 2   | ·1850        | 31·4           |
| 3   | ·1614        | 34·8           |
| 4   | ·1417        | 38·5           |
| 5   | ·1260        | 43·0           |
| 6   | ·1102        | 47·9           |
| 7   | ·0984        | 52·9           |
| 8   | ·0866        | 59·1           |
| 9   | ·0748        | 65·1           |
| 10  | ·0669        | 72·6           |
| 11  | ·0591        | 81·9           |
| 12  | ·0511        | 90·9           |
| 13  | ·0472        | 102·0          |
| 14  | ·0394        | 109·9          |
| 15  | ·0354        | 120·5          |
| 16  | ·0311        | 133·3          |

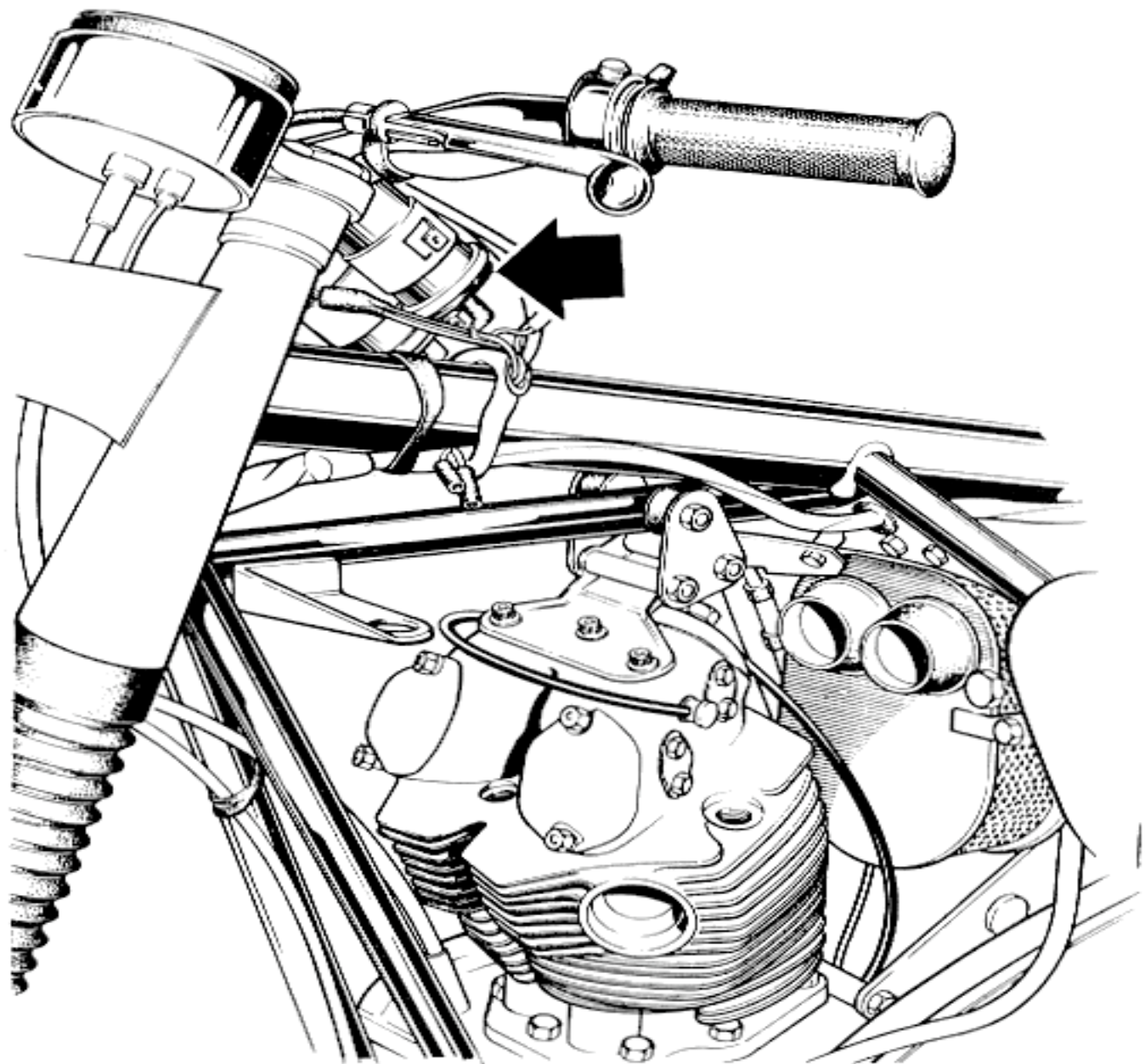
## B.S.W.

| Dia. of bolt (inch) | Threads per inch |
|---------------------|------------------|
| 1/4                 | 20               |
| 5/16                | 18               |
| 3/8                 | 16               |
| 7/16                | 14               |
| 1/2                 | 12               |
| 9/16                | 12               |
| 5/8                 | 11               |
| 11/16               | 11               |
| 3/4                 | 10               |
| 13/16               | 10               |
| 7/8                 | 9                |
| 15/16               | 9                |
| 1                   | 8                |

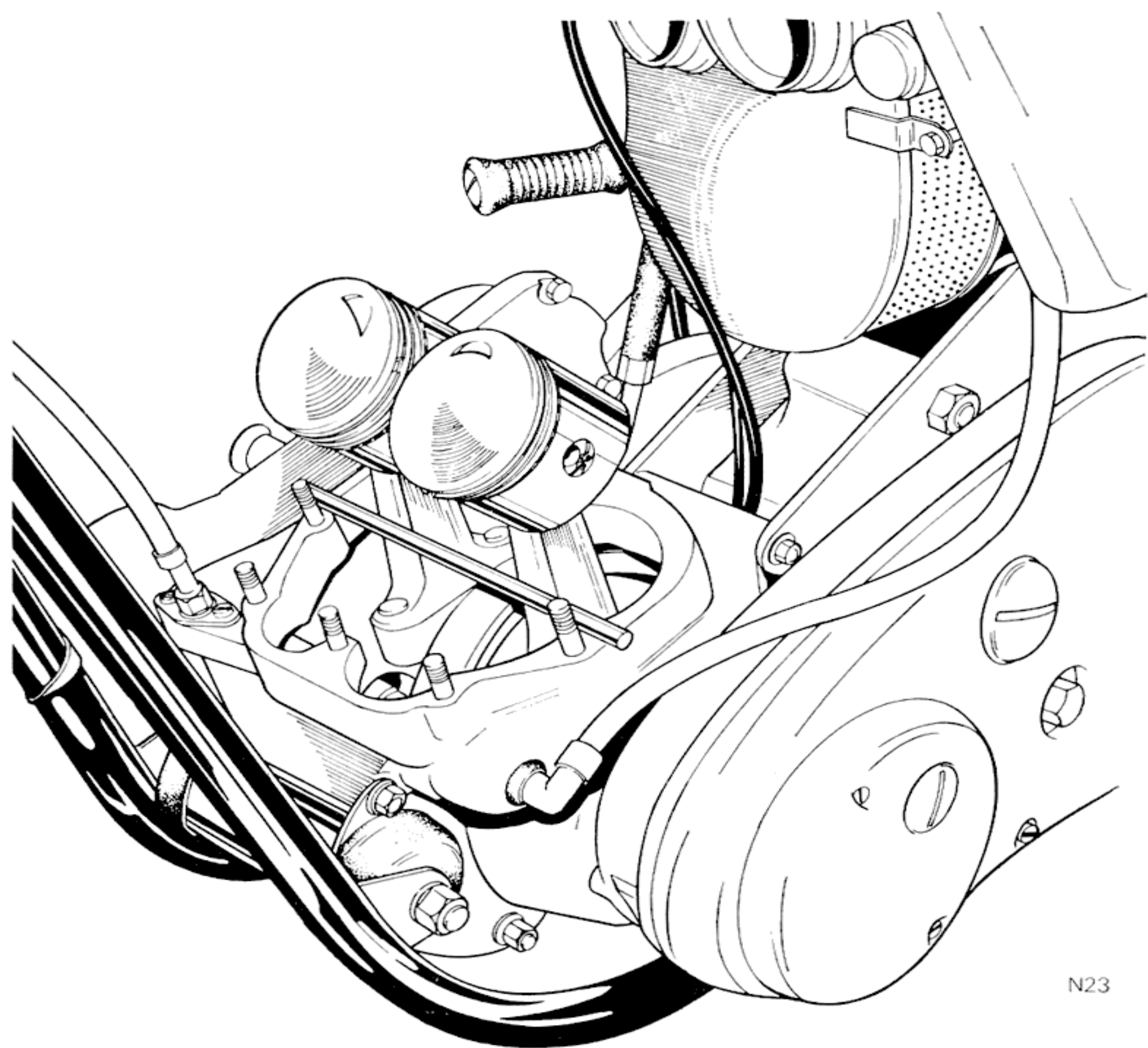
## B.S.F.

| Dia. of bolt (inch) | Threads per inch |
|---------------------|------------------|
| 7/32                | 28               |
| 1/4                 | 26               |
| 9/32                | 26               |
| 5/16                | 22               |
| 3/8                 | 20               |
| 7/16                | 18               |
| 1/2                 | 16               |
| 9/16                | 16               |
| 5/8                 | 14               |
| 11/16               | 14               |
| 3/4                 | 12               |
| 13/16               | 12               |
| 7/8                 | 11               |
| 1                   | 10               |
| 1-1/8               | 9                |
| 1-1/4               | 9                |
| 1-3/8               | 8                |
| 1-1/2               | 8                |
| 1-5/8               | 8                |





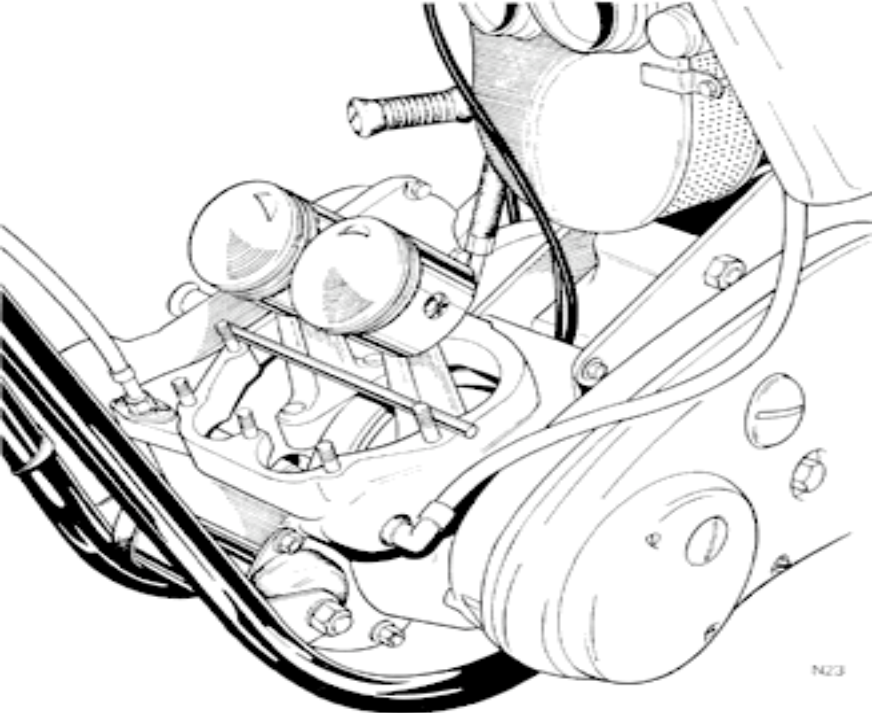
*Fig. C1      Coil Cluster lifted clear of cylinder head*



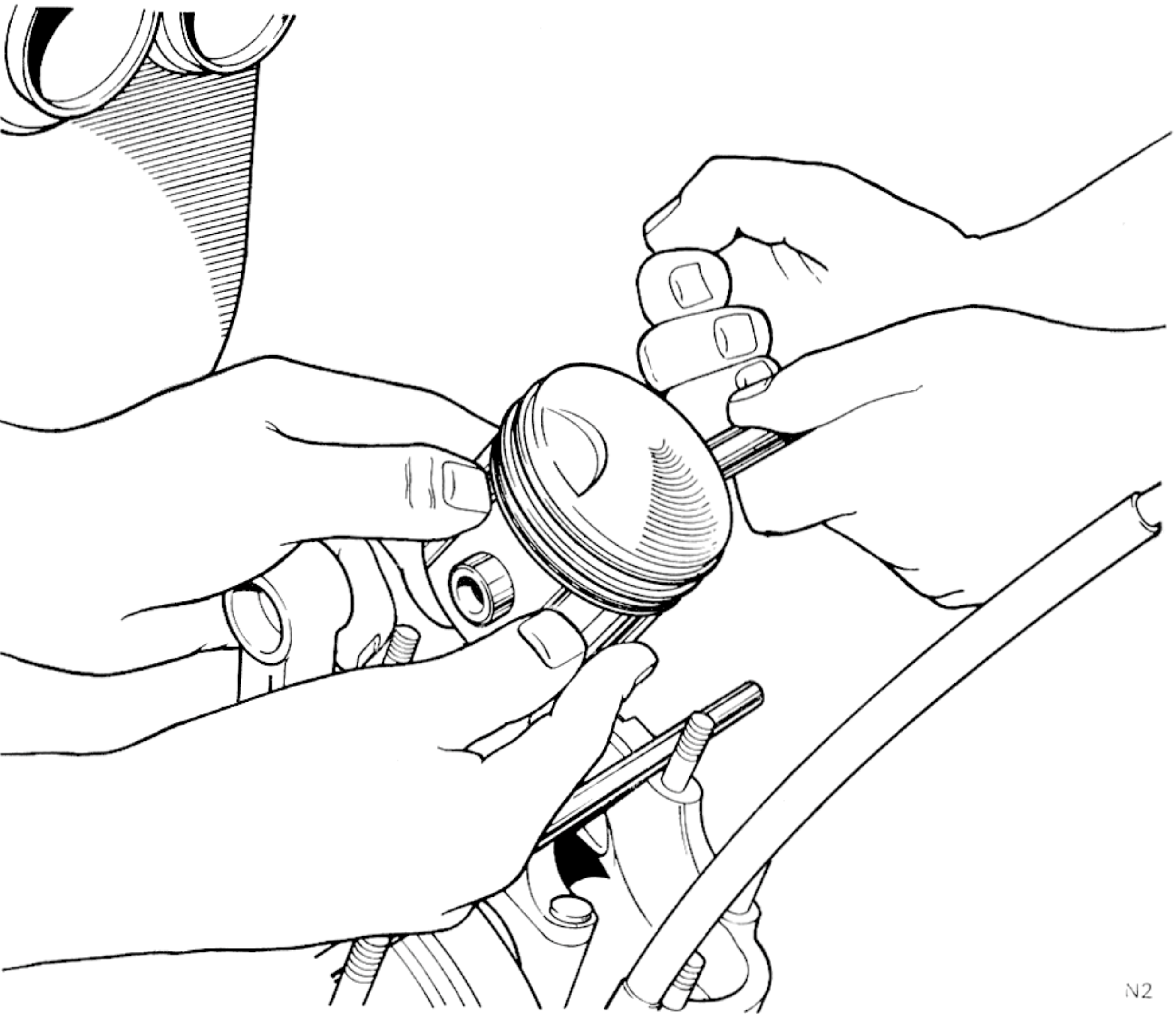
N23

*Fig. C10*

*Support connecting rods to prevent damage against crankcases*

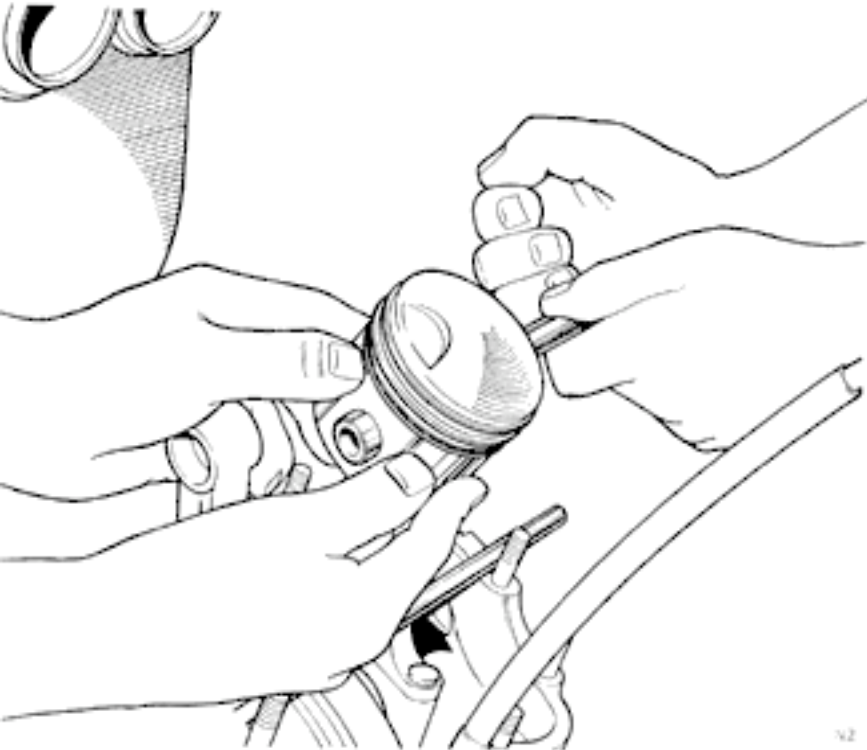


*Fig. C10 Support connecting rods to prevent damage against crankcases*

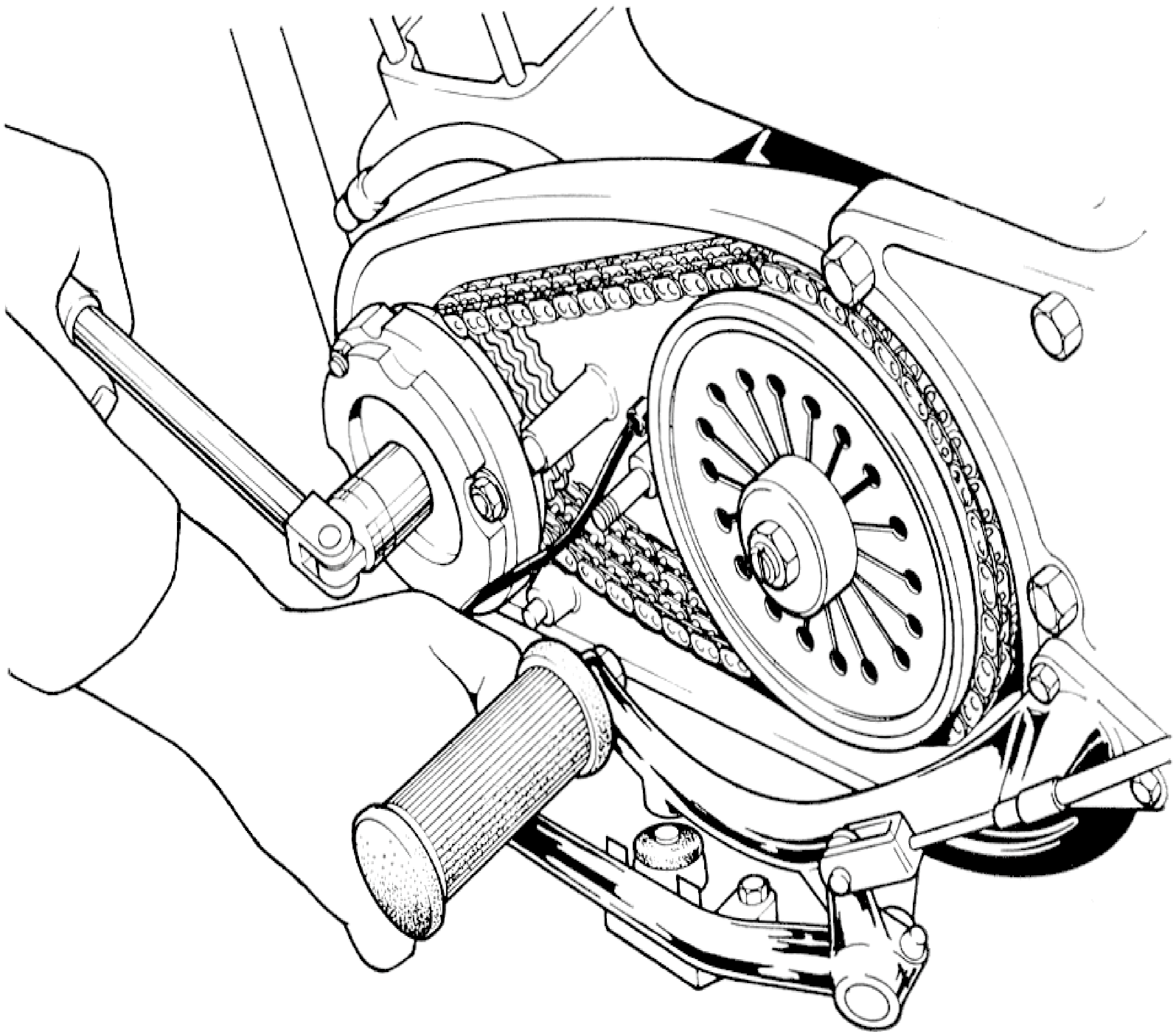


N2

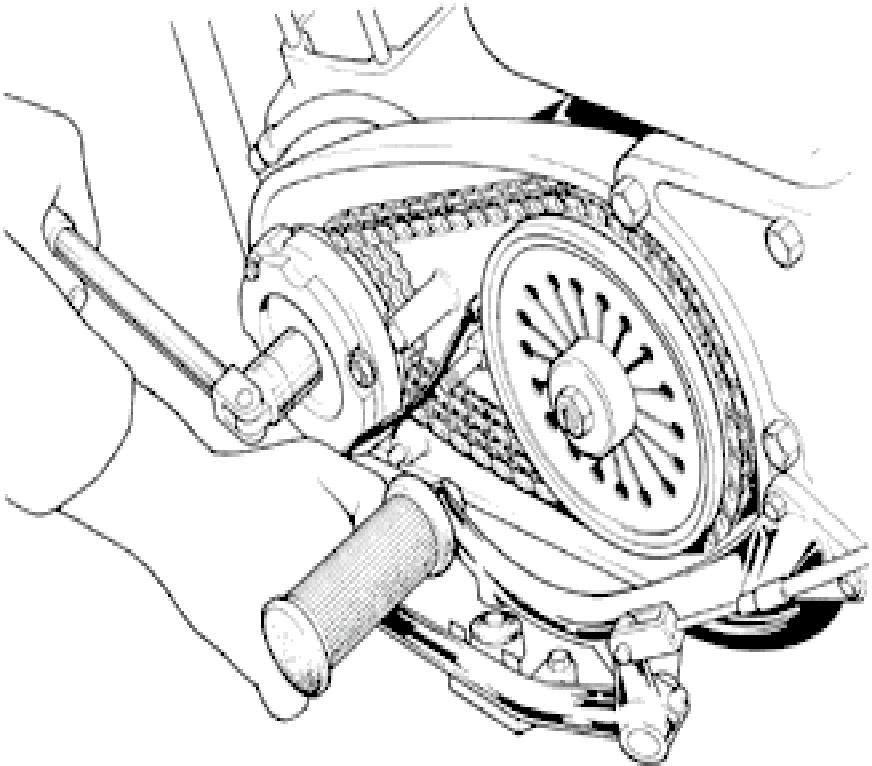
*Fig. C11 Supporting piston body whilst pushing out gudgeon pin*



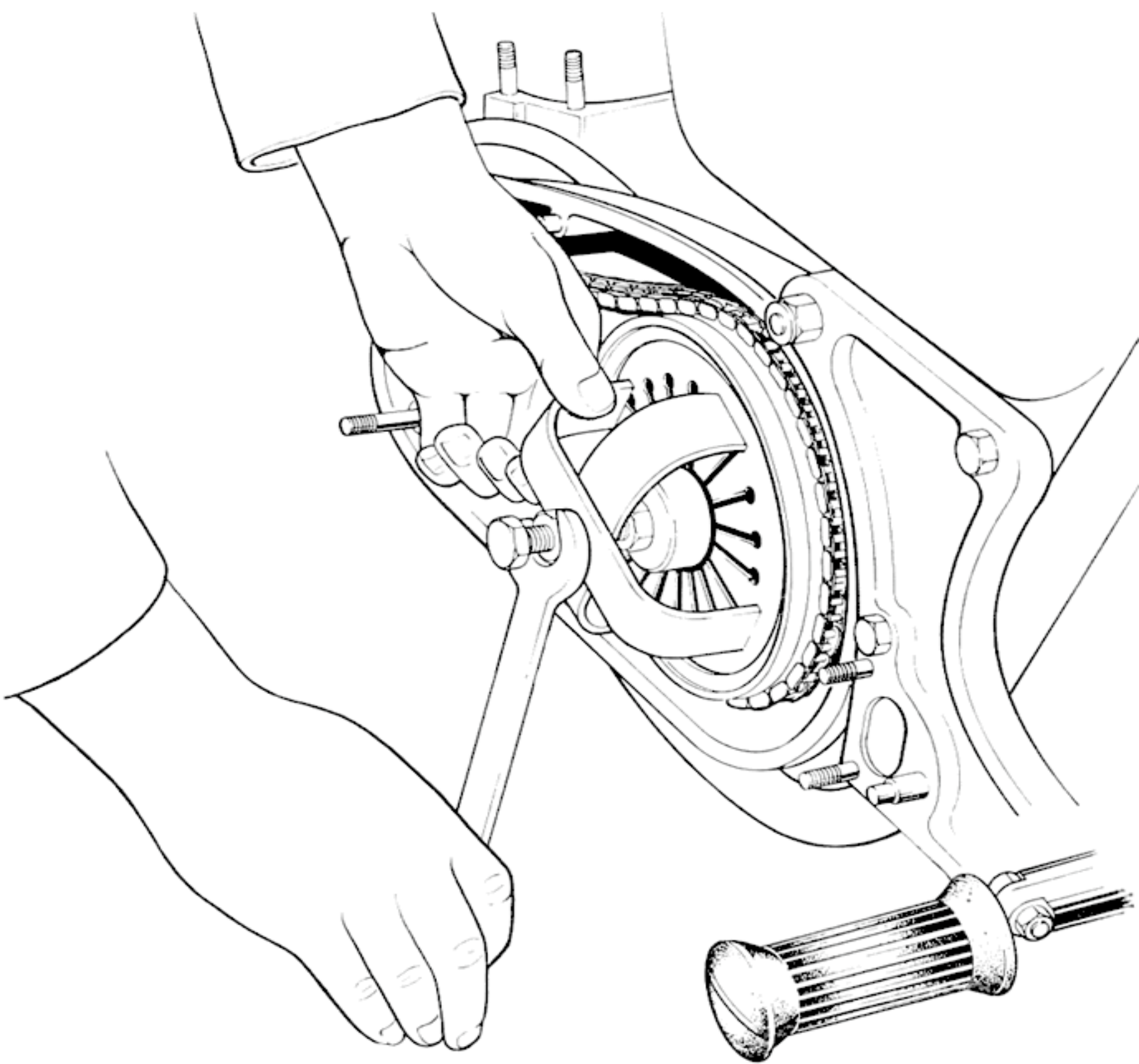
**Fig. C11** *Supporting piston body whilst pushing out gudgeon pin*



*Fig. C12 Removing rotor nut whilst applying rear brake to prevent movement*

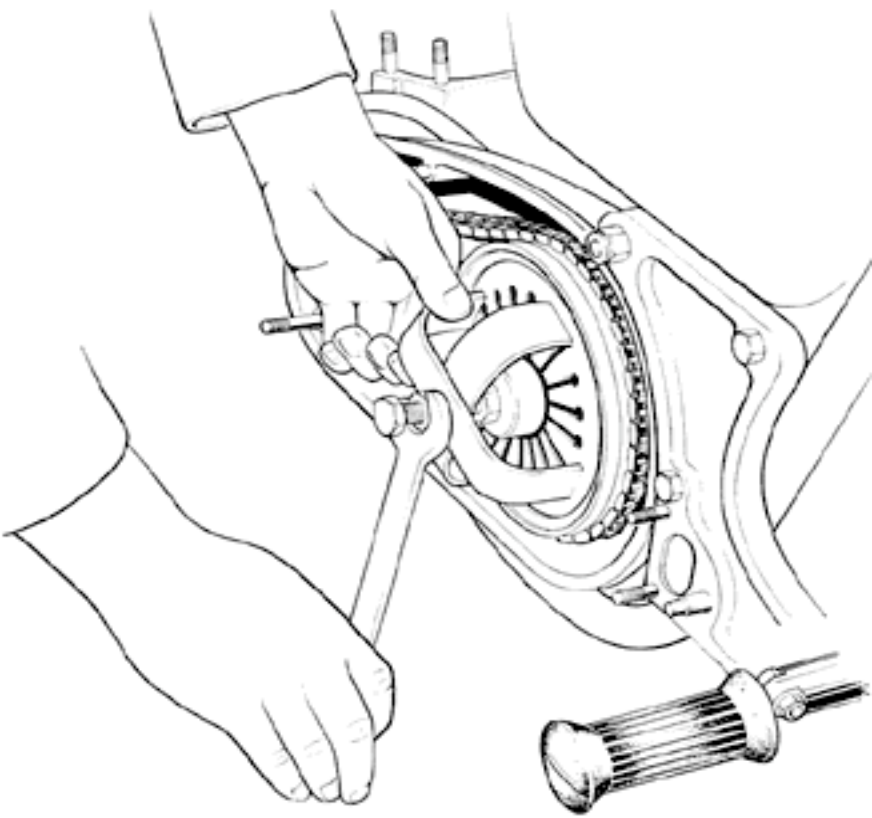


*Fig. C12 Removing rotor nut whilst applying rear brake to prevent movement*

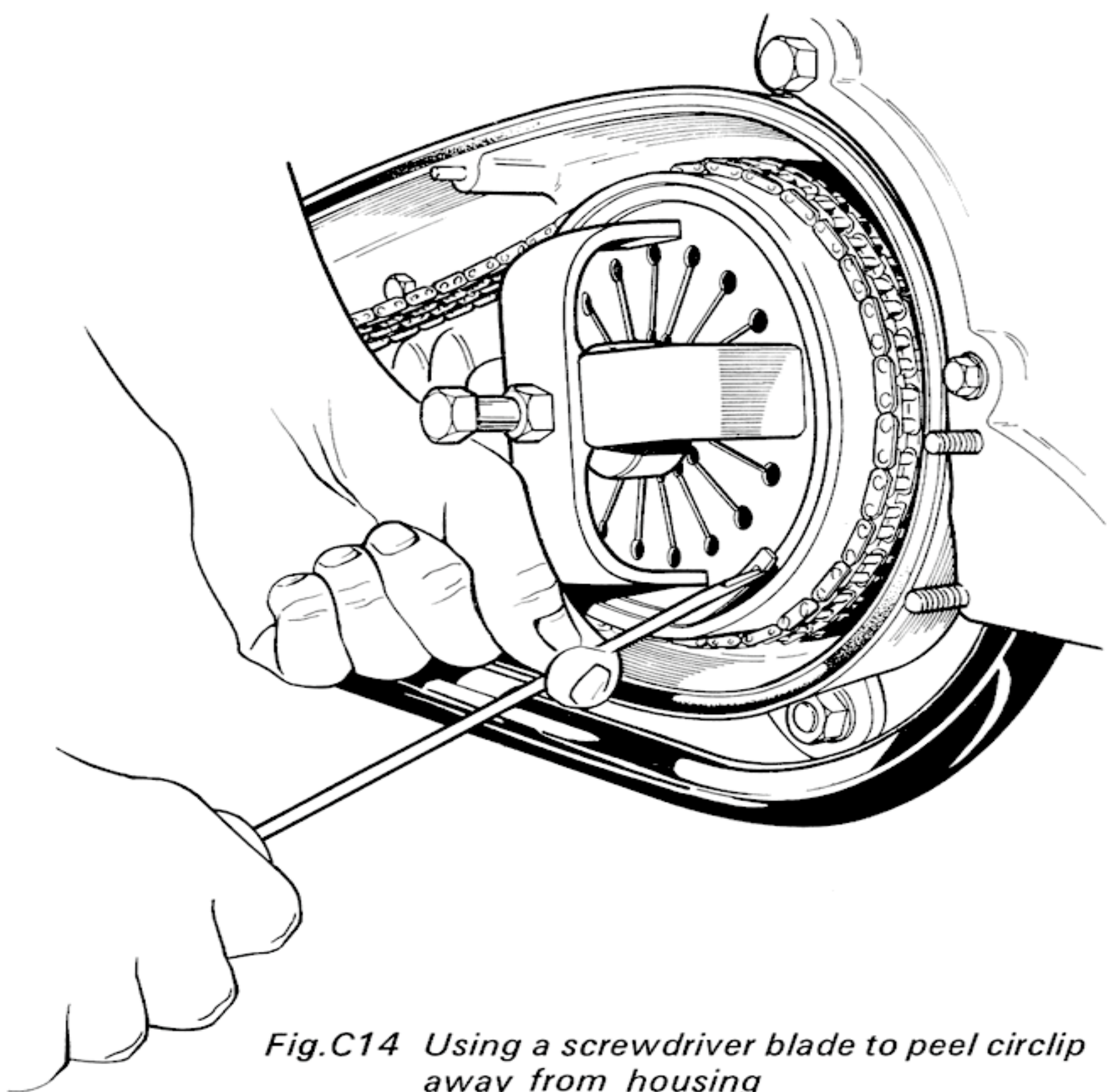


*Fig. C13 Diaphragm spring compressor tool 060999 in use*

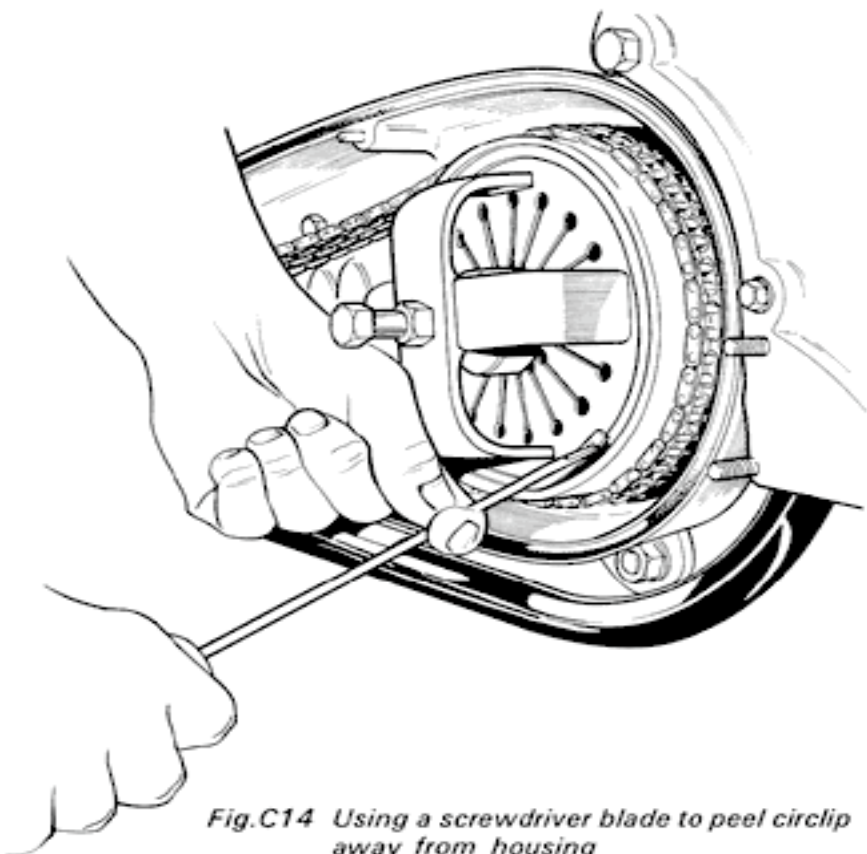


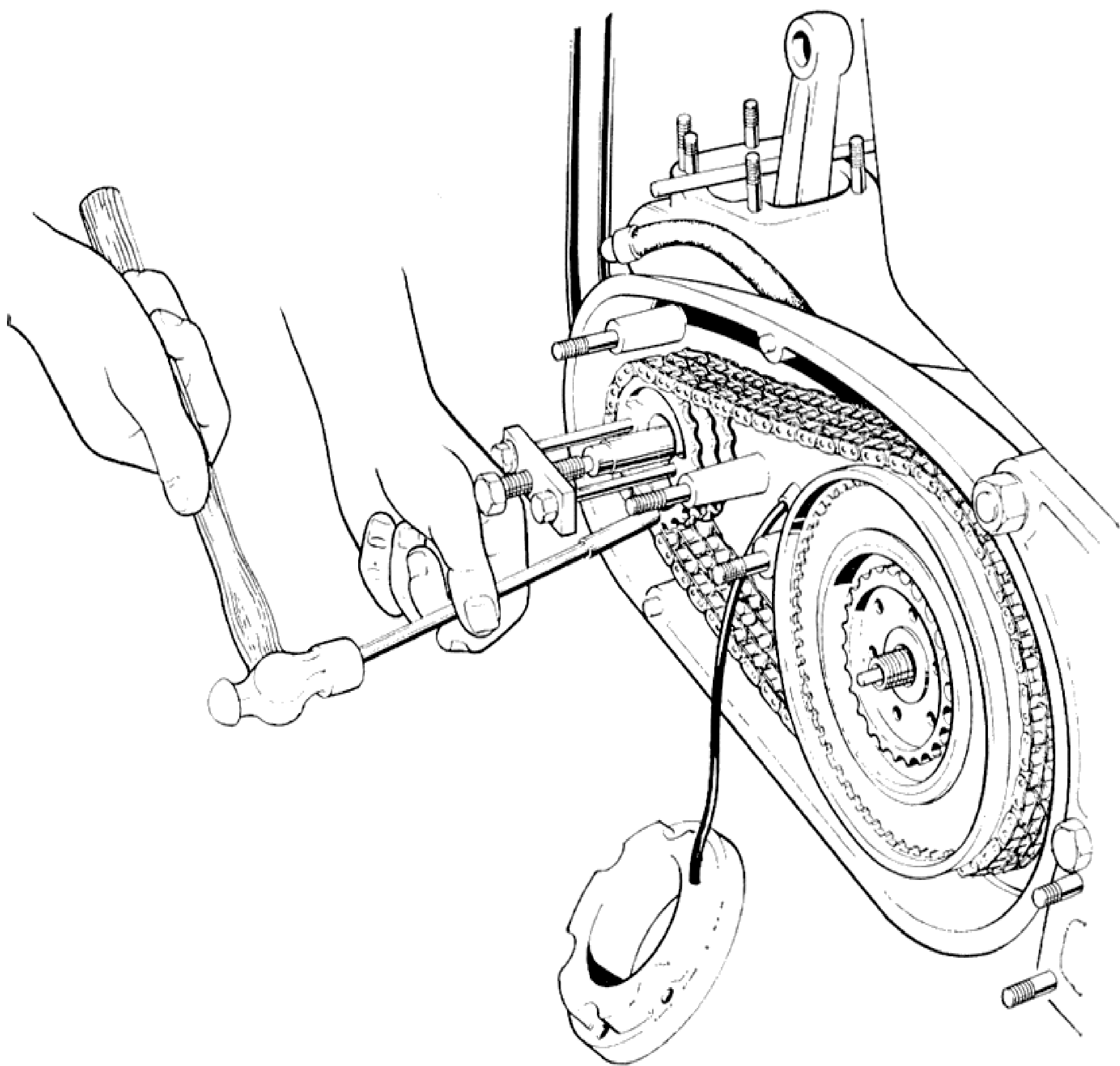


*Fig. C13 Diaphragm spring compressor tool 060999 in use*

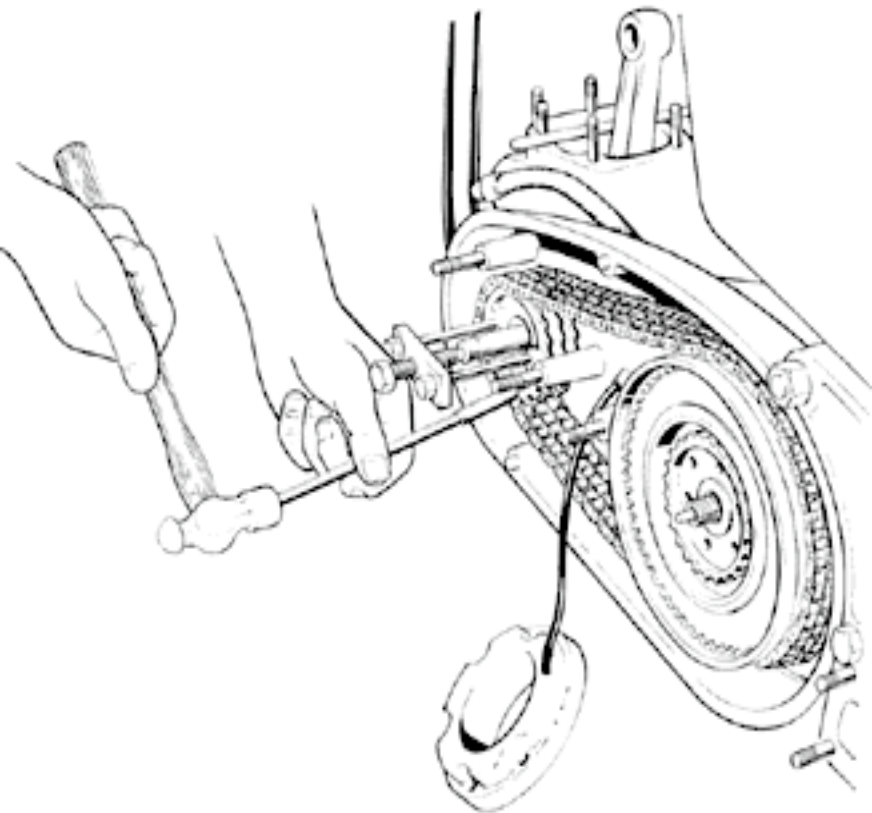


*Fig.C14 Using a screwdriver blade to peel circlip away from housing*

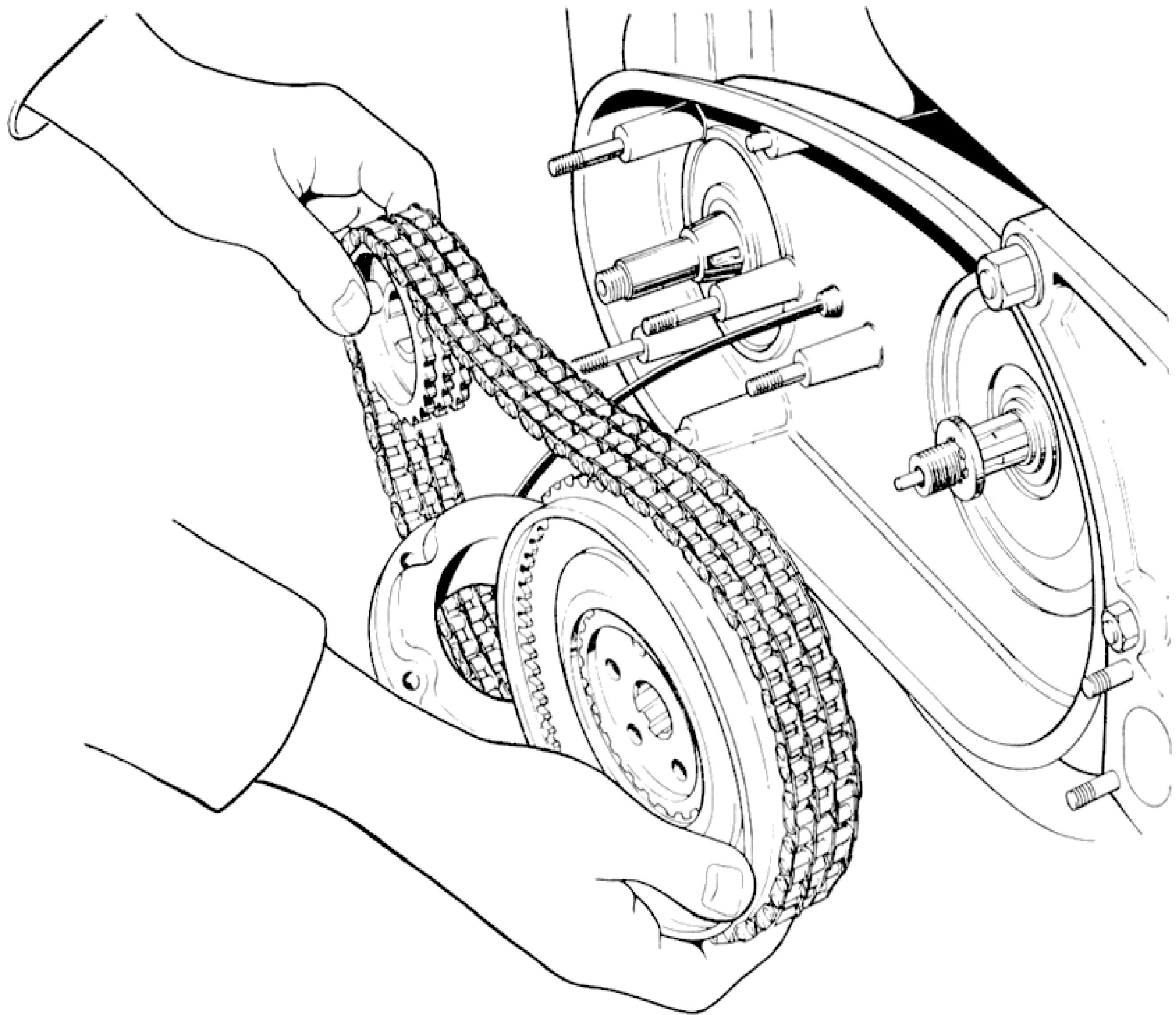




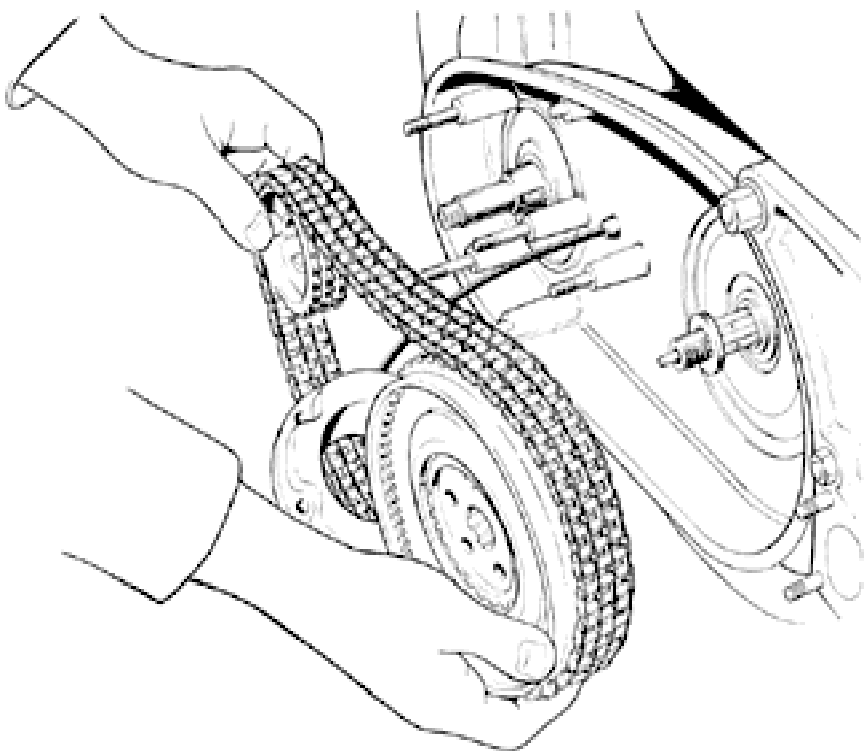
*Fig. C15 Use of engine sprocket puller 060941*



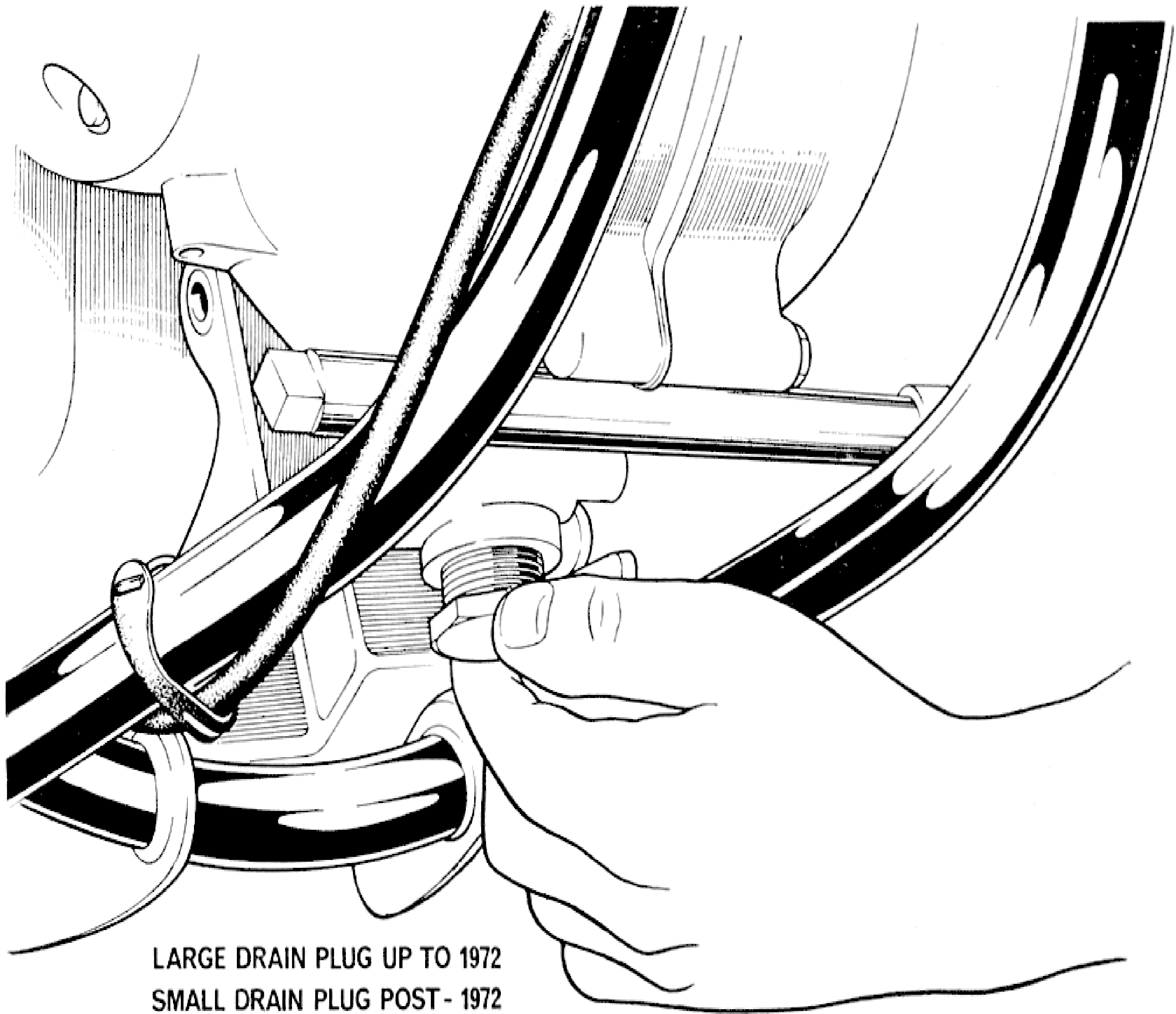
*Fig. C15 Use of engine sprocket puller 060941*



*Fig. C16 Removing engine sprocket clutch and primary chain as a set*



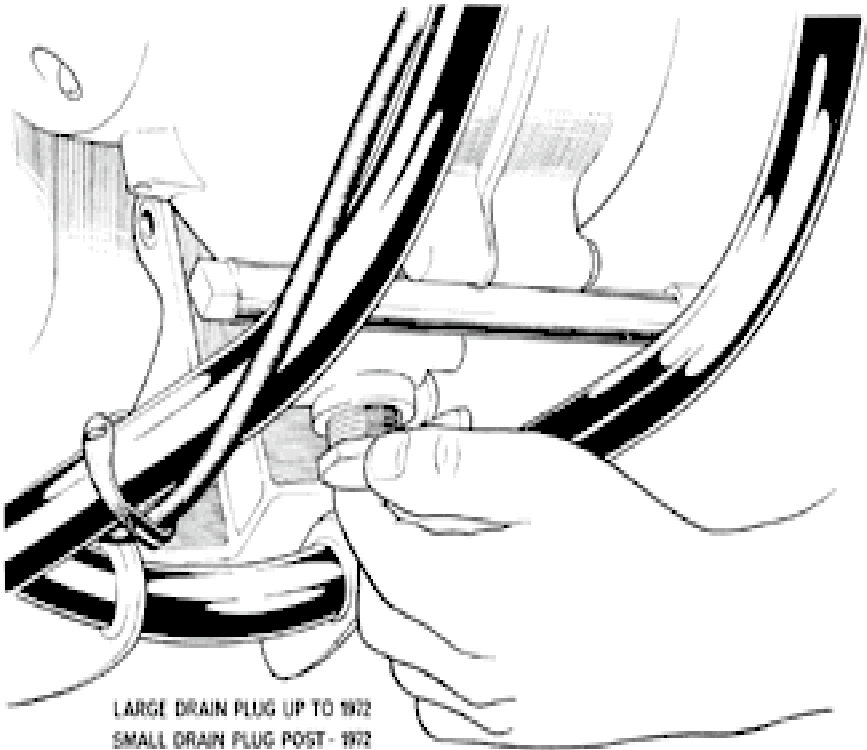
**Fig. C16** *Removing engine sprocket clutch and primary chain as a set*



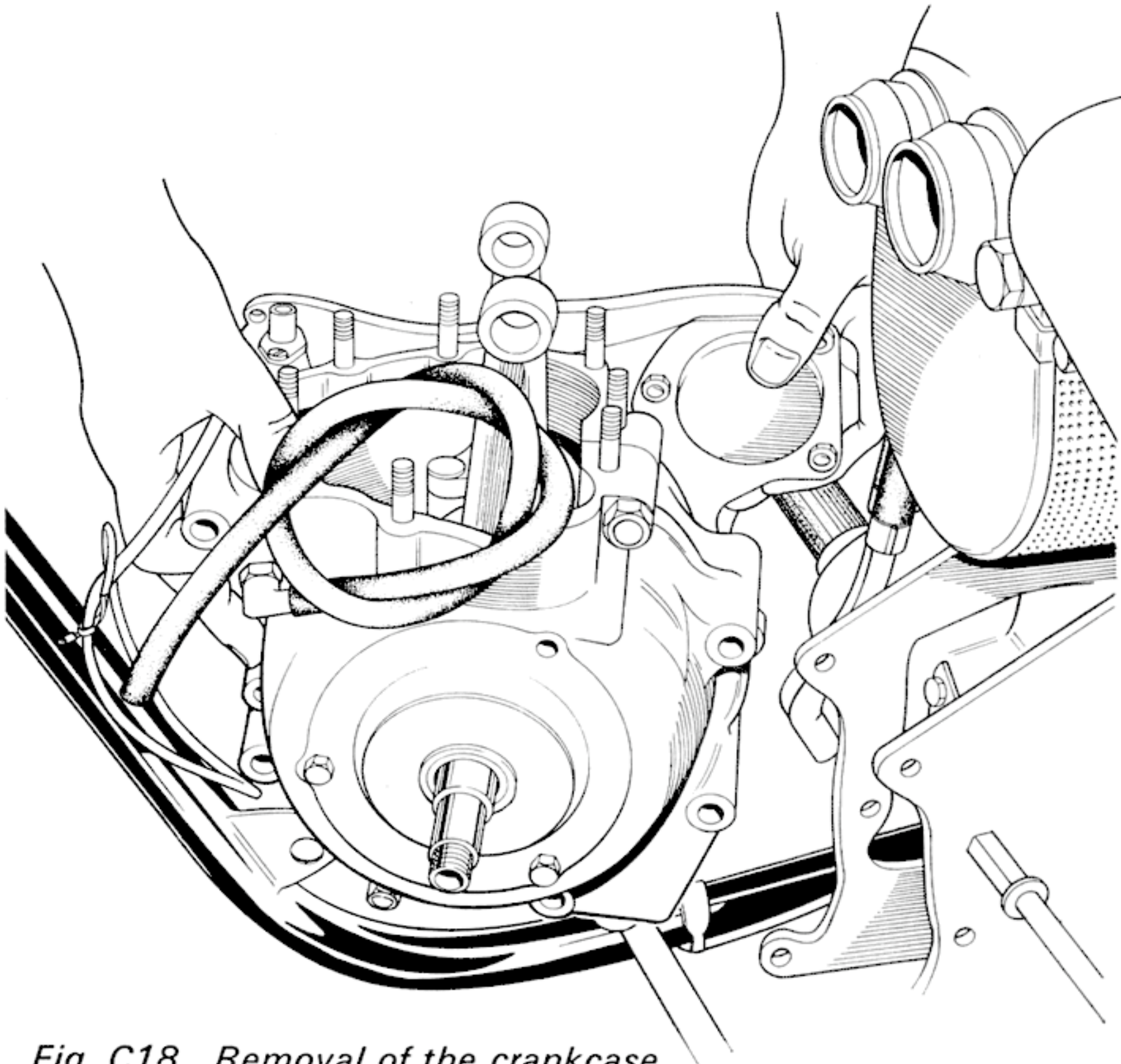
LARGE DRAIN PLUG UP TO 1972  
SMALL DRAIN PLUG POST - 1972

*Fig. C17 Showing crankcases supported by a bar to remove sump filter*

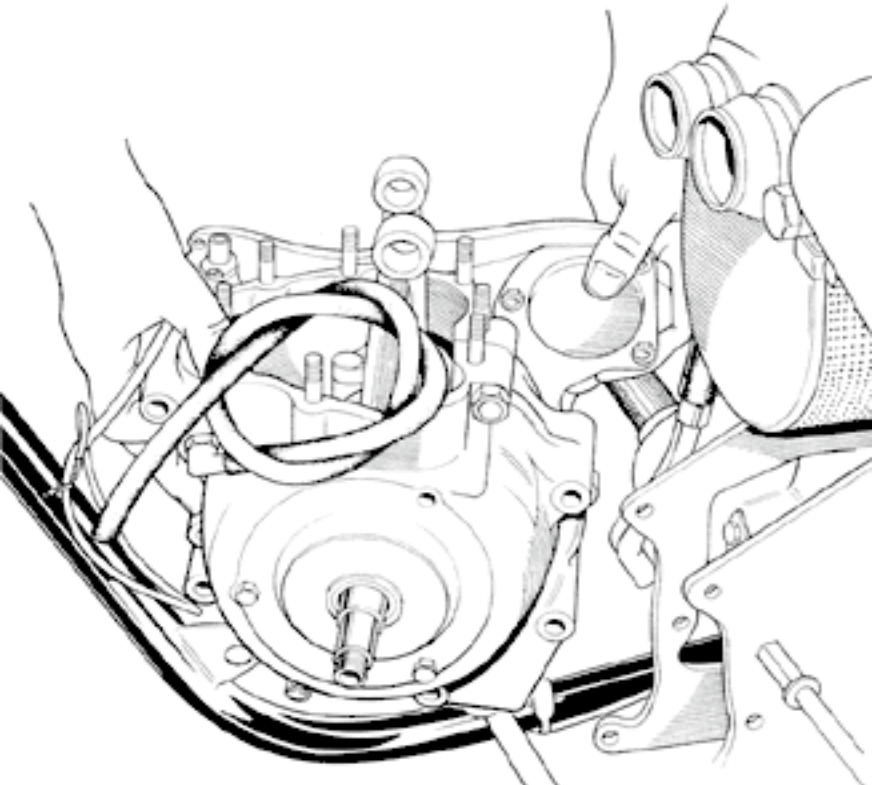




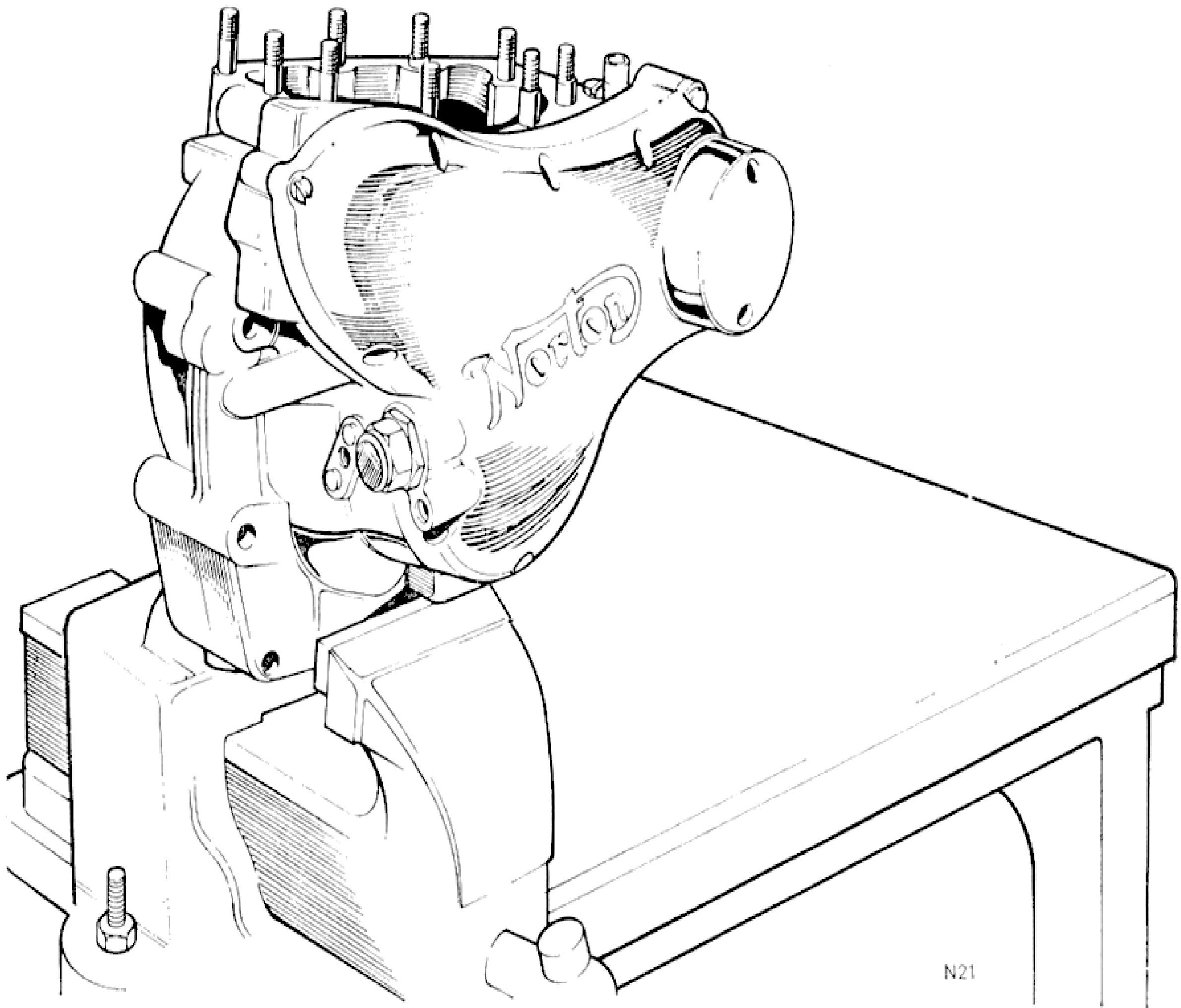
*Fig.C17 Showing crankcases supported by a bar to remove sump filter*



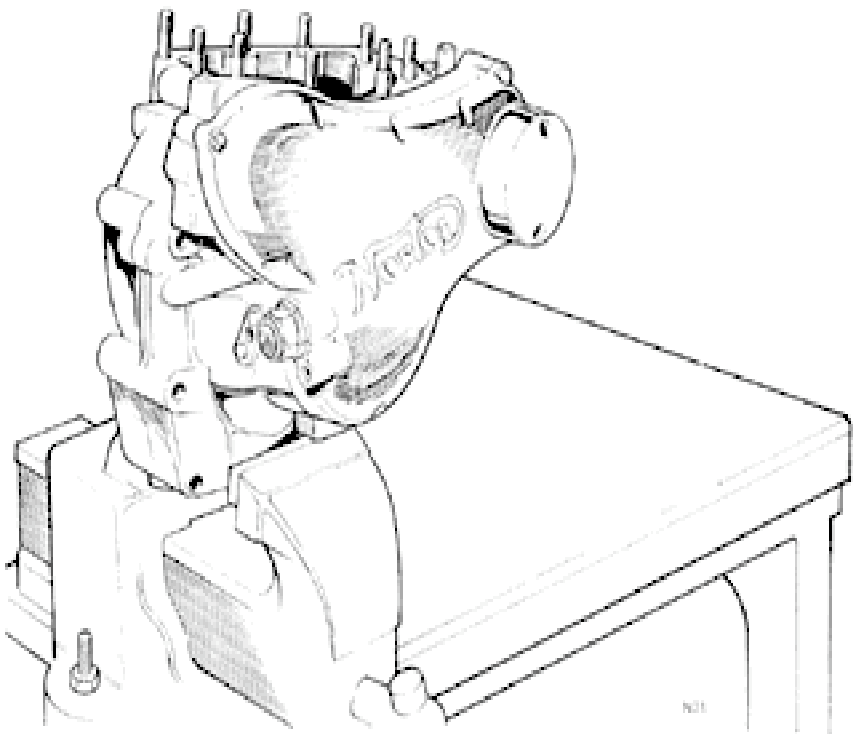
*Fig. C18 Removal of the crankcase assembly from mounting plates*



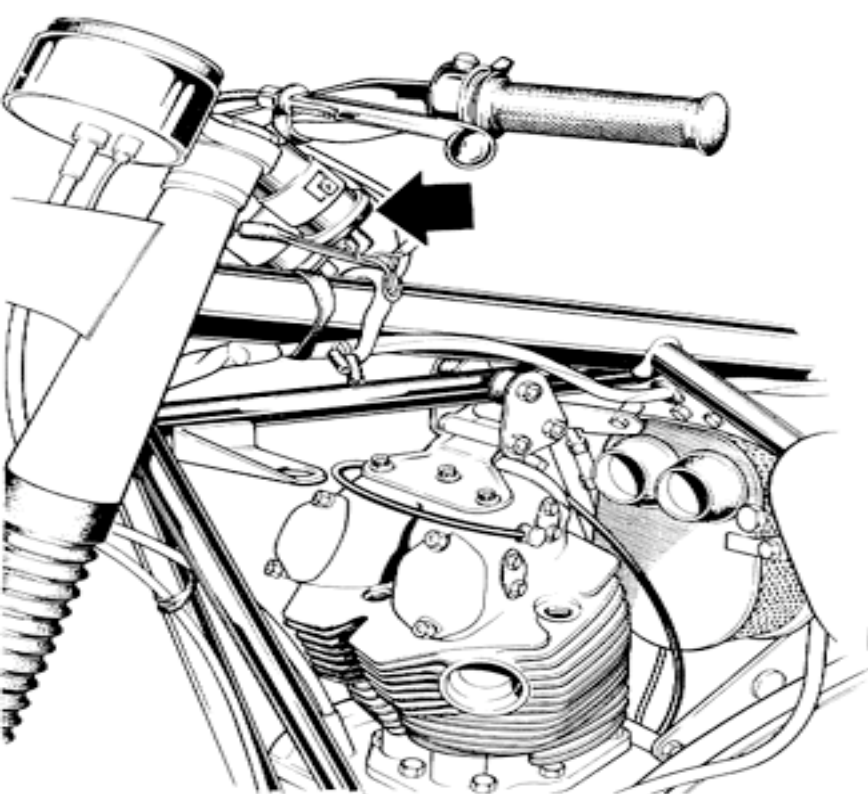
*Fig. C18 Removal of the crankcase assembly from mounting plates*



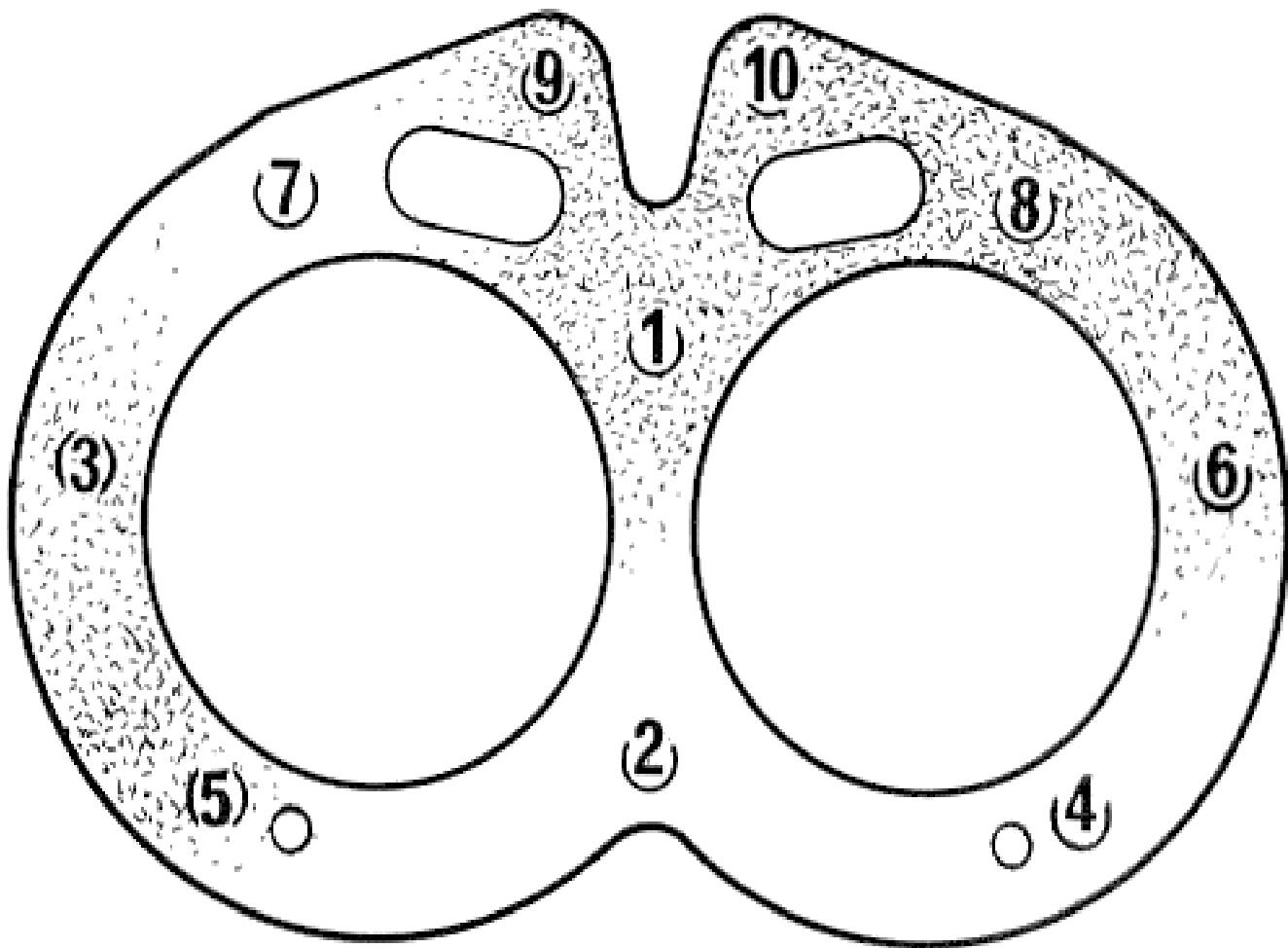
*Fig. C19 Showing crankcases mounted in a plain jaw vice for ease of handling*



*Fig.C19 Showing crankcases mounted in a plain jaw vice for ease of handling*



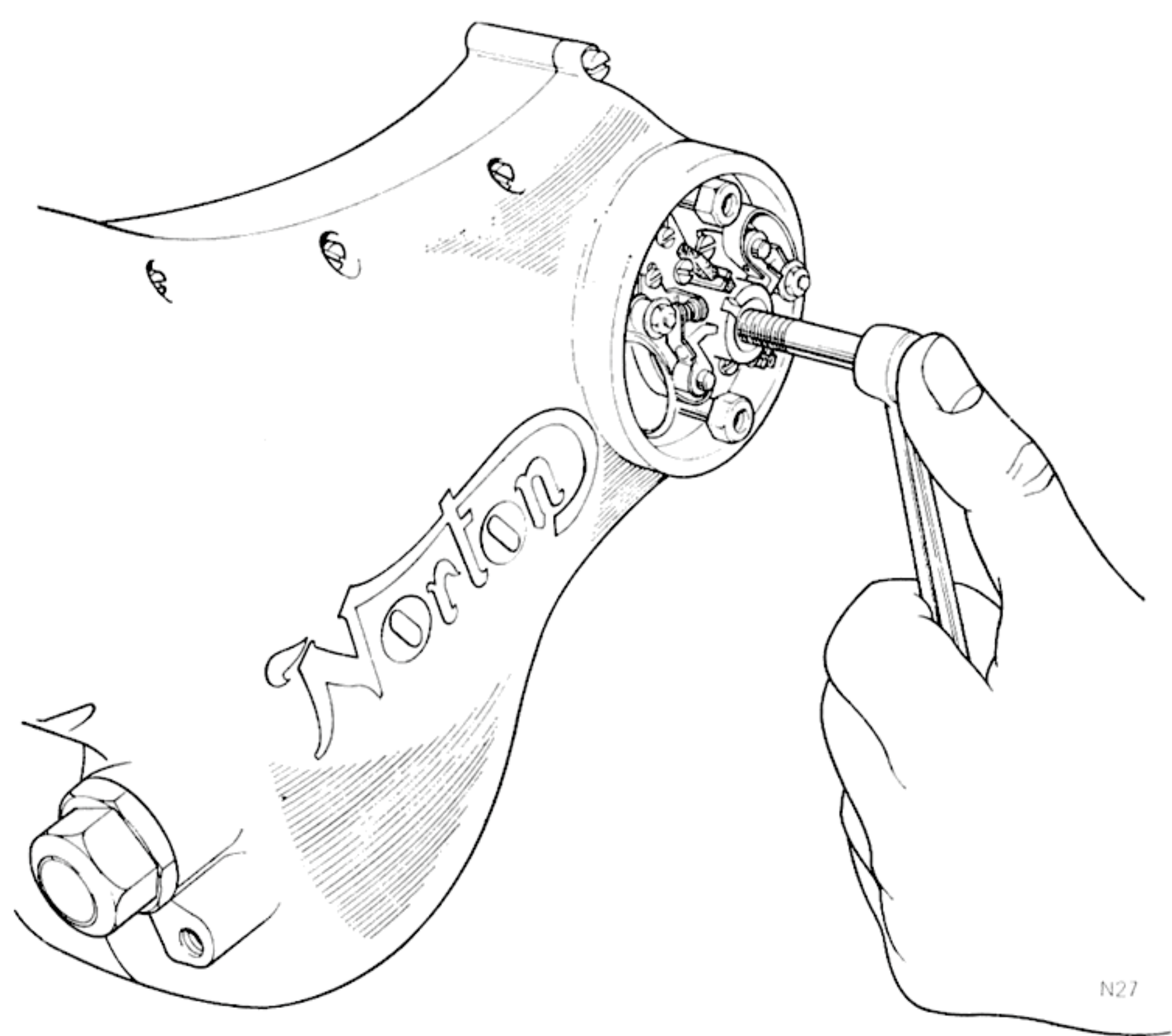
*Fig. C1 Coil Cluster lifted clear of cylinder head*



N36

## TIGHTENING SEQUENCE

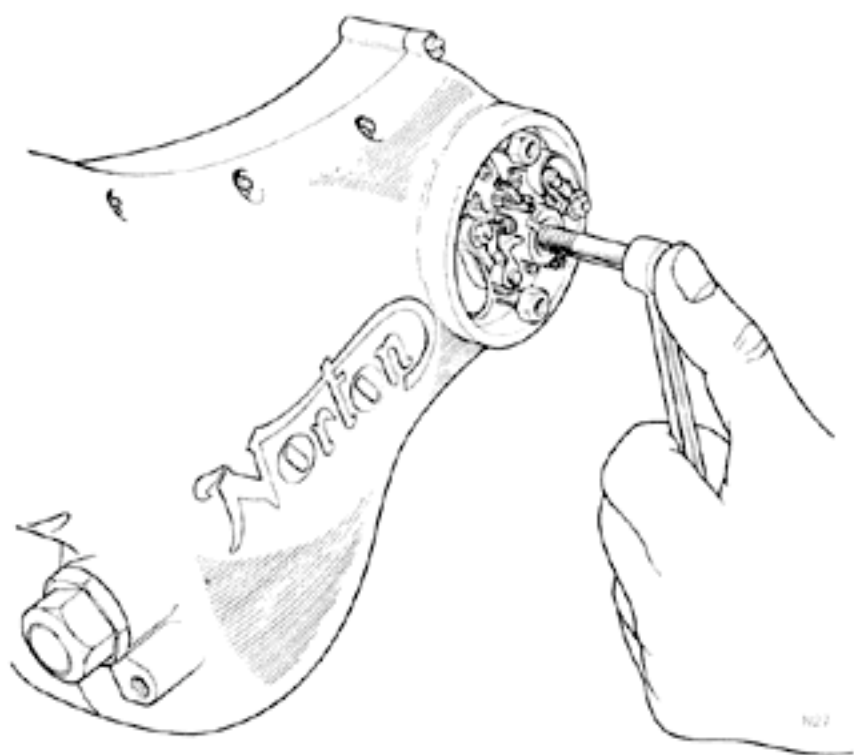
*Fig. C2 Cylinder head; order of slackening and tightening*



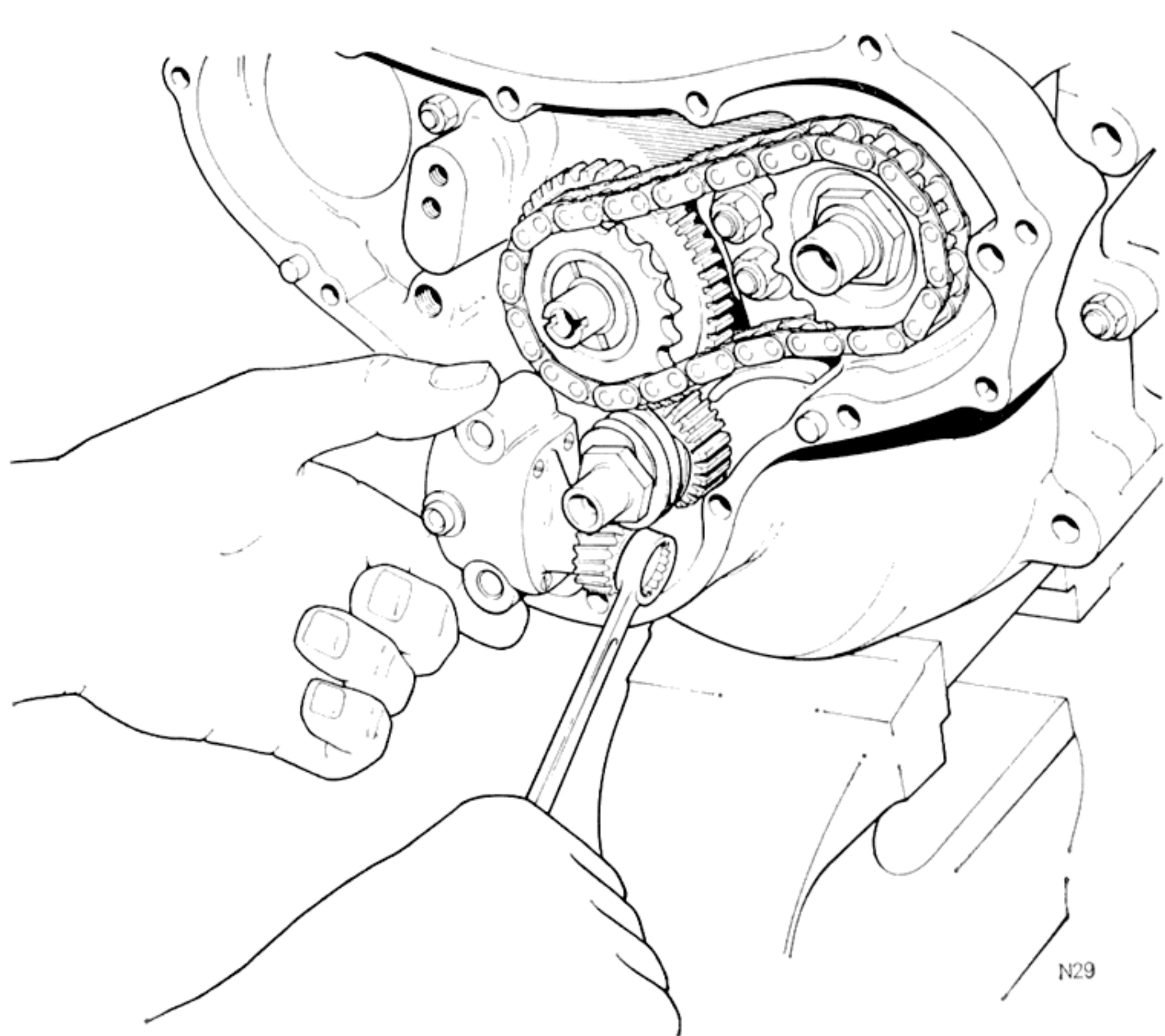
N27

*Fig.C20 Removing contact breaker cam using service tool  
060934*



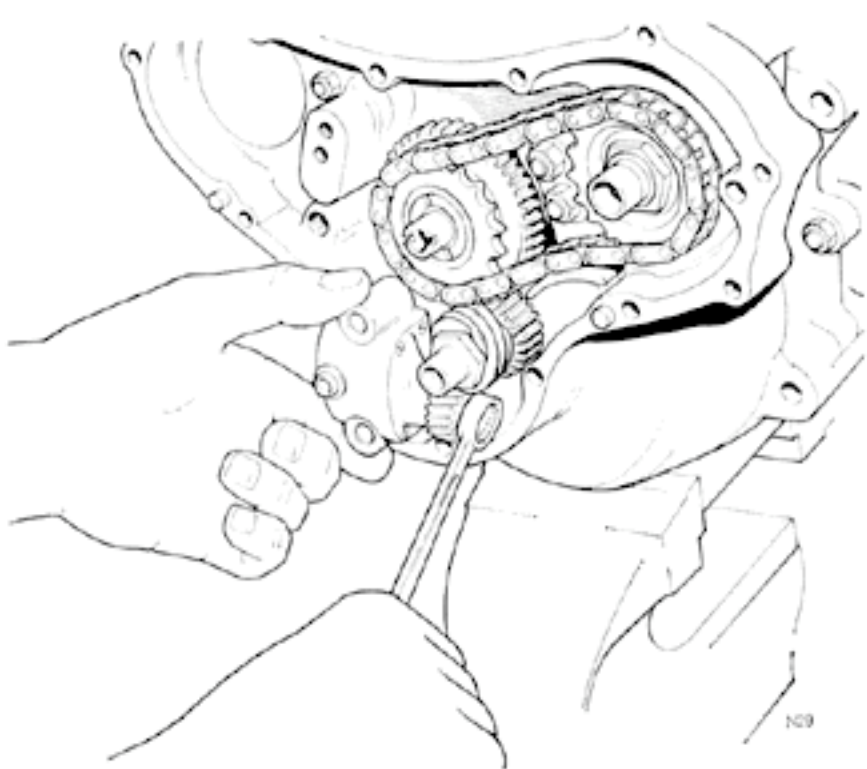


**Fig.C20** *Removing contact breaker cam using service tool 060934*

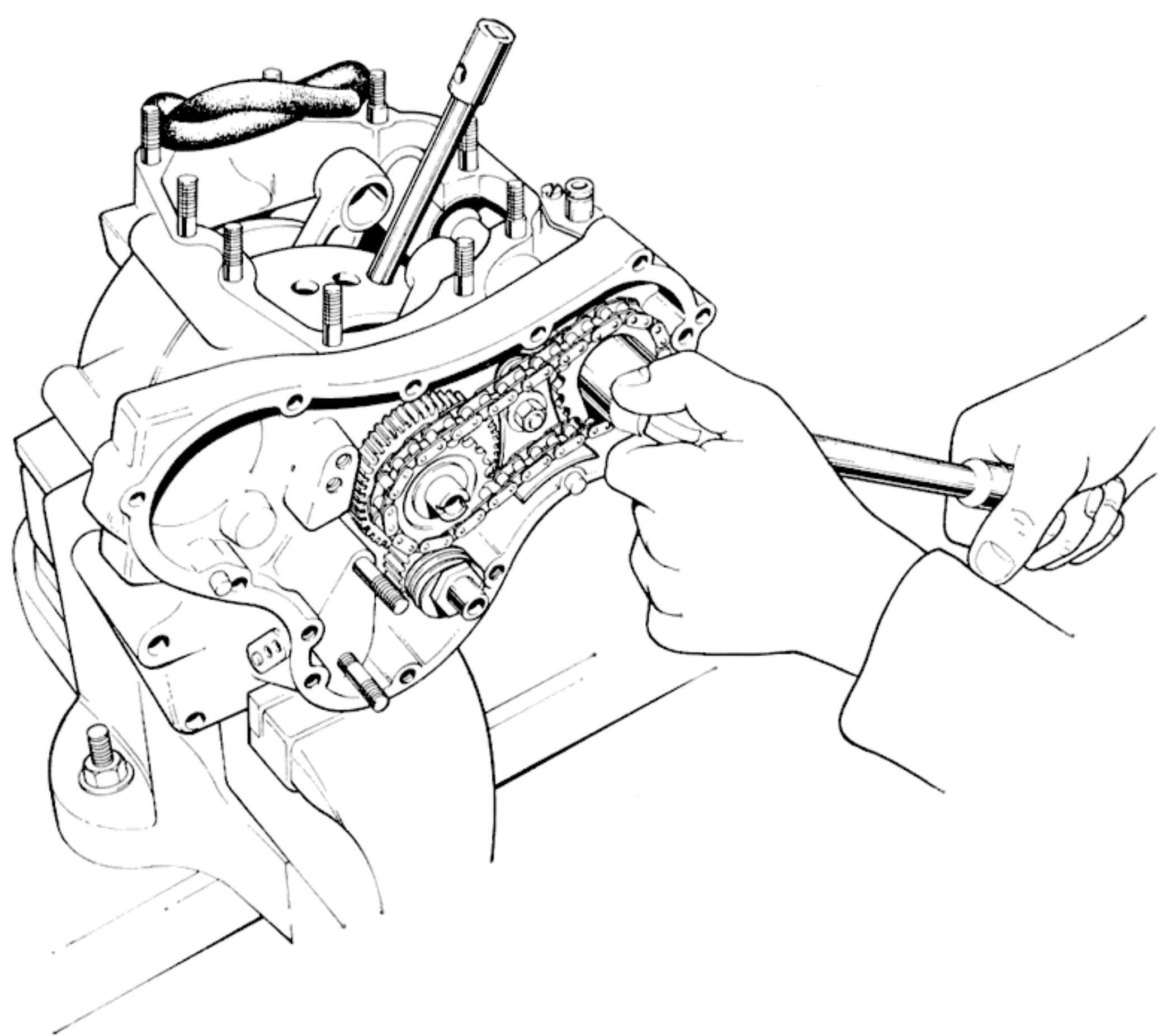


N29

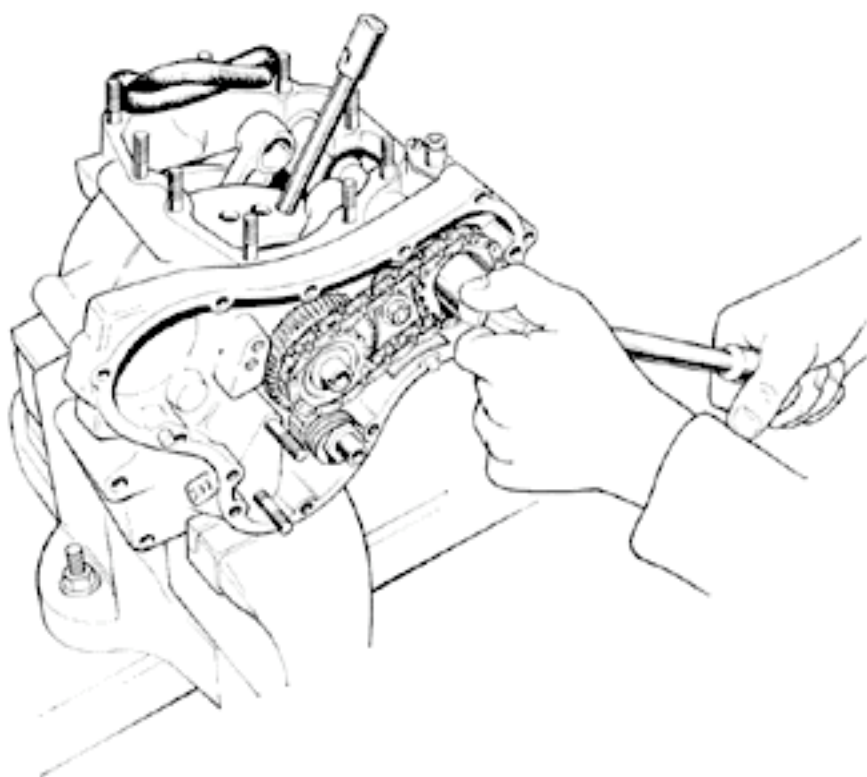
***Fig.C21 Using a spanner to turn the oil pump drive wheel nut and remove the pump***



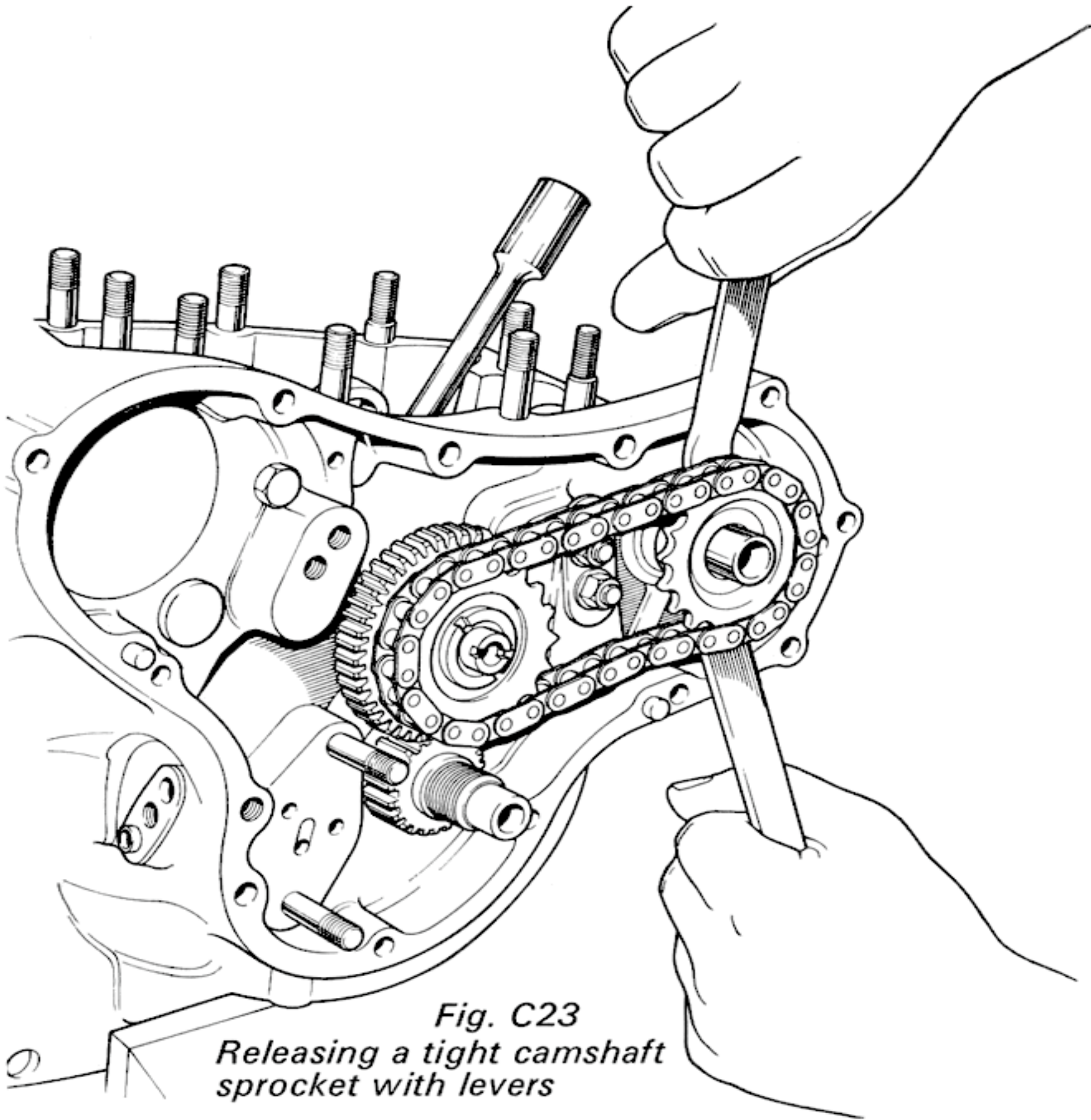
*Fig.C21 Using a spanner to turn the oil pump drive wheel nut and remove the pump*



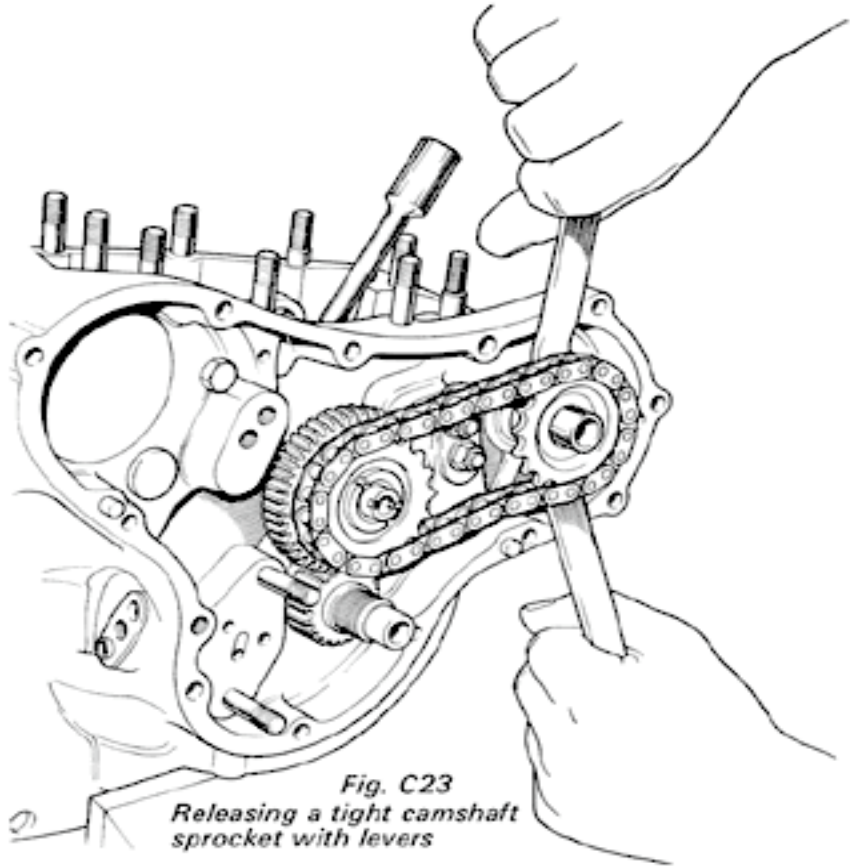
*Fig.C22 Preventing flywheel turning by use of a bar lodged in a flywheel balance hole*

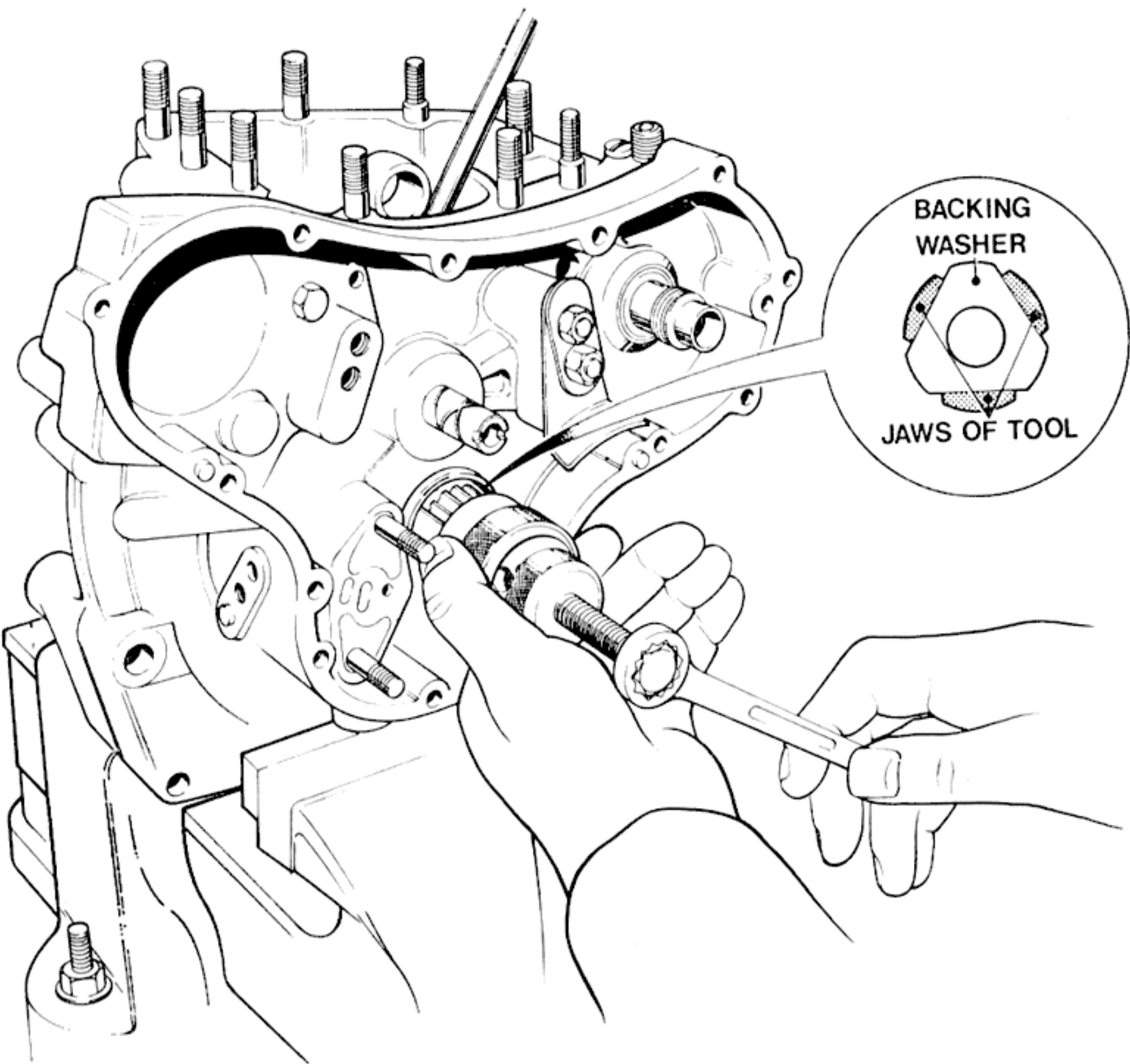


*Fig.C22 Preventing flywheel turning by use of a bar lodged in a flywheel balance hole*



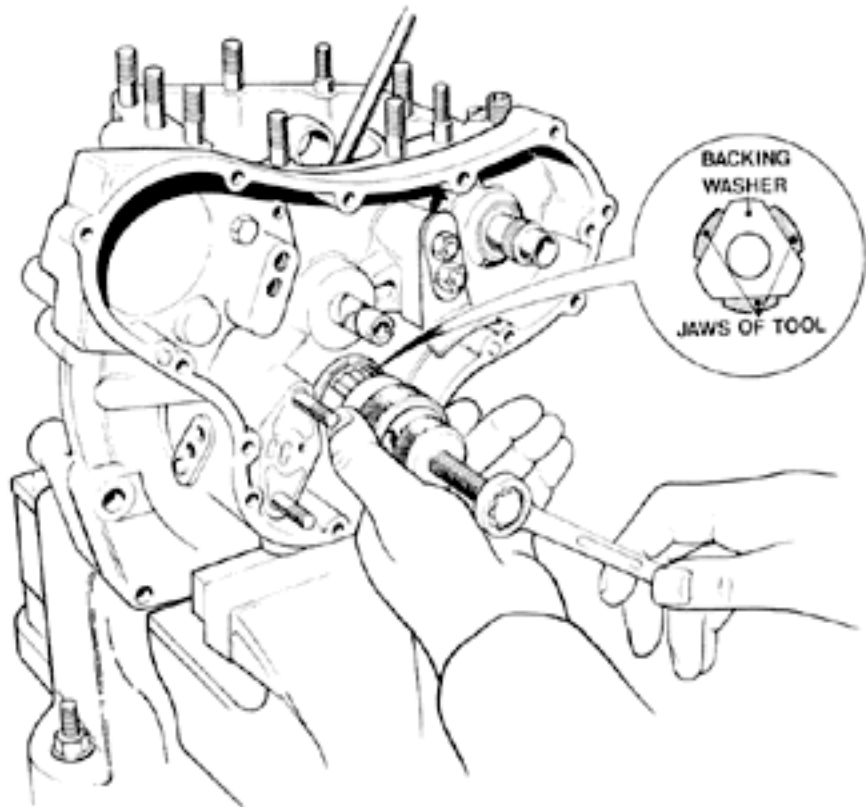
**Fig. C23**  
*Releasing a tight camshaft  
sprocket with levers*



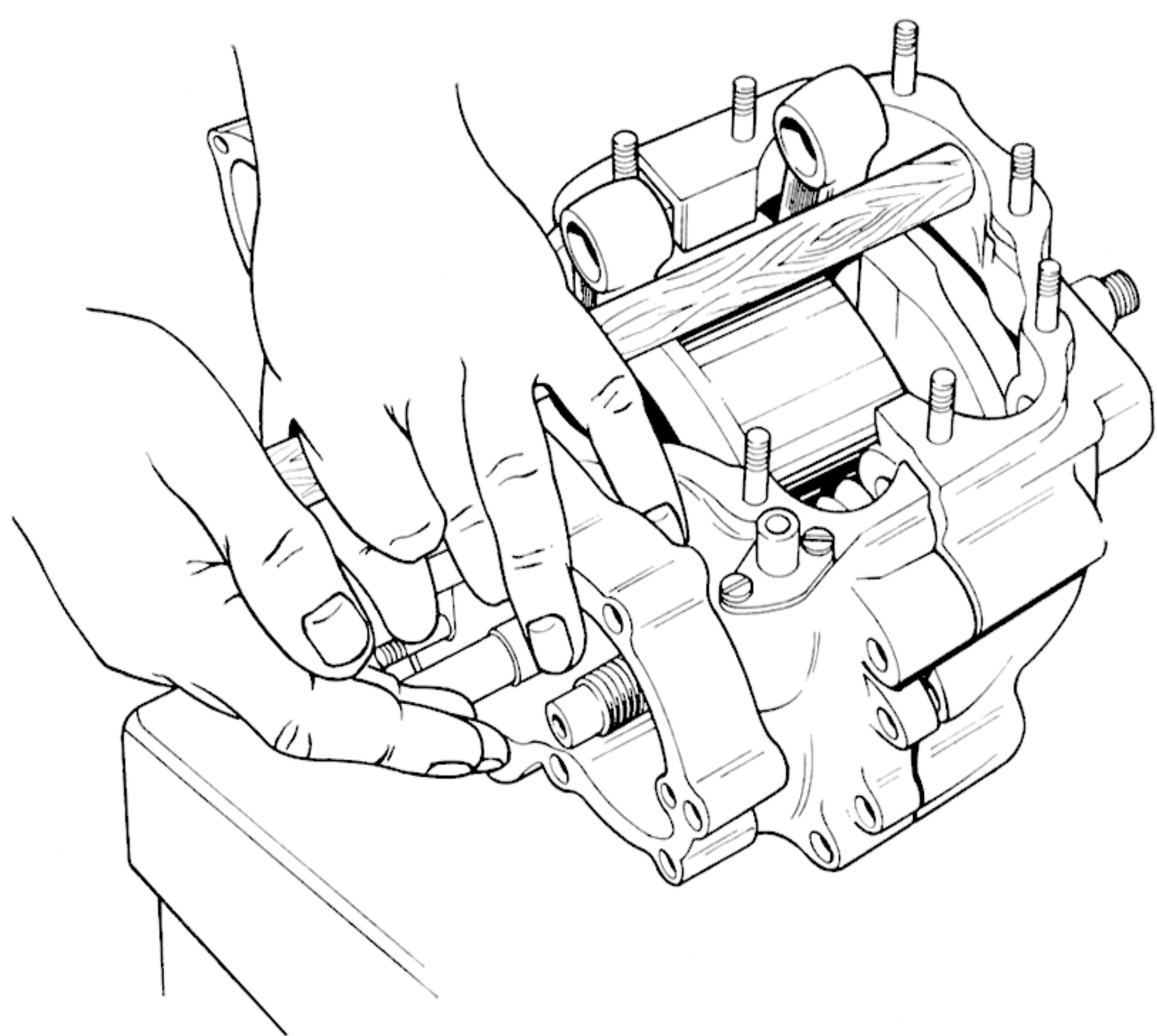


*Fig. C24 Extracting crankshaft pinion using tool ET 2003*

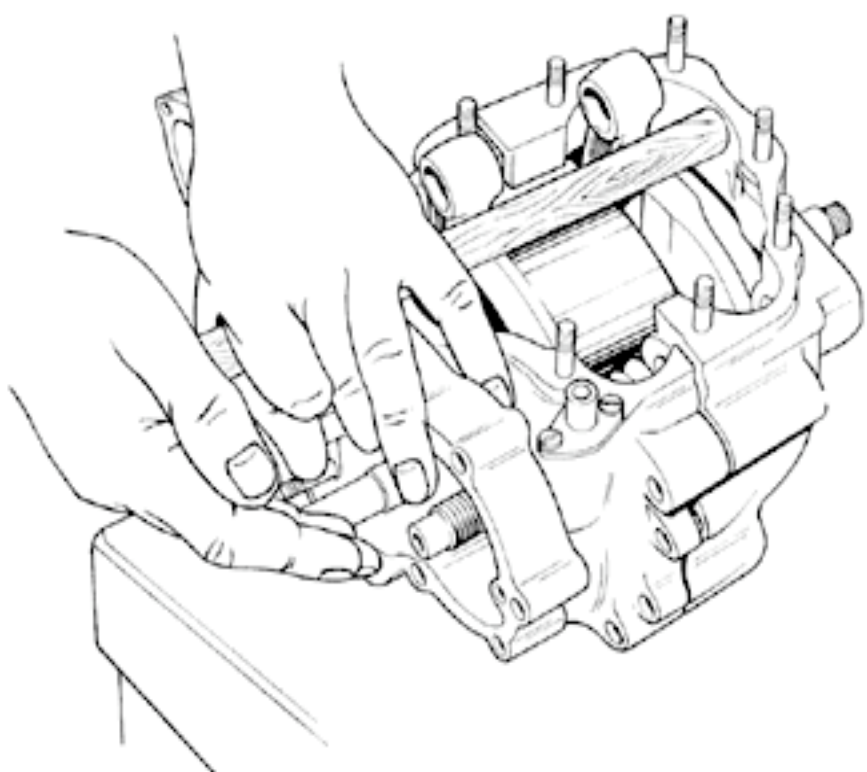




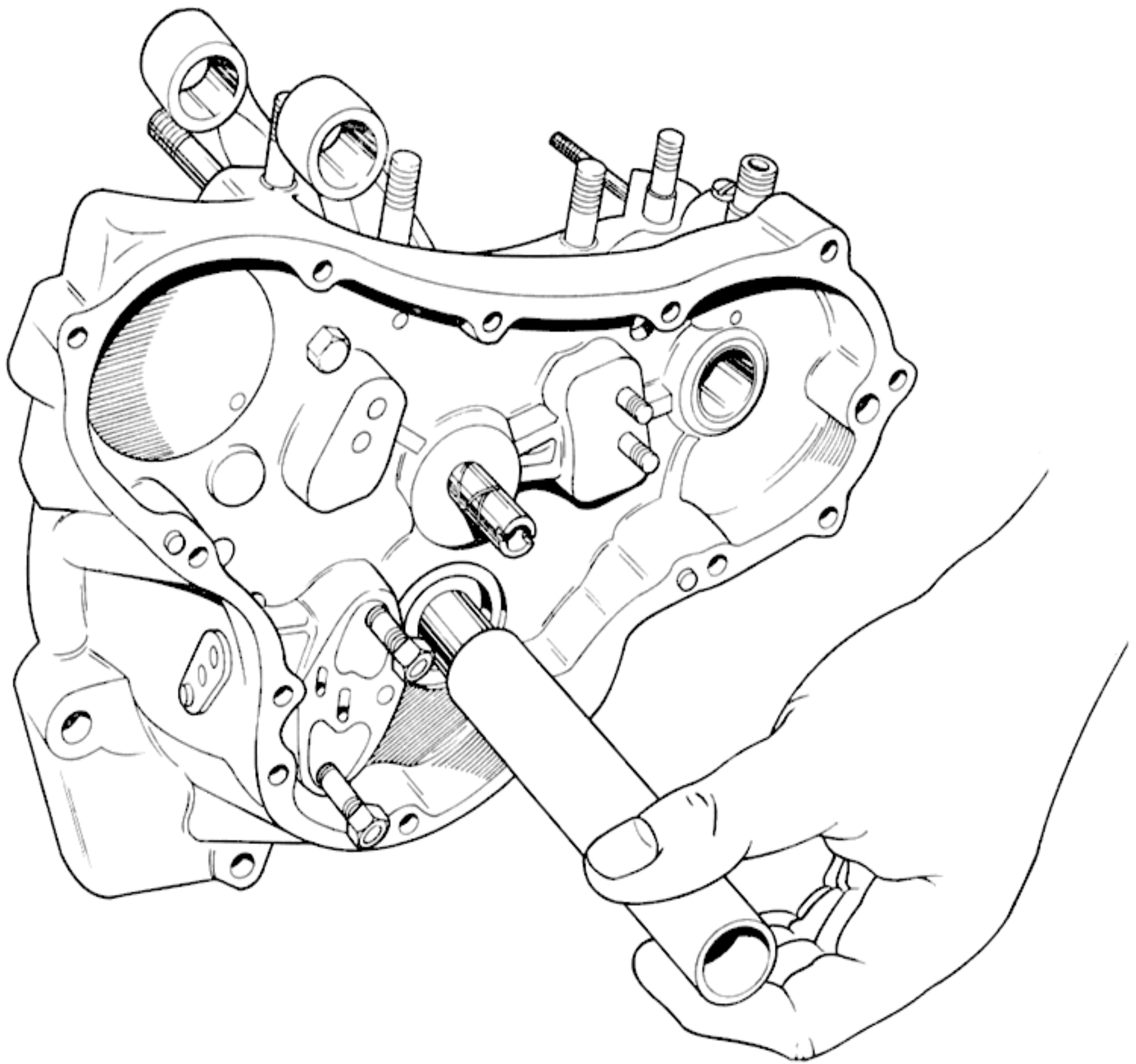
*Fig. C24 Extracting crankshaft pinion using tool ET 2003*



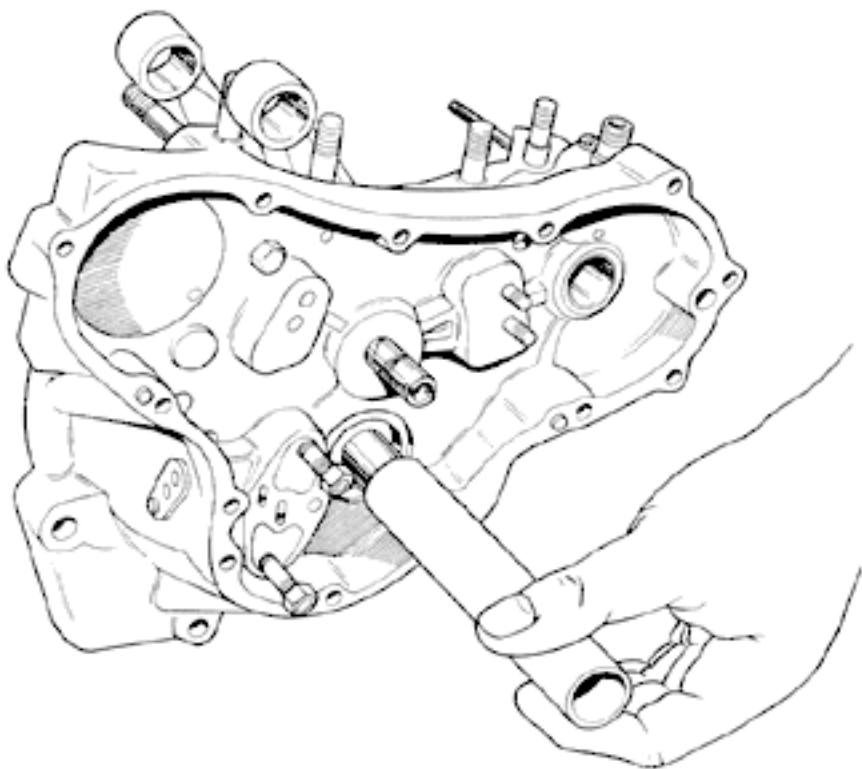
*Fig. C25 Parting the crankcases using a wood block against the inner drive side*



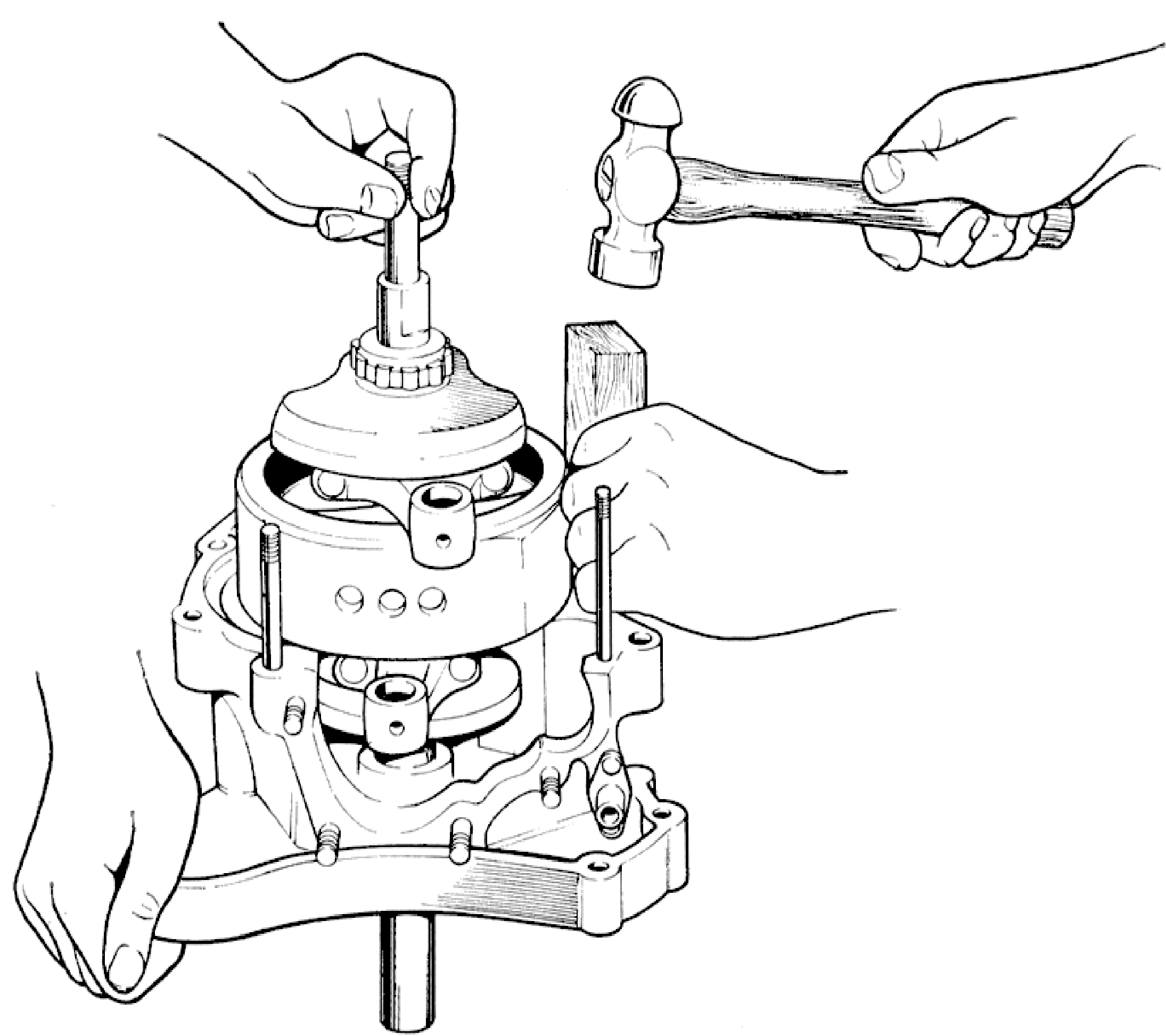
*Fig. C25 Parting the crankcases using a wood block against the inner drive side*



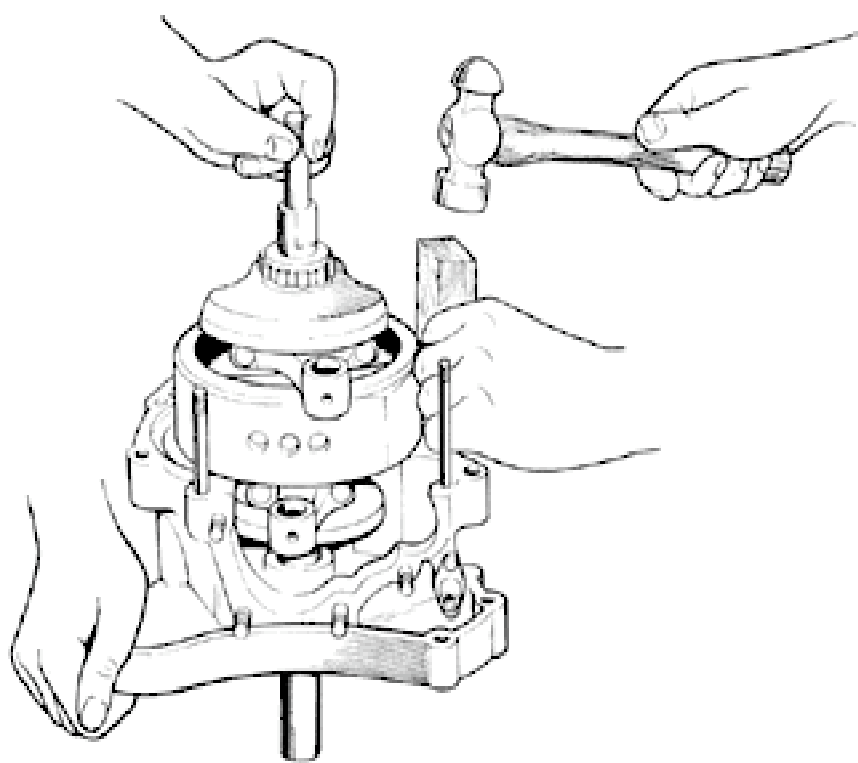
*Fig. C26 Showing suitable tube to abutt to crankshaft shoulder yet pass throguh crankcase*



*Fig. C26 Showing suitable tube to abutt to crankshaft shoulder yet pass througk crankcase*

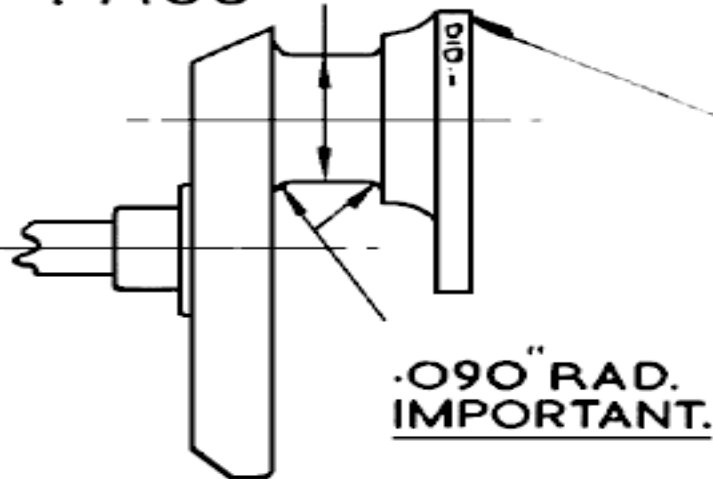


*Fig. C27 Supporting the crankcase shoulder on a tube whilst separating the crankcase from the crankshaft*



*Fig. C27 Supporting the crankcase shoulder on a tube whilst separating the crankcase from the crankshaft*

1.7405"  
1.7400" DIA

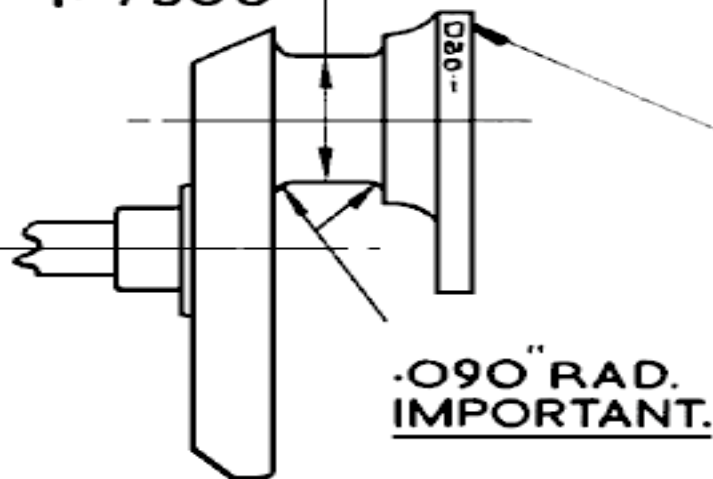


### FIRST RE - GRIND

GRIND THE CRANKPIN TO  
1.7405"/1.7400" DIA. WITH  
.090" FACE RADIUS.

STAMP -.010" HERE.

1.7305"  
1.7300" DIA.

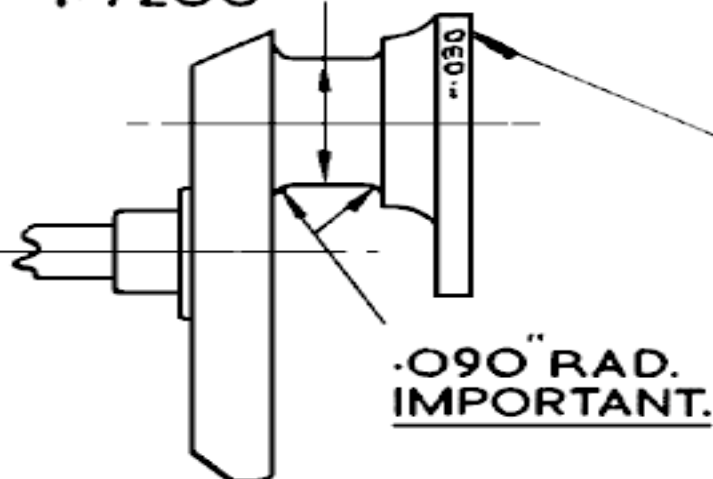


### SECOND RE - GRIND

GRIND THE CRANKPIN TO  
1.7305"/1.7300" DIA. WITH  
.090" FACE RADIUS.

STAMP -.020" HERE.

1.7205"  
1.7200" DIA.



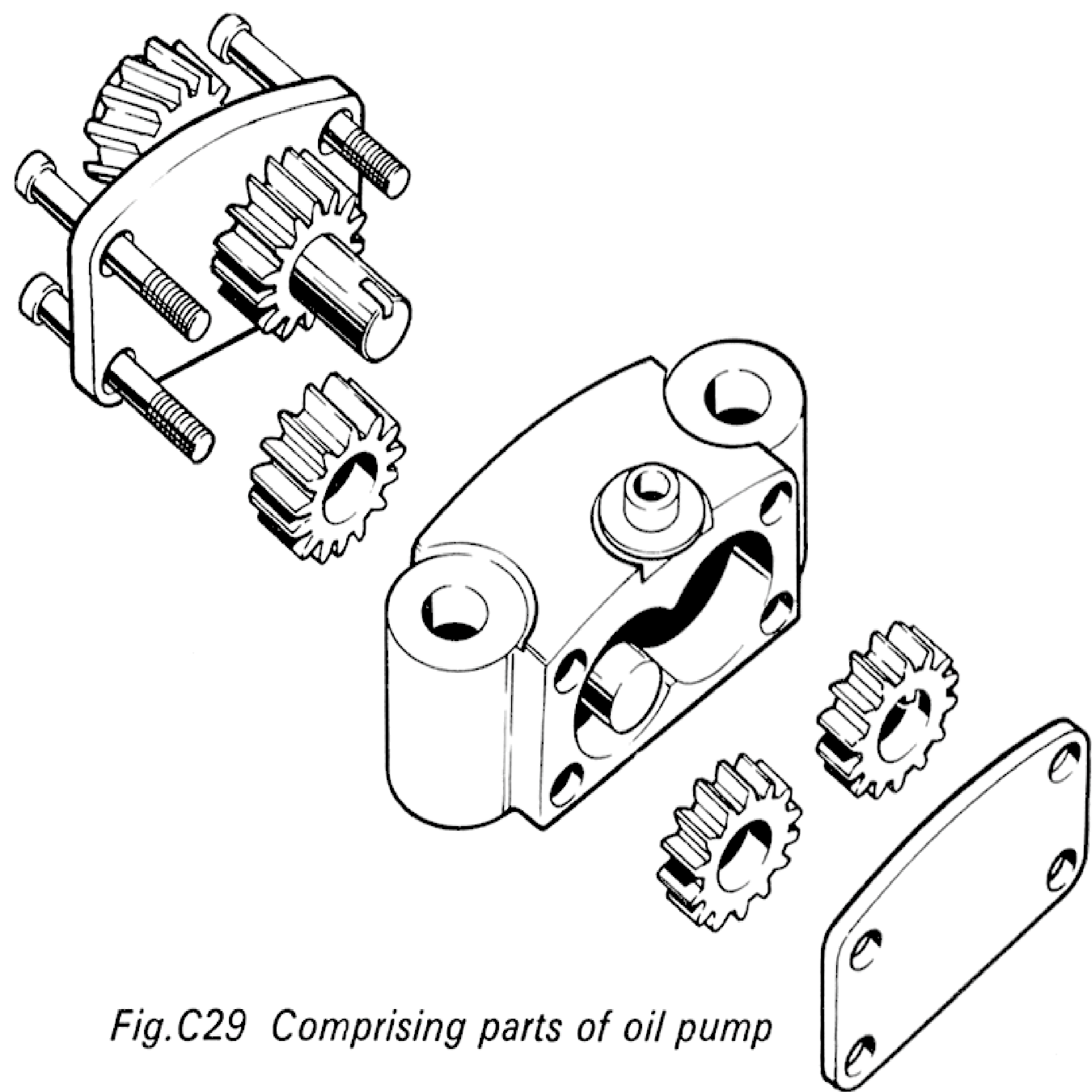
### THIRD RE - GRIND

GRIND THE CRANKPIN TO  
1.7205"/1.7200" DIA WITH  
.090" FACE RADIUS.

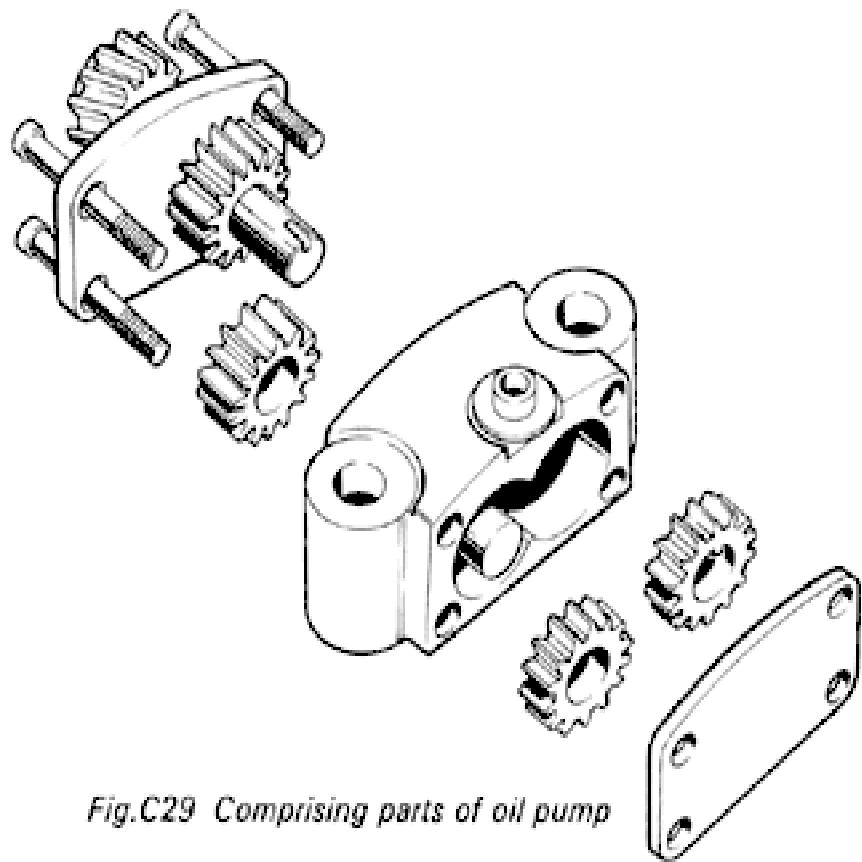
STAMP -.030" HERE.

Fig. C28 Crank regrinding chart

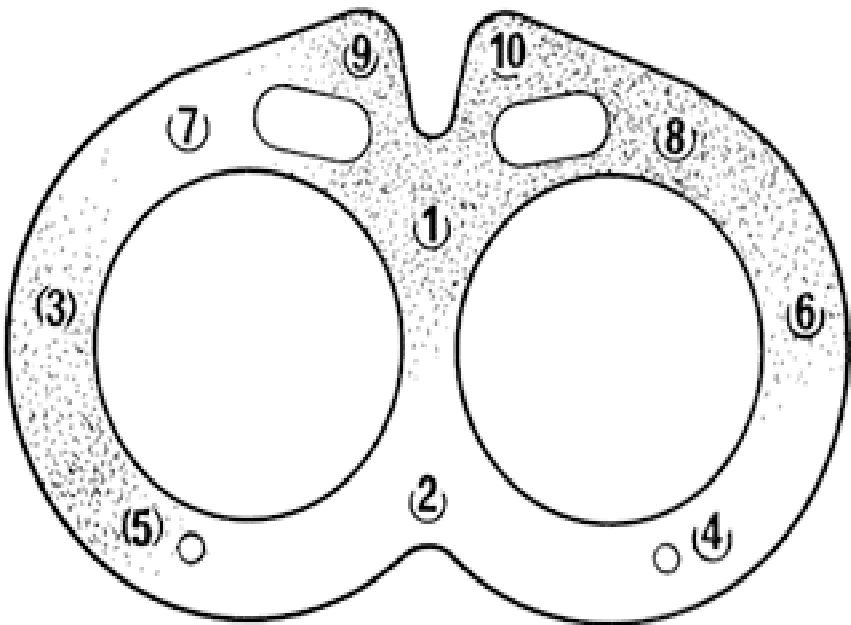




*Fig.C29 Comprising parts of oil pump*



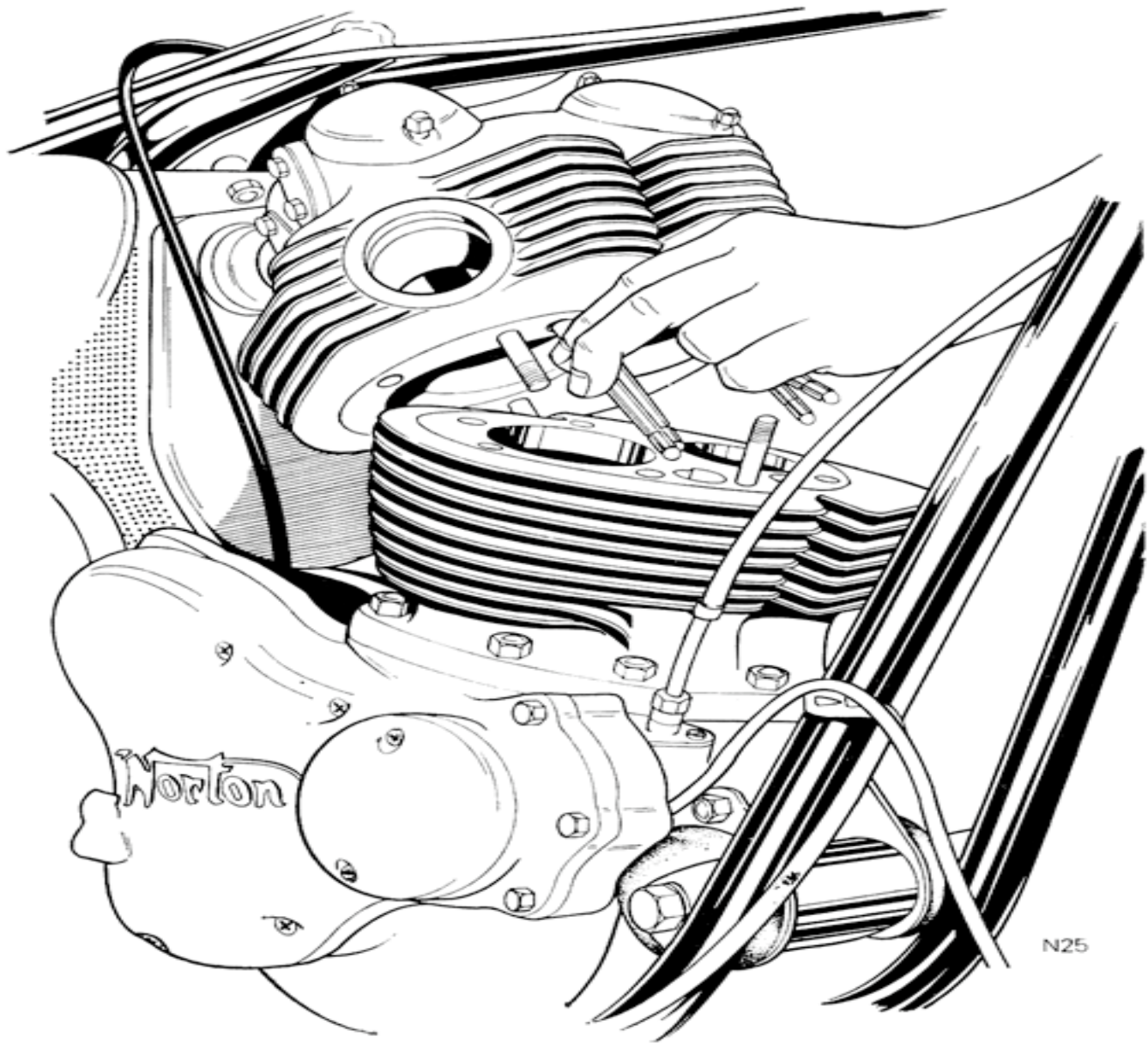
*Fig.C29 Comprising parts of oil pump*



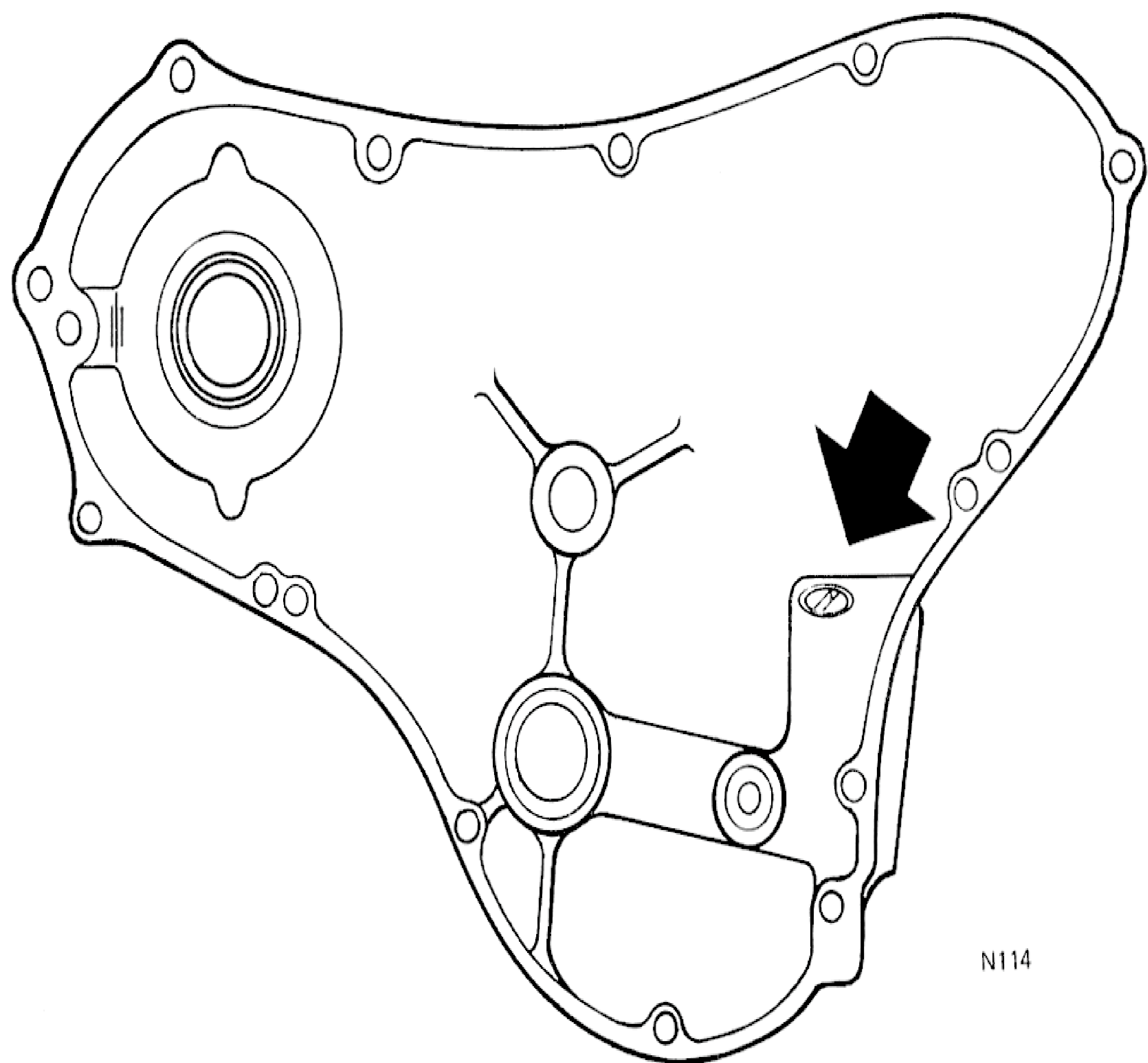
N36

## TIGHTENING SEQUENCE

*Fig. C2 Cylinder head; order of slackening and tightening*

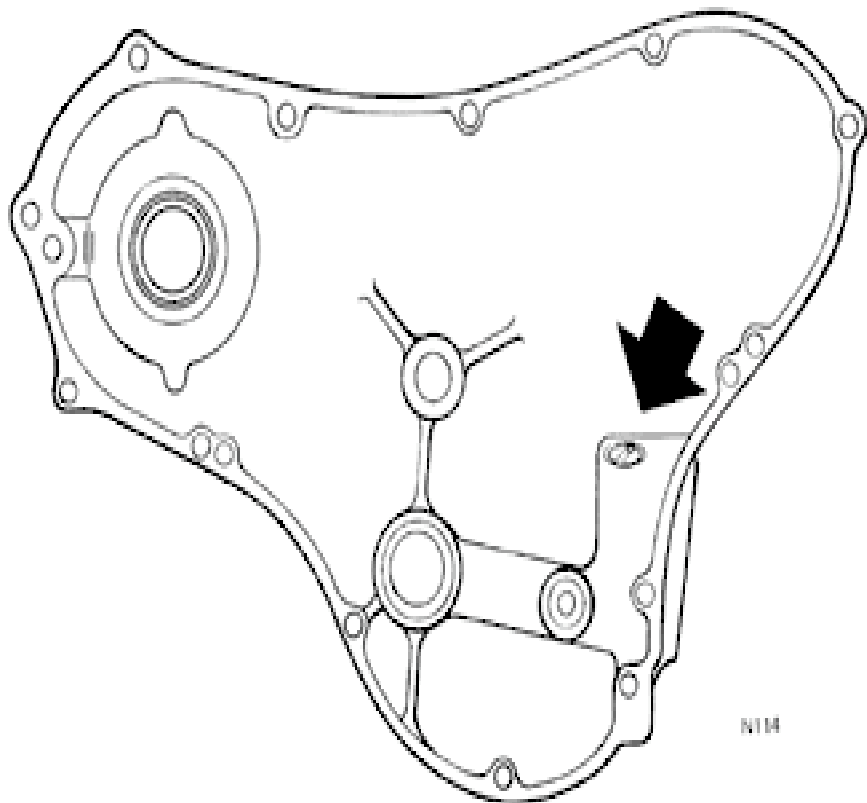


*Fig. C3 Tilting cylinder head with pushrods held into*



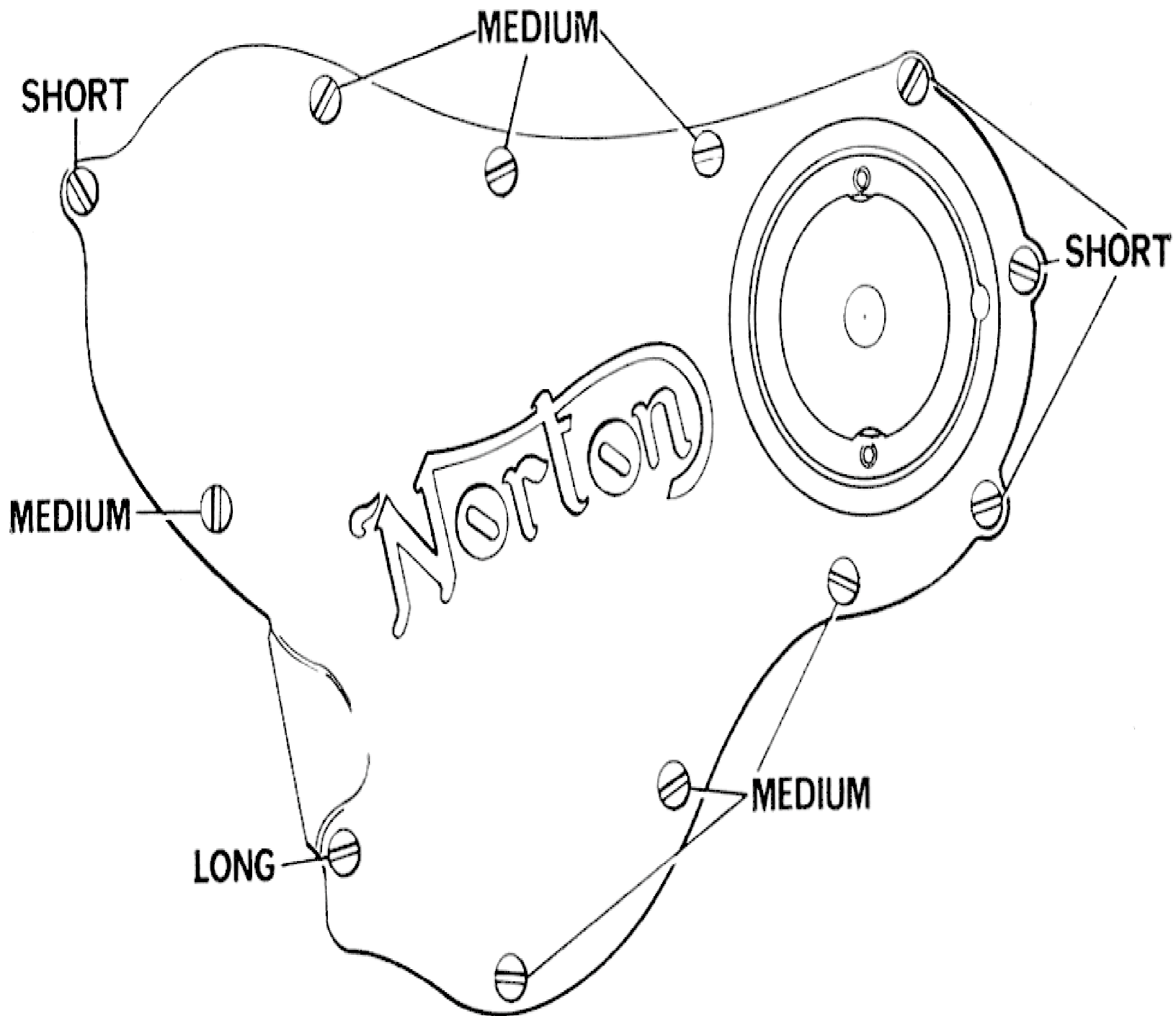
N114

*Fig. C30 Showing blanking plug in position in timing cover*

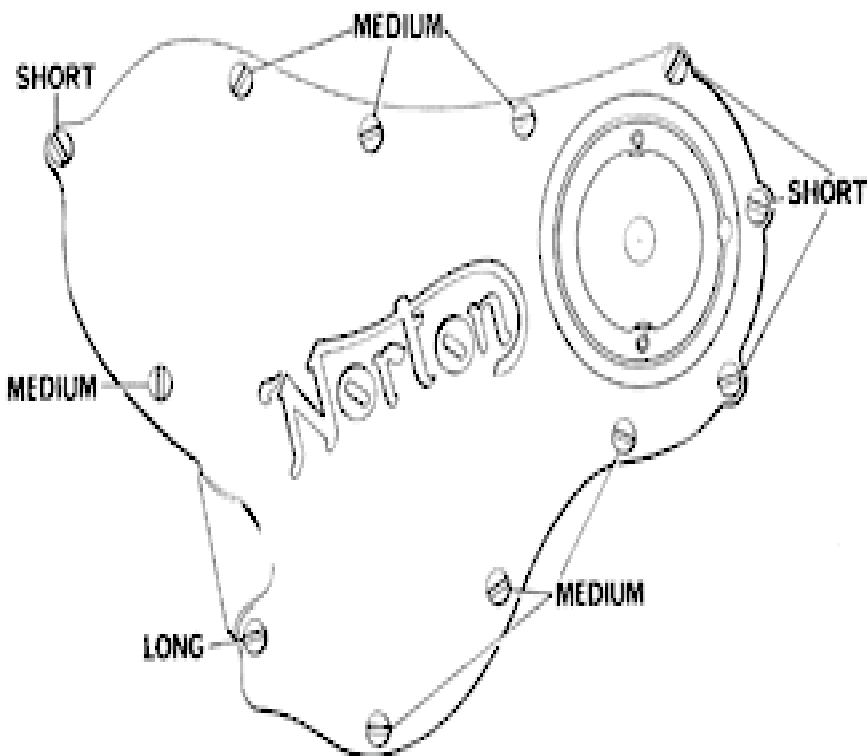


N114

*Fig.C30 Showing blanking plug in position in timing cover*

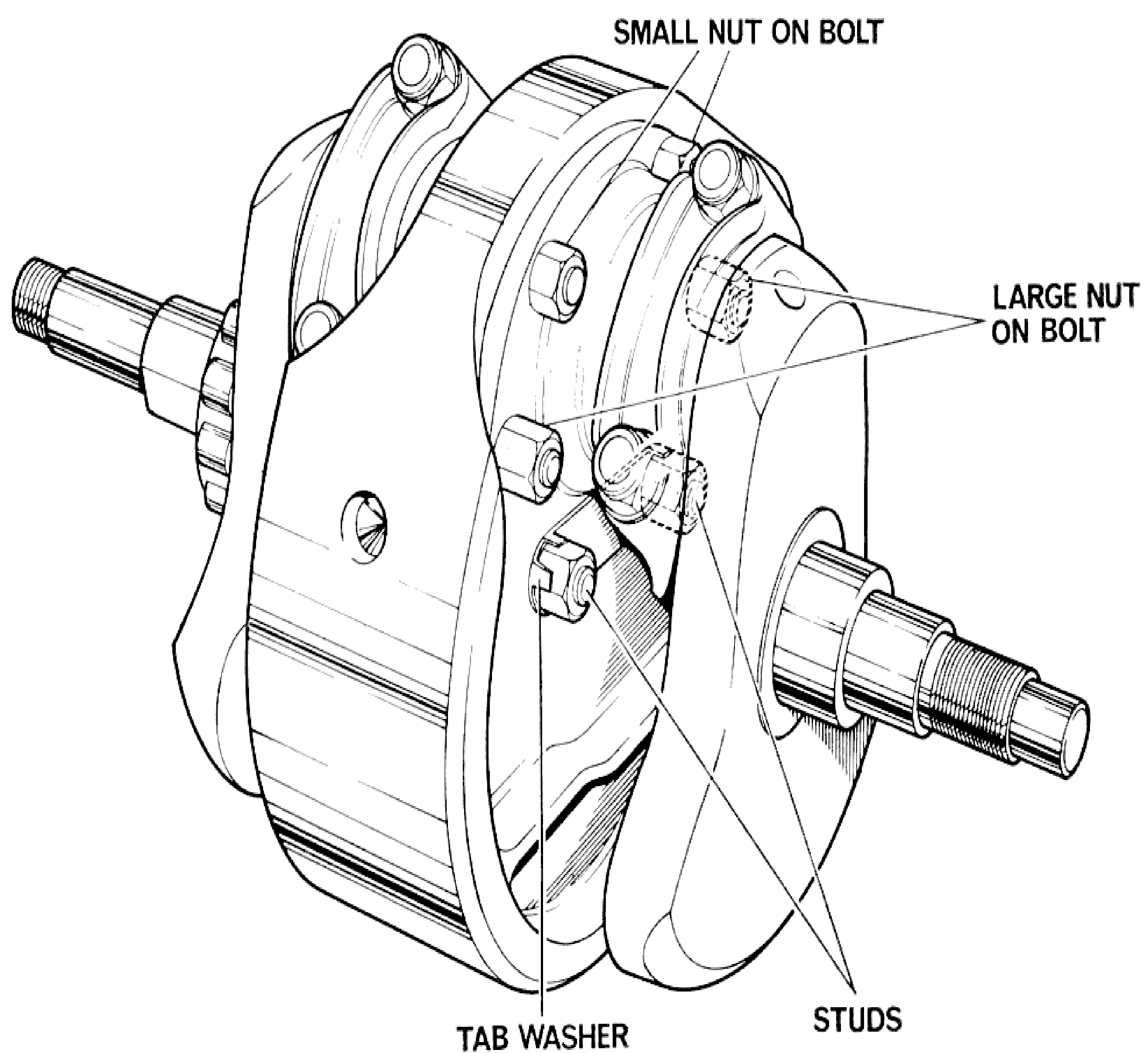


*Fig. C31 Positions and lengths of odd timing cover screws*

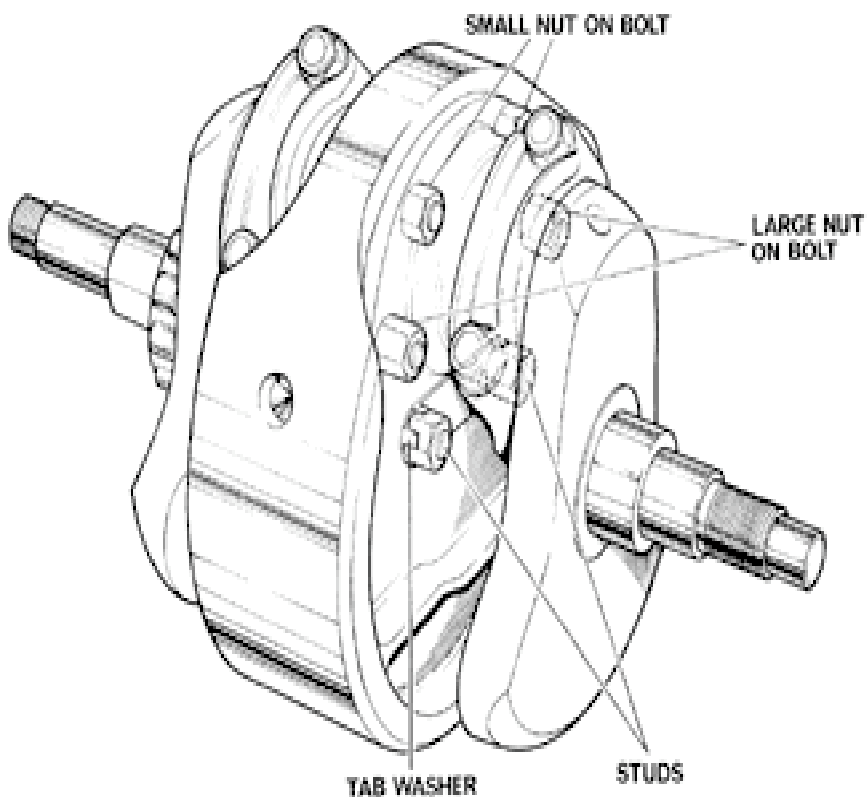


*Fig. C31 Positions and lengths of odd timing cover screws*

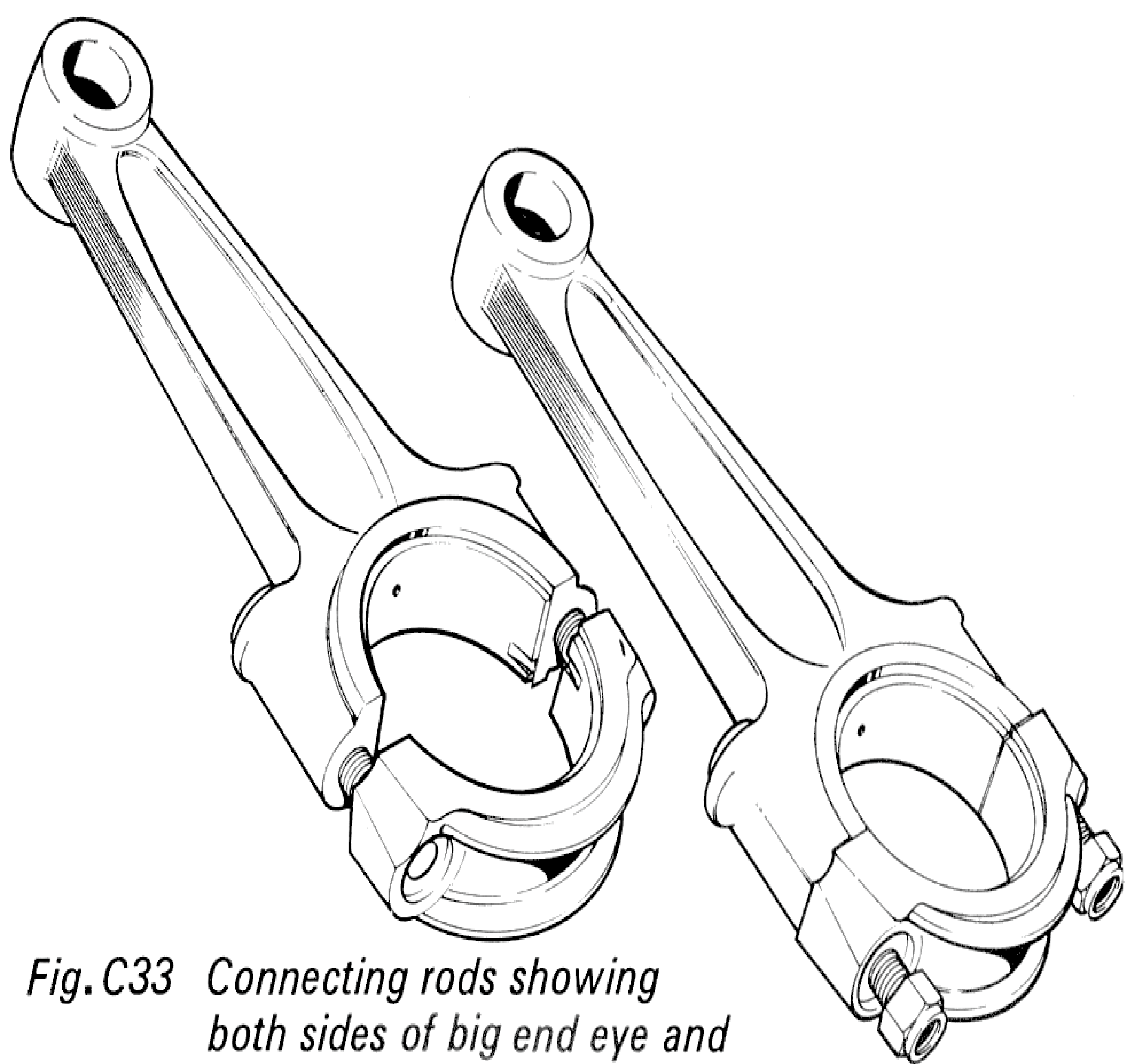




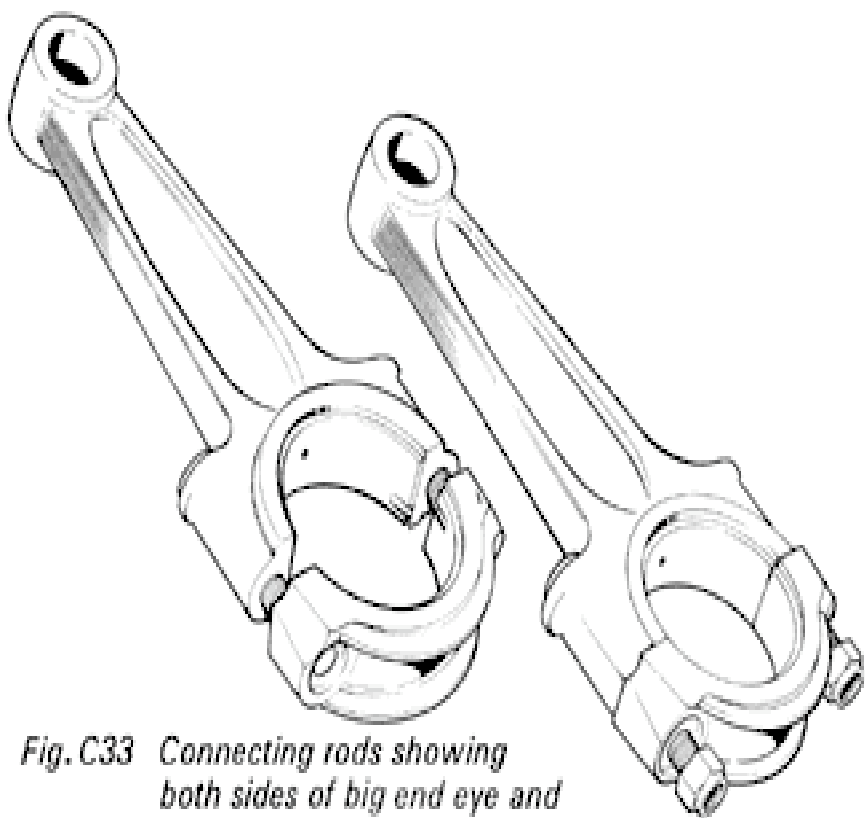
*Fig. C32 Showing crankcheek to flywheel securing hardware*



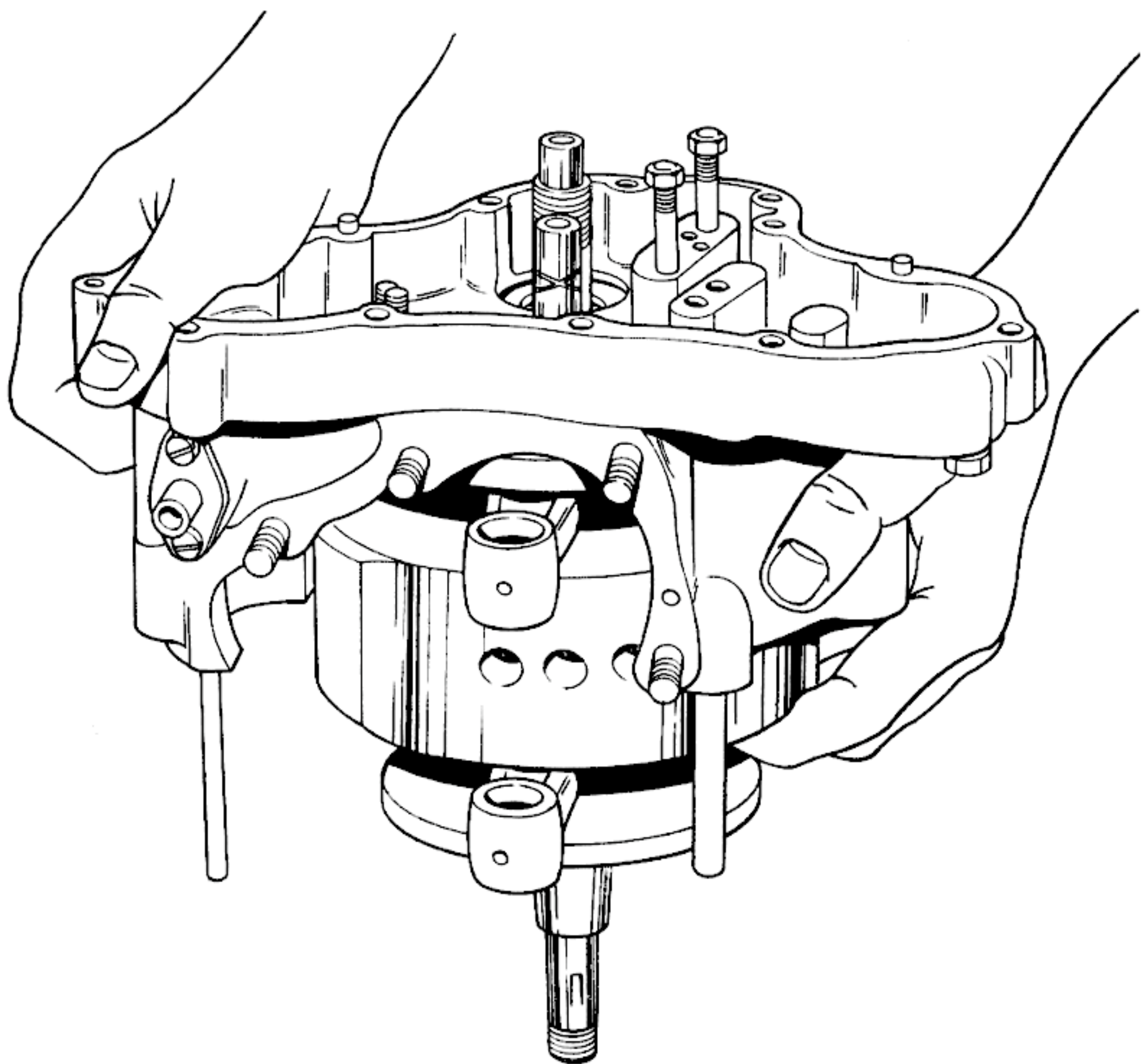
*Fig.C32 Showing crankcheek to flywheel securing hardware*



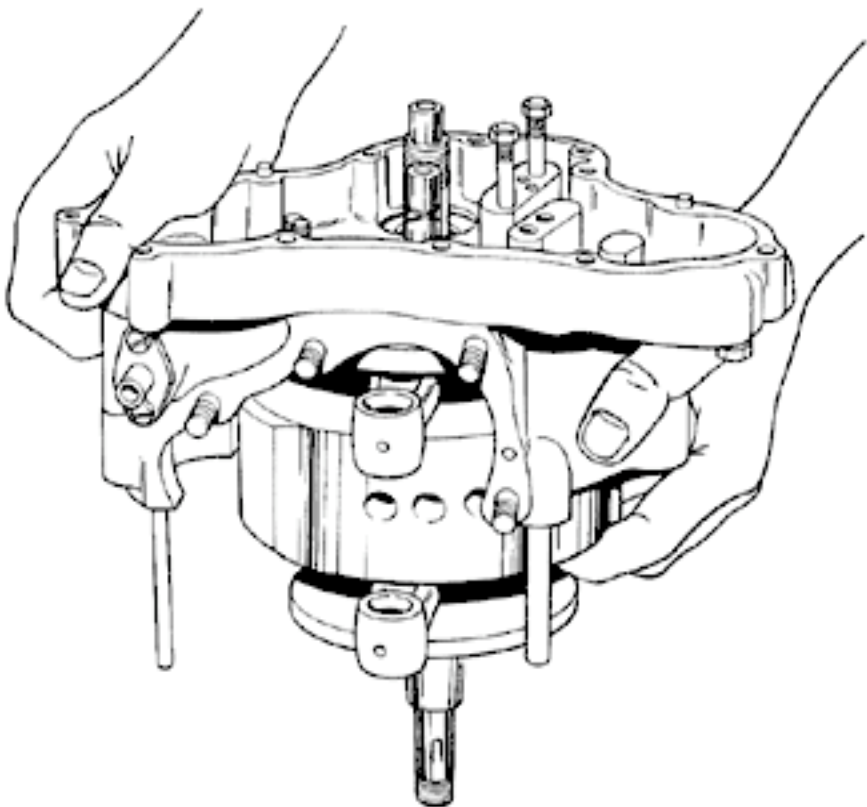
*Fig. C33 Connecting rods showing both sides of big end eye and bearing shell tab locations*



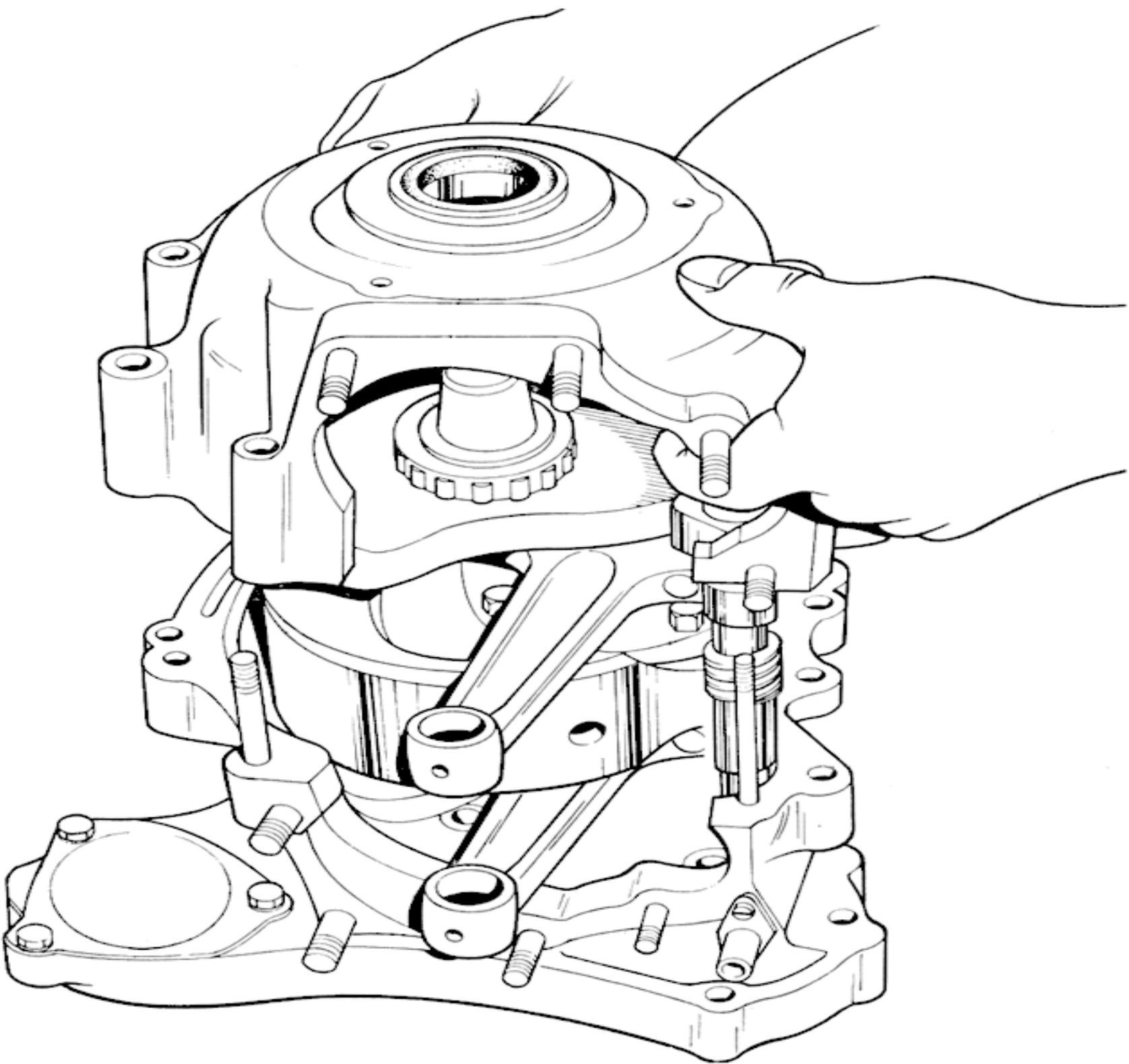
*Fig. C33 Connecting rods showing both sides of big end eye and bearing shell tab locations*



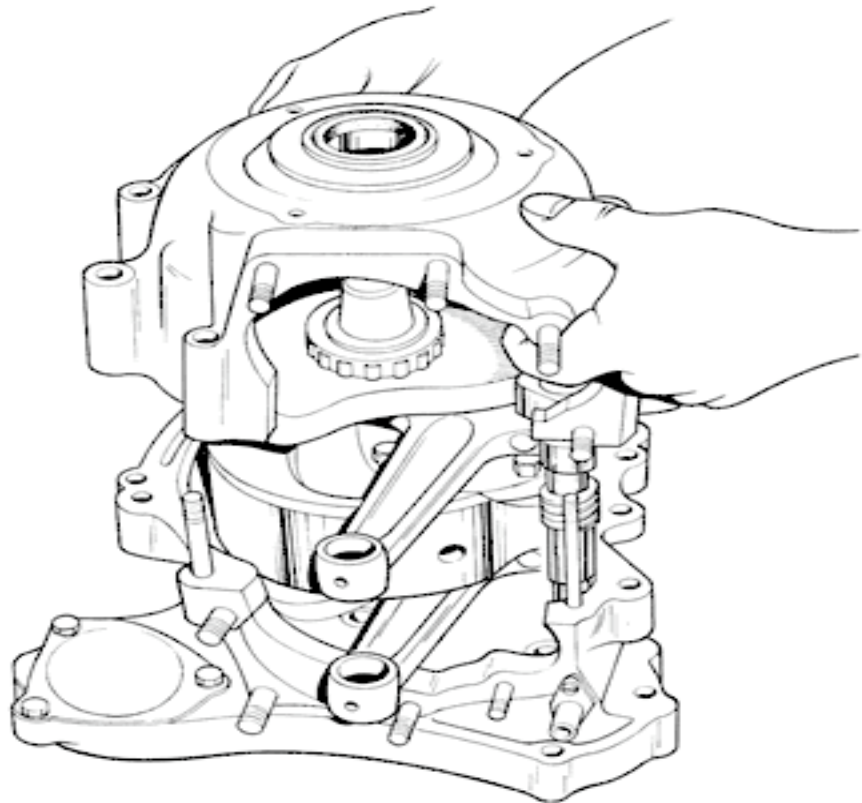
*Fig. C34 Pushing timing side crankcase over crankshaft*



*Fig. C34 Pushing timing side crankcase over crankshaft*

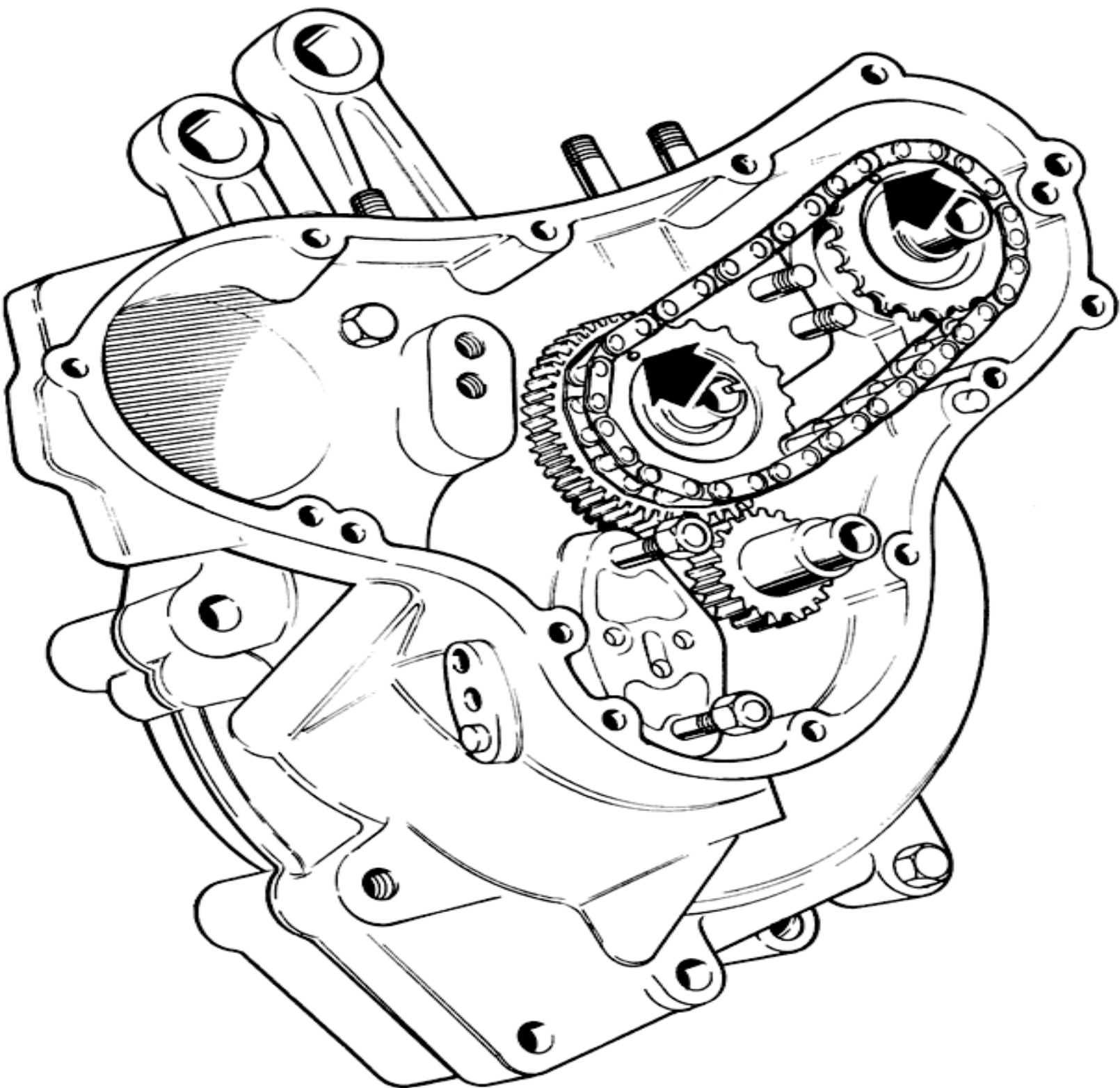


*Fig.C35 Mating crankcases. Note the camshaft is held against the spring and disc with the finger*

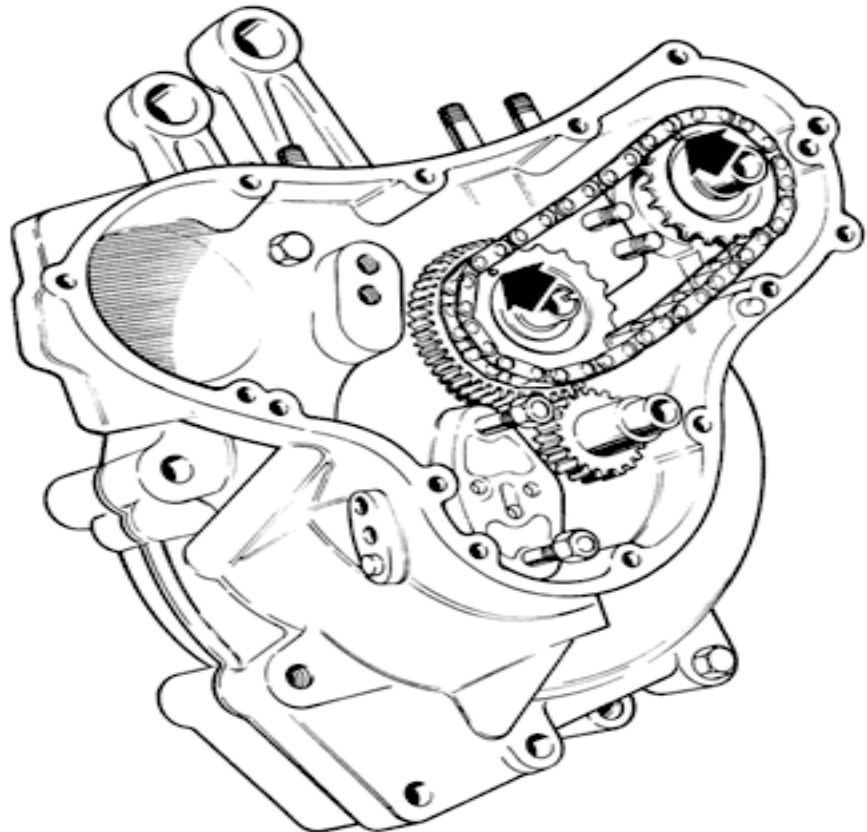


*Fig.C35 Mating crankcases. Note the camshaft is held against the spring and disc with the finger*

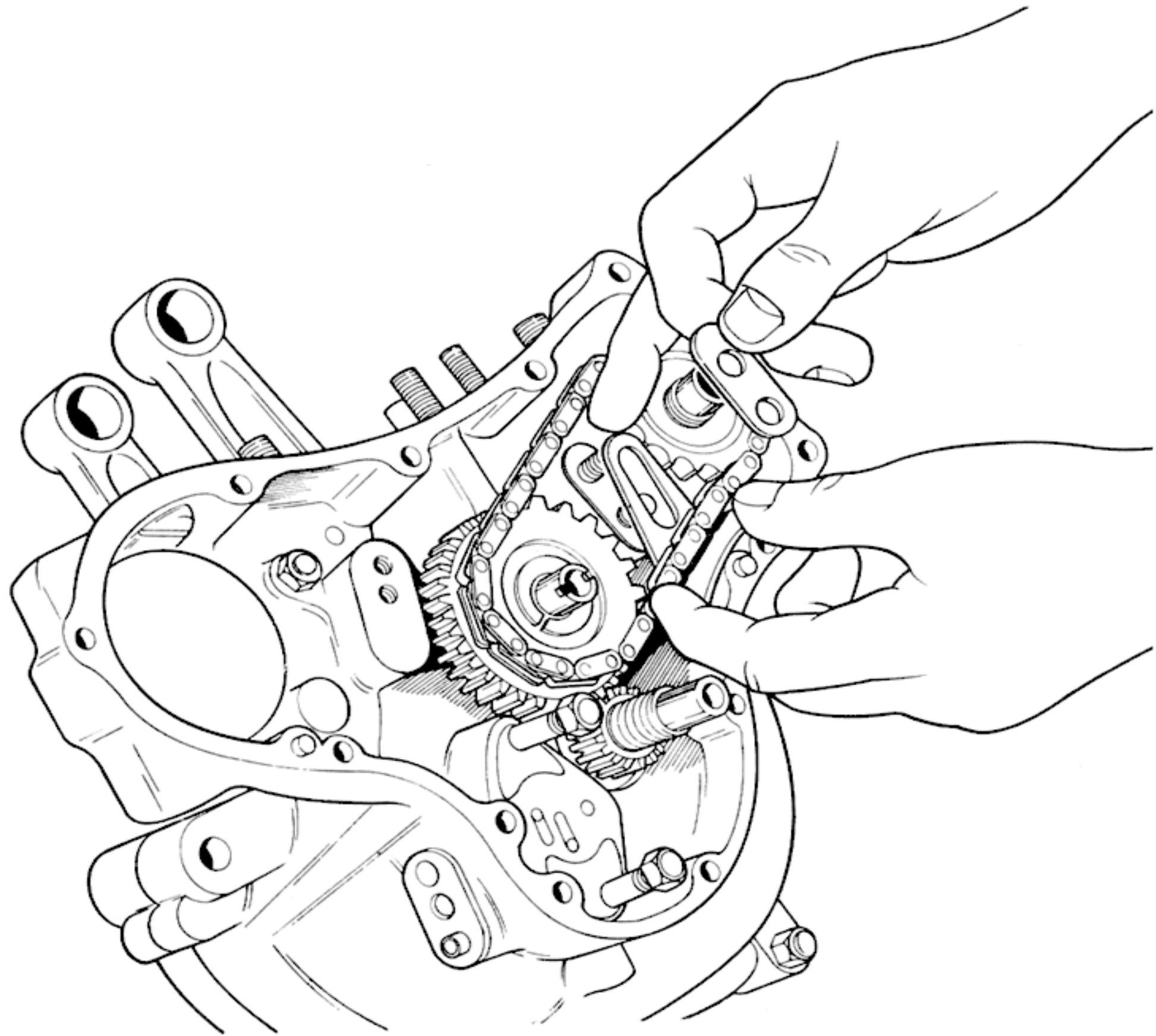




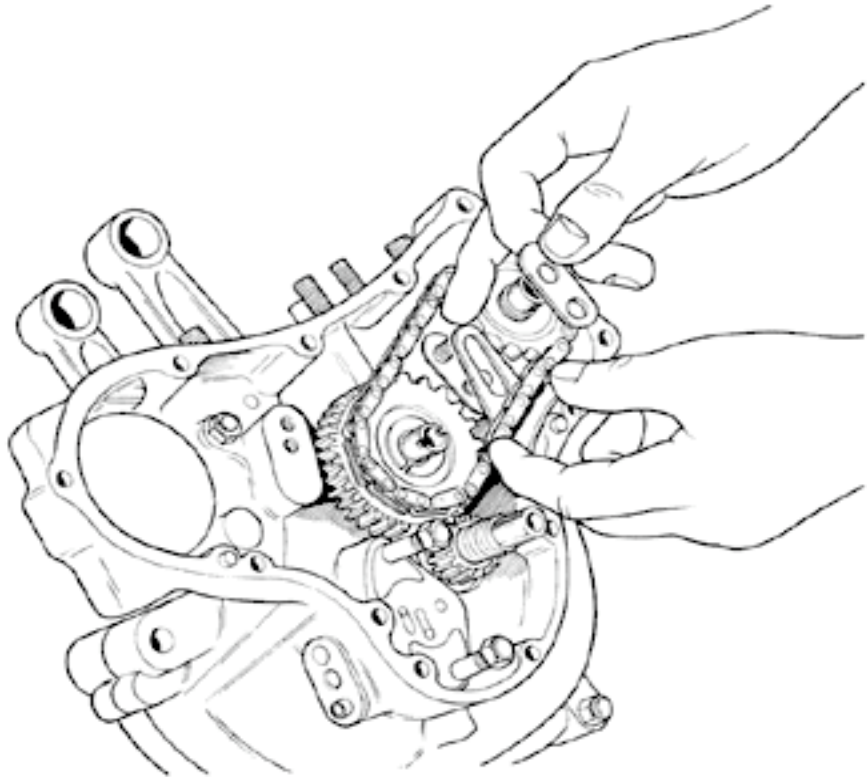
*Fig.C36 Assembly of timing chain and sprockets. Note arrows*



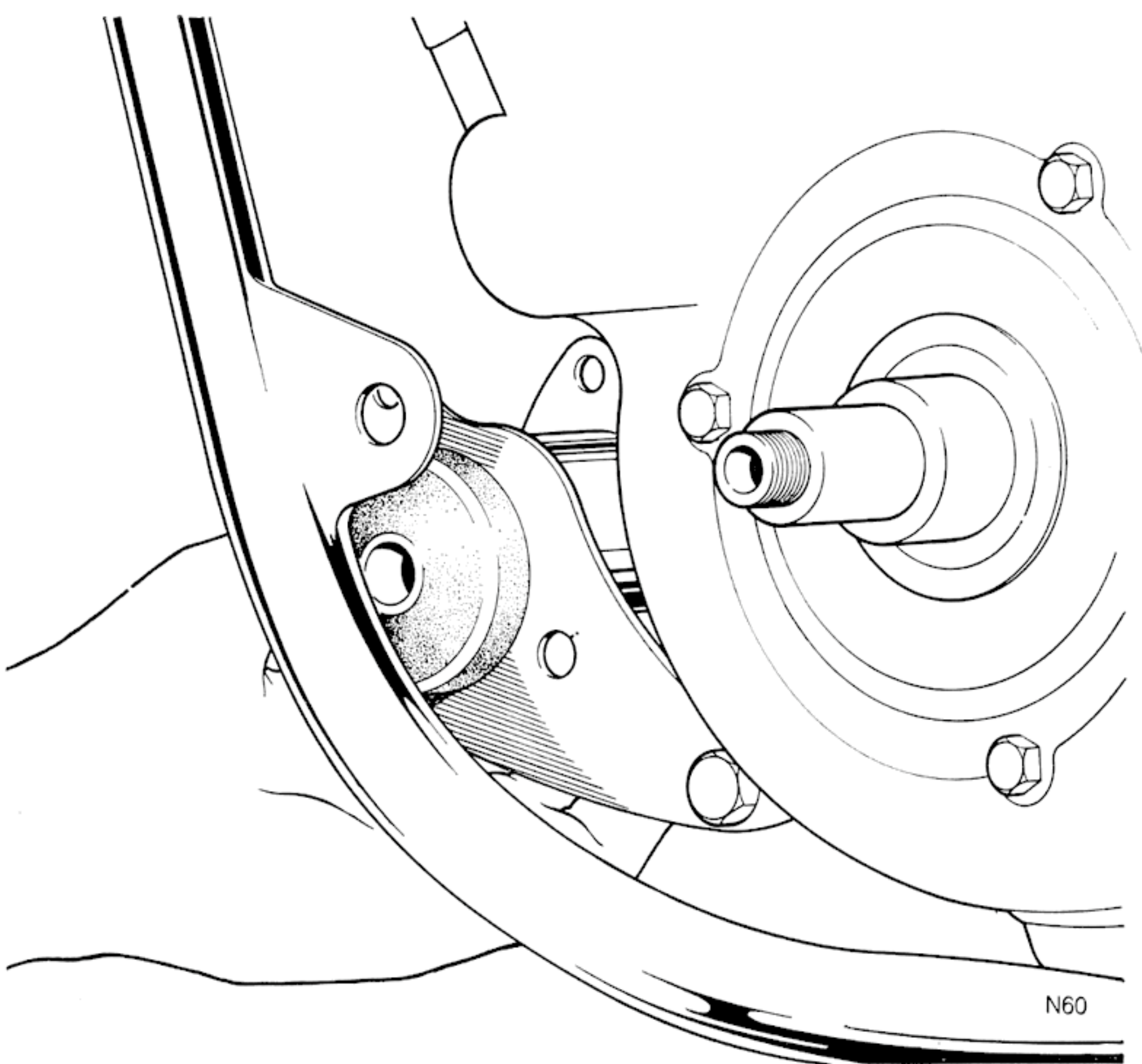
*Fig.C36 Assembly of timing chain and sprockets. Note arrows*



*Fig. C37 Chain tensioner showing thin inner plate long end downwards*

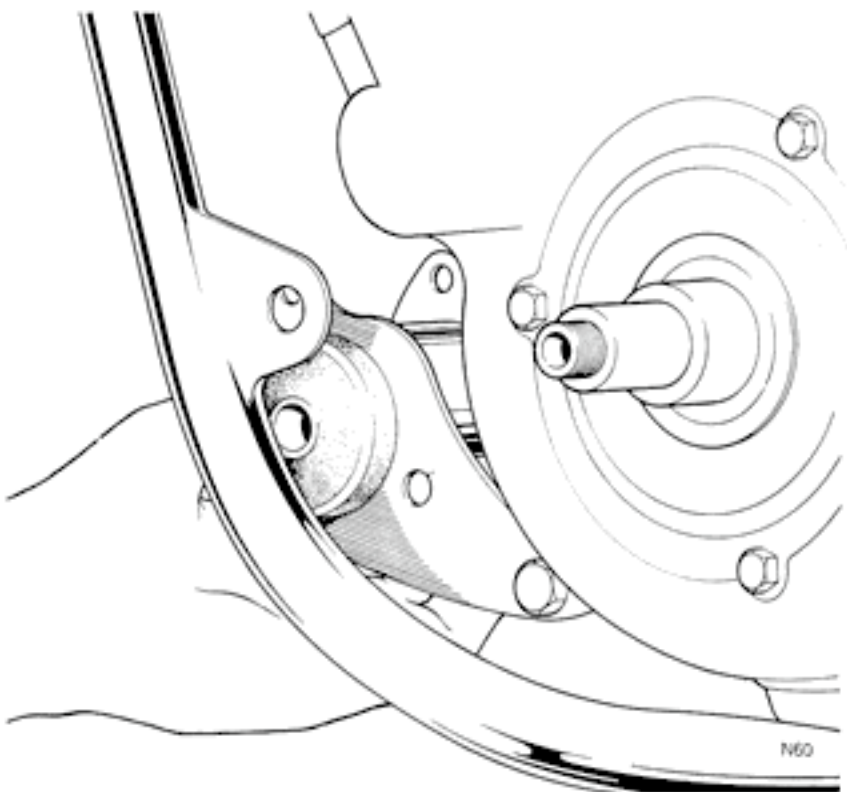


*Fig. C37 Chain tensioner showing thin inner plate long end downwards*



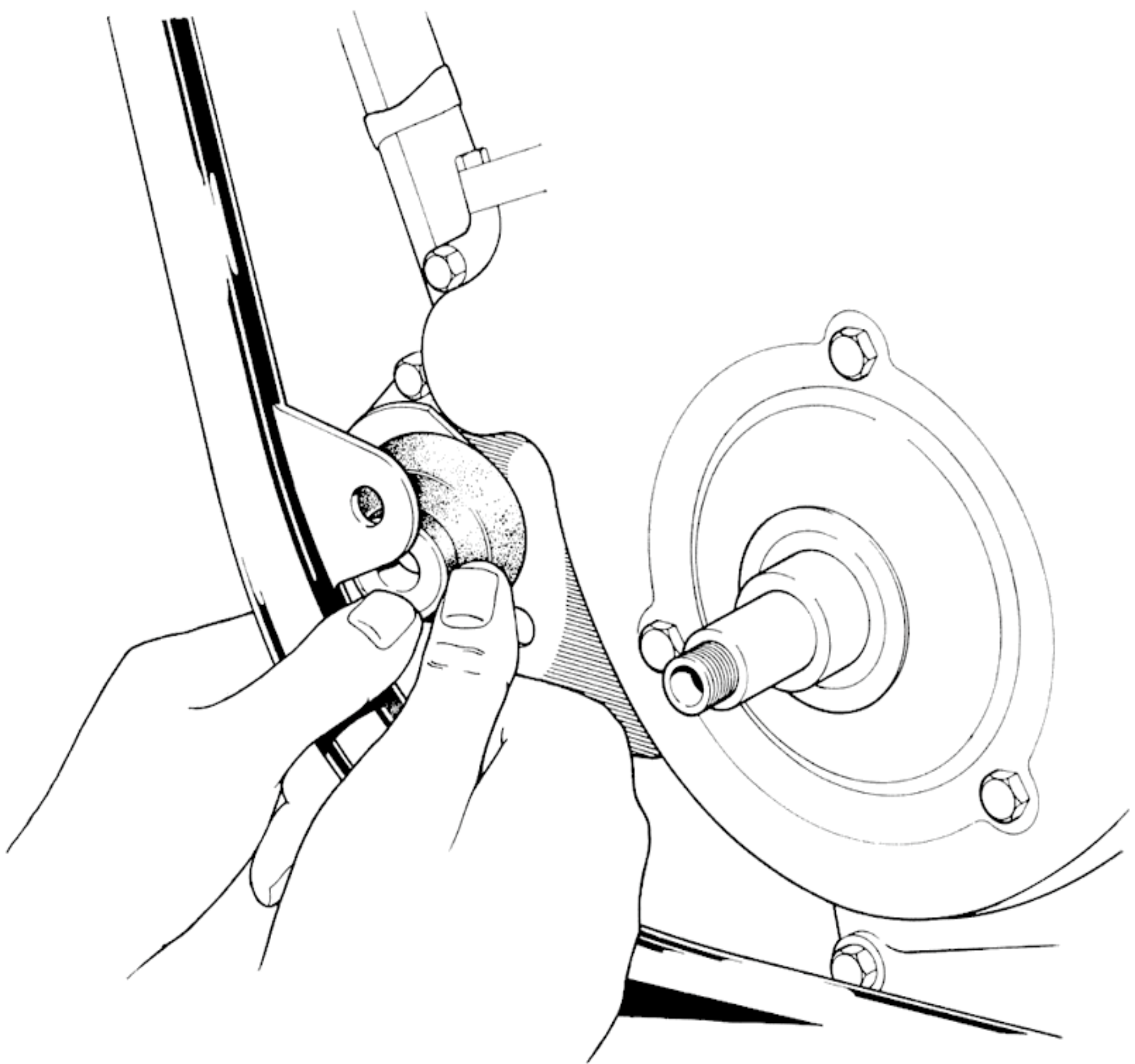
N60

*Fig. C38 Lifting front mounting into position using bottom bolt as pivot*

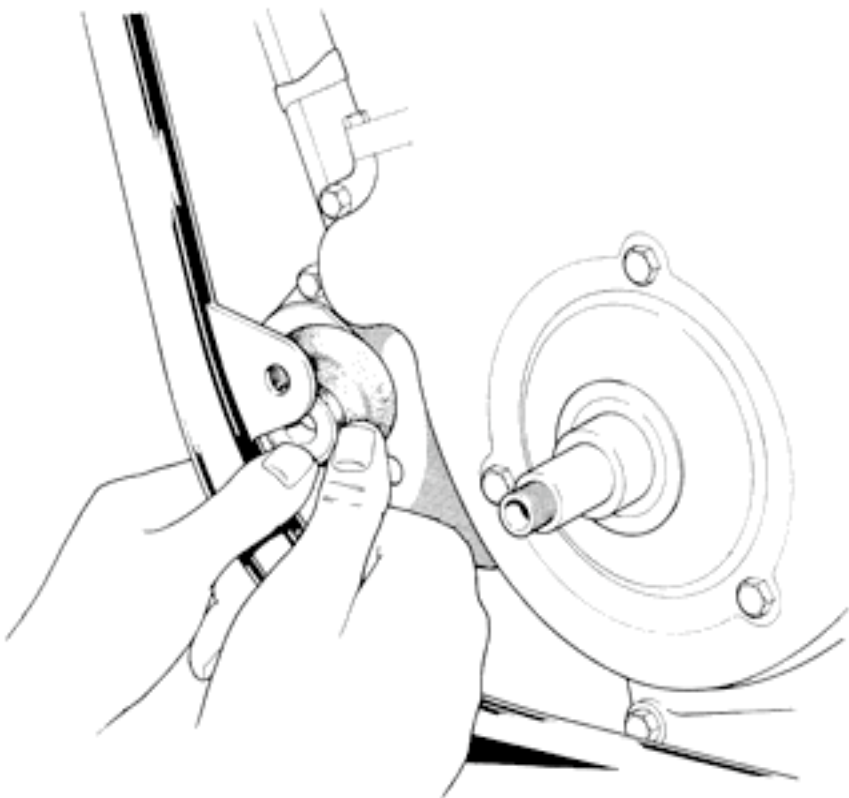


N60

*Fig. C38 Lifting front mounting into position using bottom bolt as pivot*

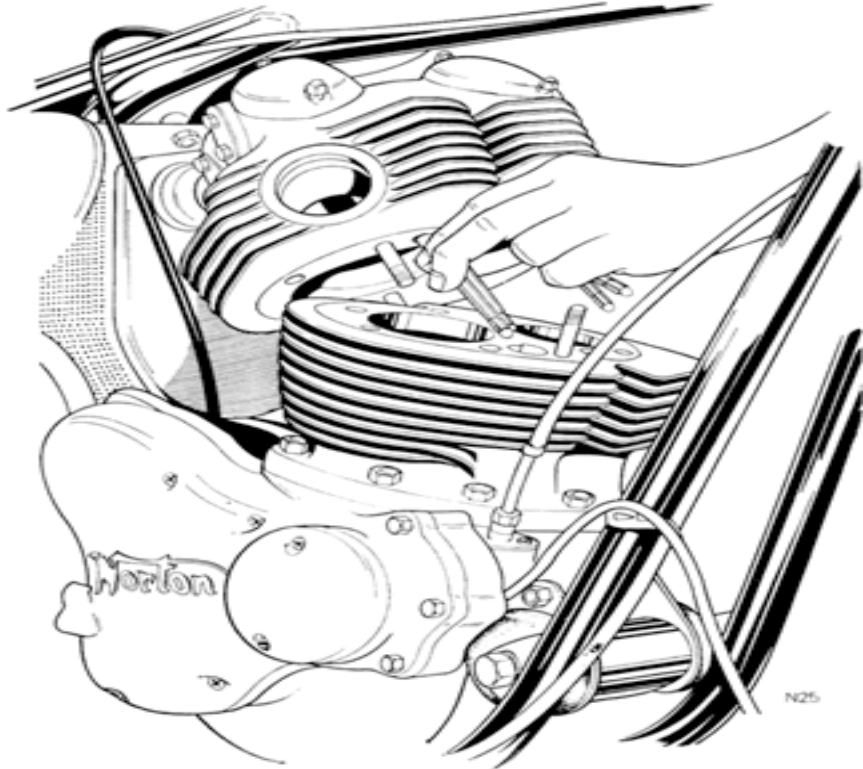


*Fig. C39 Inserting front left gaiter mounting cap group*

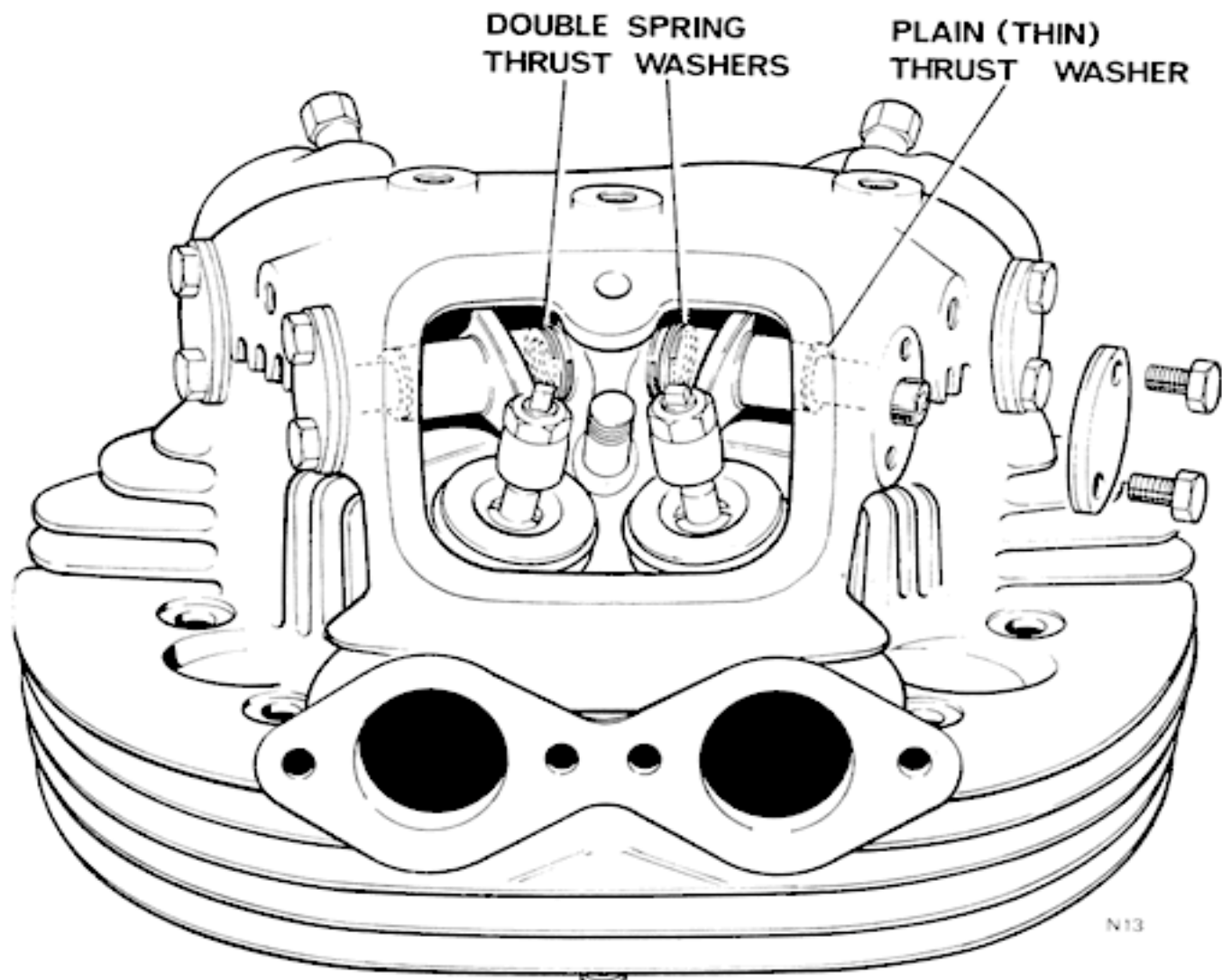


*Fig. C39 Inserting front left gaiter mounting cap group*

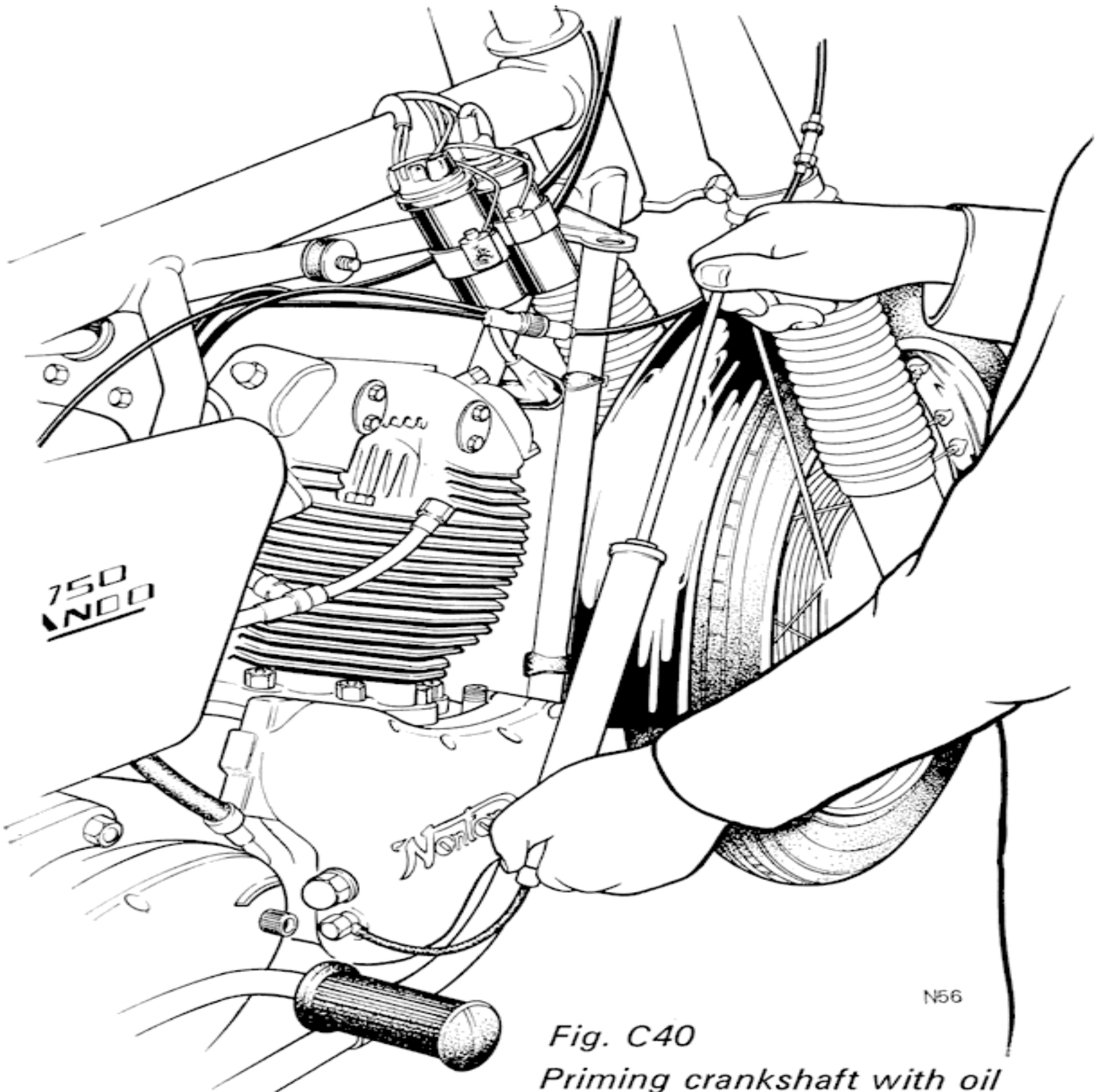




*Fig. C3 Tilting cylinder head with pushrods held into*

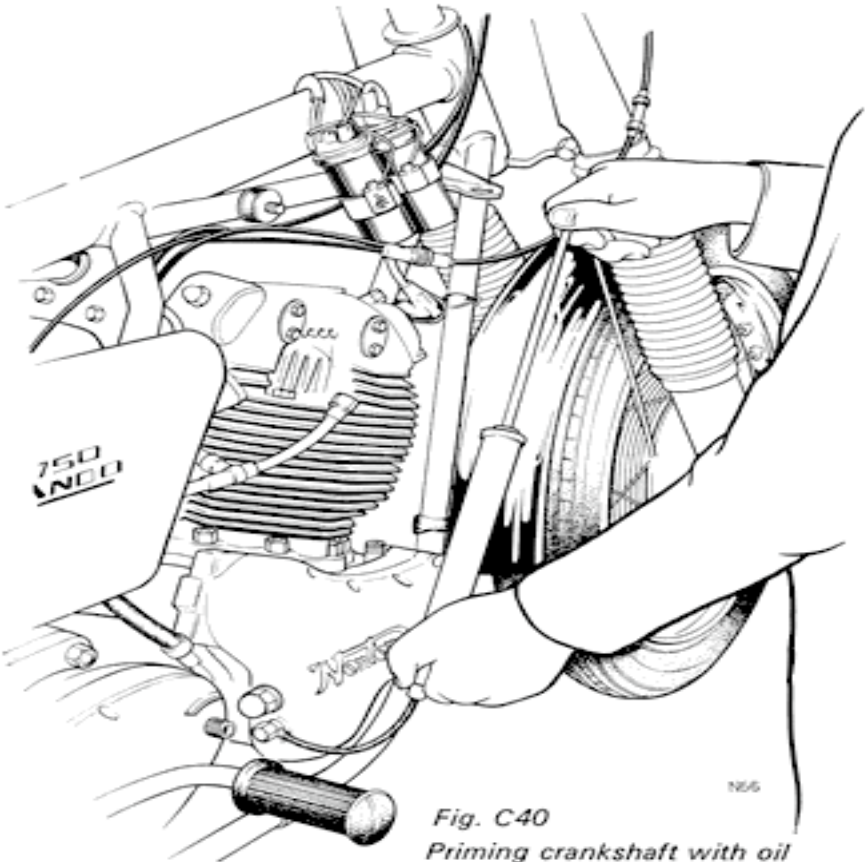


*Fig. C4     Rocker spindle securing plates and screws.  
Note also positions of thrust washers for rockers*

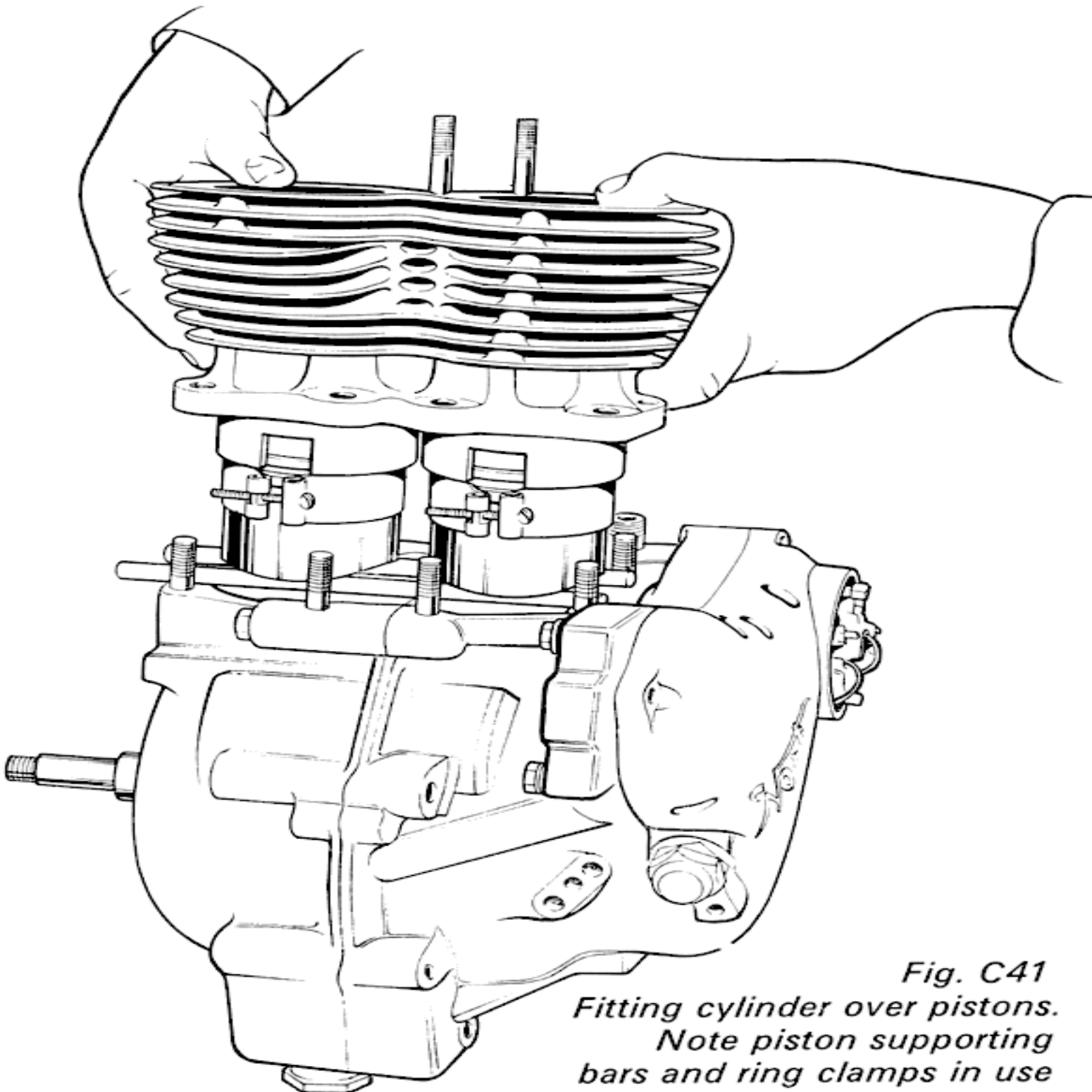


N56

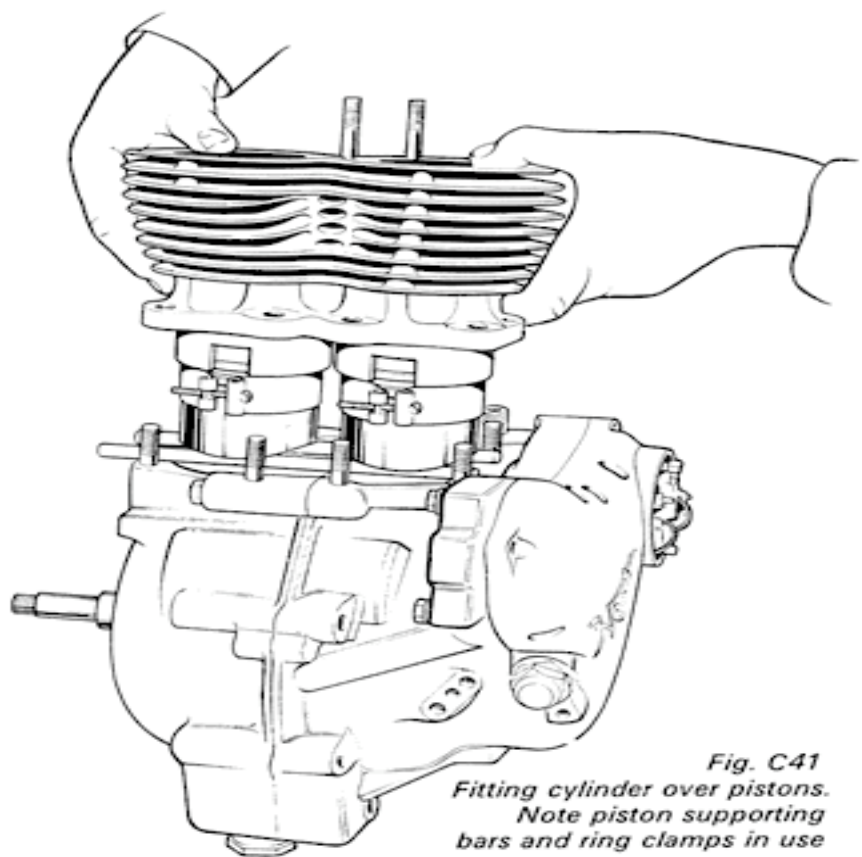
*Fig. C40  
Priming crankshaft with oil*



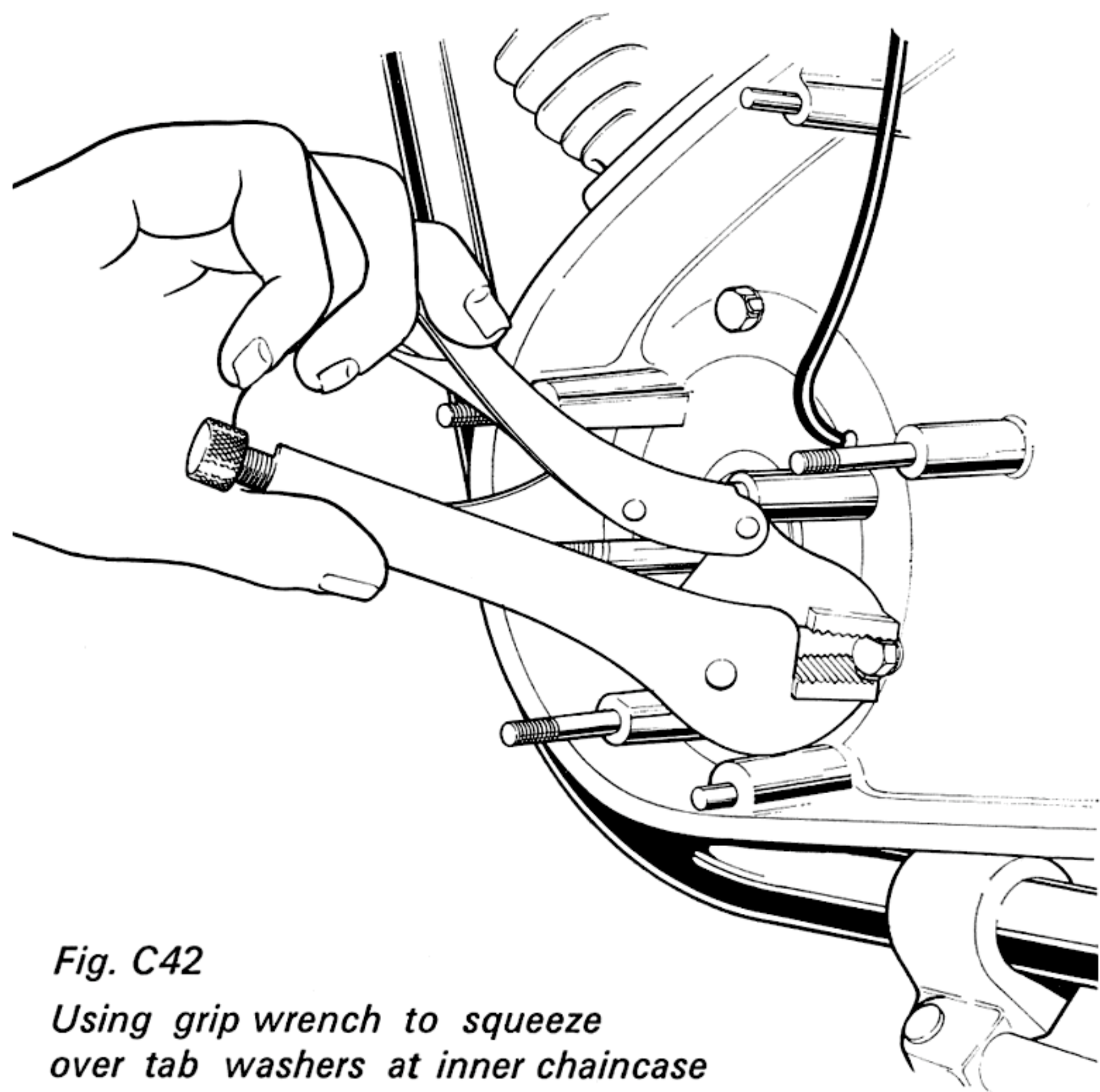
*Fig. C40*  
*Priming crankshaft with oil*



*Fig. C41  
Fitting cylinder over pistons.  
Note piston supporting  
bars and ring clamps in use*

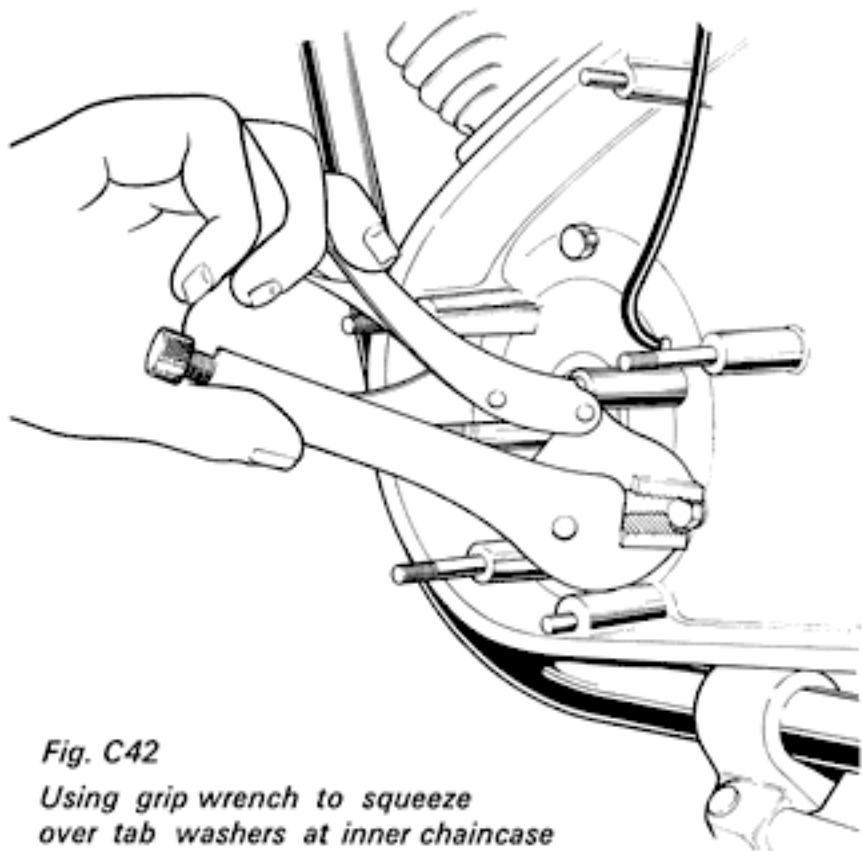


*Fig. C41  
Fitting cylinder over pistons.  
Note piston supporting  
bars and ring clamps in use*



**Fig. C42**

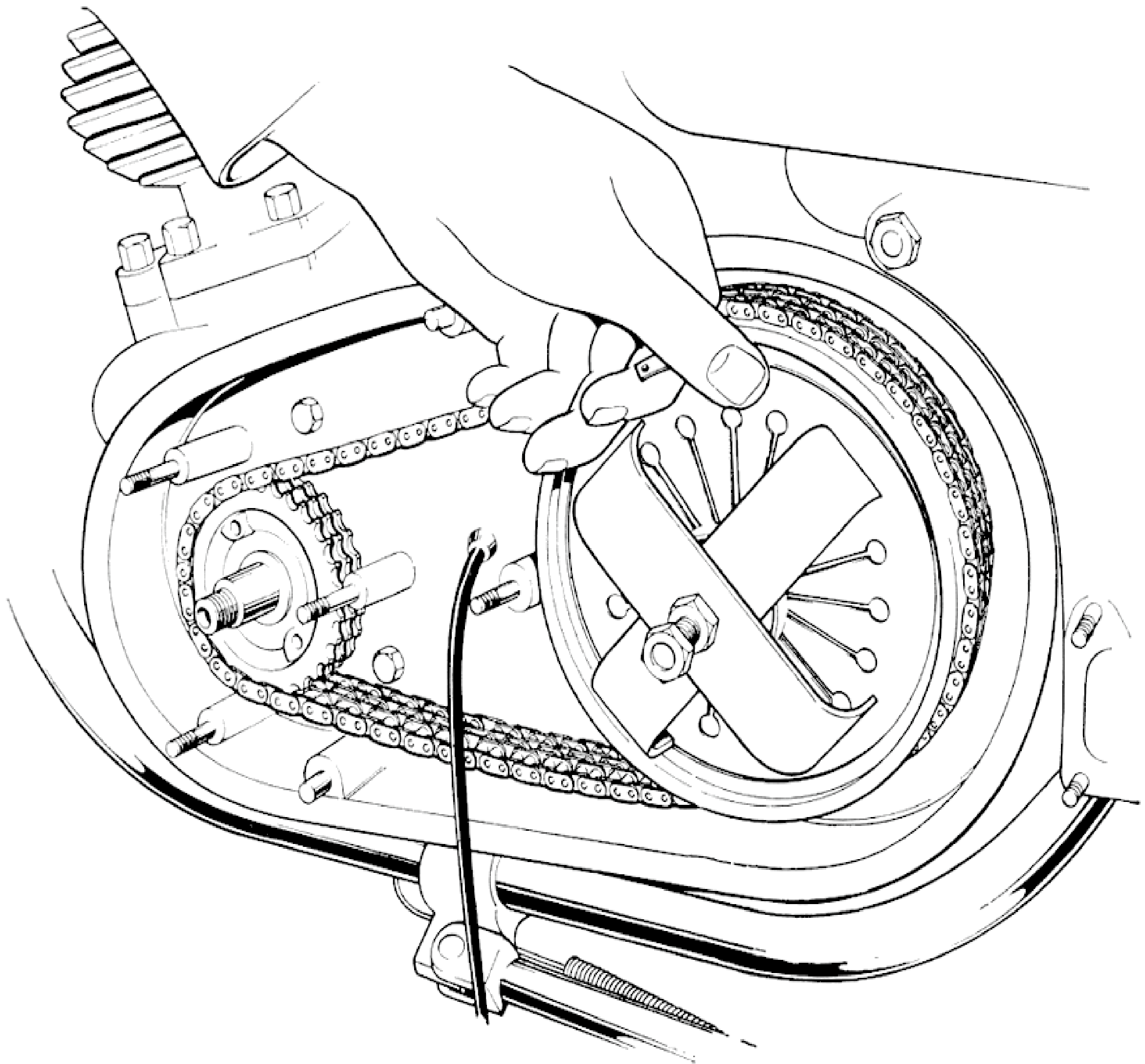
***Using grip wrench to squeeze  
over tab washers at inner chaincase***



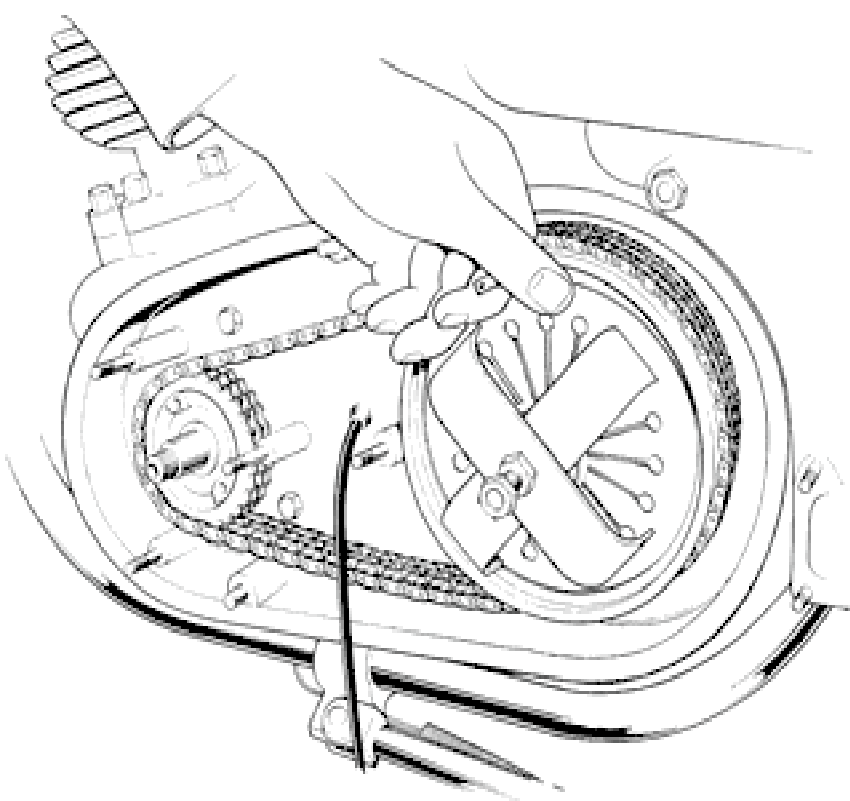
**Fig. C42**

*Using grip wrench to squeeze  
over tab washers at inner chaincase*

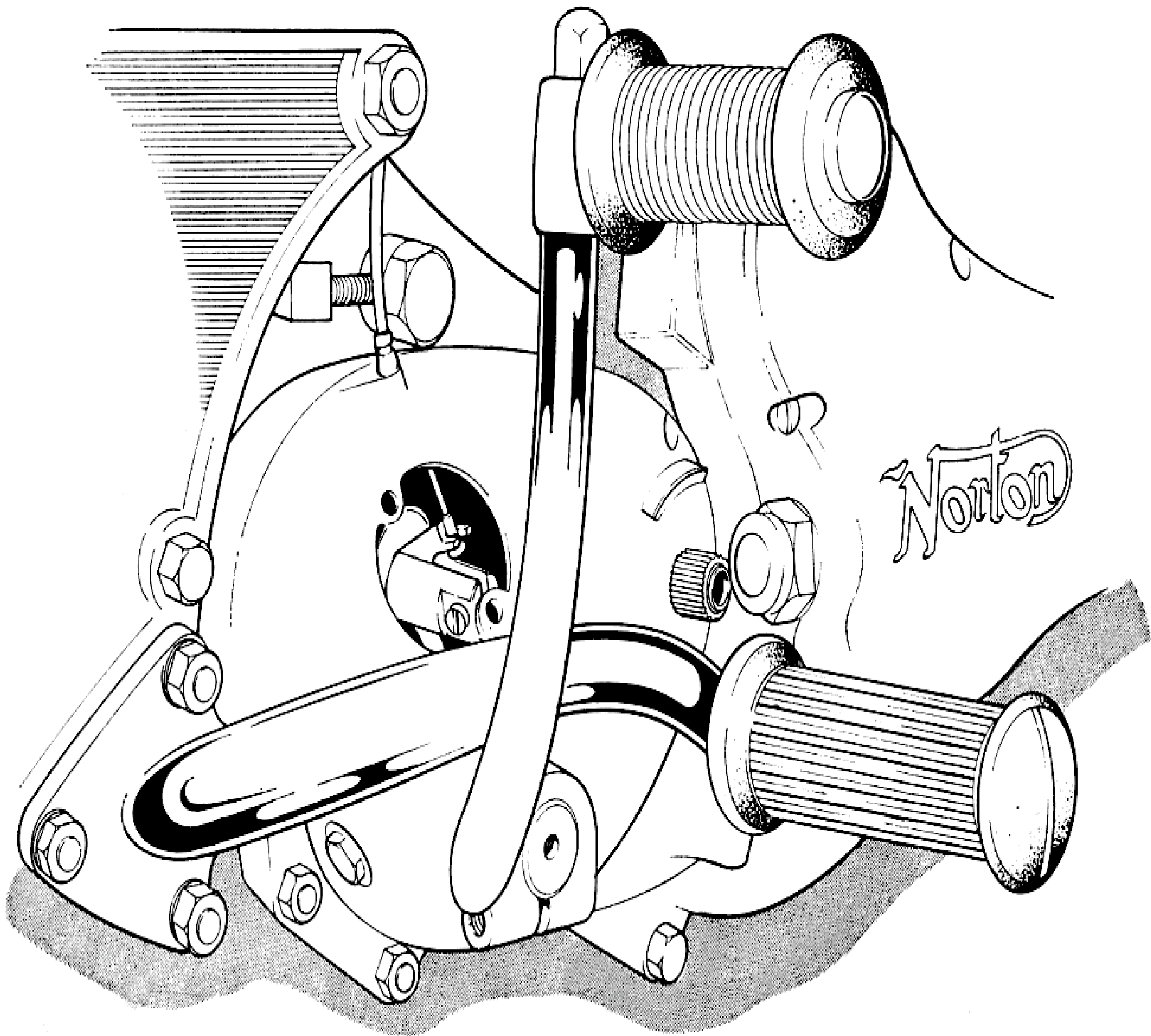




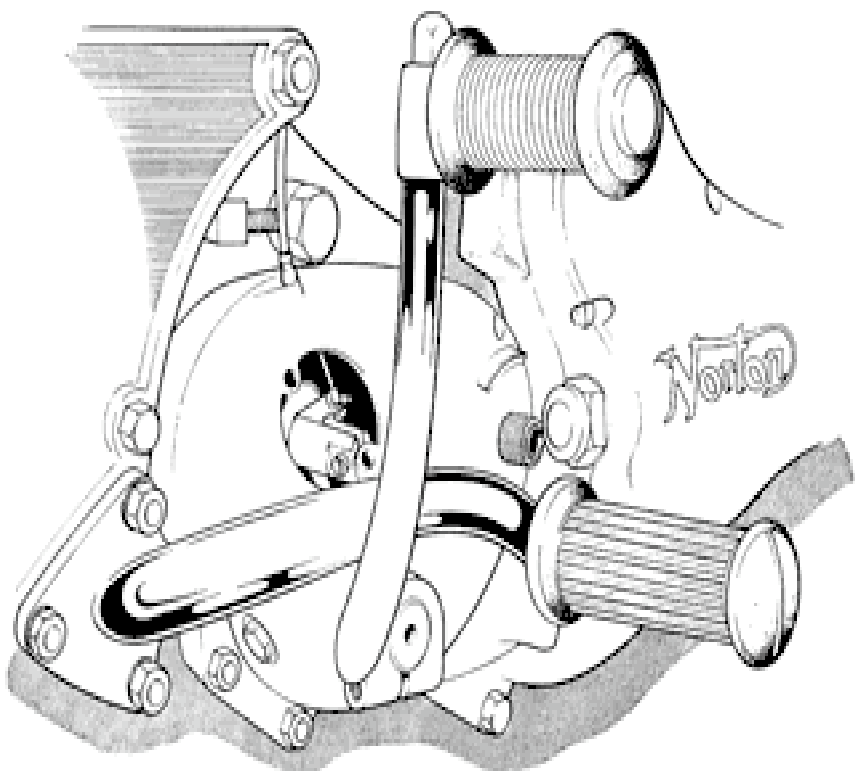
*Fig. C43 Winding diaphragm spring circlip into position*



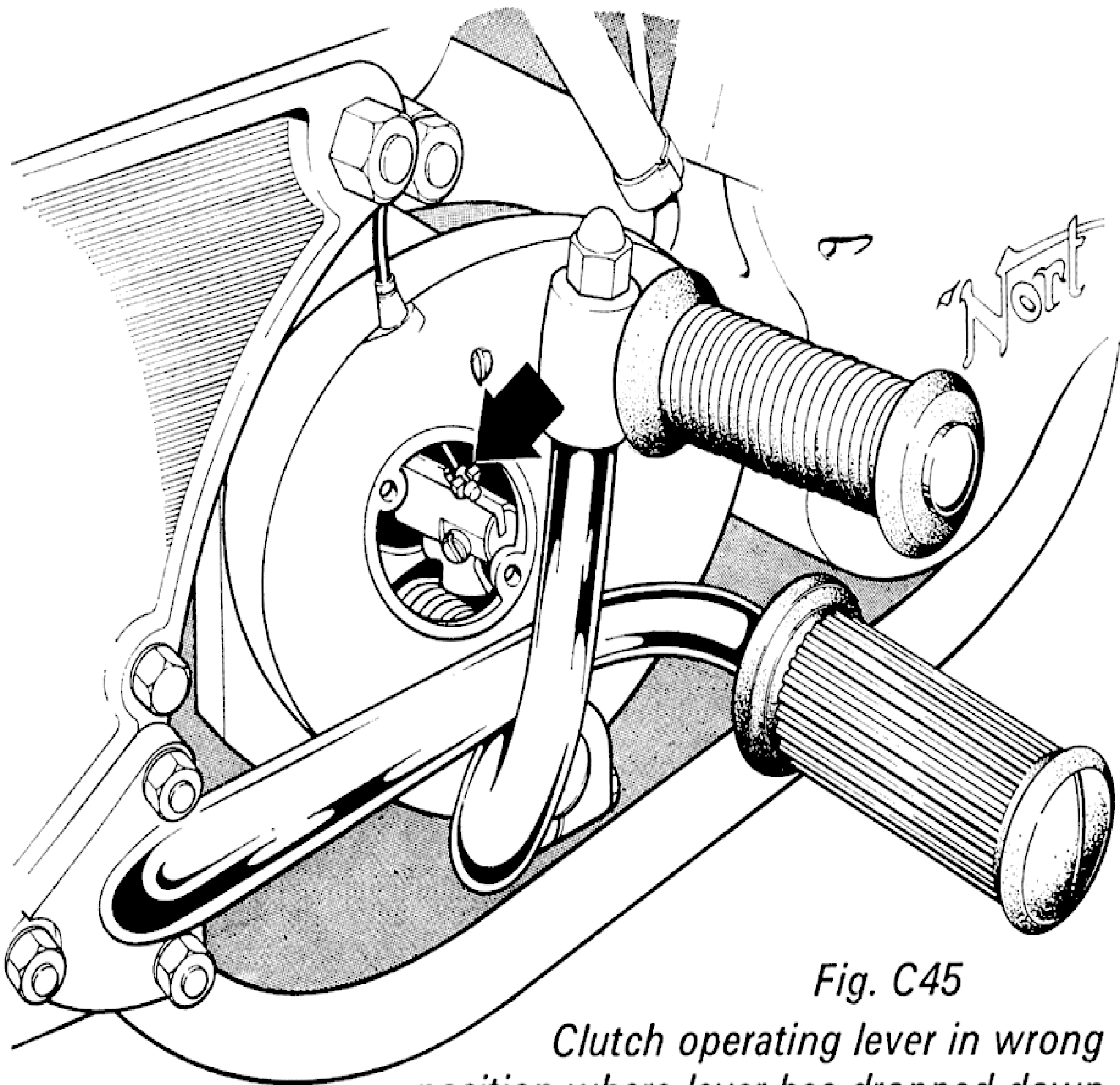
*Fig. C43 Winding diaphragm spring circlip into position*



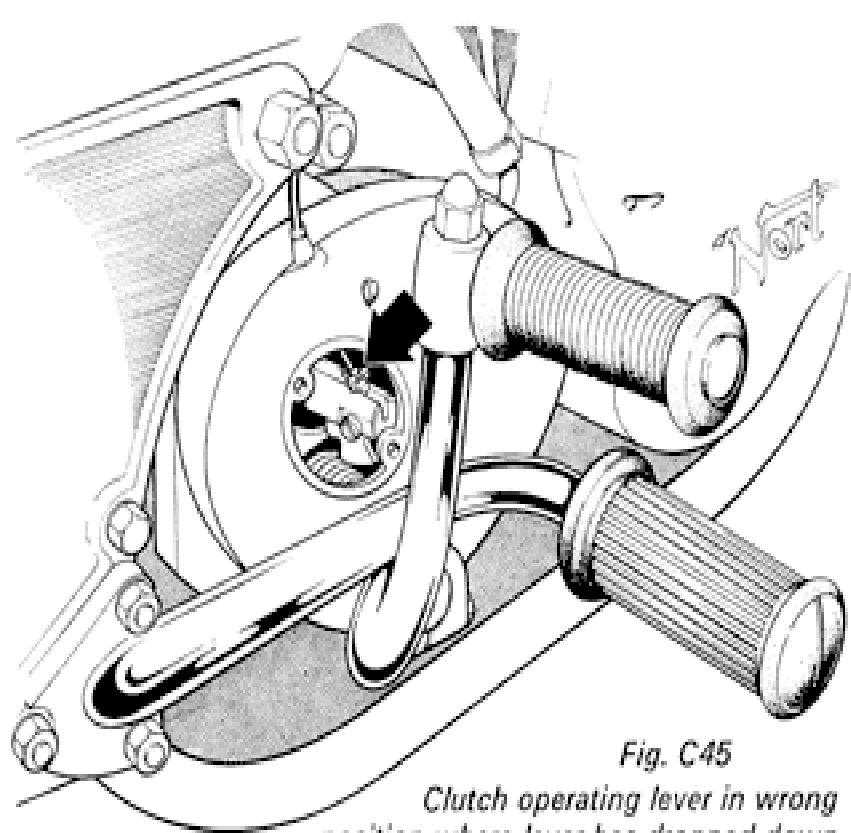
*Fig. C44 Clutch operating lever in correct position*



*Fig. C44 Clutch operating lever in correct position*

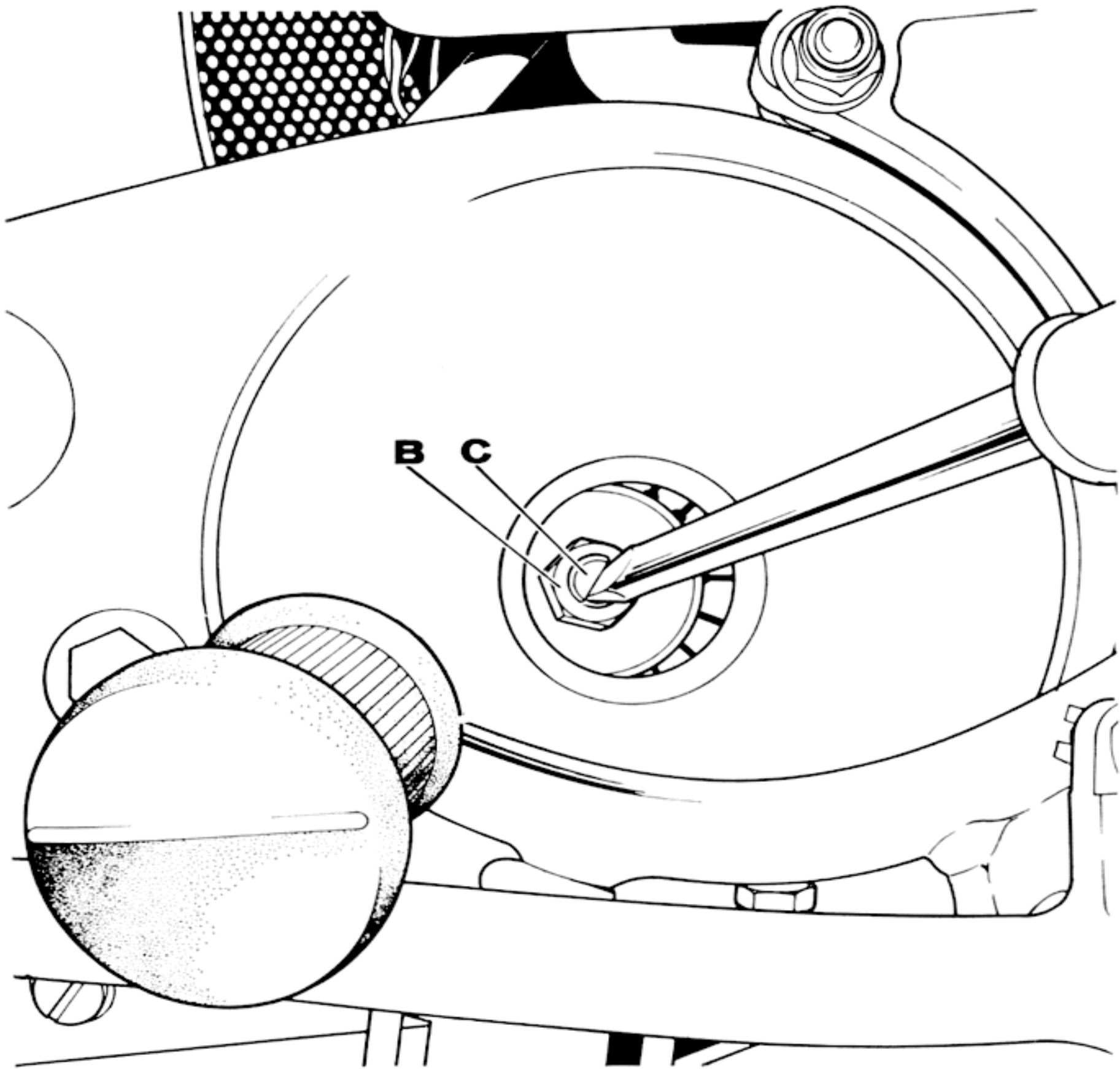


*Fig. C45*  
*Clutch operating lever in wrong position where lever has dropped down*

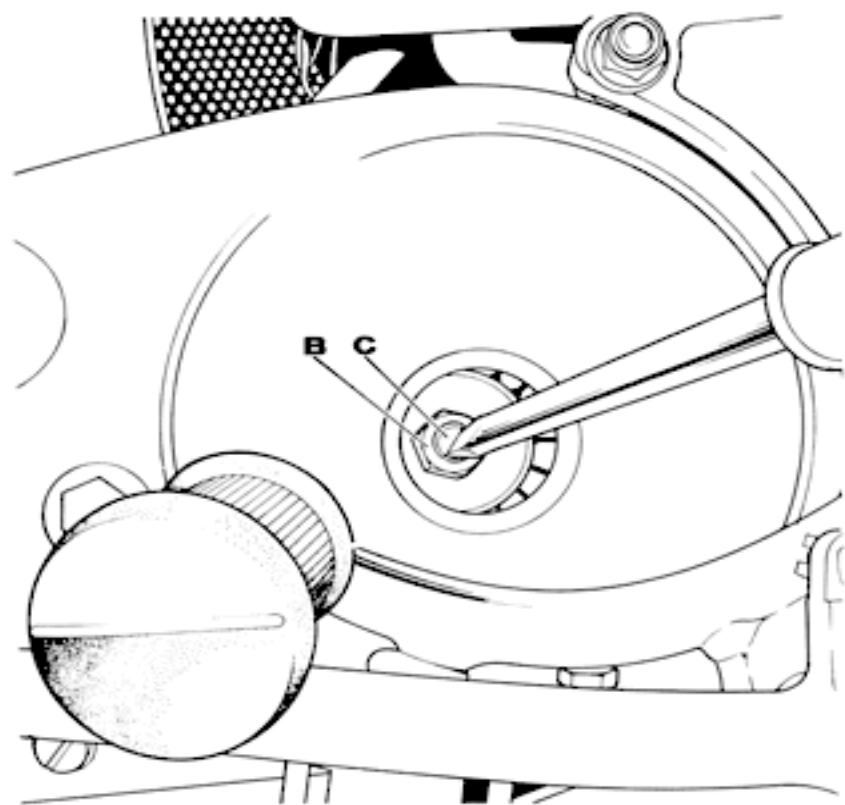


*Fig. C45*

*Clutch operating lever in wrong position where lever has dropped down*

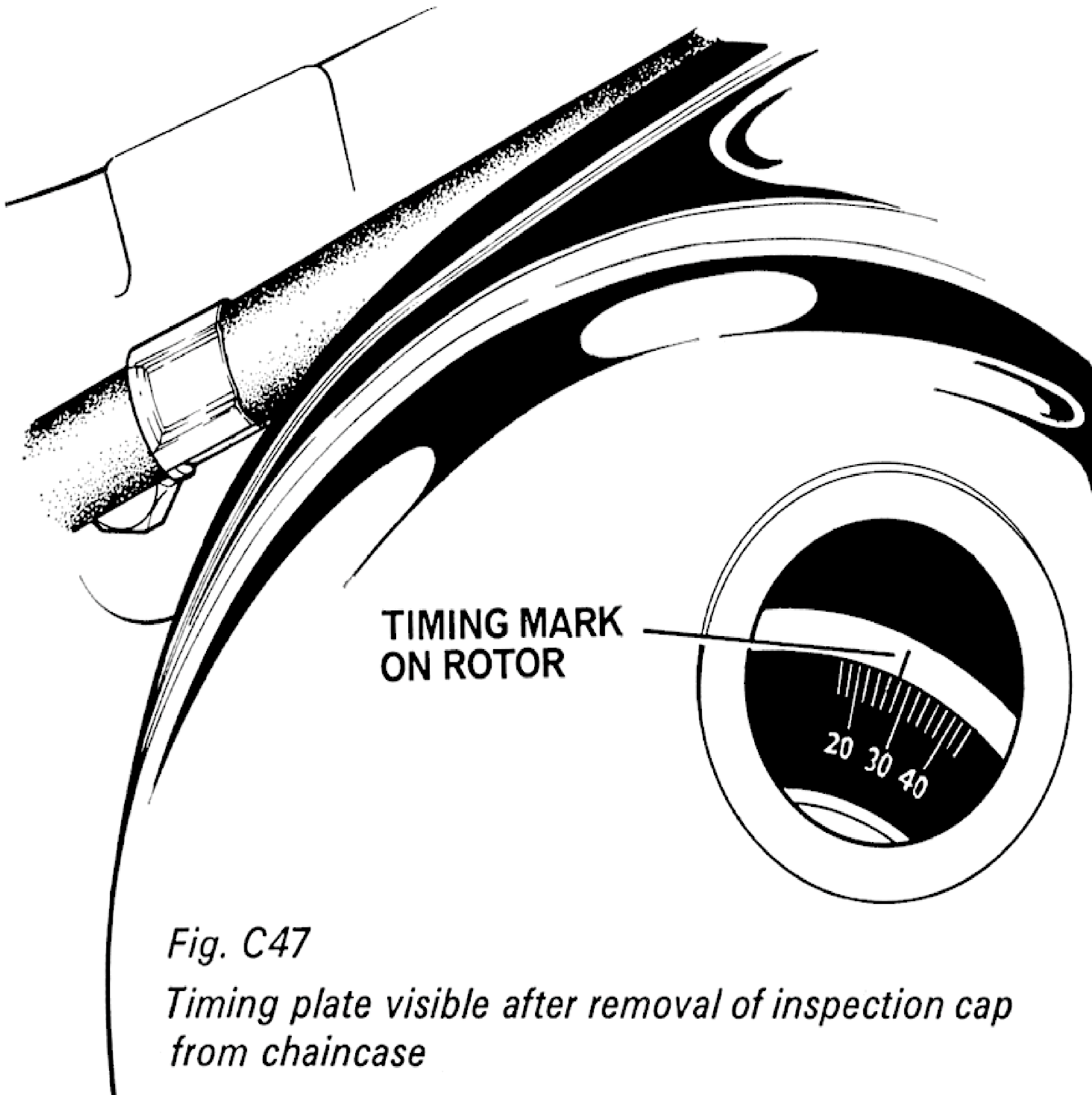


*Fig. C46 Clutch adjustment*



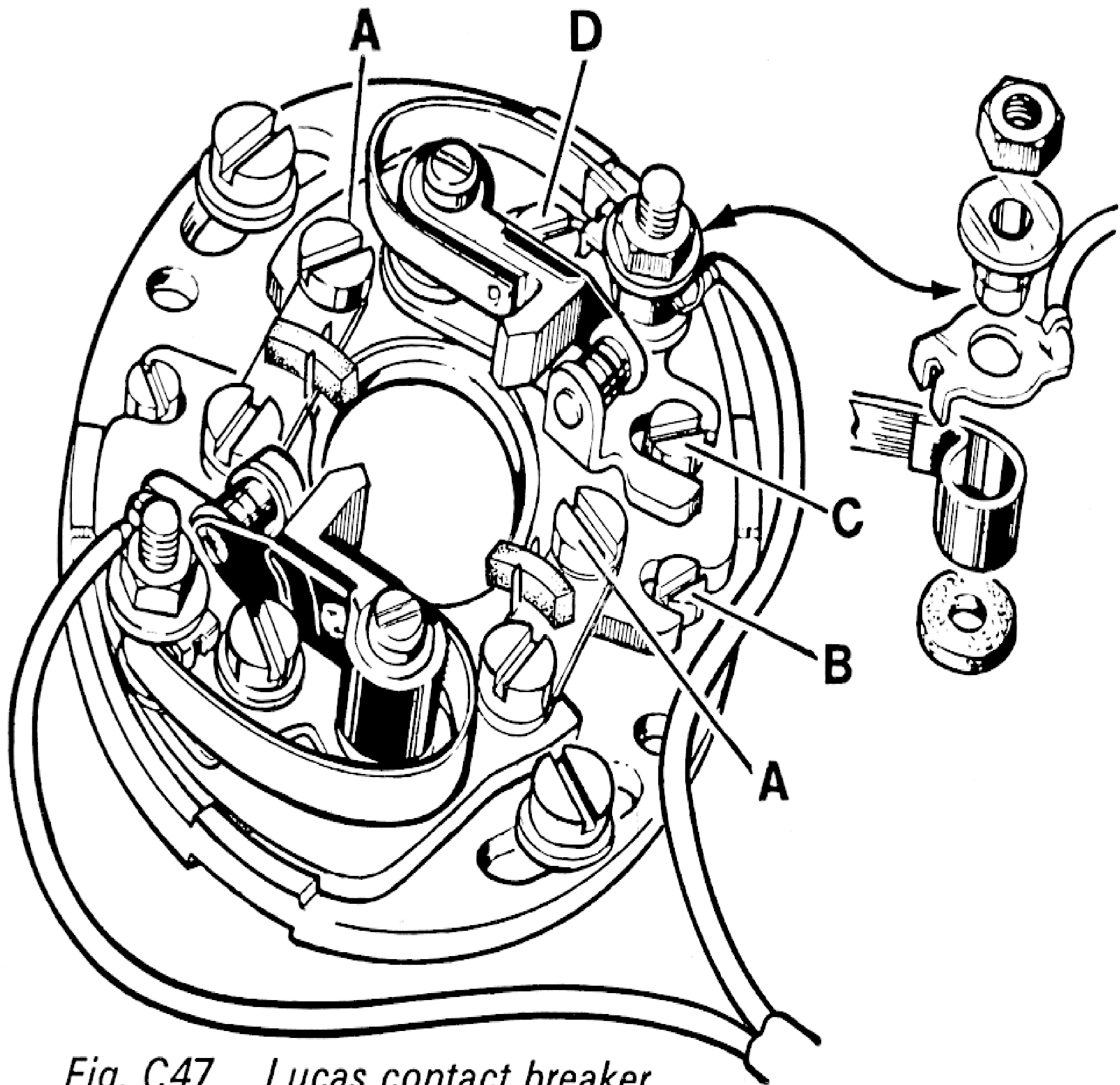
*Fig. C46 Clutch adjustment*



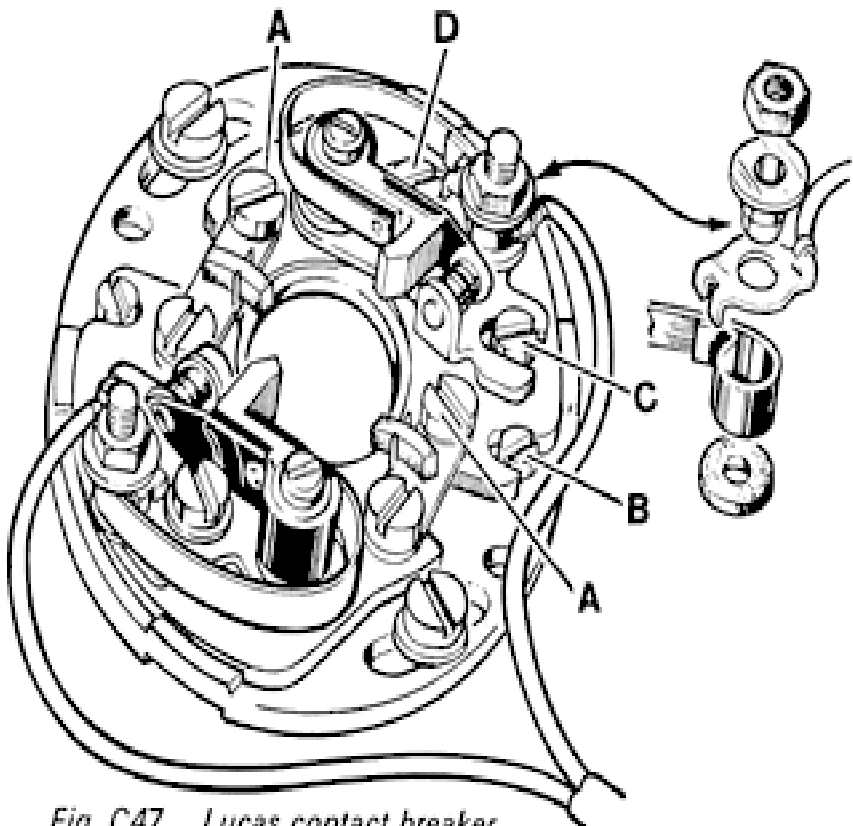


*Fig. C47*

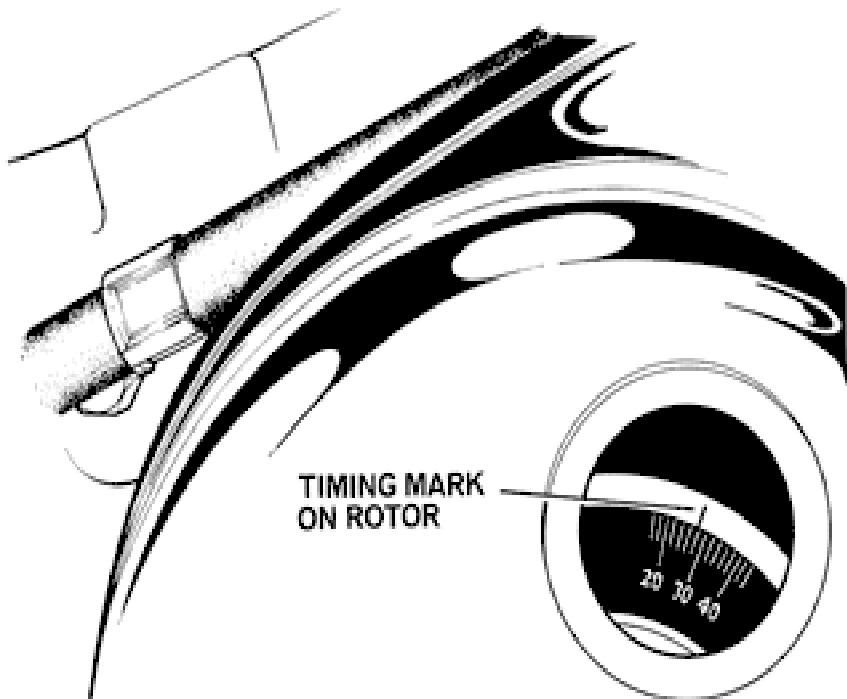
*Timing plate visible after removal of inspection cap from chaincase*



*Fig. C47 Lucas contact breaker*



*Fig. C47 Lucas contact breaker*



*Fig. C47*  
*Timing plate visible after removal of inspection cap*  
*from chaincase*

# PRIMARY CHAIN ADJUSTER

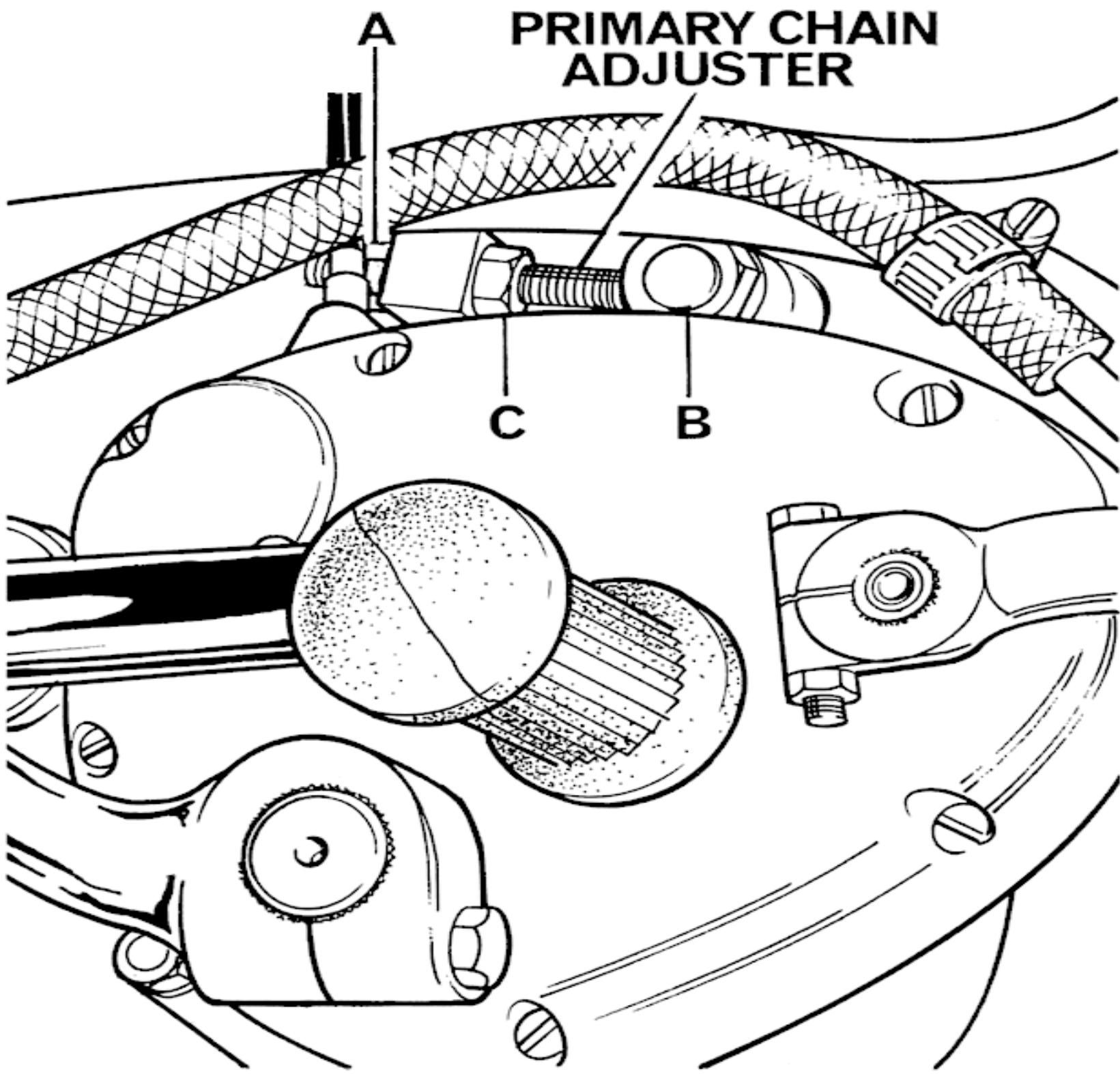


Fig. C48 Primary chain adjustment points

# PRIMARY CHAIN ADJUSTER

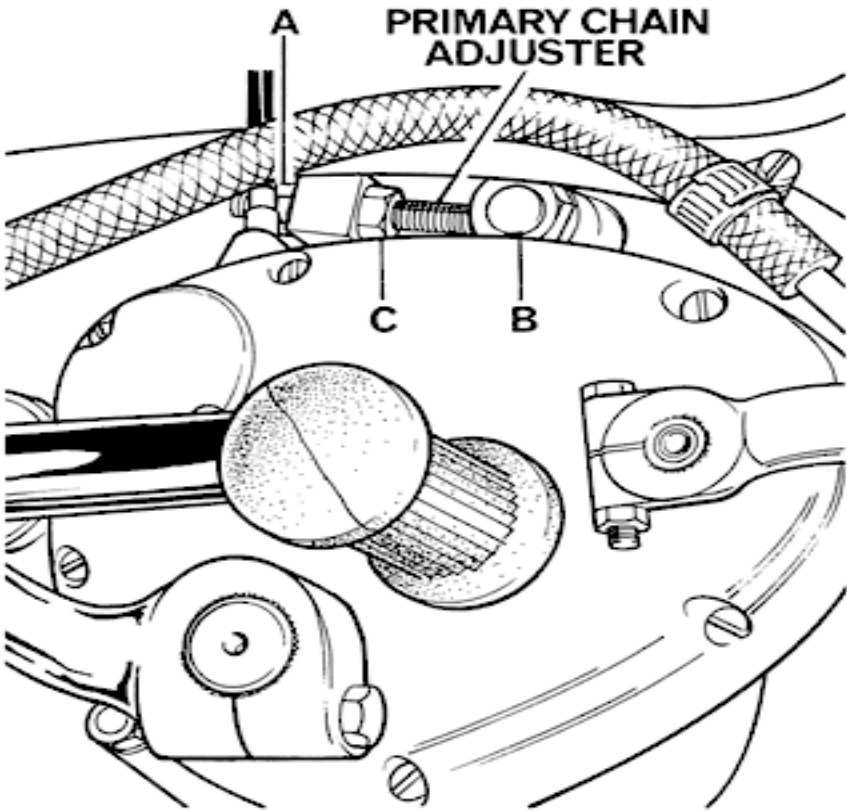
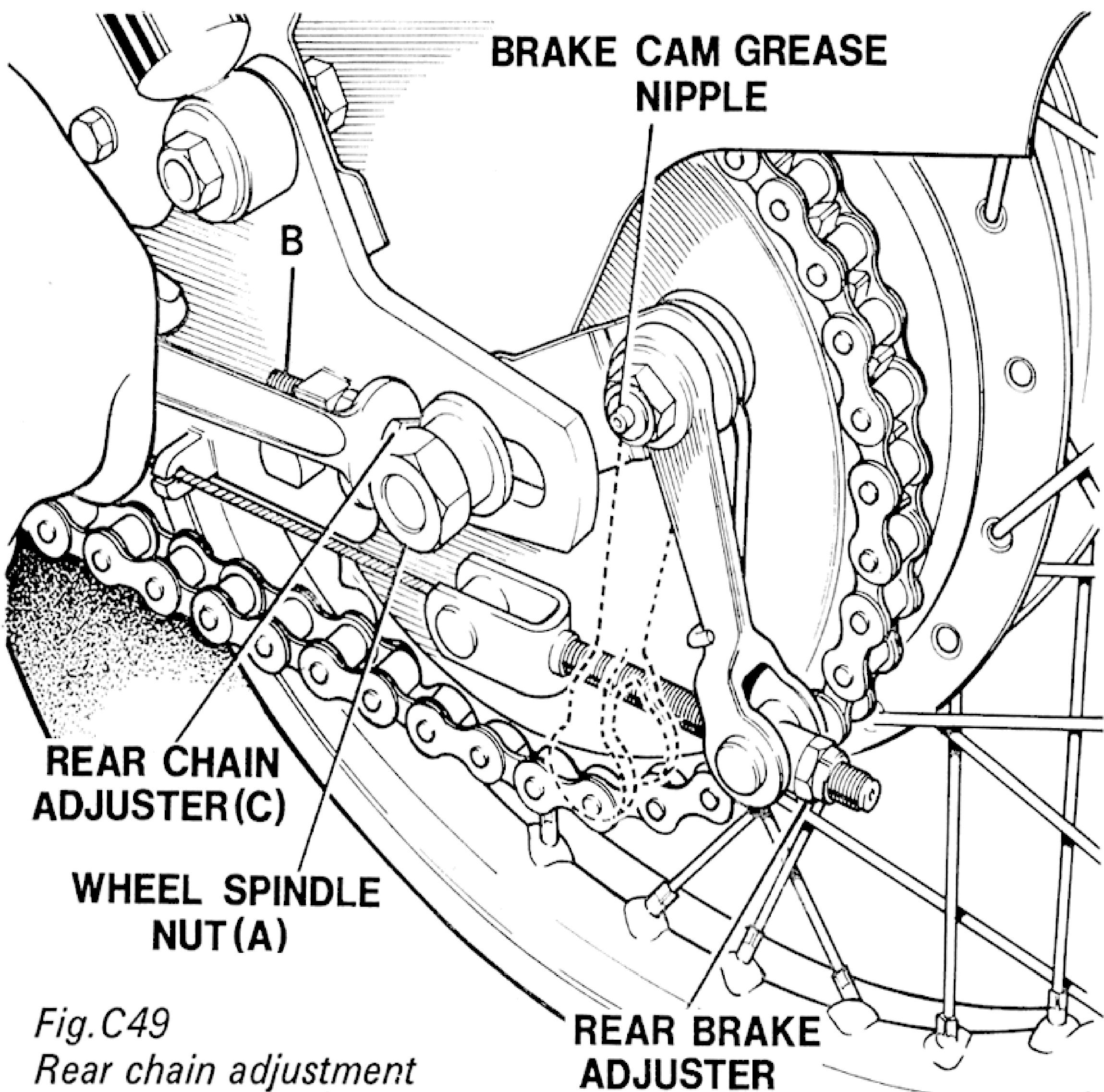


Fig. C48 Primary chain adjustment points



**BRAKE CAM GREASE NIPPLE**

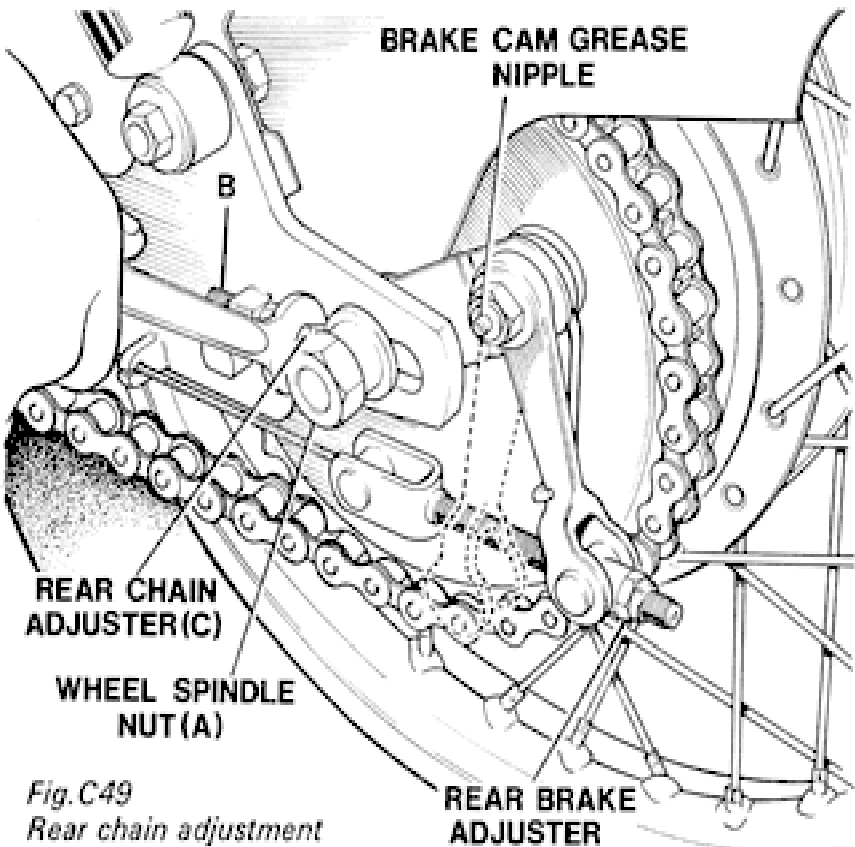
**B**

**REAR CHAIN ADJUSTER (C)**

**WHEEL SPINDLE NUT (A)**

**REAR BRAKE ADJUSTER**

*Fig. C49  
Rear chain adjustment*



**BRAKE CAM GREASE NIPPLE**

**B**

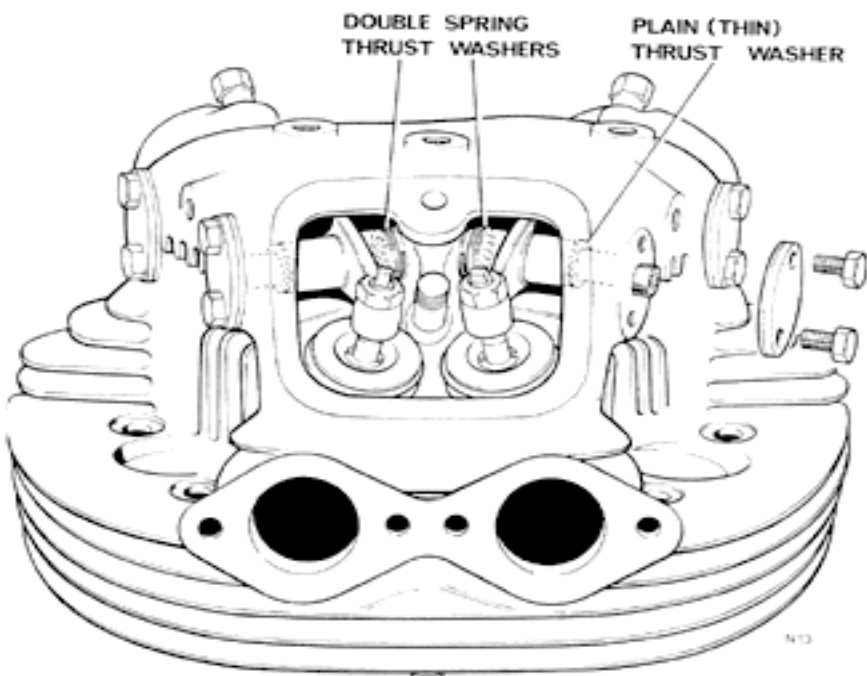
**REAR CHAIN ADJUSTER (C)**

**WHEEL SPINDLE NUT (A)**

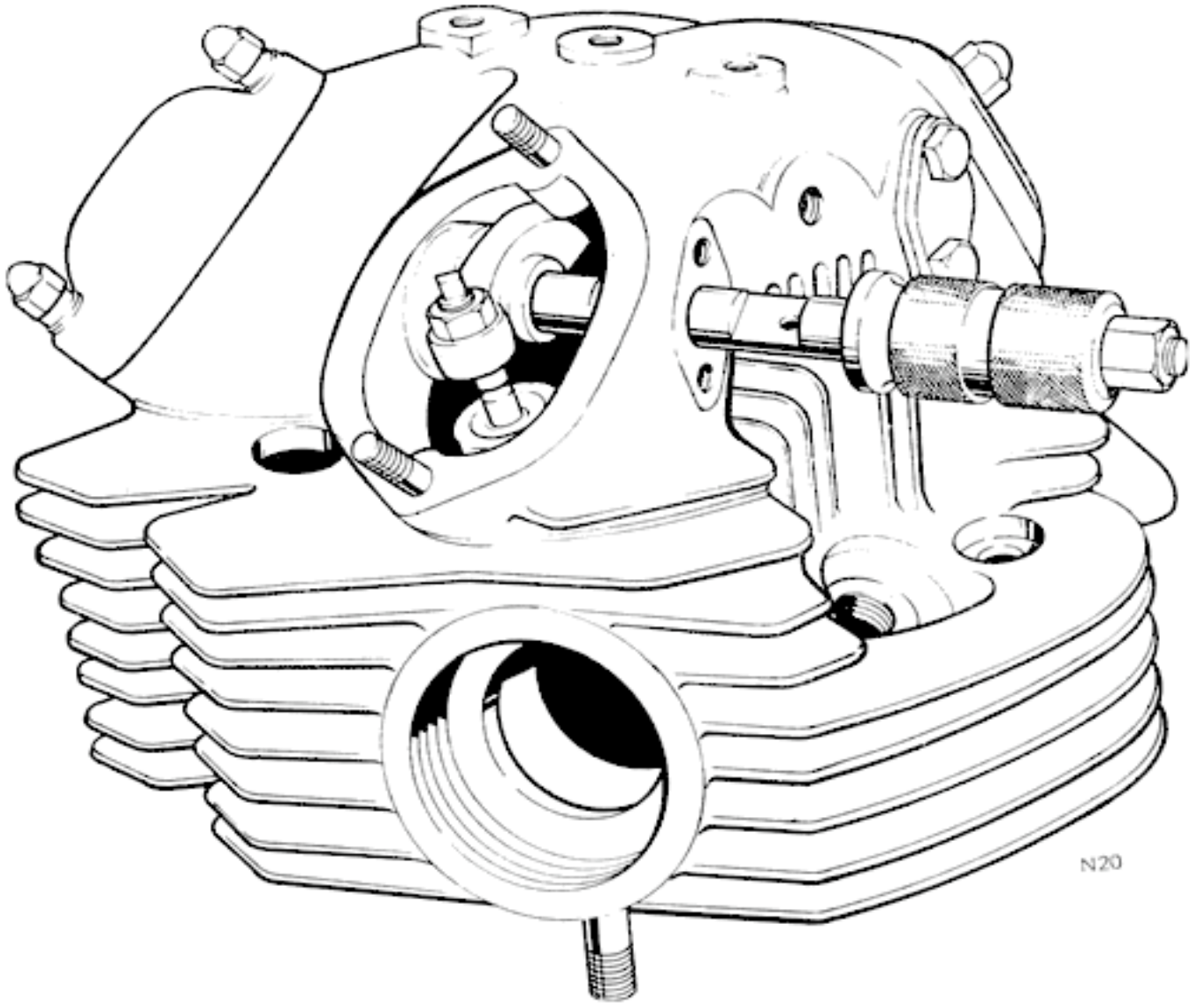
**REAR BRAKE ADJUSTER**

*Fig. C49  
Rear chain adjustment*



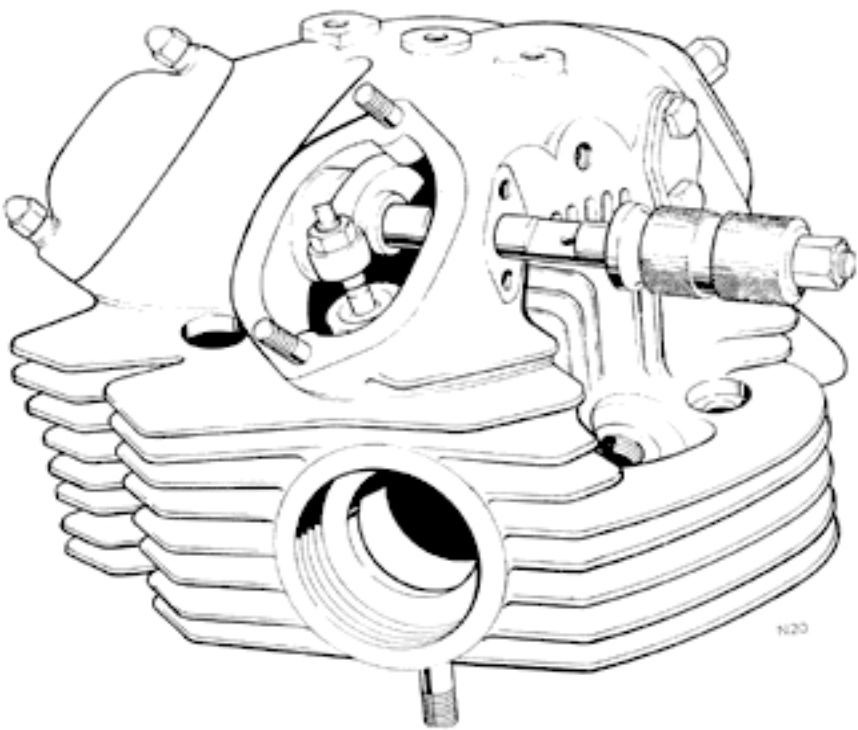


*Fig. C4 Rocker spindle securing plates and screws.  
Note also positions of thrust washers for rockers*

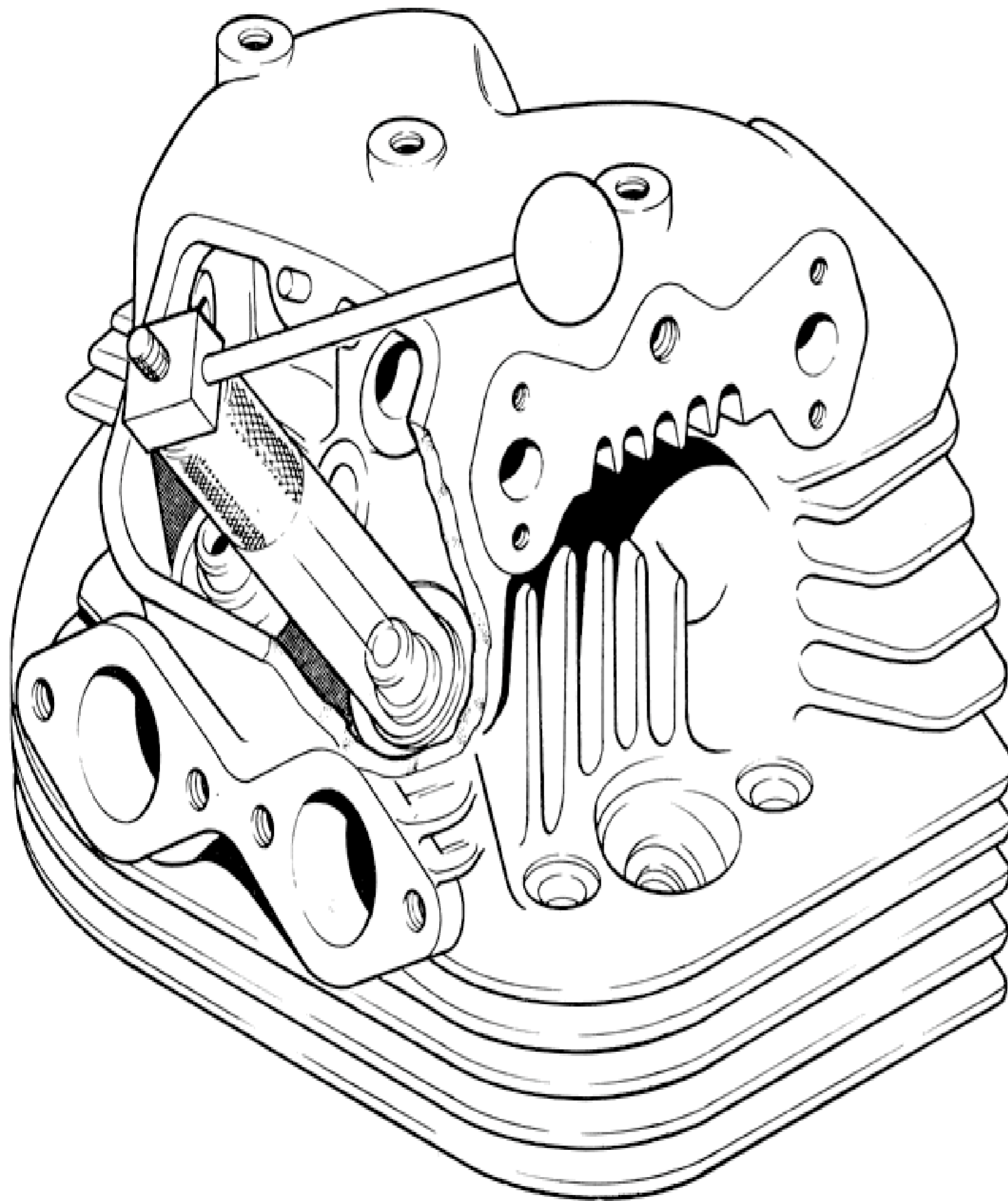


N20

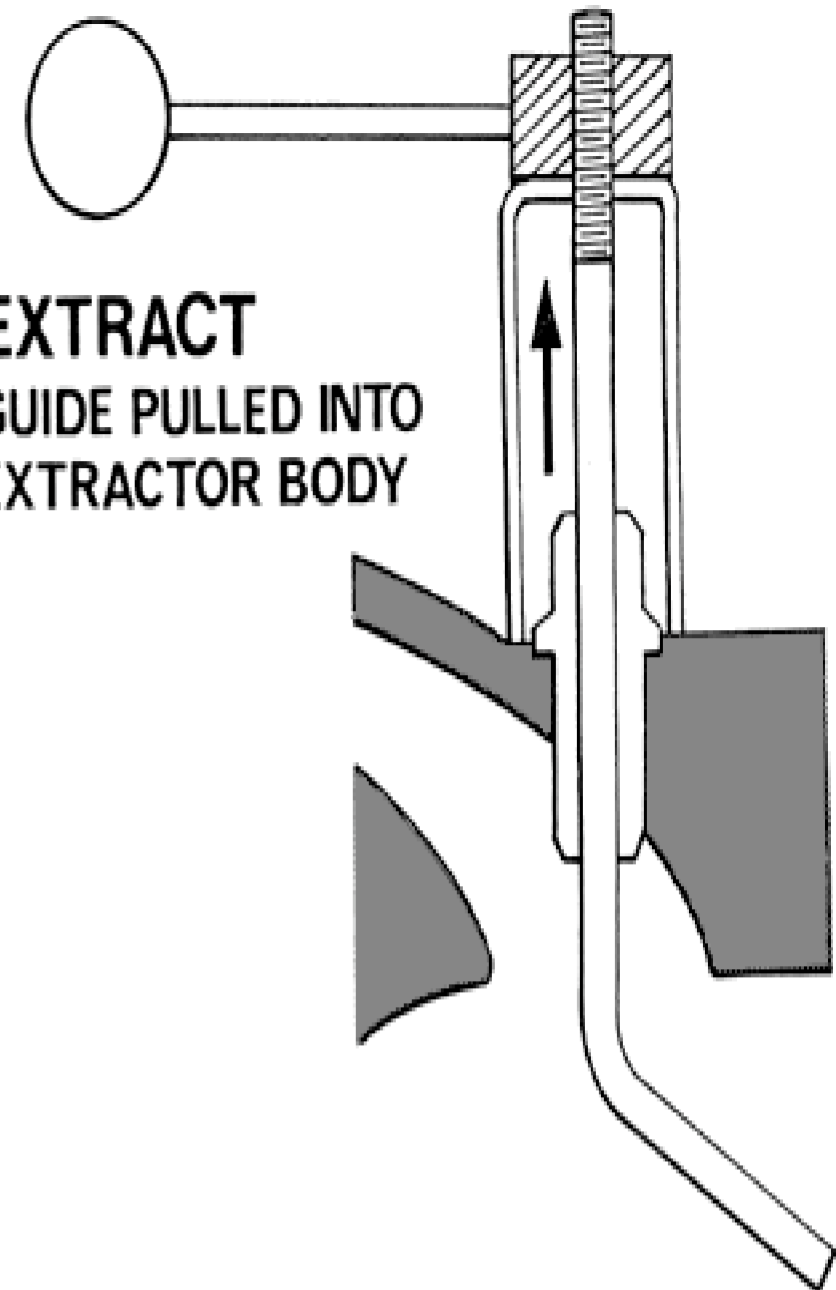
*Fig. C5      Extracting rocker spindles using service tool 061028*



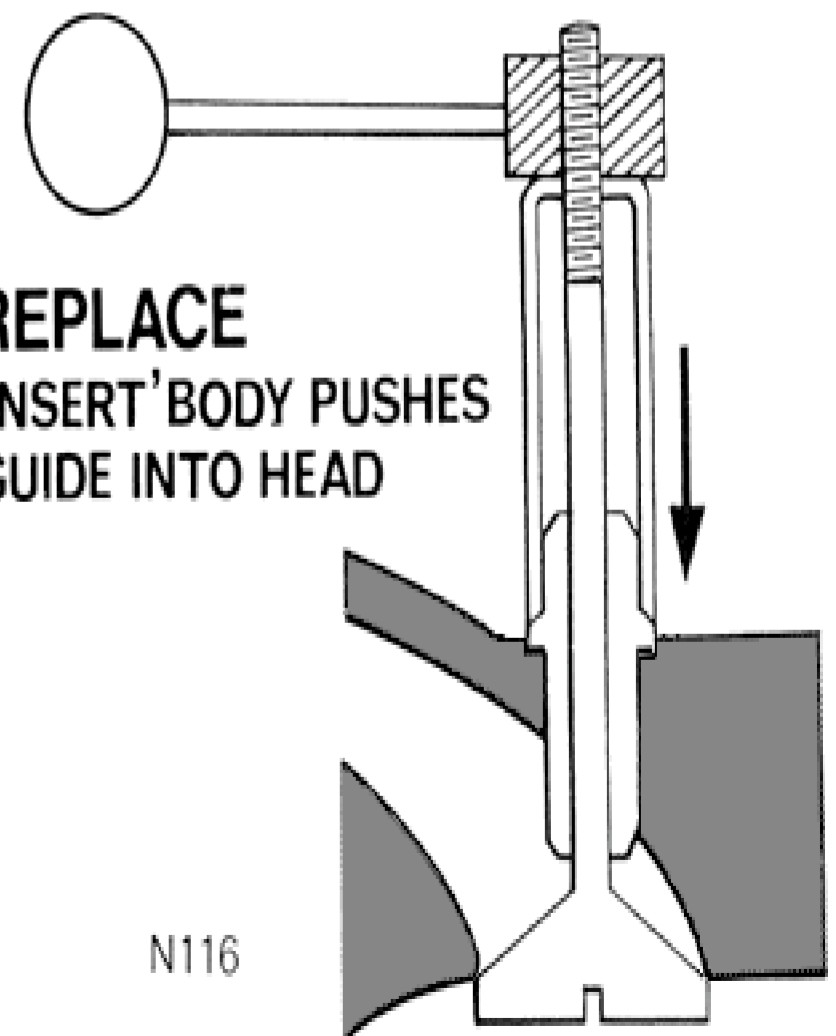
*Fig. C5     Extracting rocker spindles using service tool 061028*



**EXTRACT**  
GUIDE PULLED INTO  
EXTRACTOR BODY

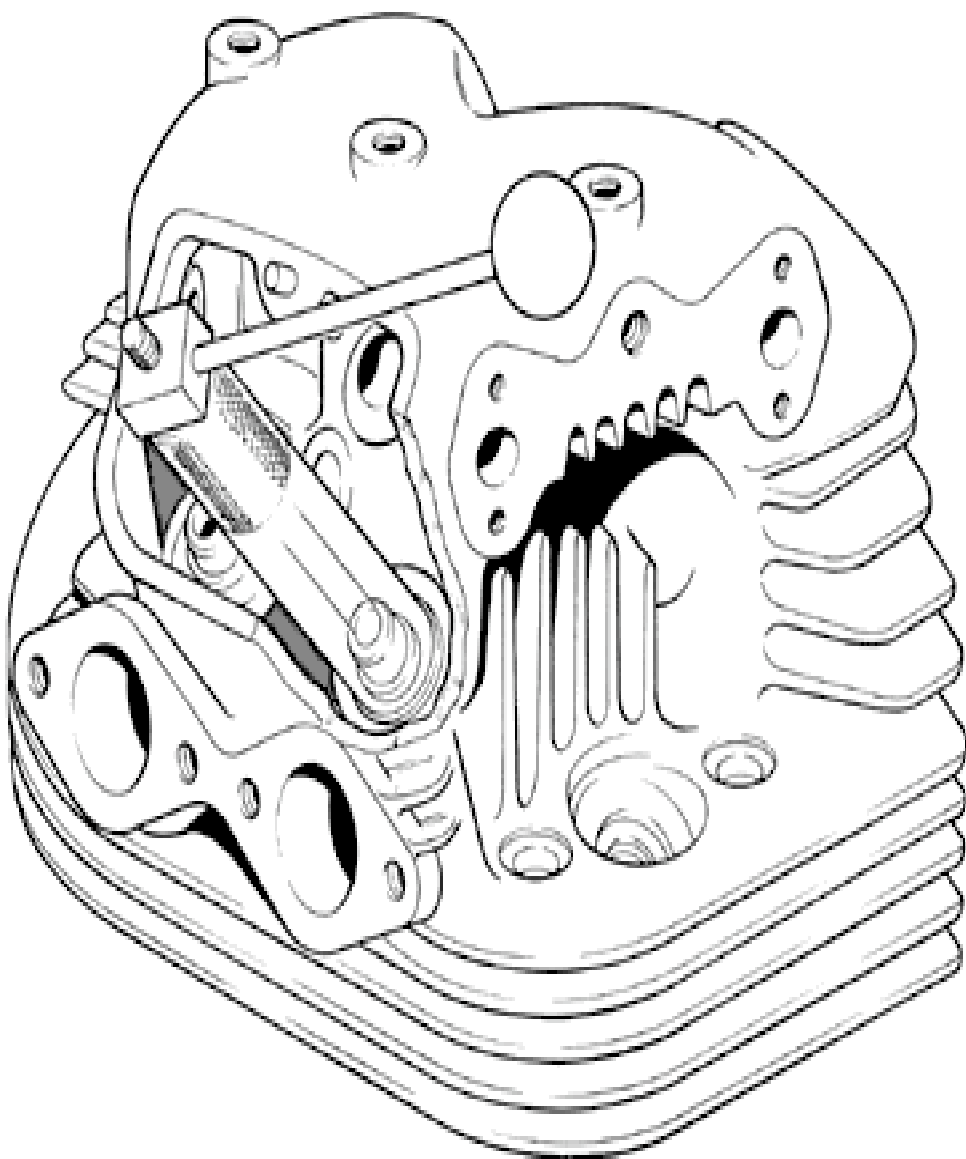


**REPLACE**  
'INSERT' BODY PUSHES  
GUIDE INTO HEAD

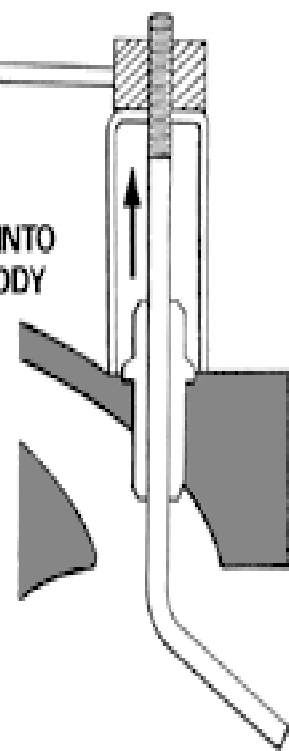


N116

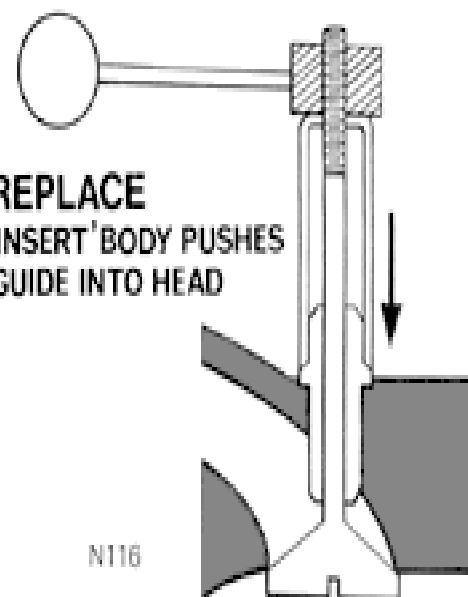
*Fig. C6 Using valve guide tool 063964 to remove a valve guide*



**EXTRACT  
GUIDE PULLED INTO  
EXTRACTOR BODY**

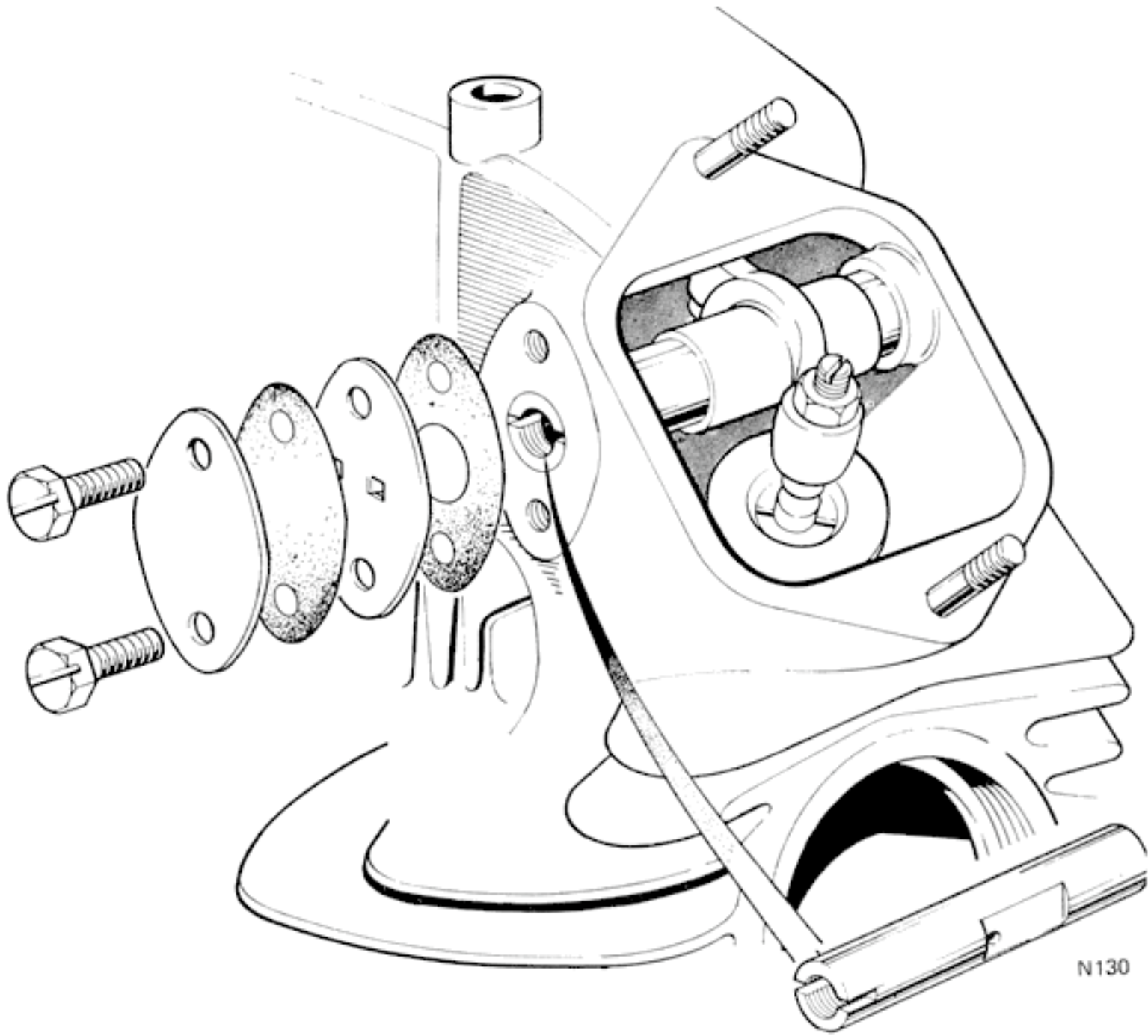


**REPLACE  
'INSERT' BODY PUSHES  
GUIDE INTO HEAD**



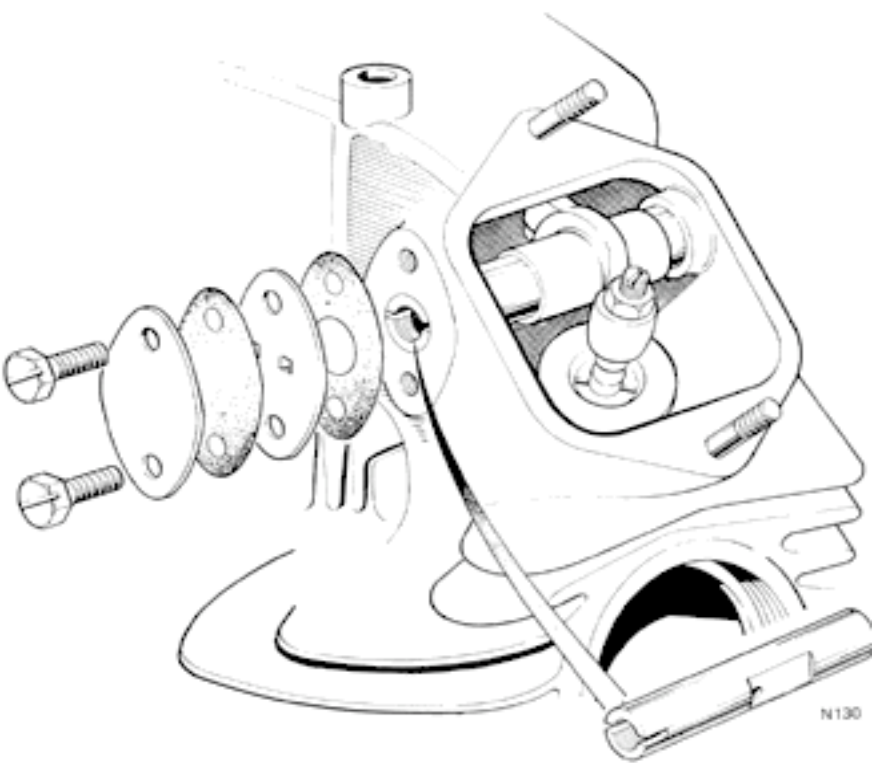
N116

*Fig. C6 Using valve guide tool 063964 to remove a valve guide*



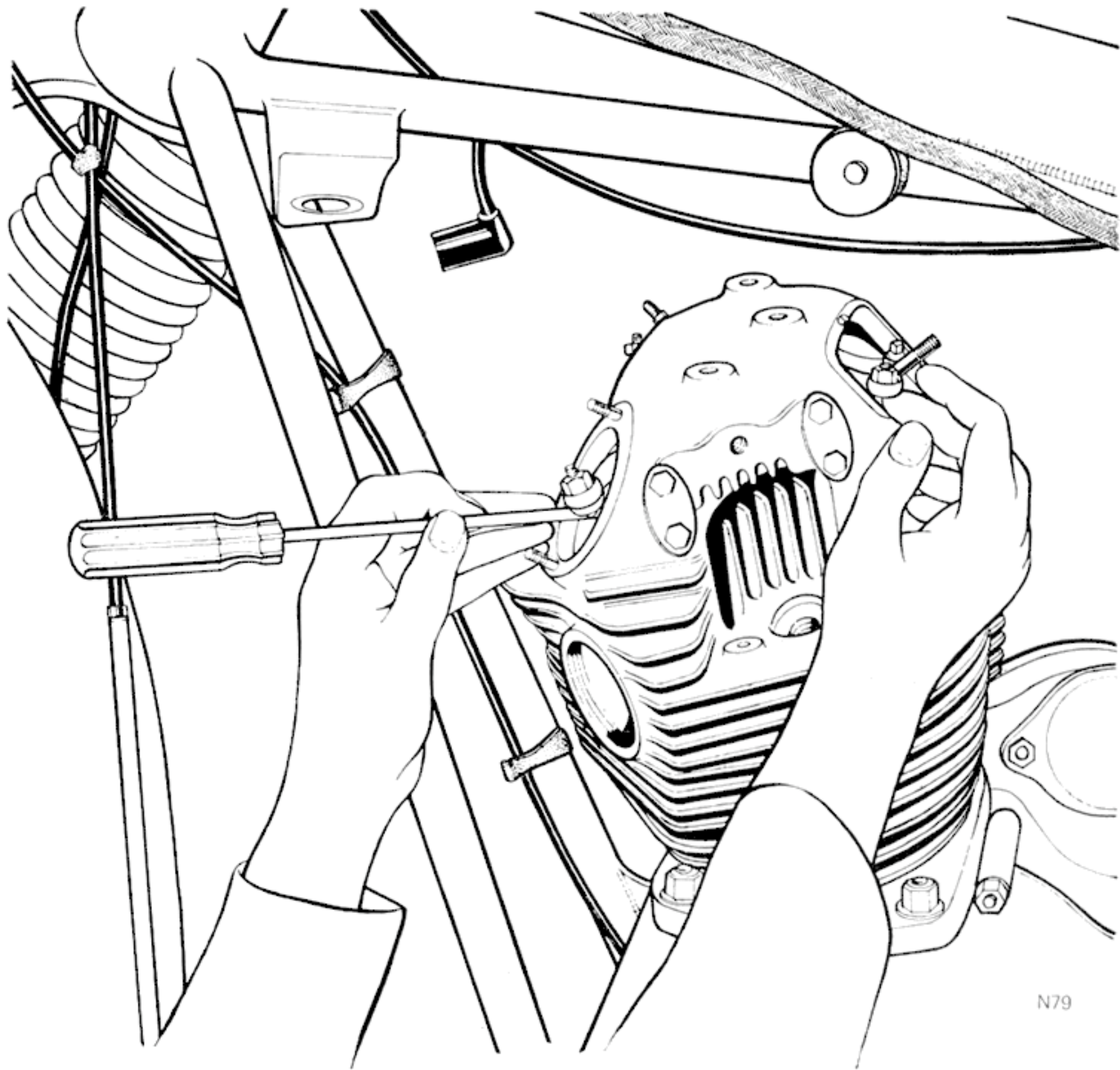
N130

*Fig. C7     Aligning rocker spindle*



N130

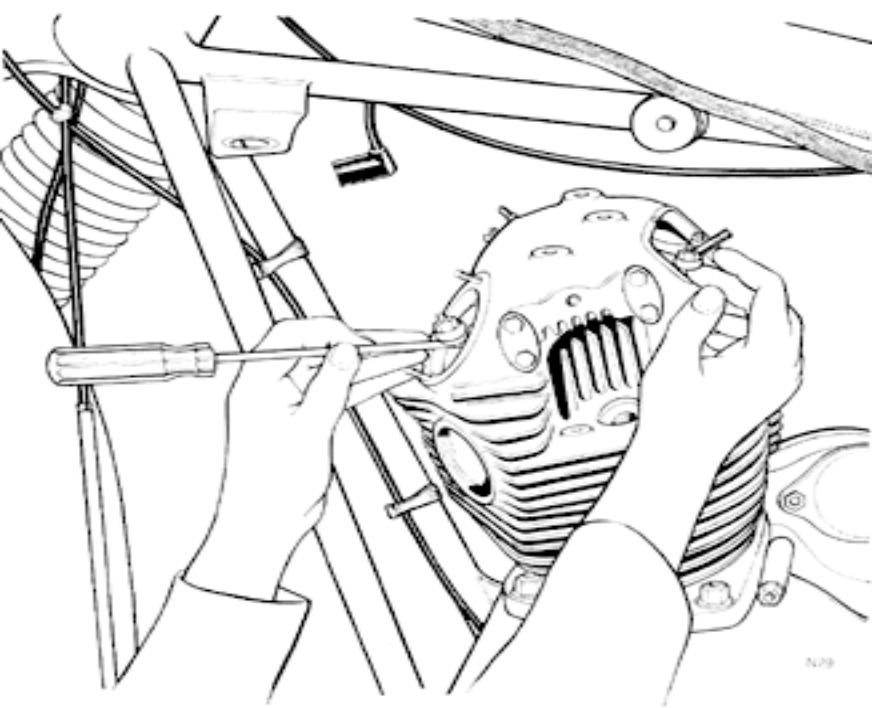
*Fig. C7*    *Aligning rocker spindle*



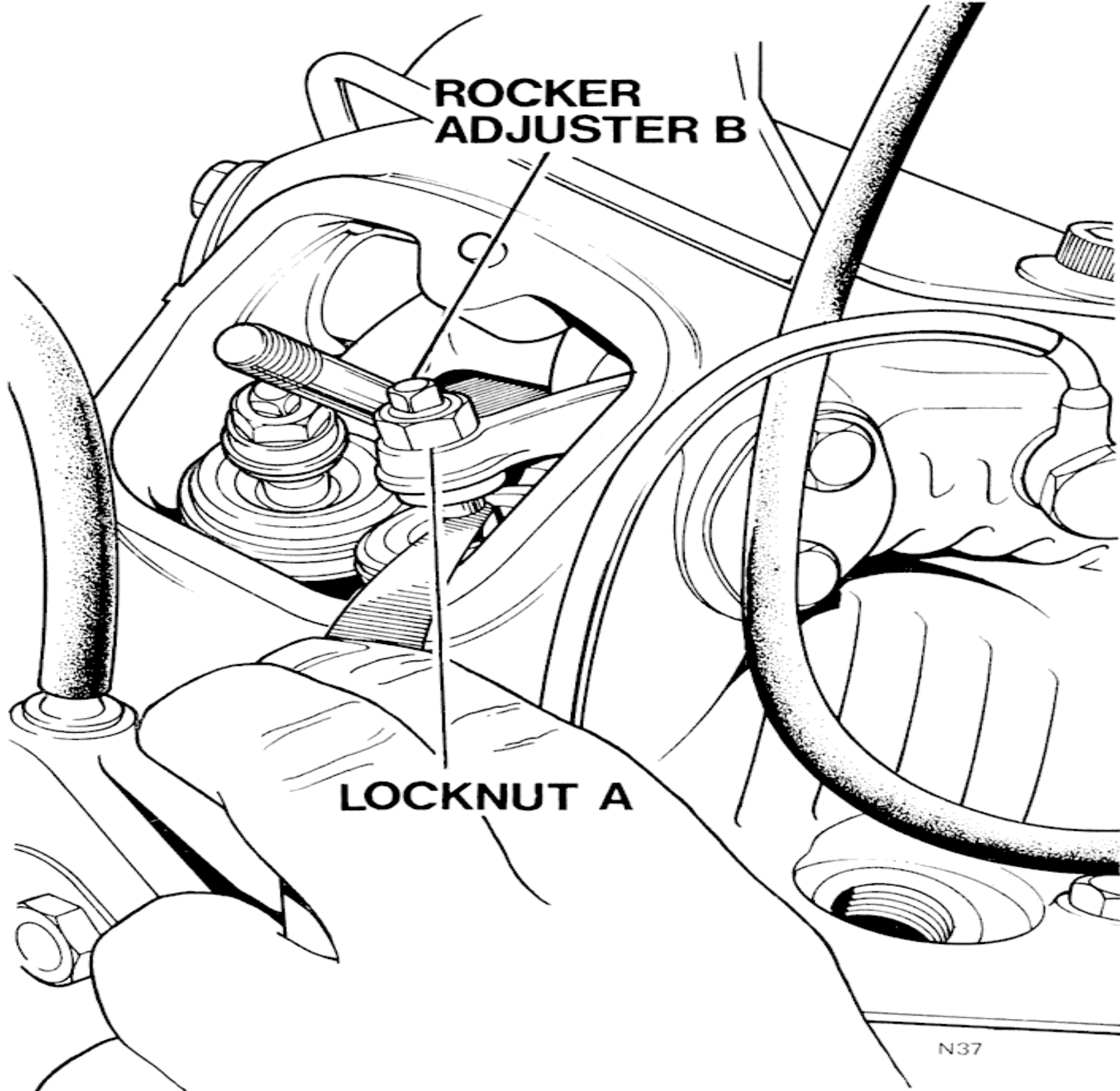
N79

*Fig. C8      Guiding pushrods into engagement with the rockers*





**Fig. C8** *Guiding pushrods into engagement with the rockers*

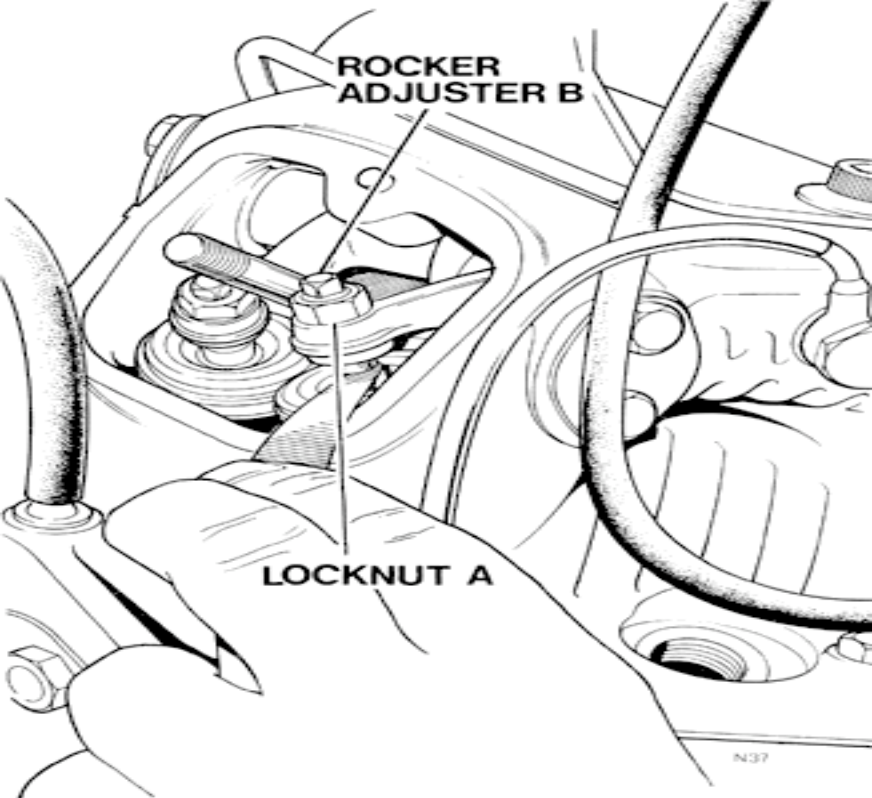


**ROCKER  
ADJUSTER B**

**LOCKNUT A**

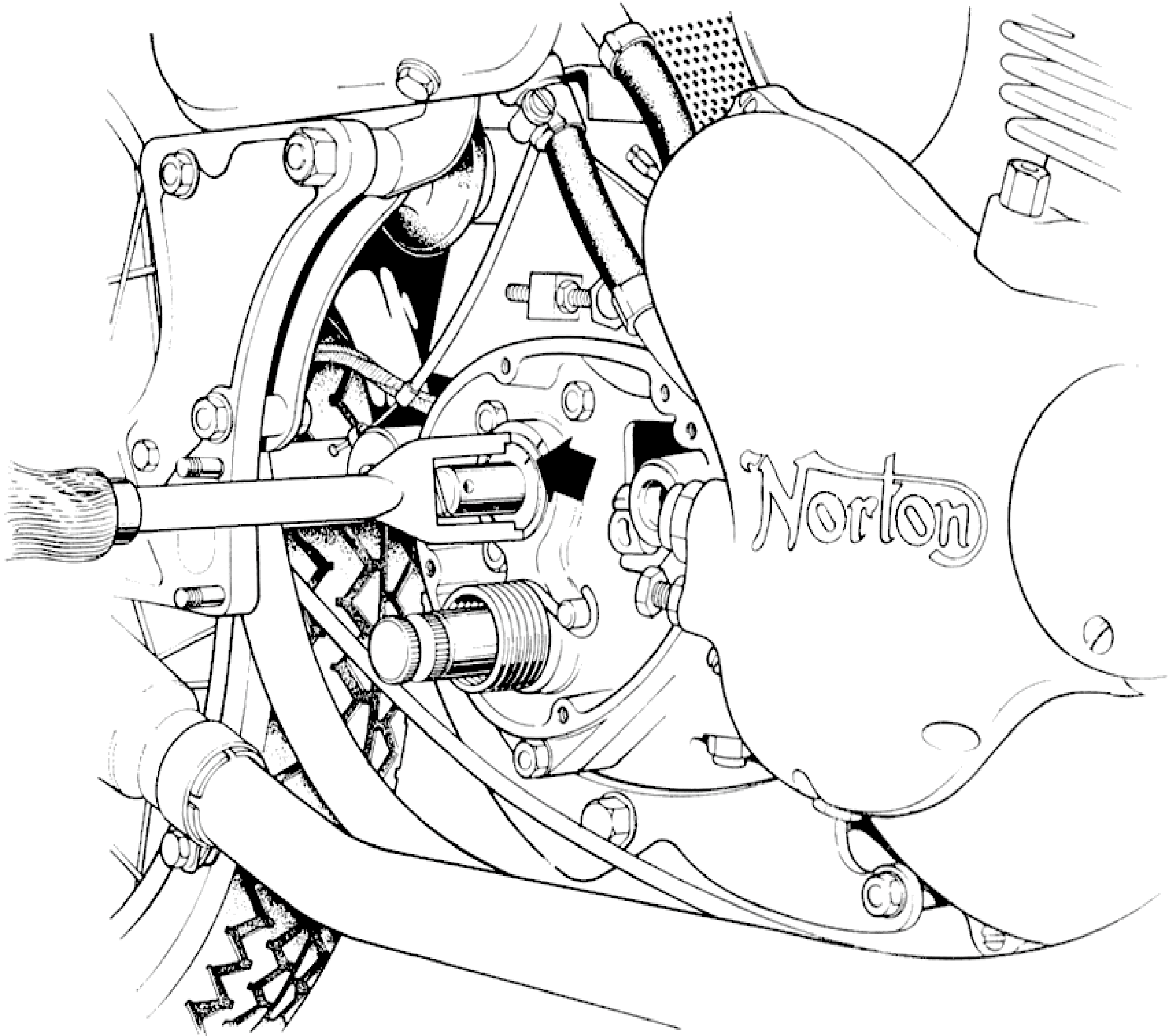
N37

*Fig. C9      Checking valve clearances*

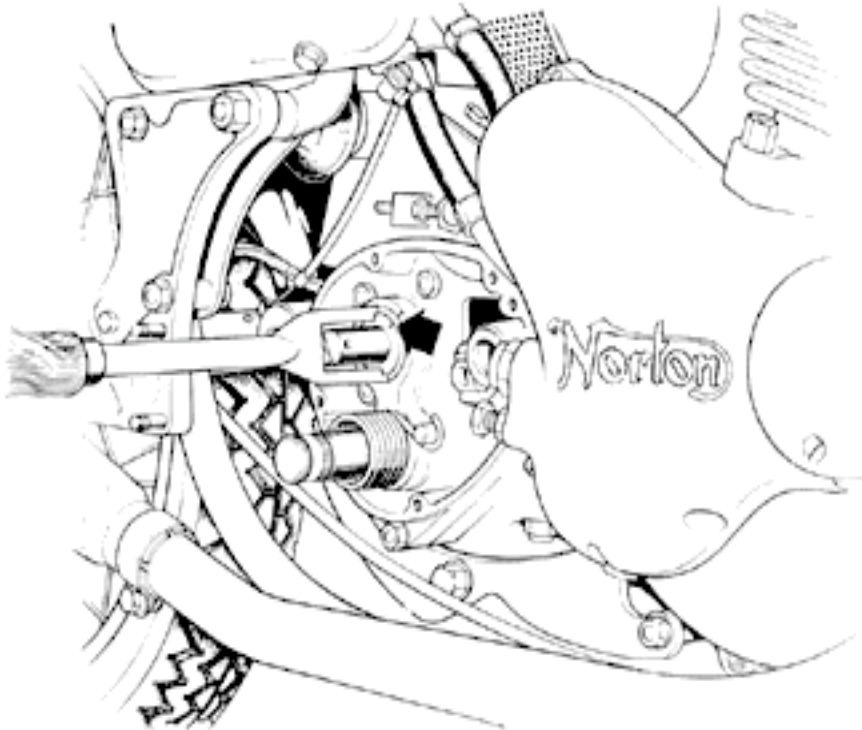


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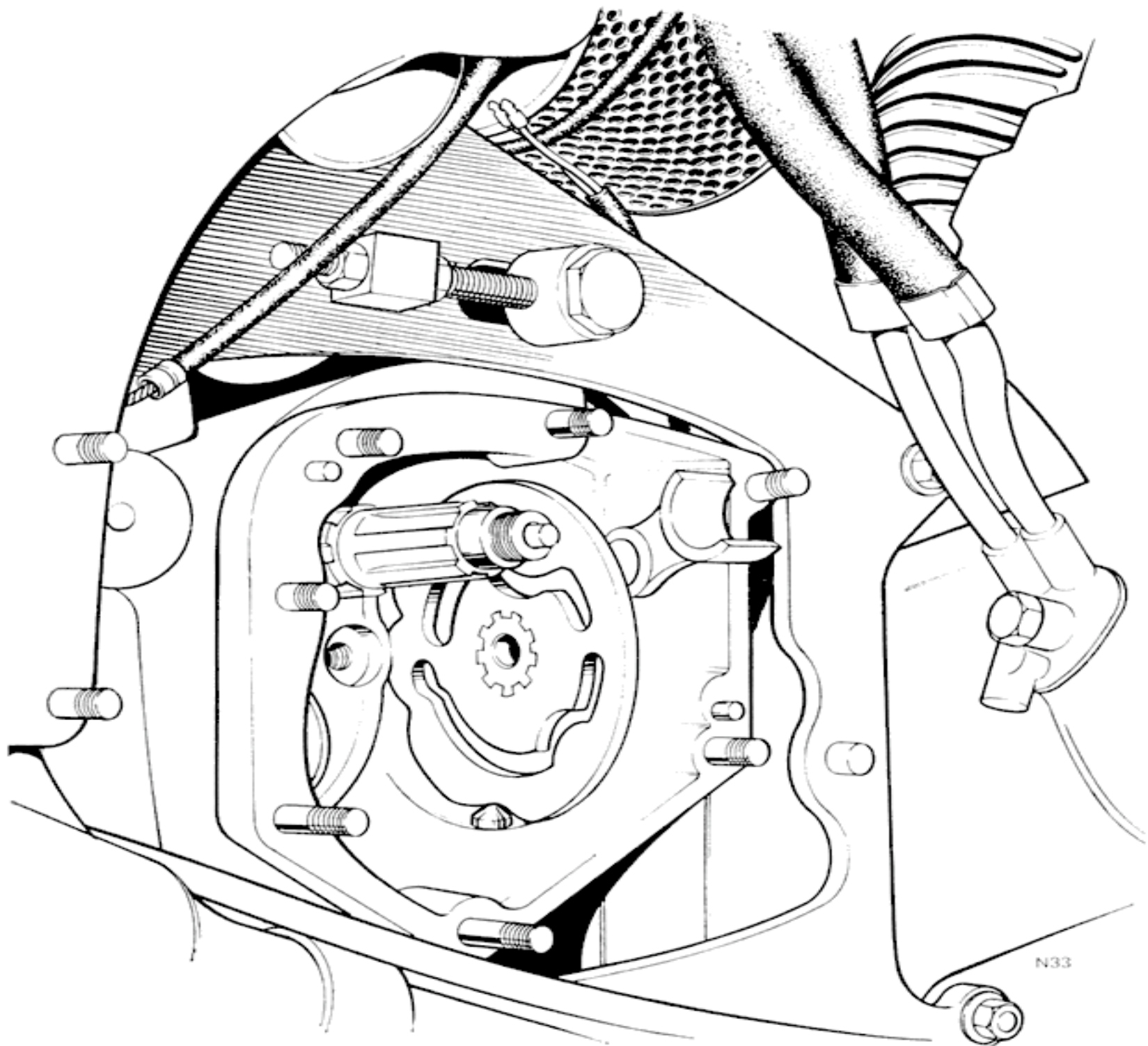
*Fig. C9*      *Checking valve clearances*



**Fig. D1** *Removal of clutch body lockring. Note alignment marks on lockring and cover*

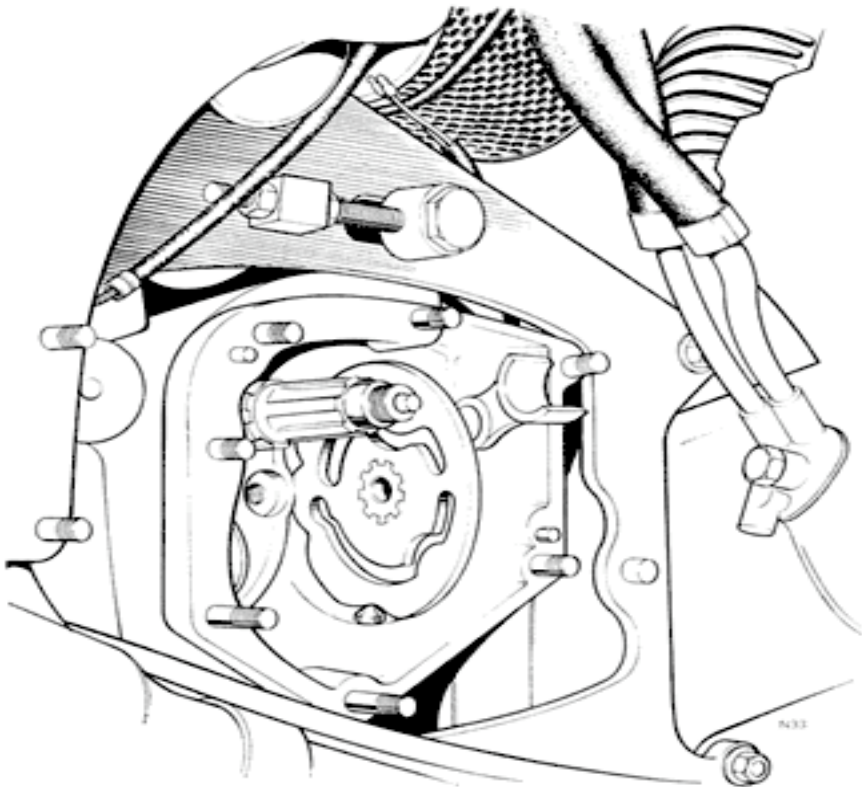


*Fig. D1 Removal of clutch body locking. Note alignment marks on locking and cover*

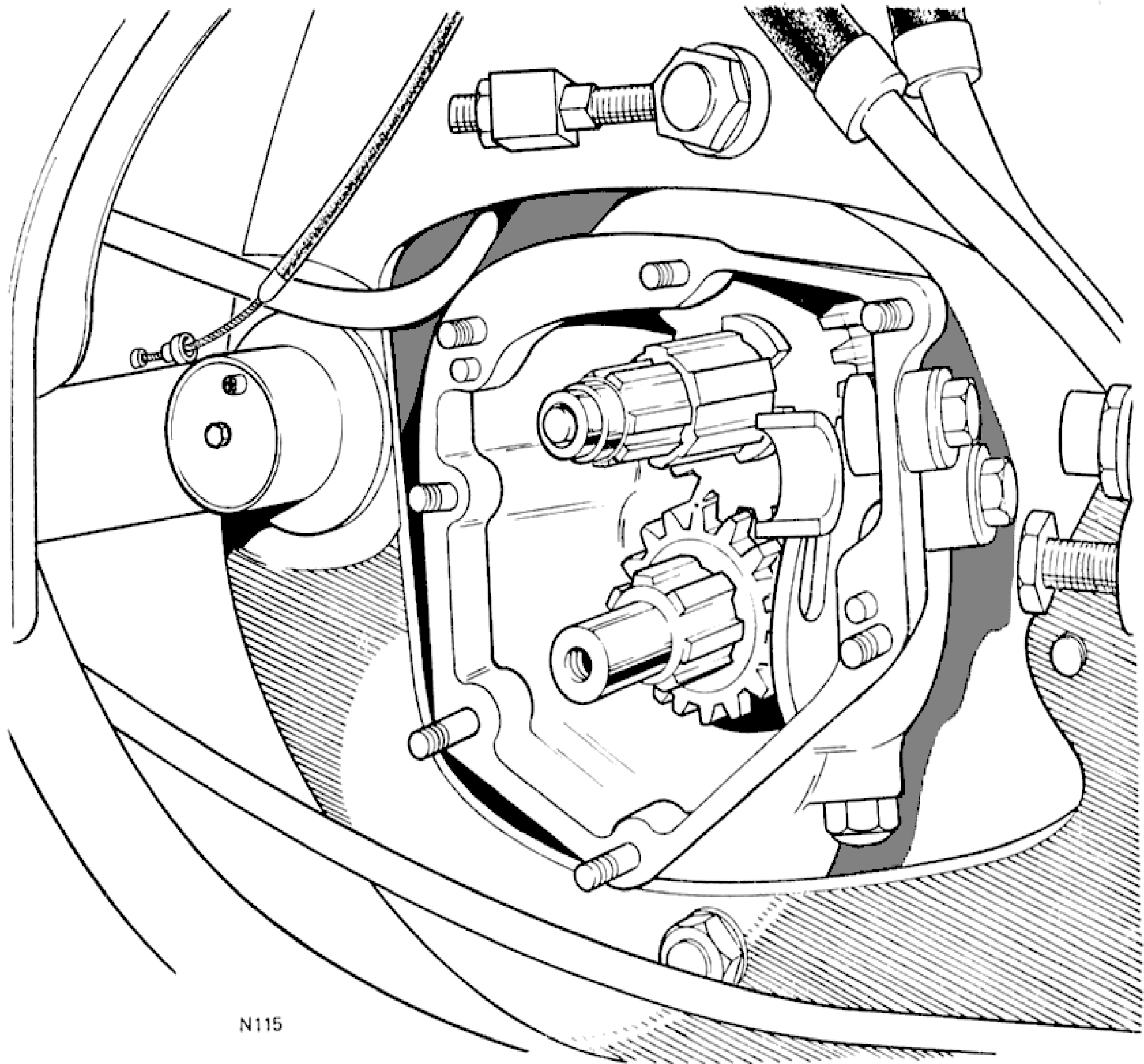


N33

*Fig. D2 Location of camplate to index plunger. Knuckle end of quadrant is aligned to top front cover stud*



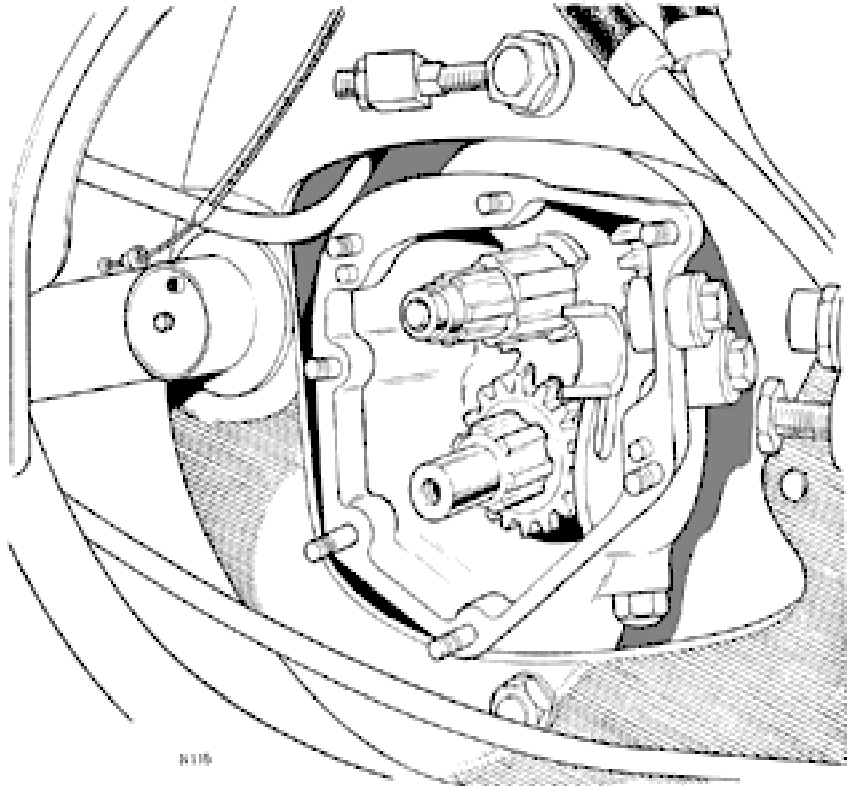
**Fig. D2** *Location of camplate to index plunger. Knuckle end of quadrant is aligned to top front cover stud*



N115

*Fig. D3 Mainshaft and layshaft fitted to gearbox shell*





N116

*Fig. D3 Mainshaft and layshaft fitted to gearbox shell*

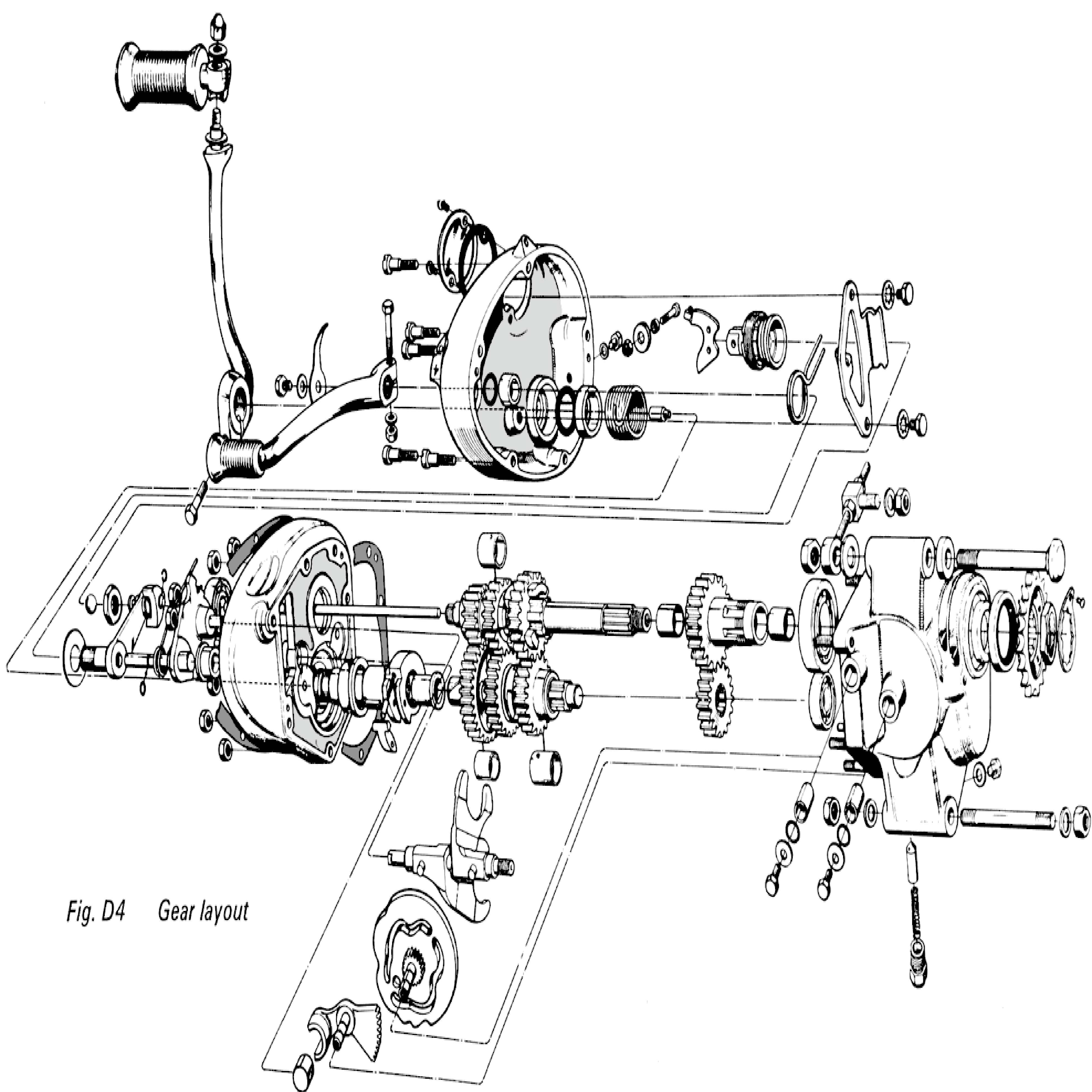


Fig. D4 Gear layout

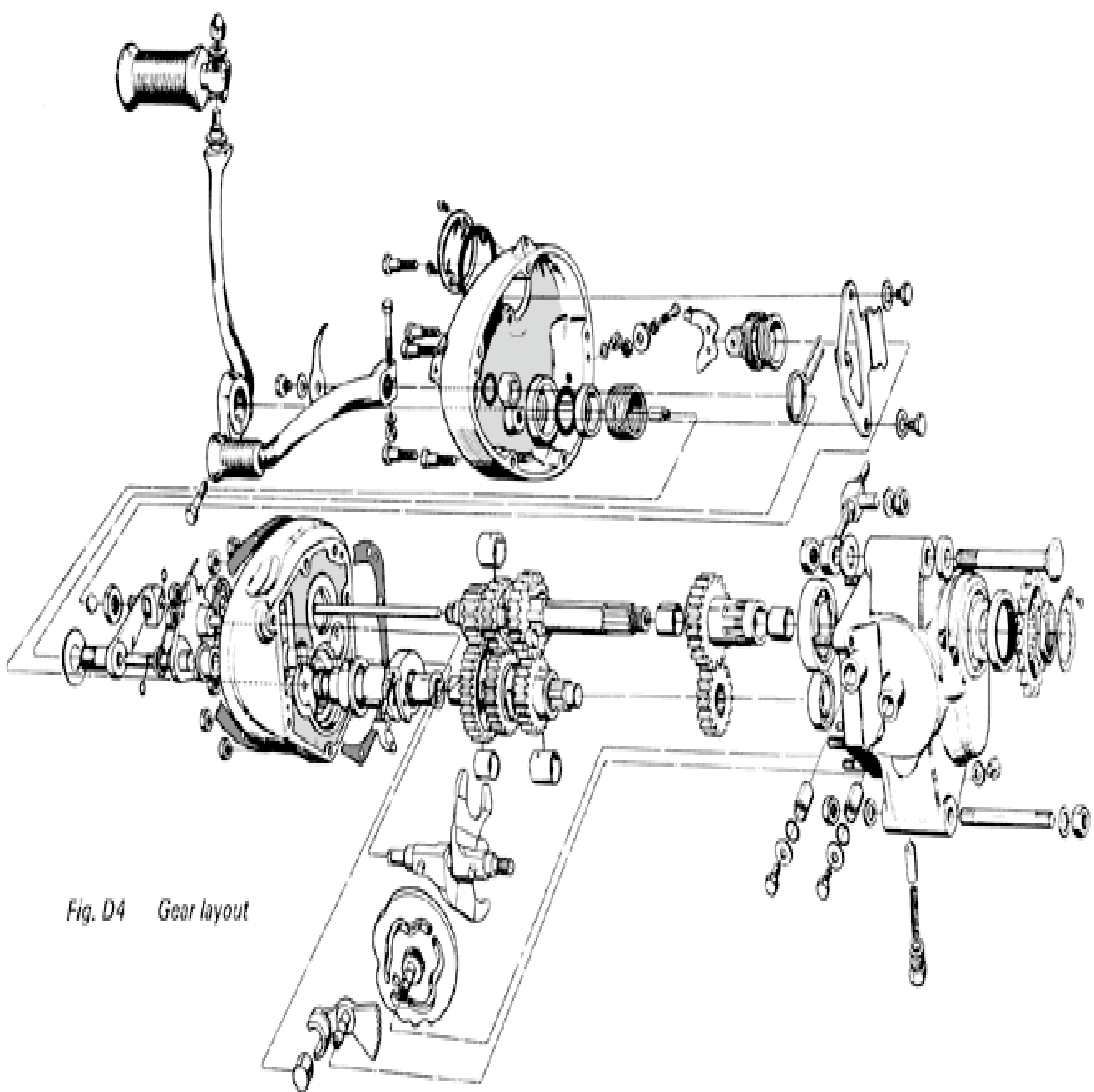
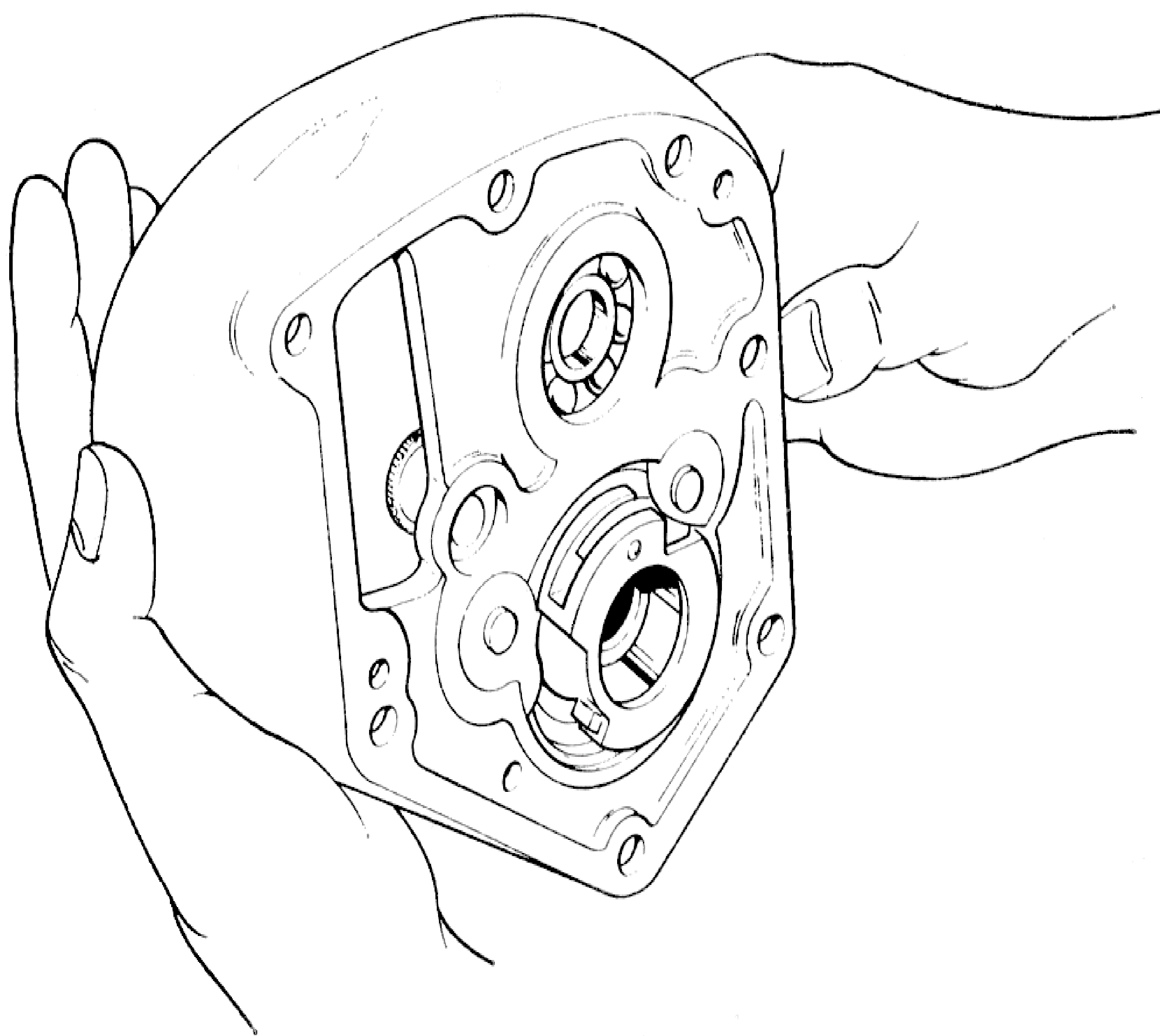
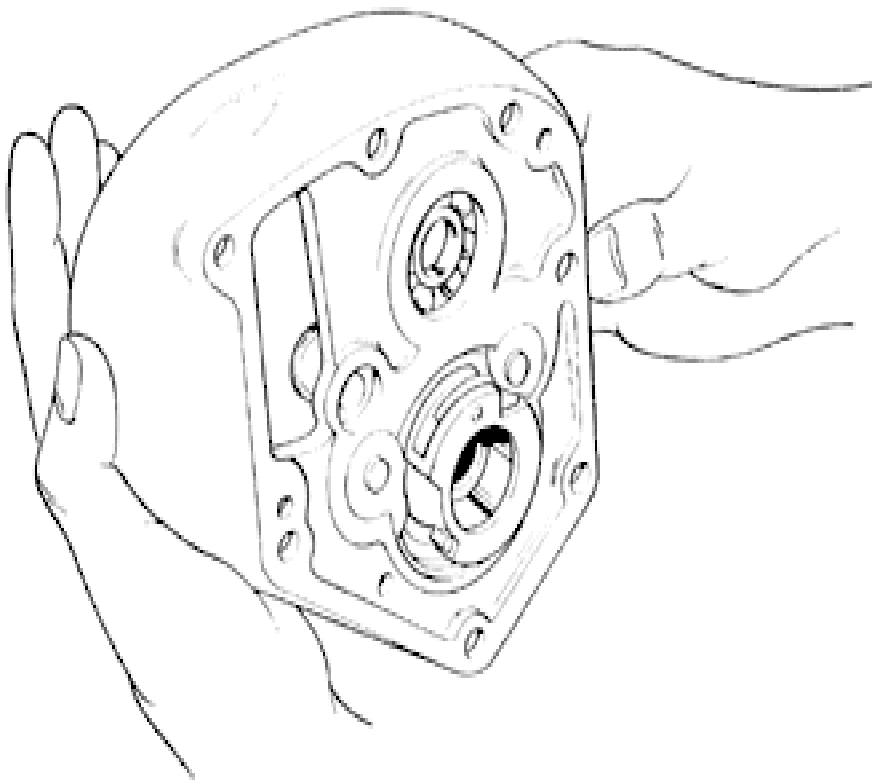


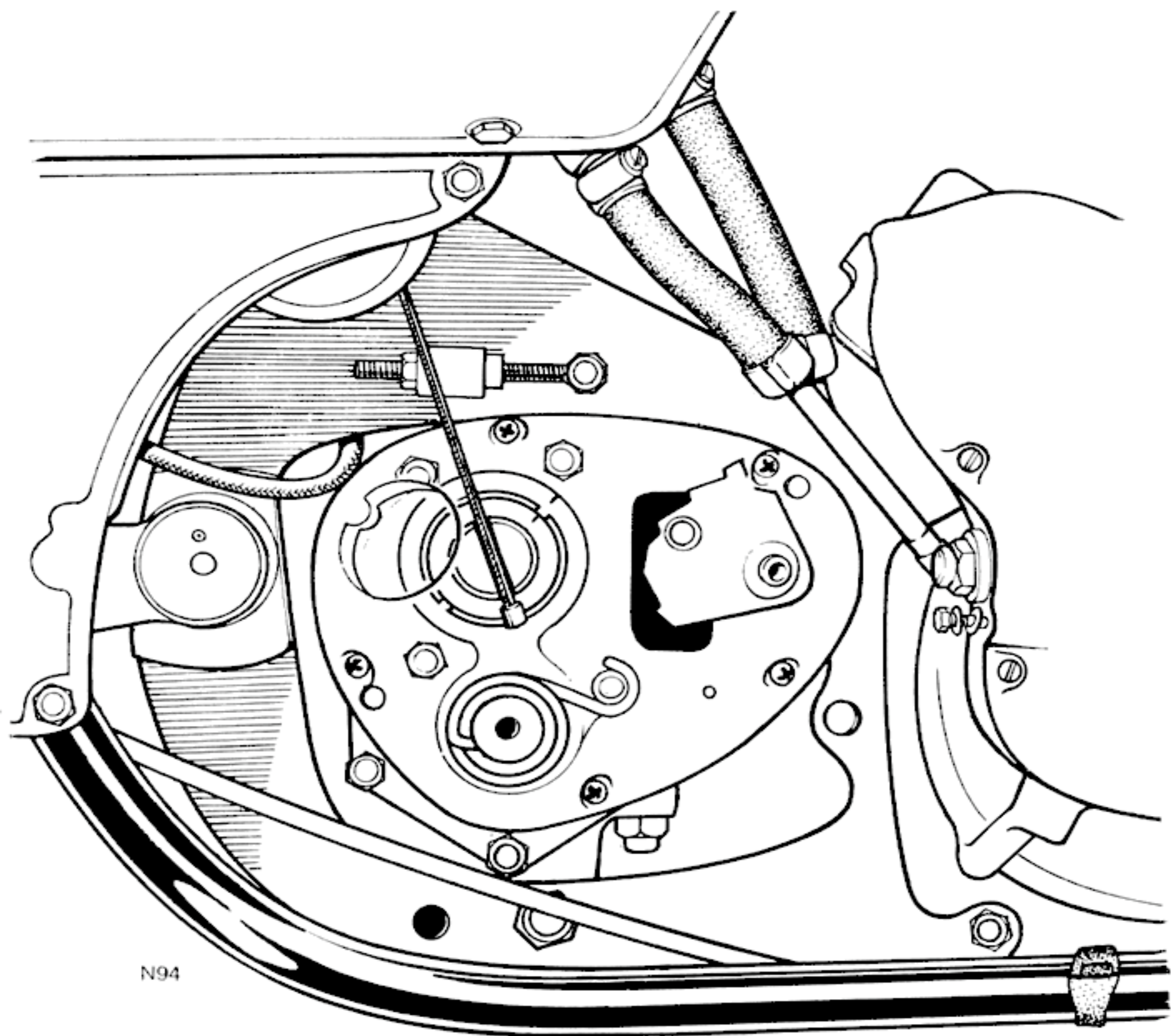
Fig. D4 Gear layout



*Fig. D5 Showing kickstart pawl stop on inner cover*

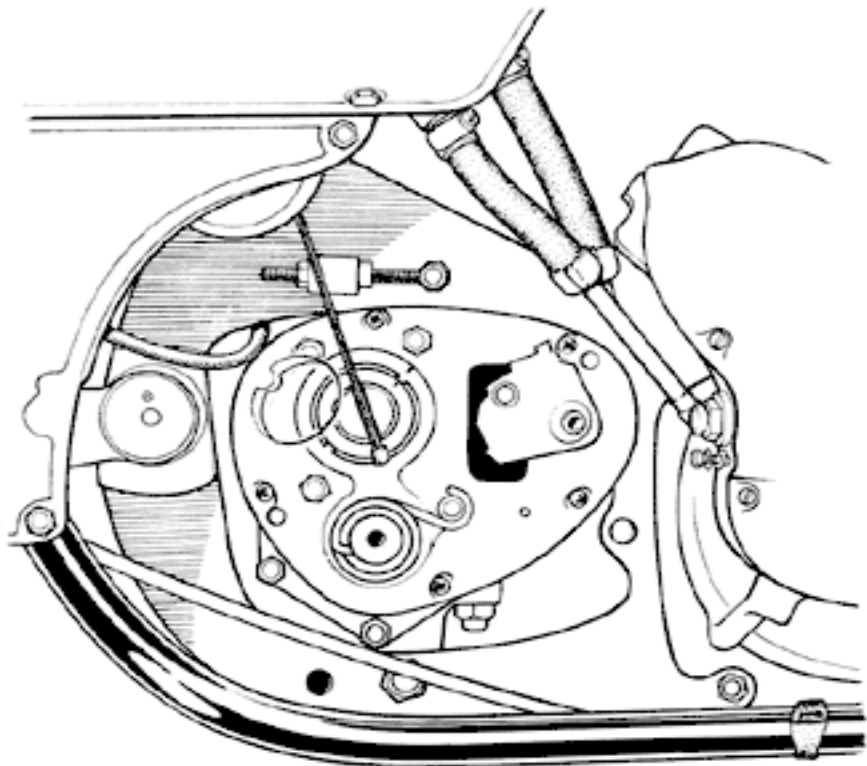


*Fig. D5 Showing kickstart pawl stop on inner cover*

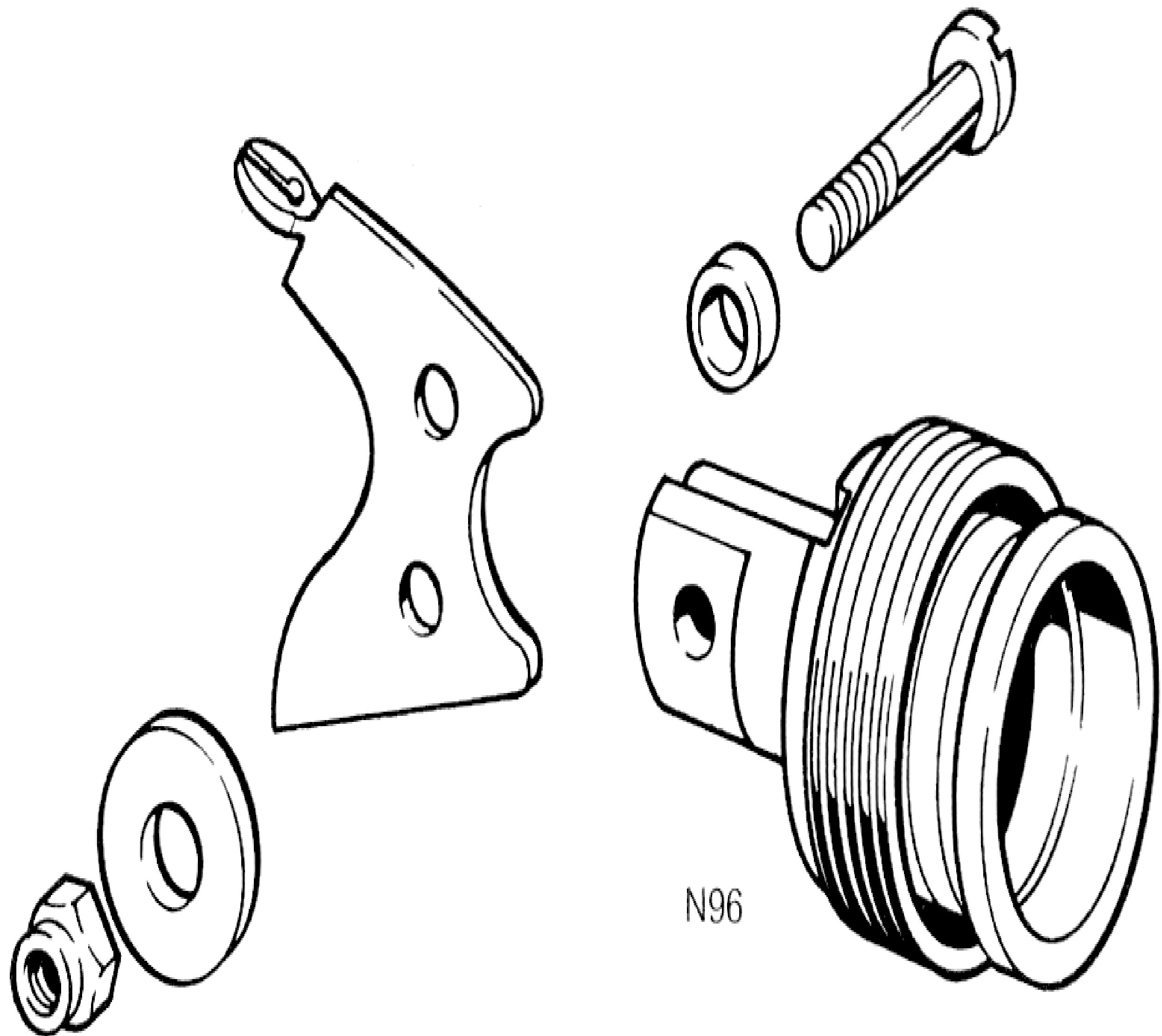


N94

*Fig. D6 Kickstart spring located. Note alignment of clutch body to permit straight pull on clutch cable and operating lever*

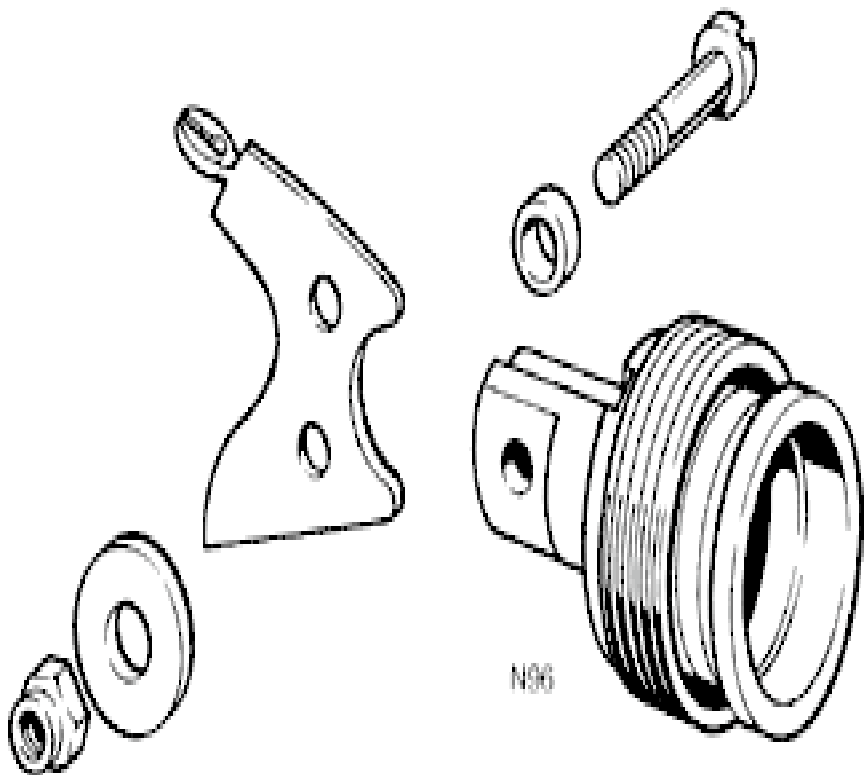


*Fig.D6 Kickstart spring located. Note alignment of clutch body to permit straight pull on clutch cable and operating lever*



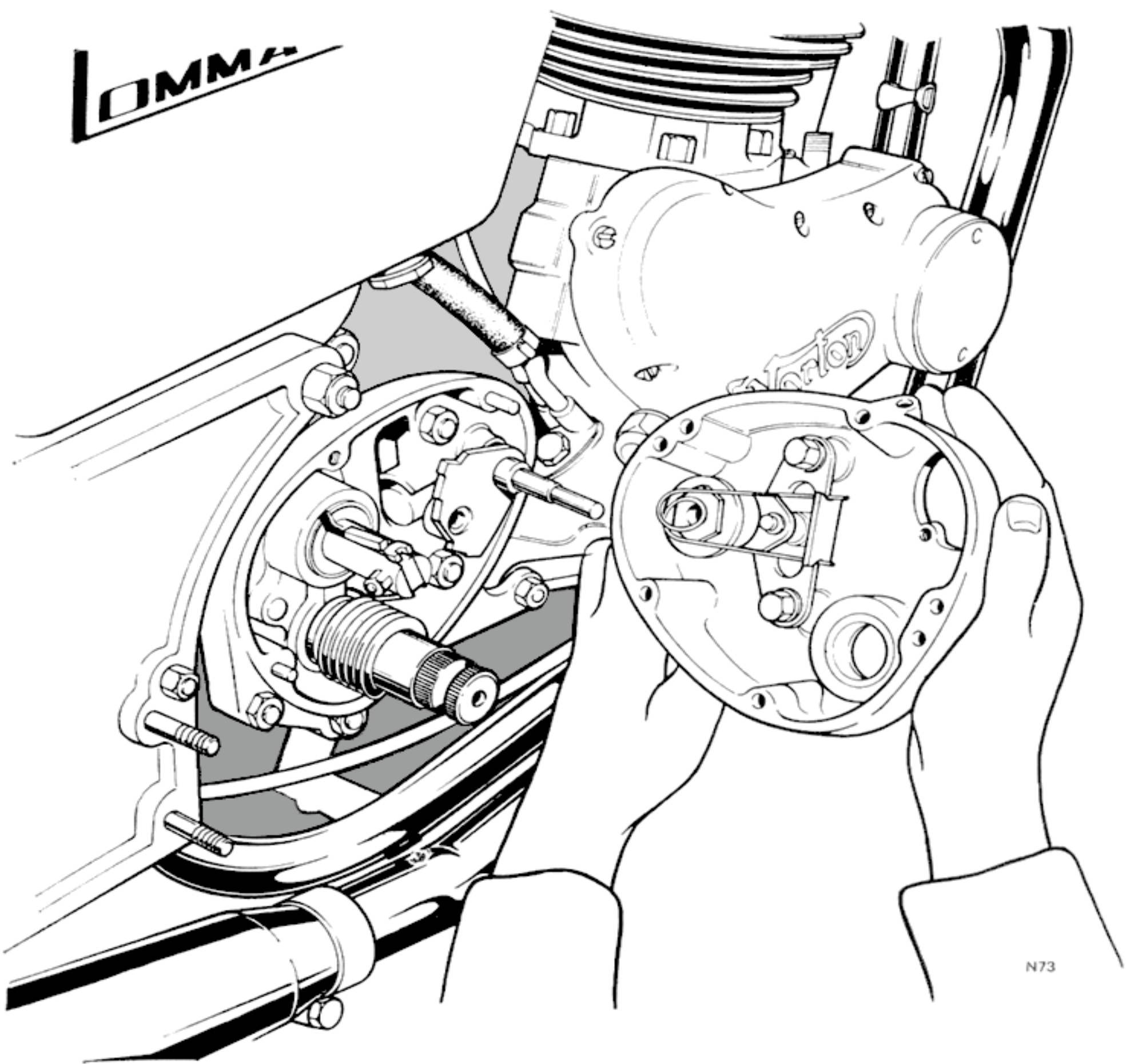
*Fig. D7 Order of assembly of clutch withdrawal lever*





*Fig. D7 Order of assembly of clutch withdrawal lever*

LOMMA



N73

Fig. D8 Pawl carrier, spring and ratchet plate assembled

LOIMMA

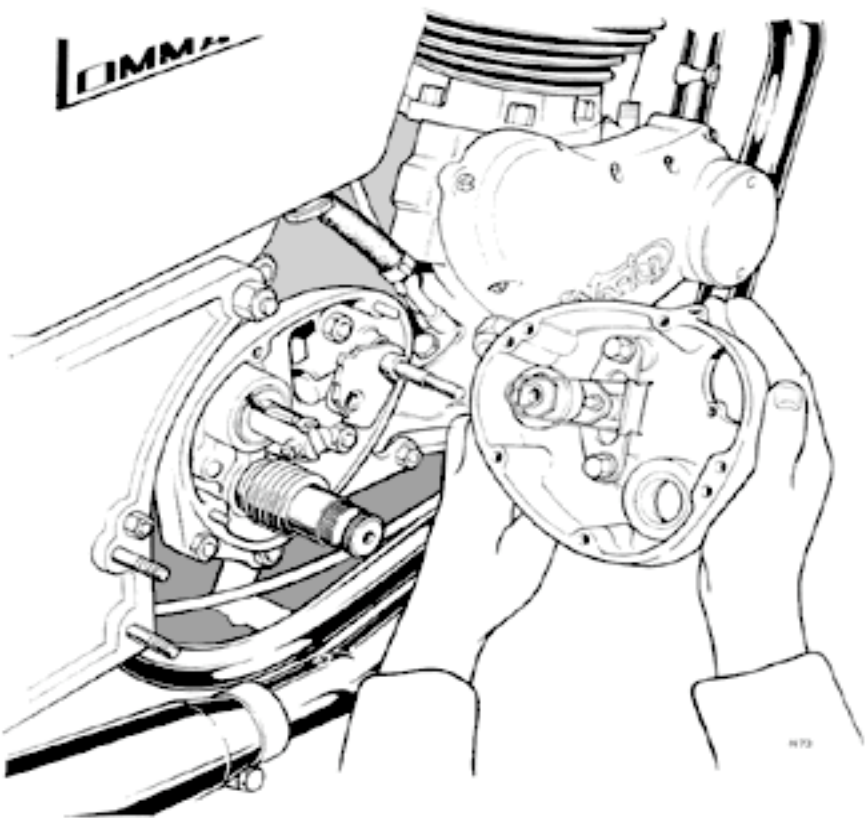
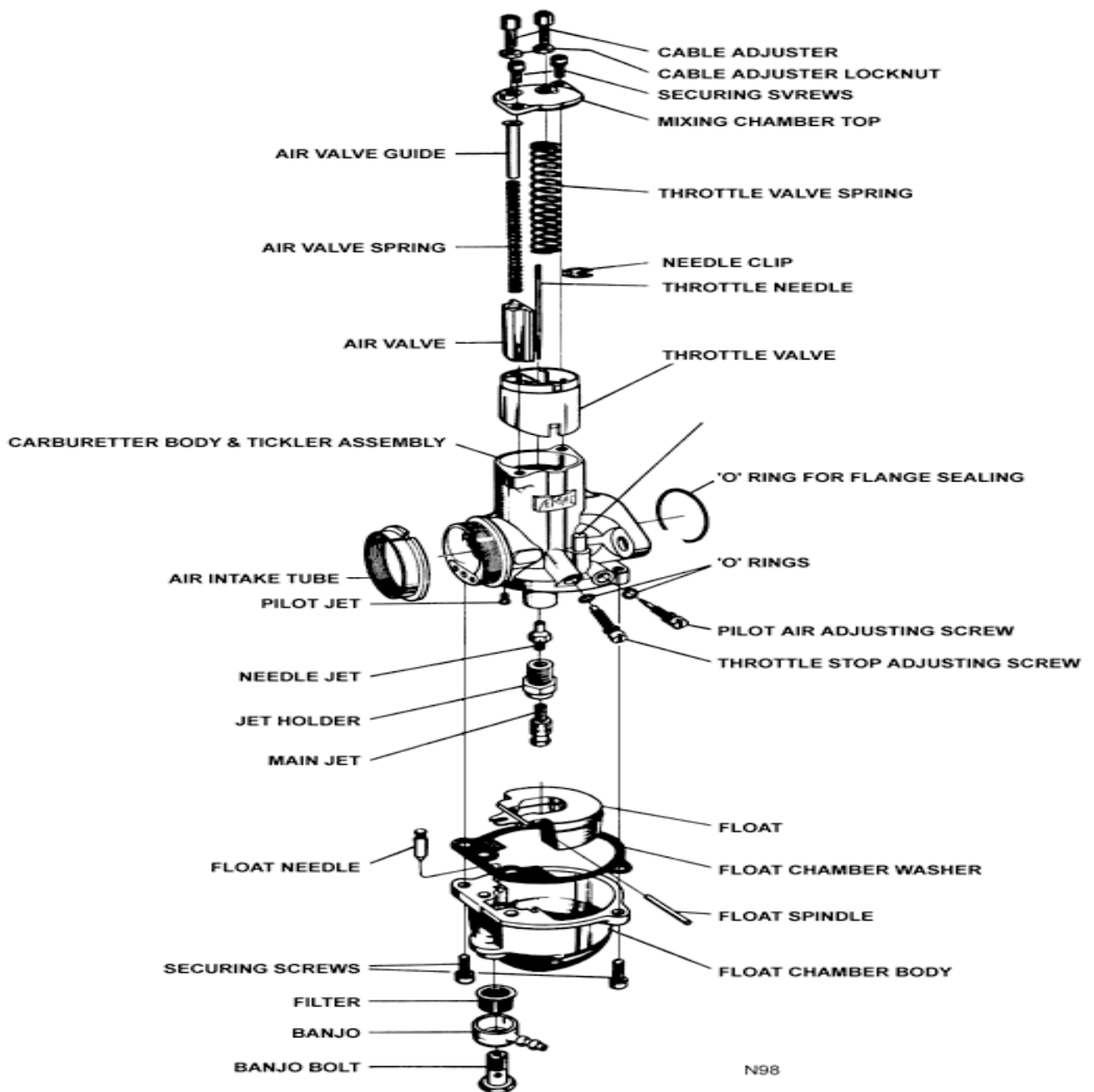


Fig. D8 Pawl carrier, spring and ratchet plate assembled



*Fig. E1 Amal concentric float carburetor*

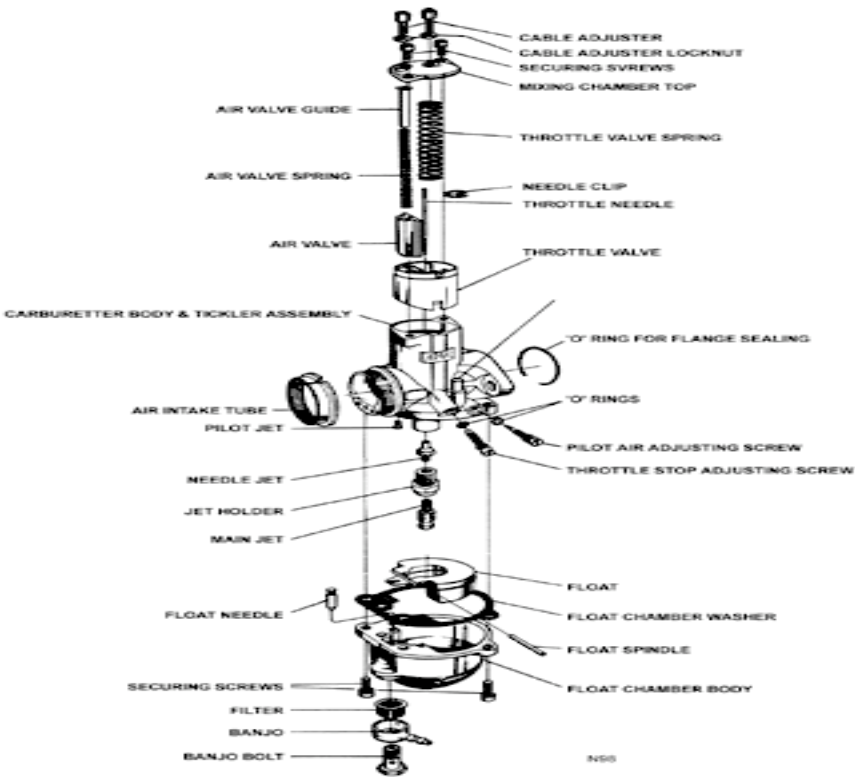
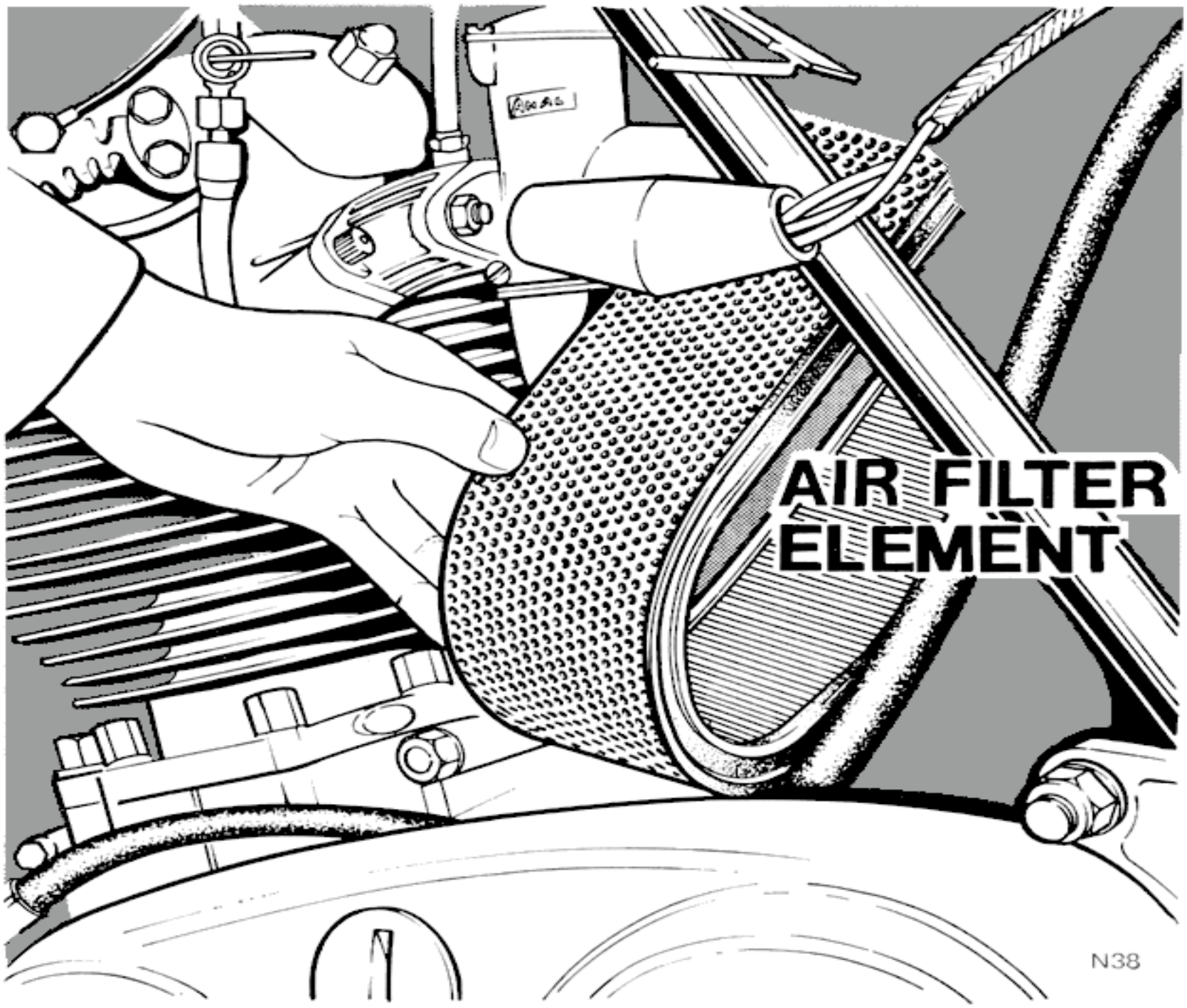


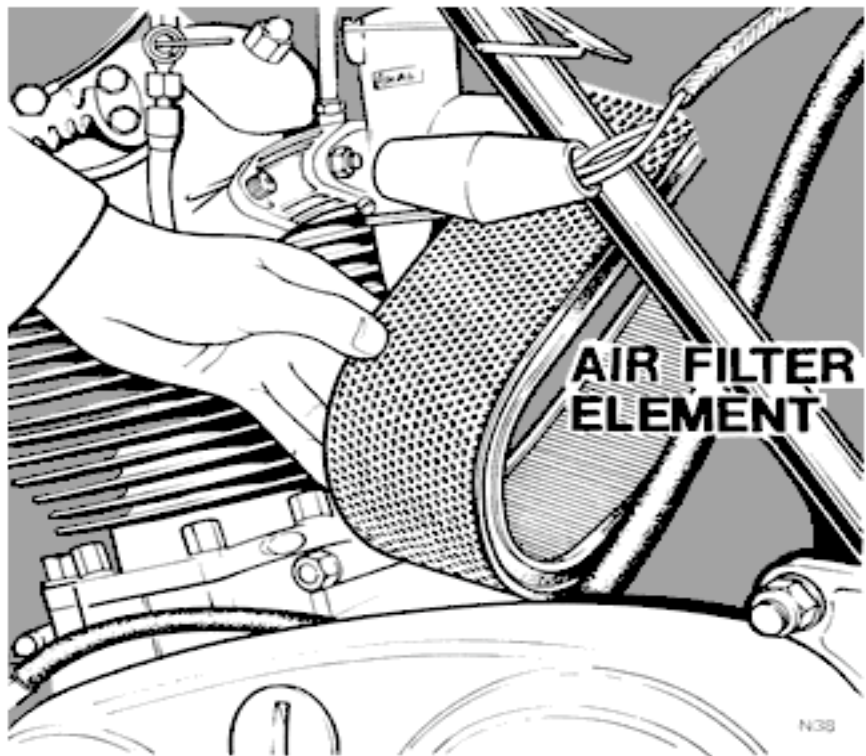
Fig. E1 Amal concentric float carburetor



**AIR FILTER  
ELEMENT**

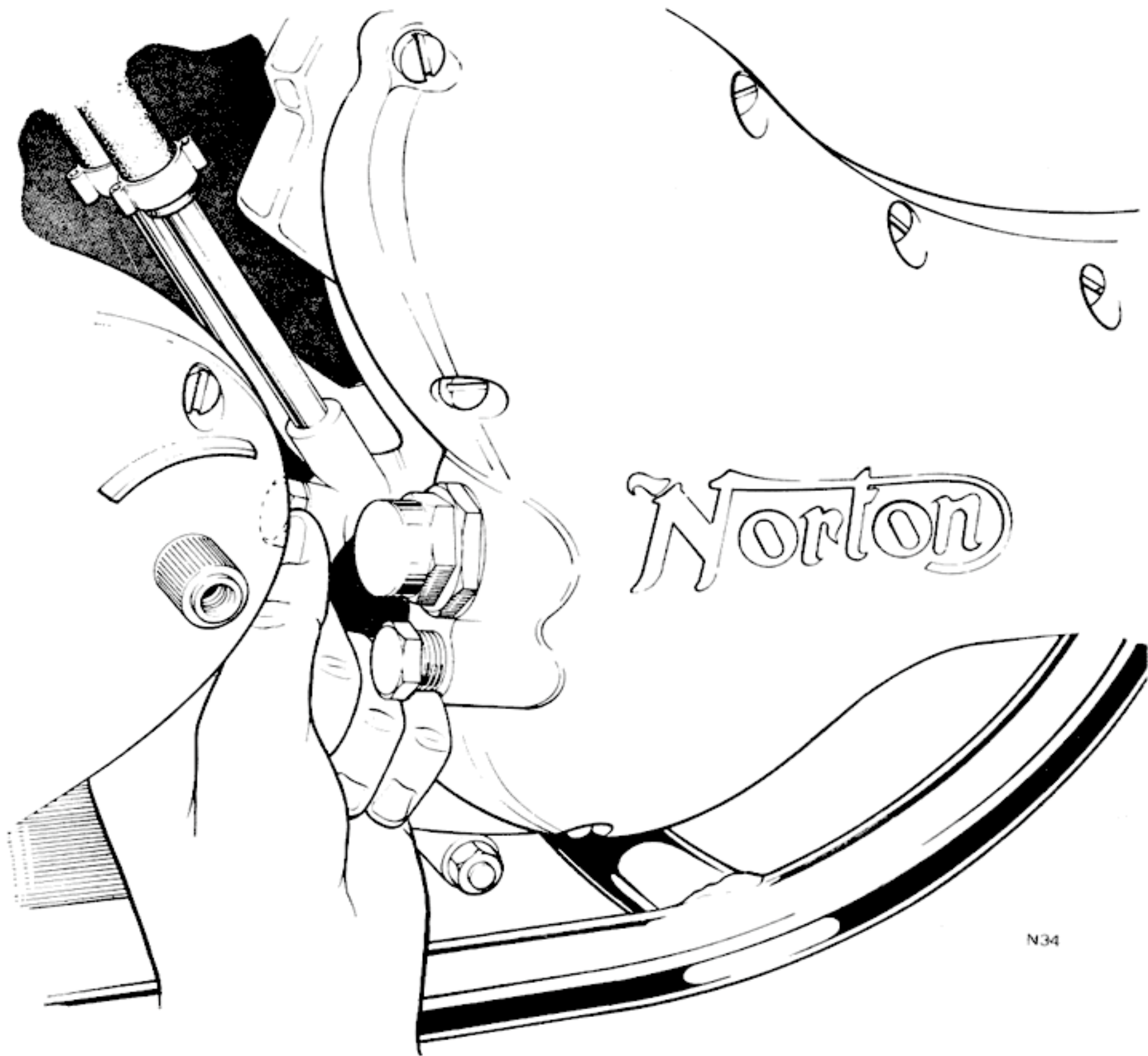
N38

*Fig. E2 Removing air filter element and gauze band*



N38

*Fig. E2 Removing air filter element and gauze band*



Norton

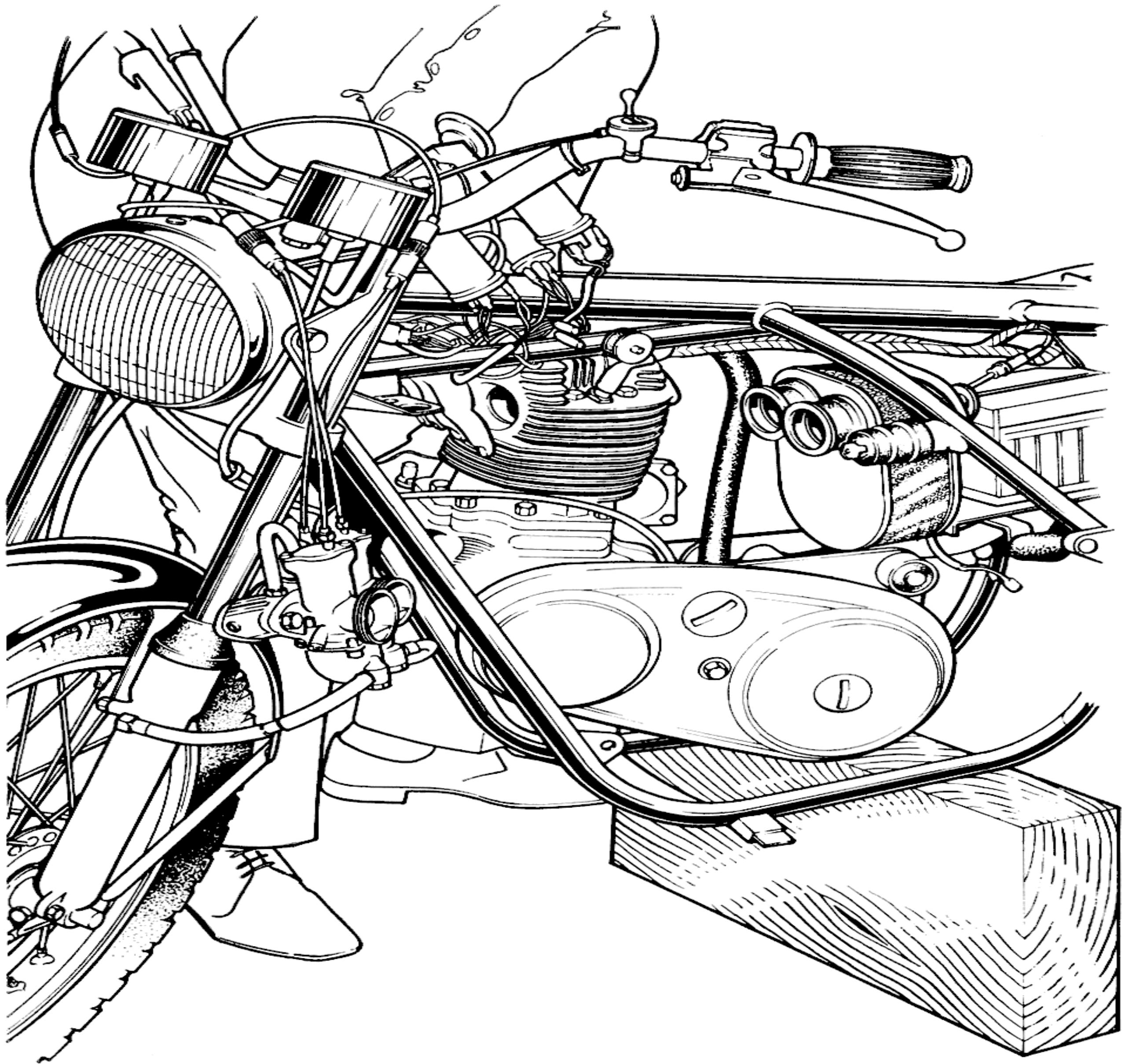
N34

*Fig. F1 Removing oil junction block securing bolt*

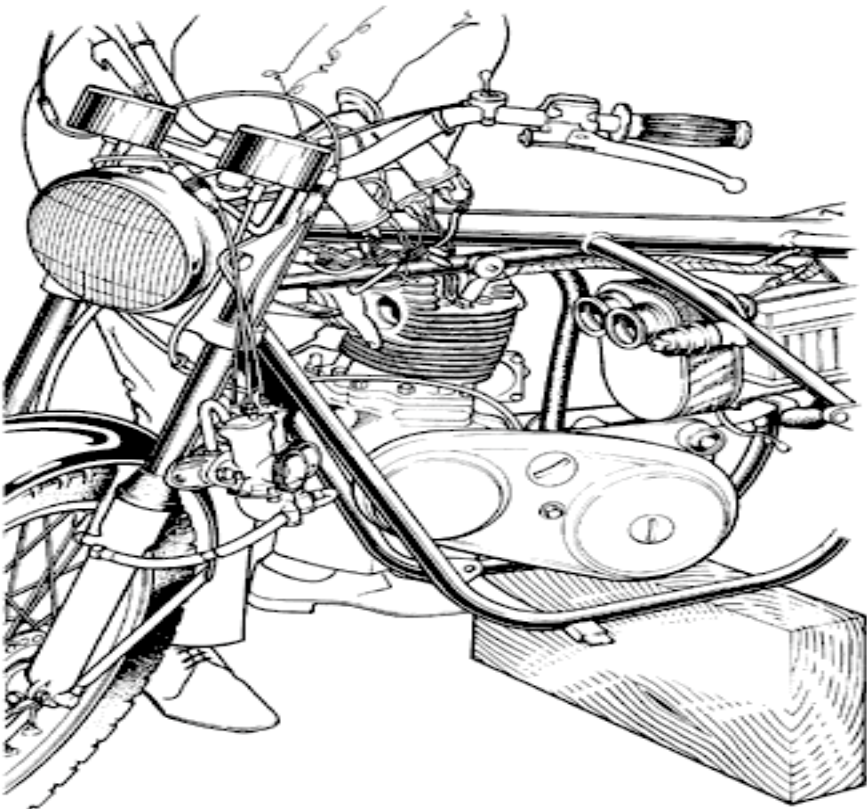




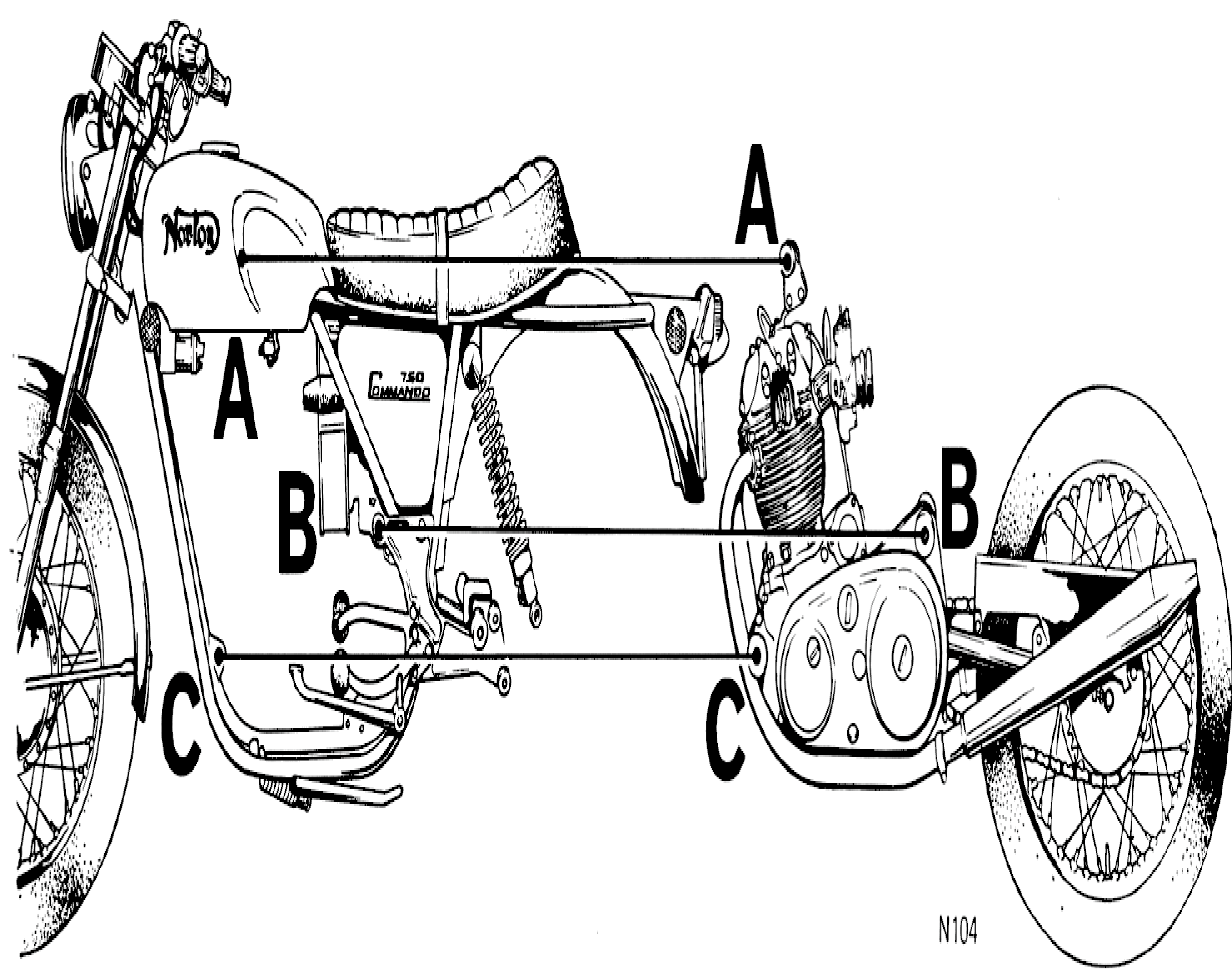
*Fig. F1 Removing oil junction block securing bolt*



**Fig. F2**      *Lifting out power unit to right side*

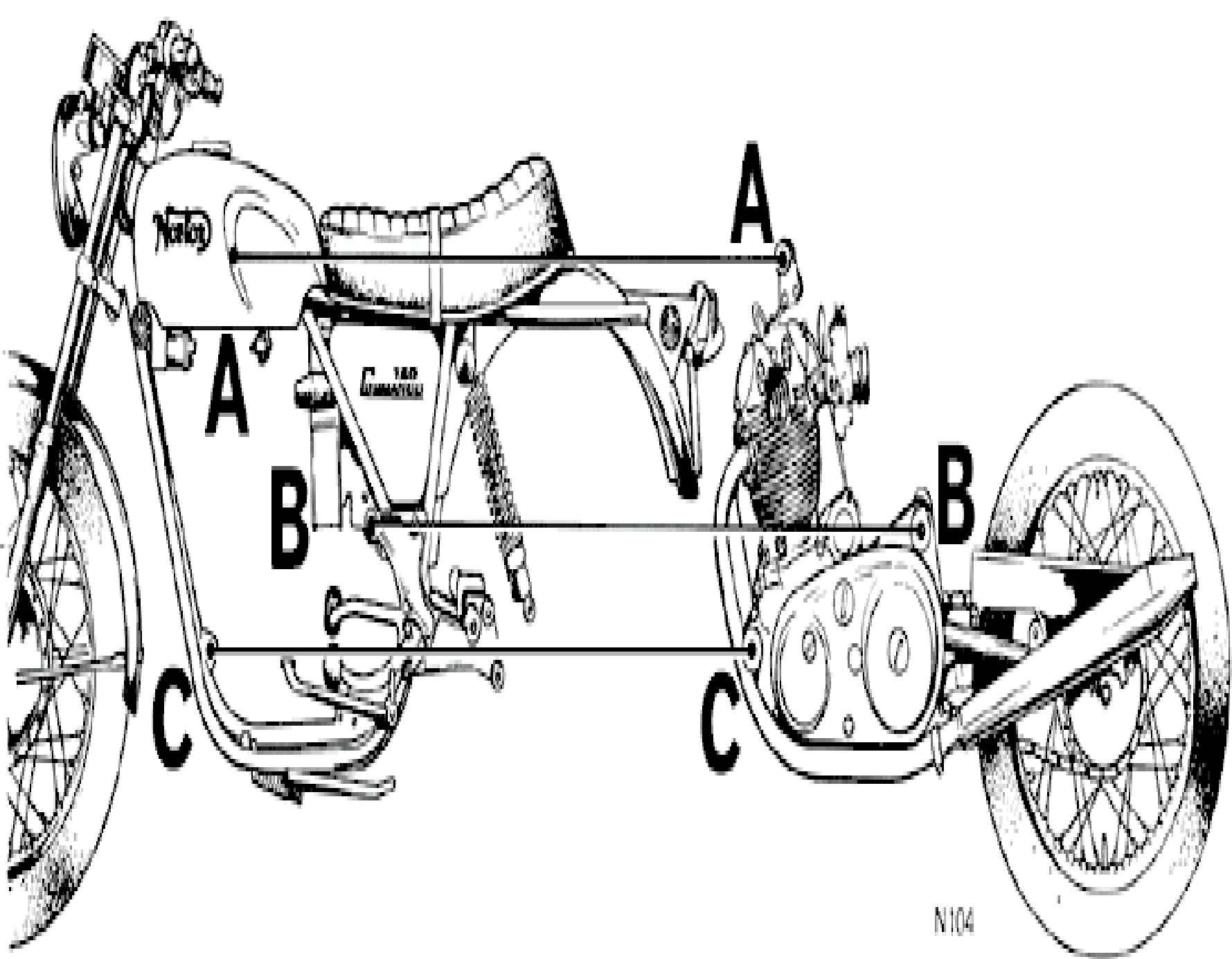


**Fig. F2** *Lifting out power unit to right side*



N104

*Fig. F3 Commando parted to show isolastic mounting points*



*Fig. F3 Commando parted to show isolastic mounting points*

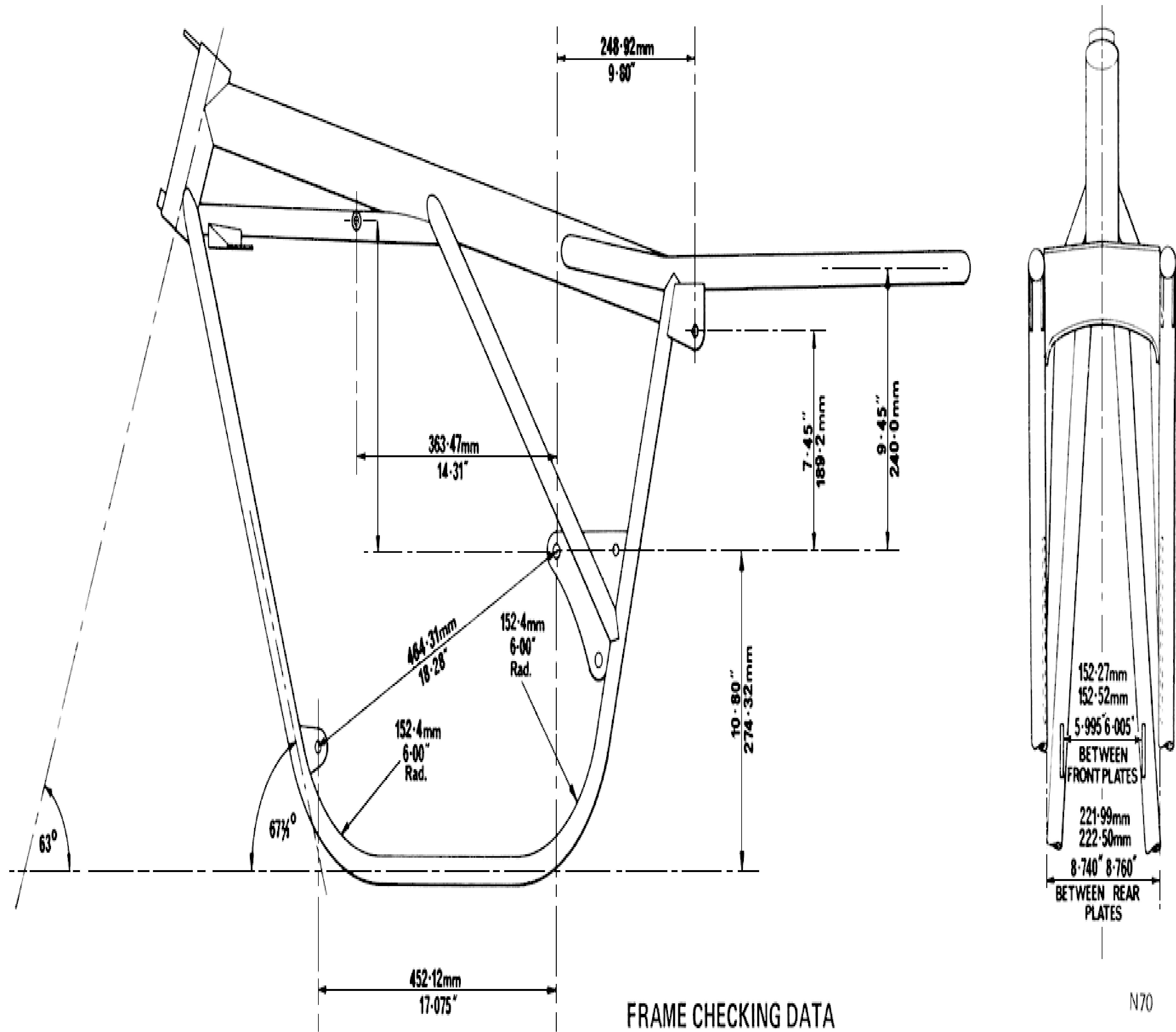


Fig. F4 Frame checking chart

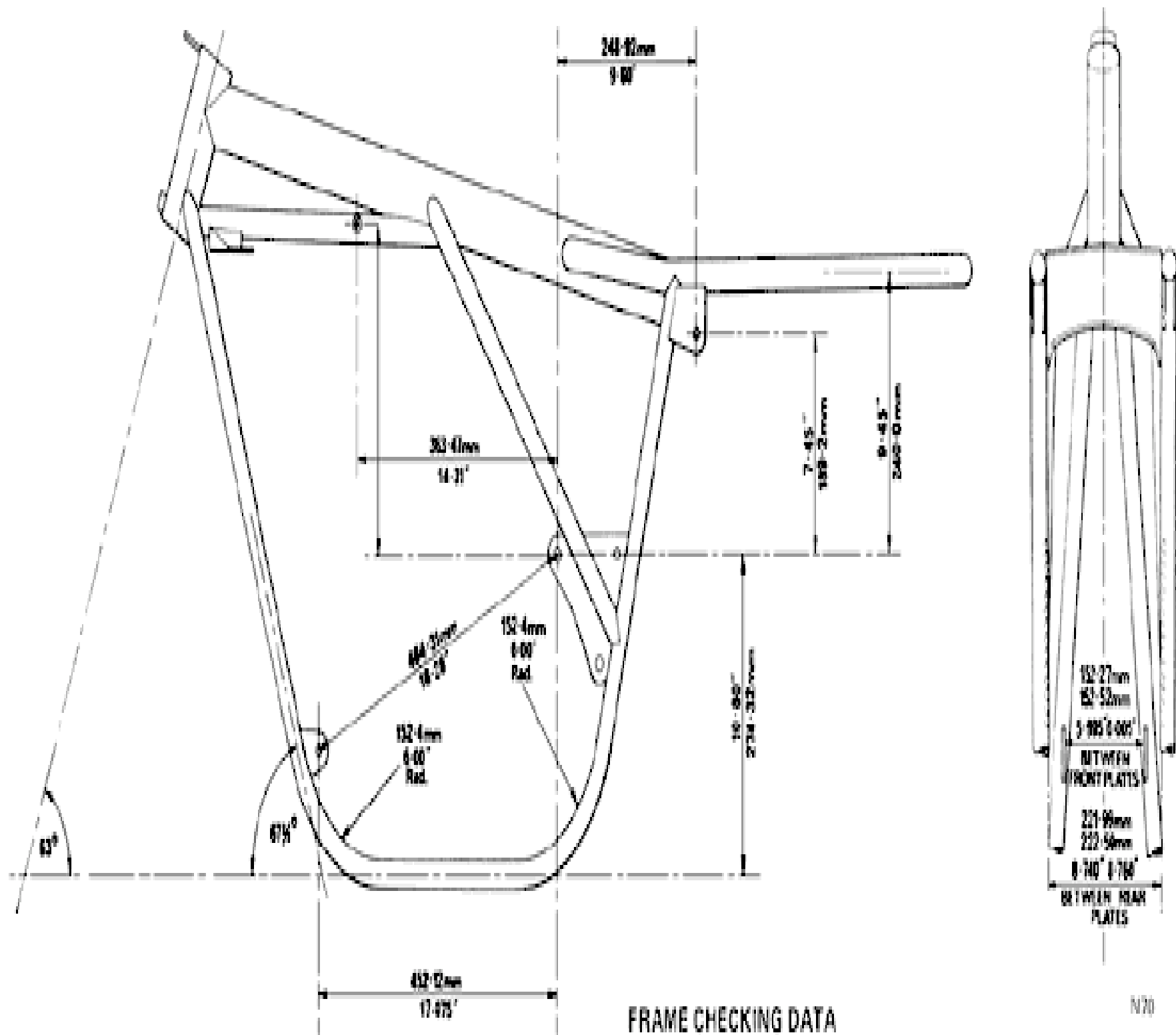
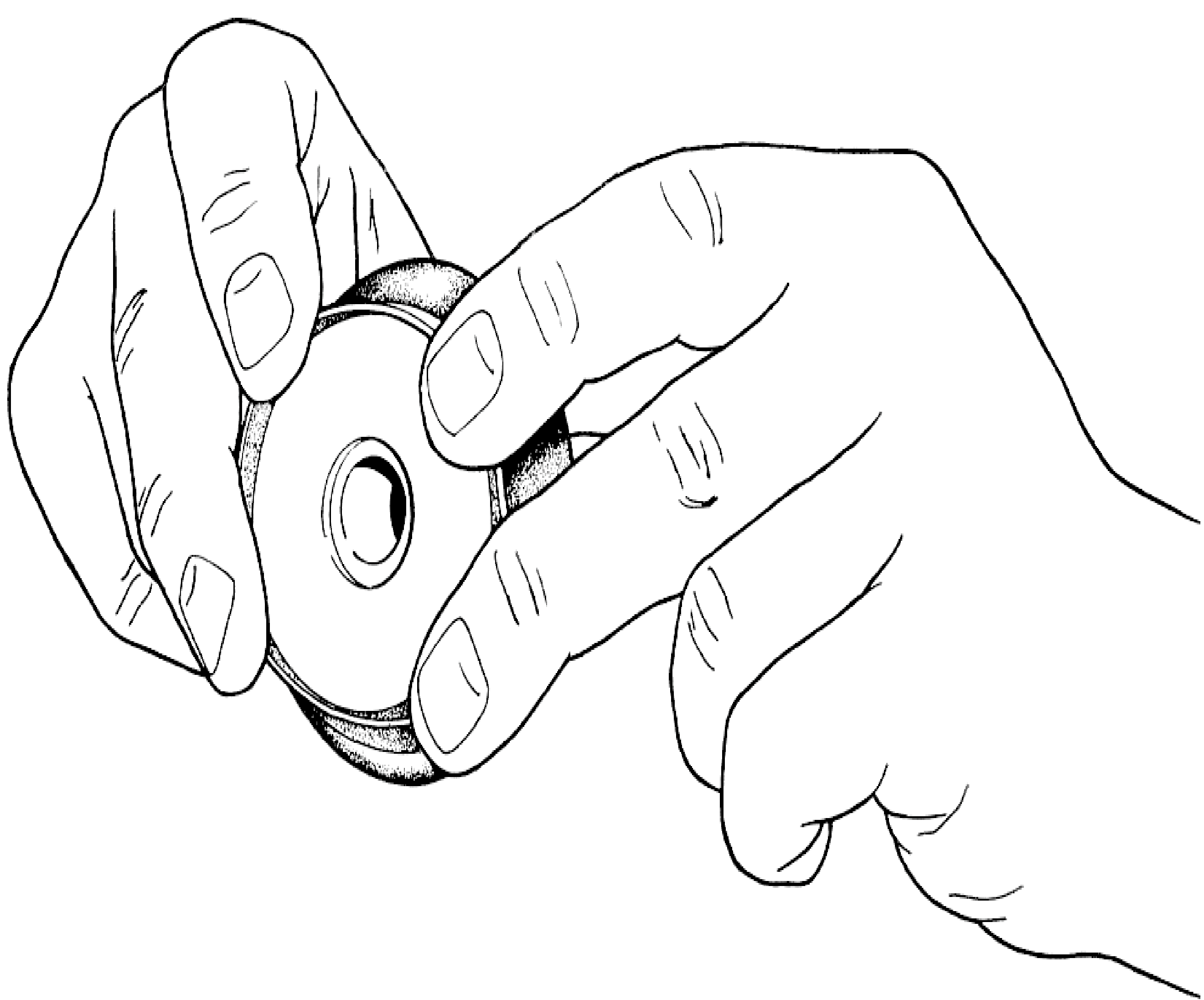
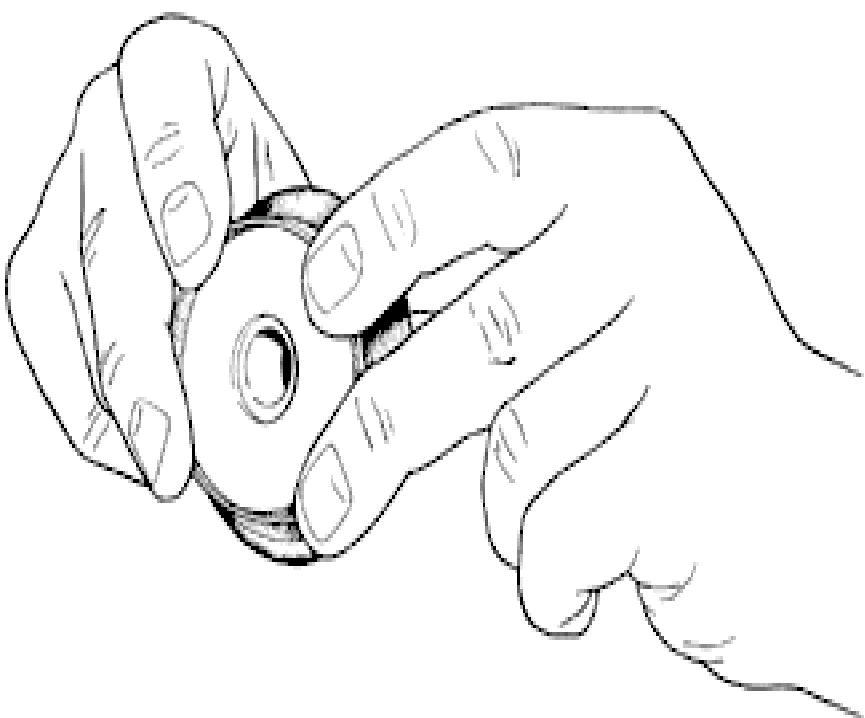


Fig. F4 Frame checking chart

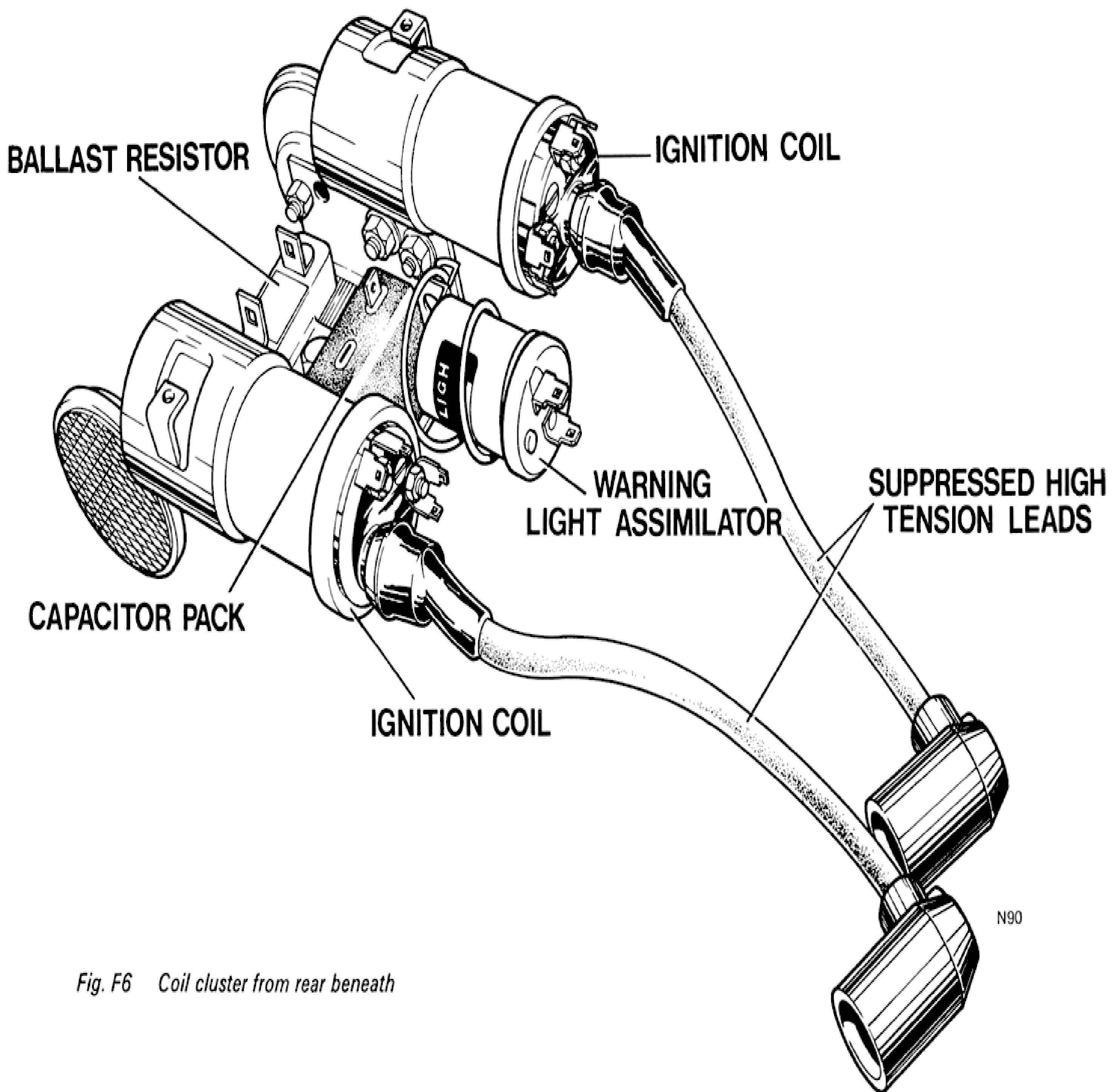


*Fig. F5 Gaiter/collar group ready to fit. Note gaiter held back on edge of polyurethane washer*





*Fig. F5 Gaiter/collar group ready to fit. Note gaiter held back on edge of polyurethane washer*



*Fig. F6 Coil cluster from rear beneath*

**BALLAST RESISTOR**

**IGNITION COIL**

**WARNING  
LIGHT ASSIMILATOR**

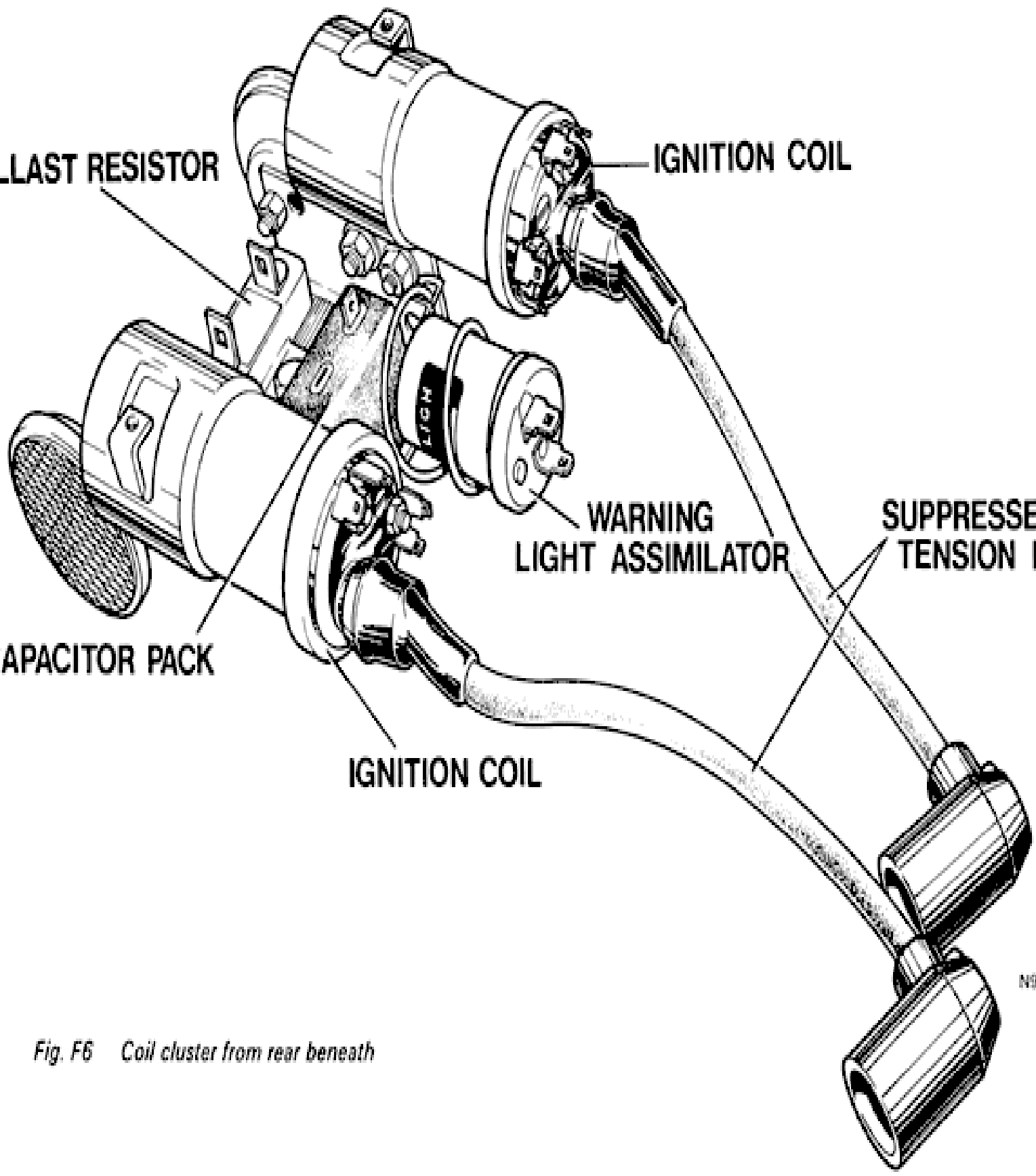
**SUPPRESSED HIGH  
TENSION LEADS**

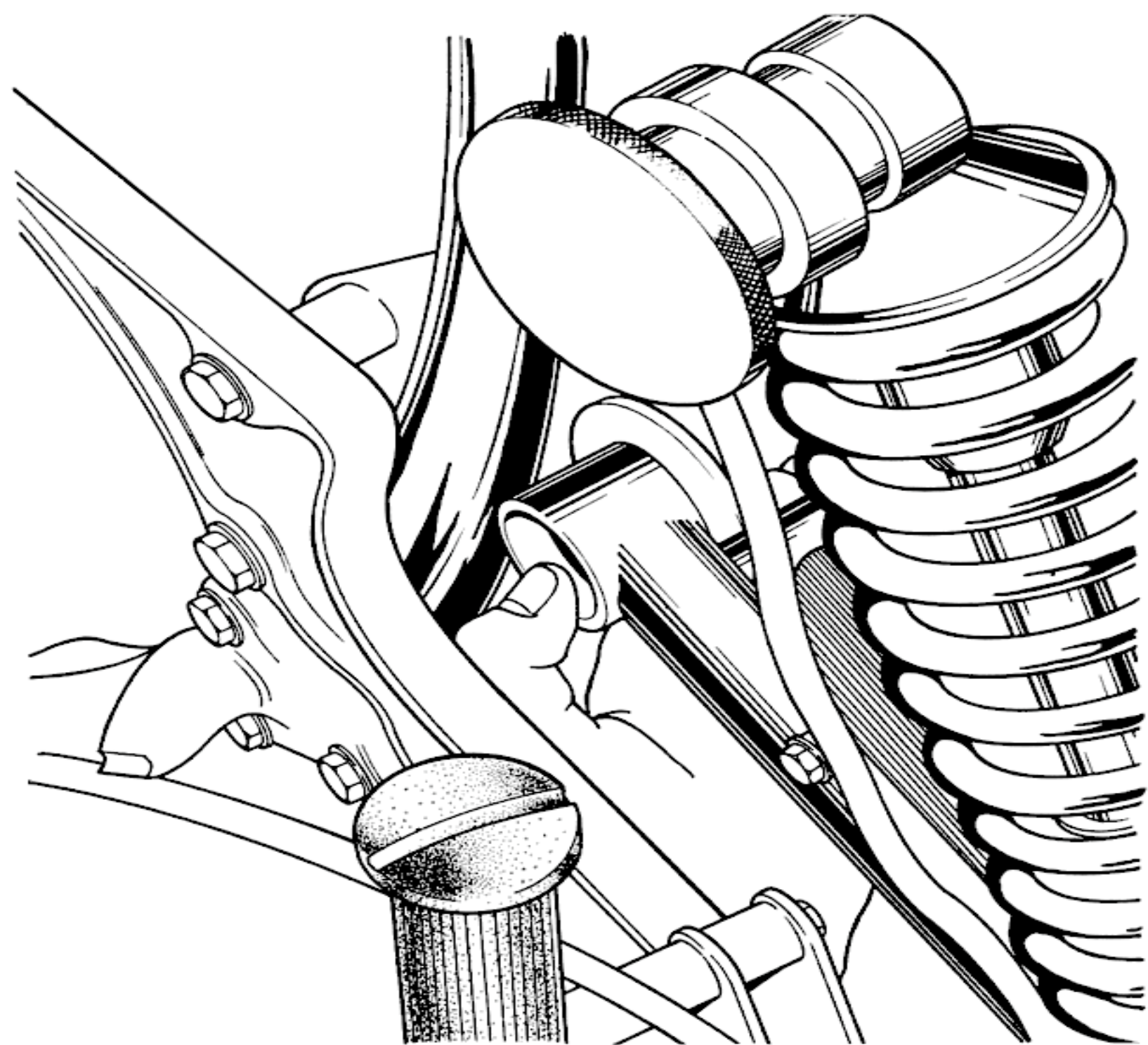
**CAPACITOR PACK**

**IGNITION COIL**

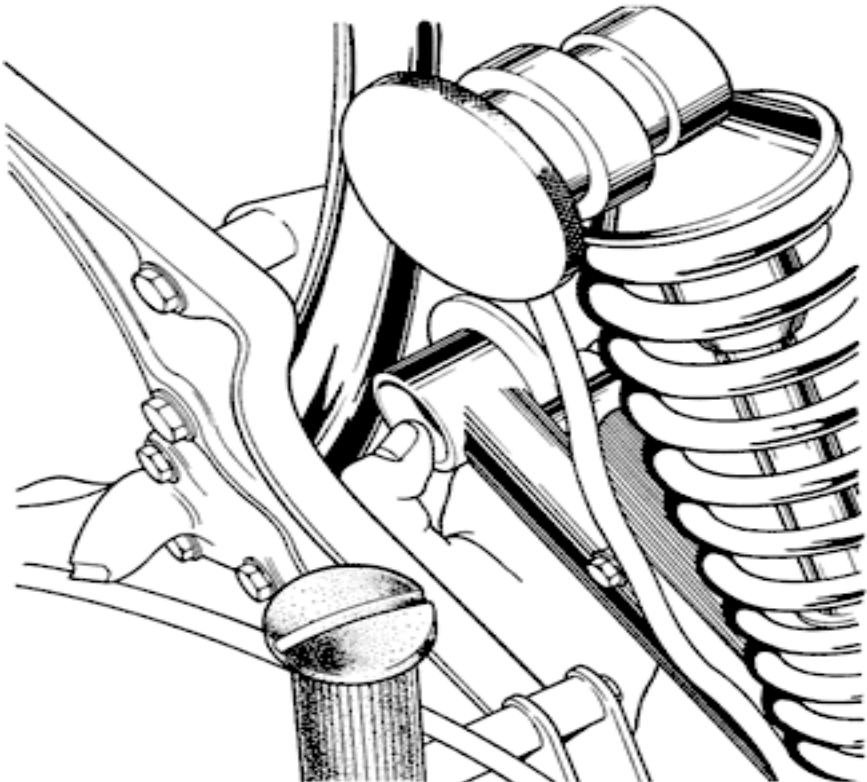
N90

*Fig. F6 Coil cluster from rear beneath*

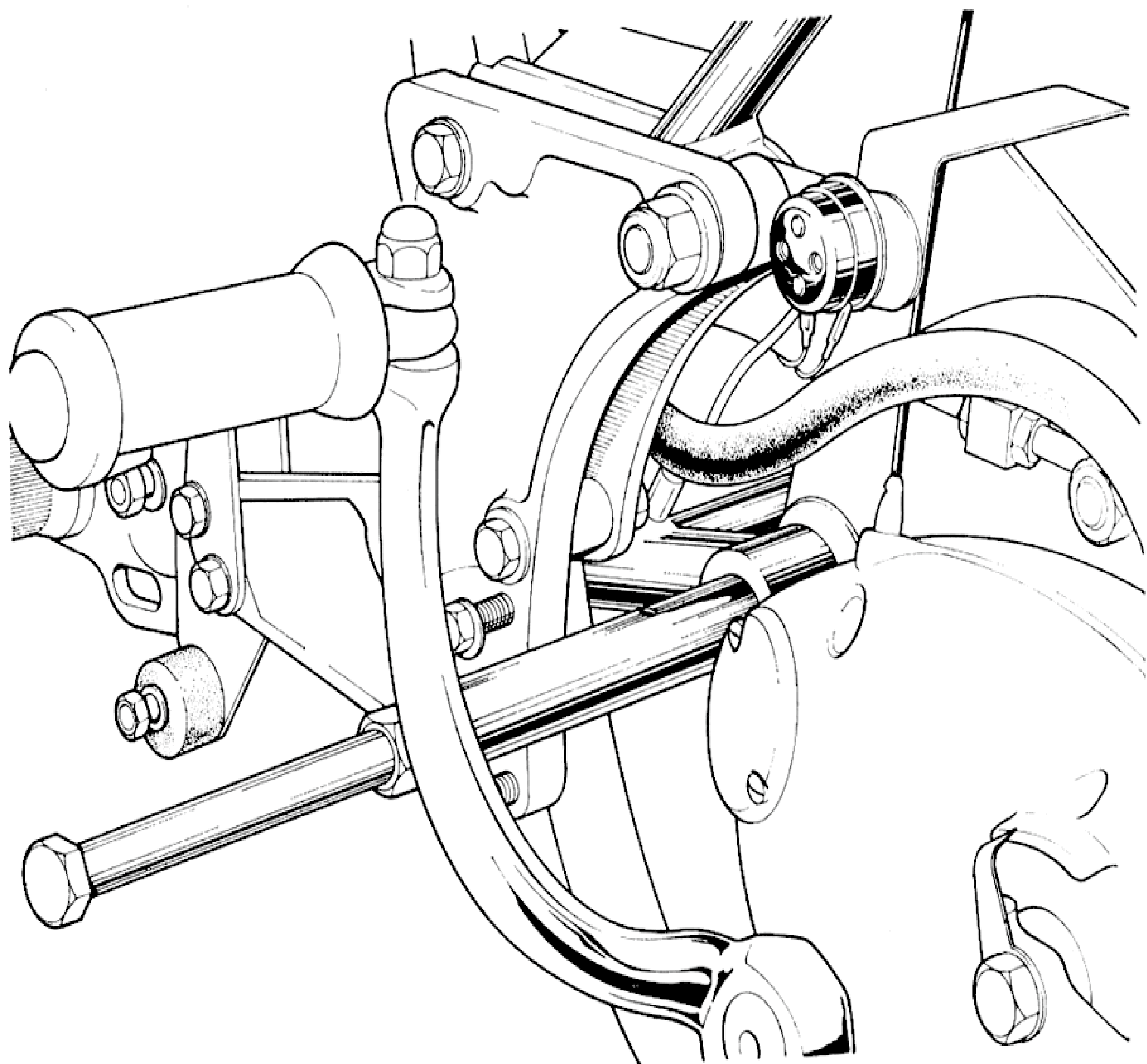




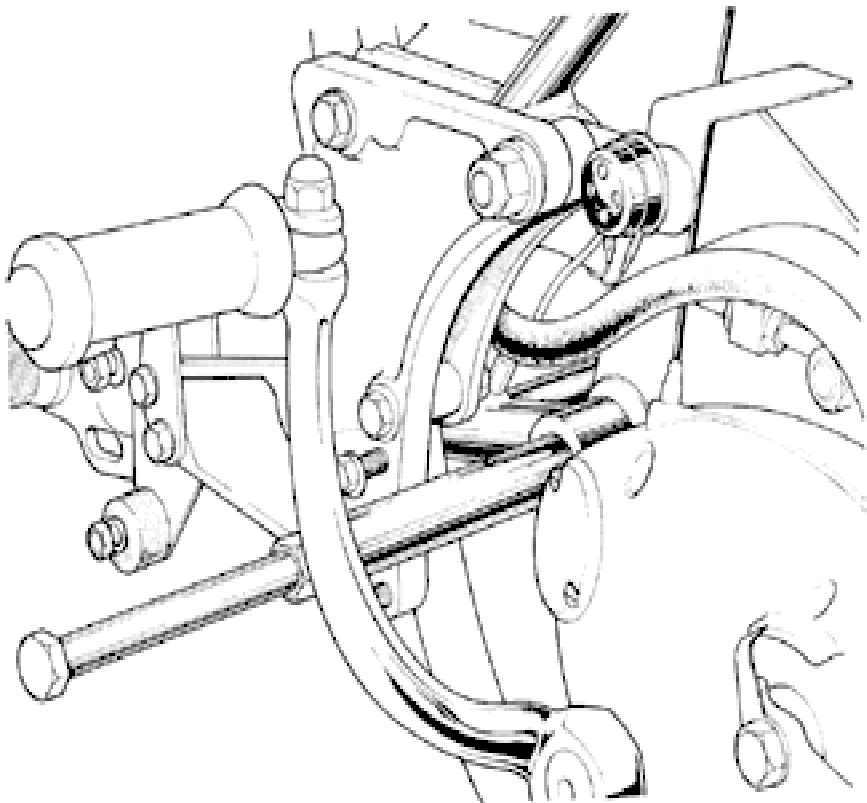
*Fig. F7 Swinging arm offered into position with end cap held in place with grease*



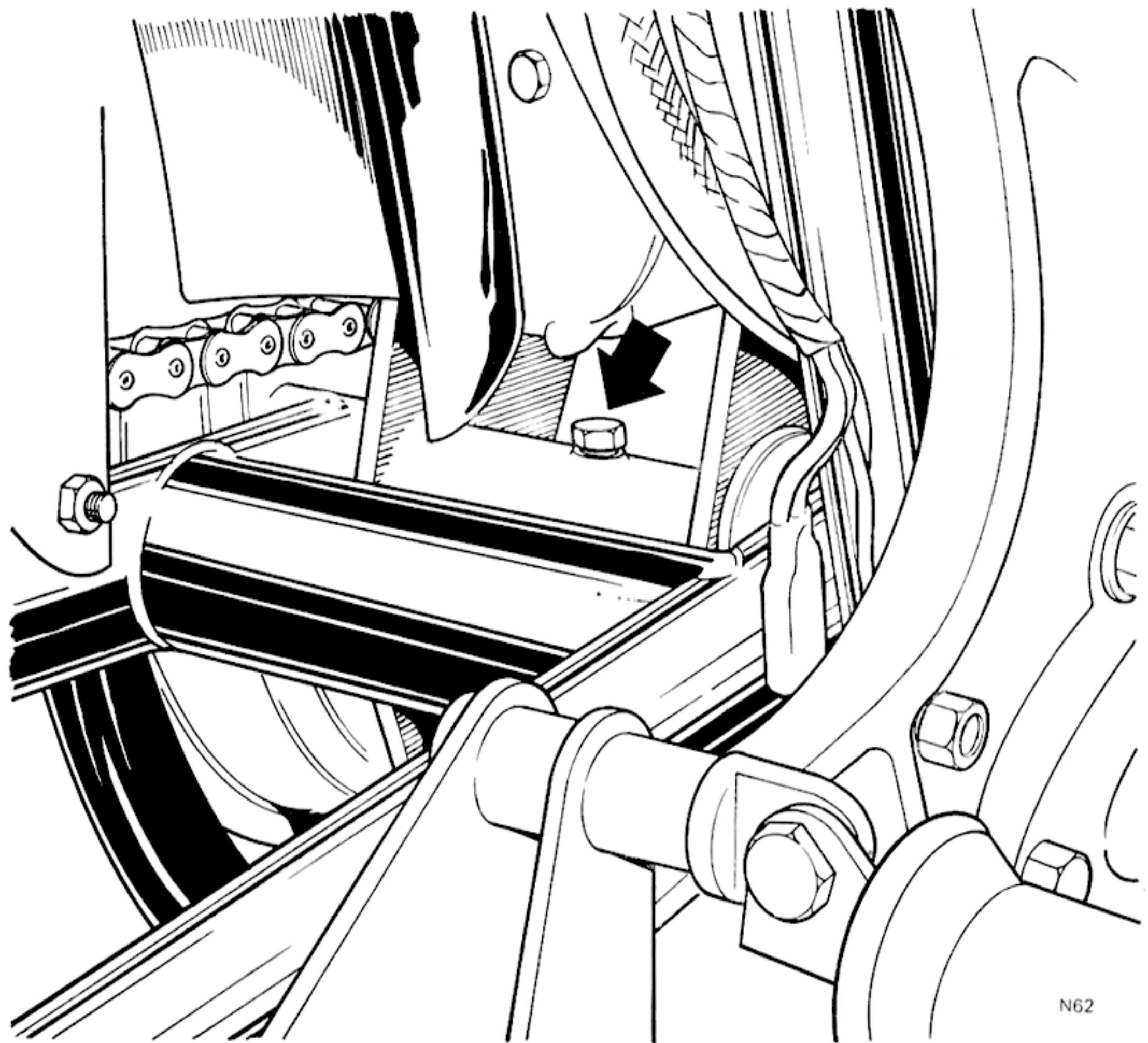
*Fig. F7 Swinging arm offered into position with end cap held in place with grease*



*Fig. F8 Aligning swinging arm spindle with swinging arm bore*



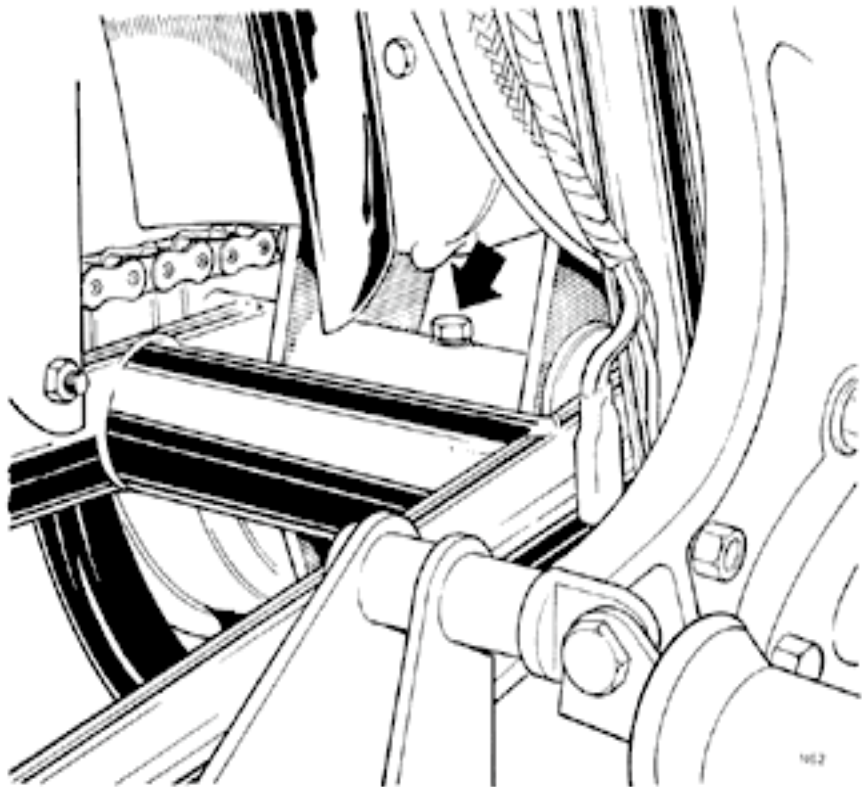
*Fig. F8* Aligning swinging arm spindle with swinging arm bore



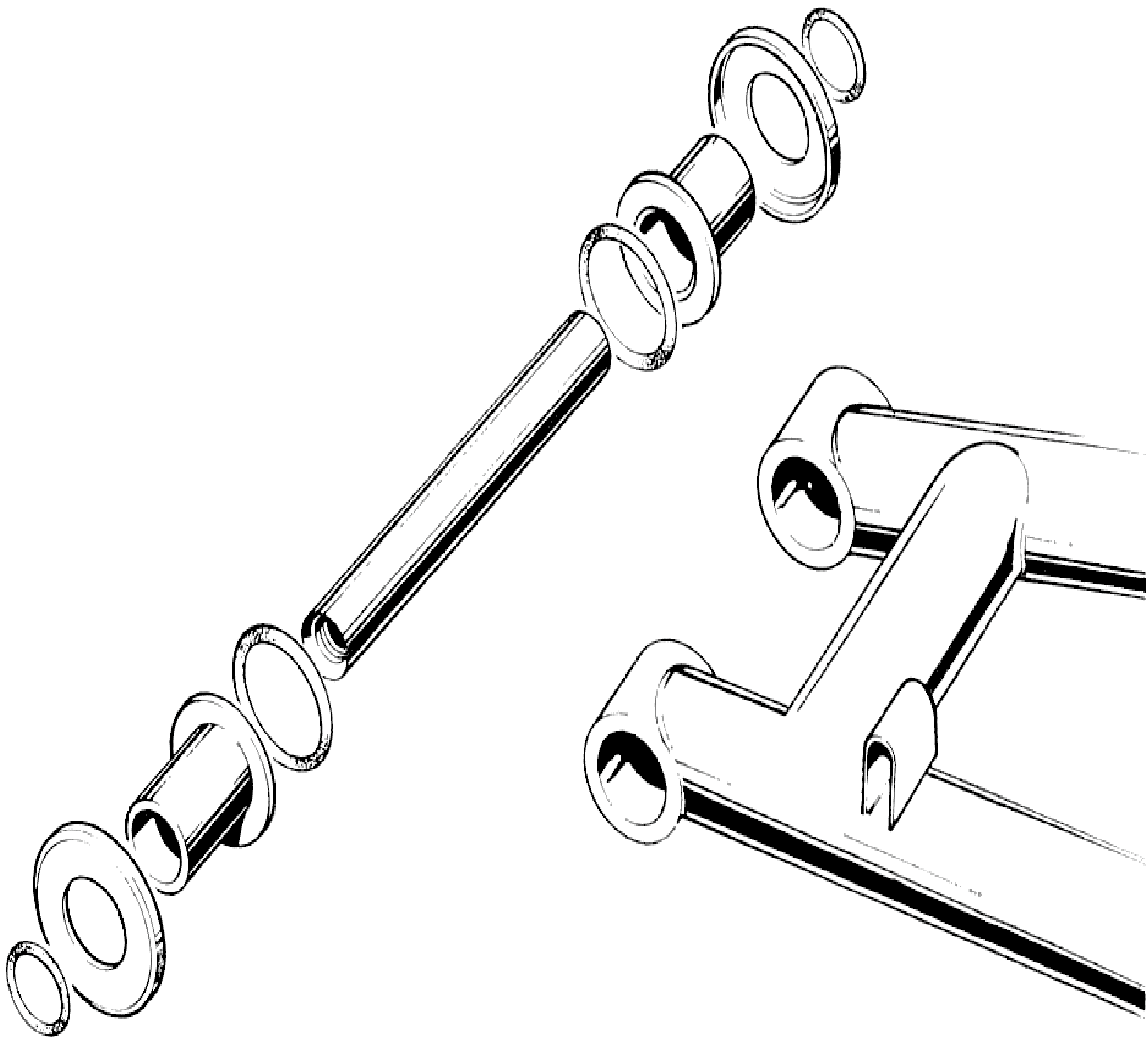
N62

*Fig. F9 Spindle lock bolt fitted*

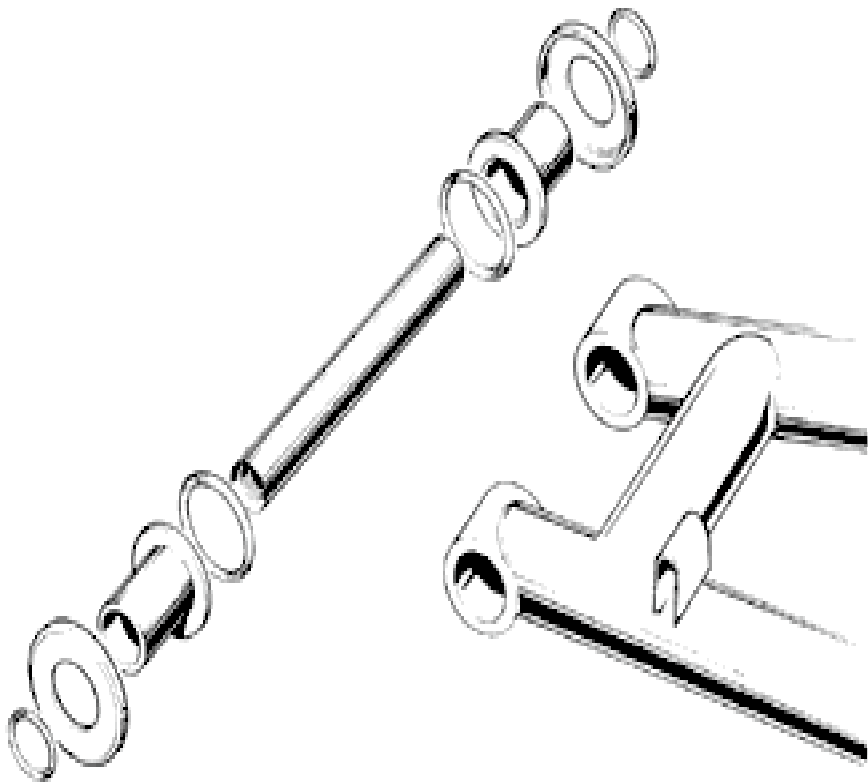




*Fig. F9 Spindle lock bolt fitted*



*Fig. F10 Swinging arm bushes showing order of assembly*



*Fig. F10 Swinging arm bushes showing order of assembly*

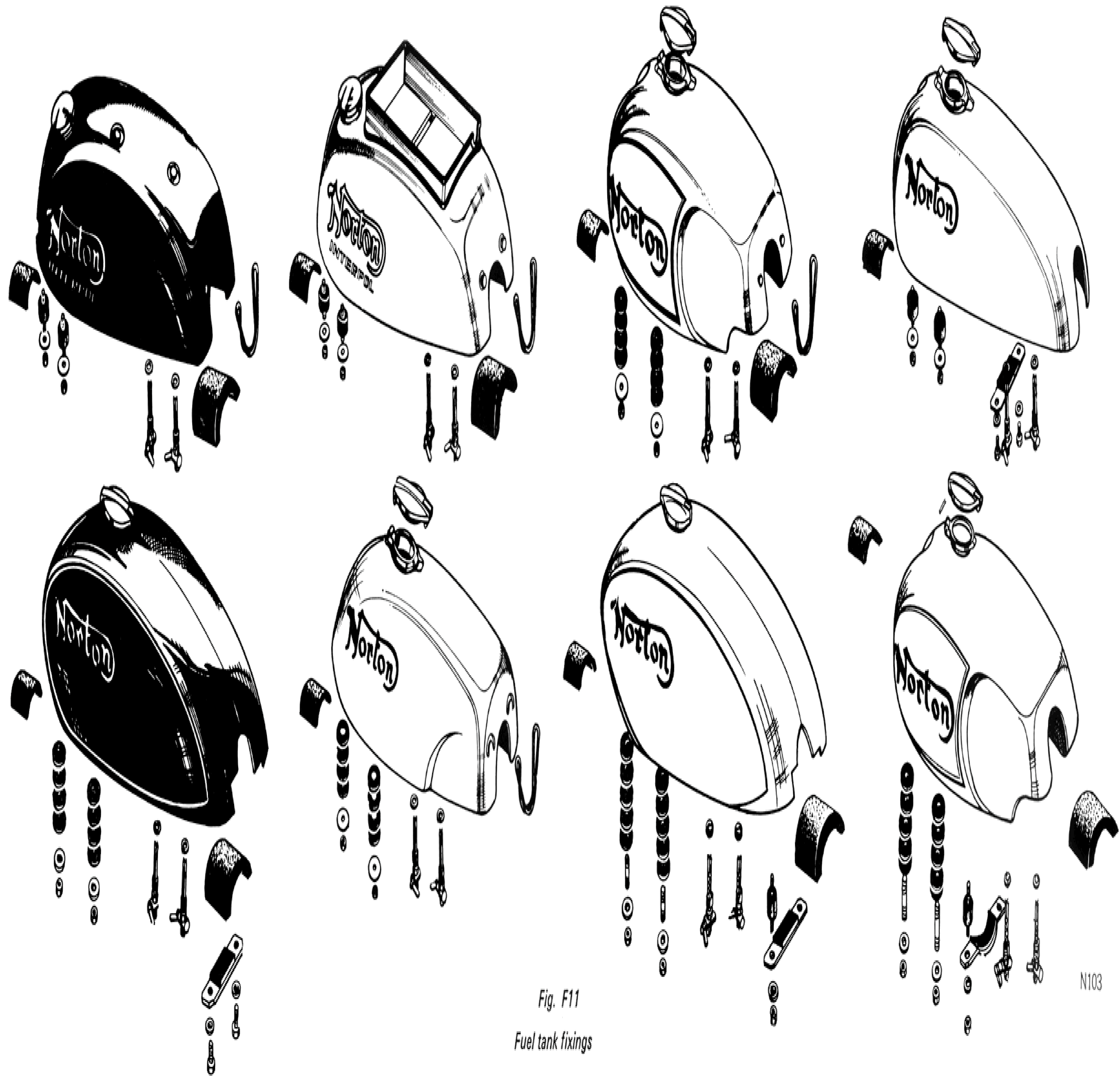


Fig. F11  
Fuel tank fixings

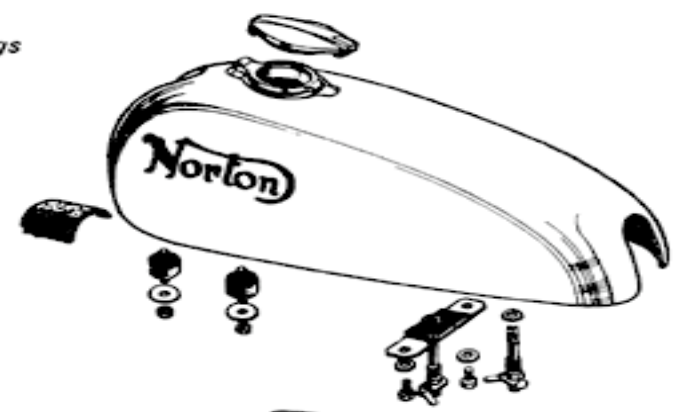
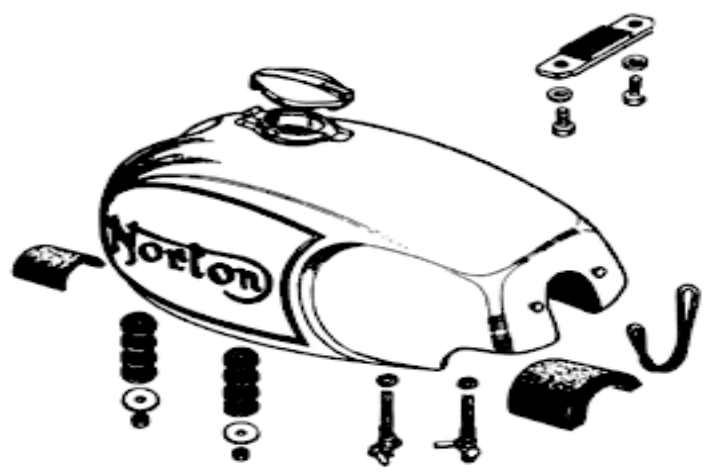
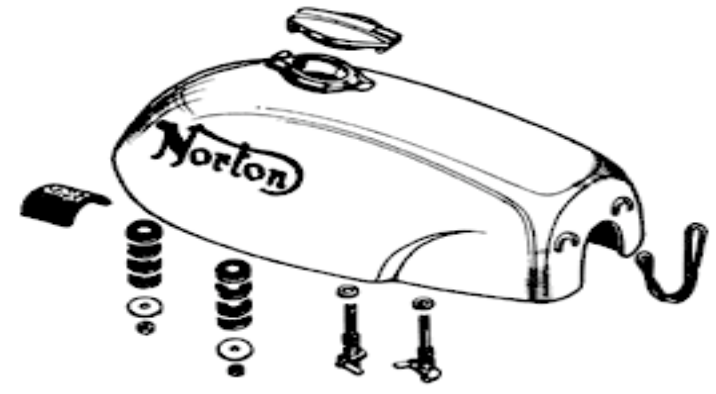
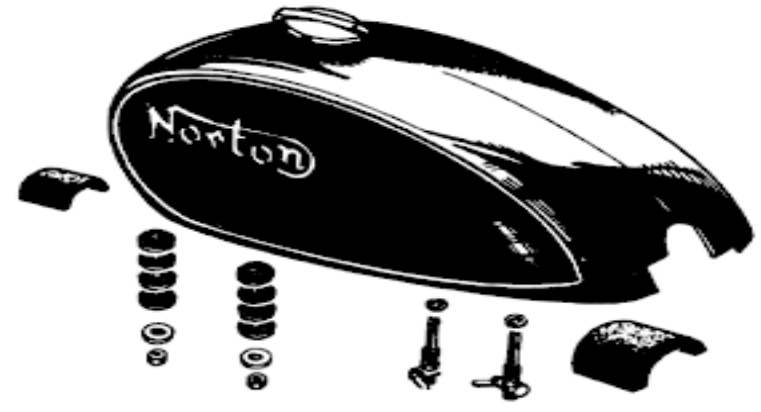
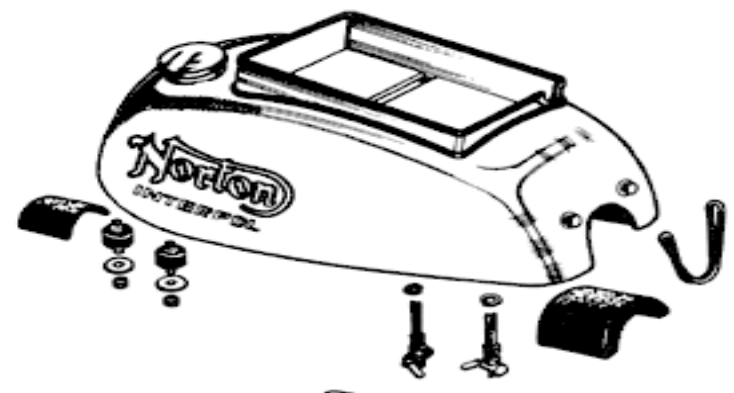
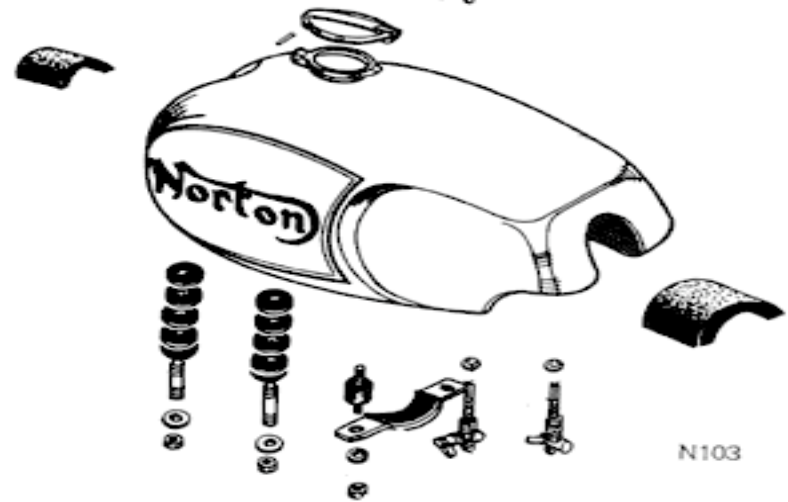
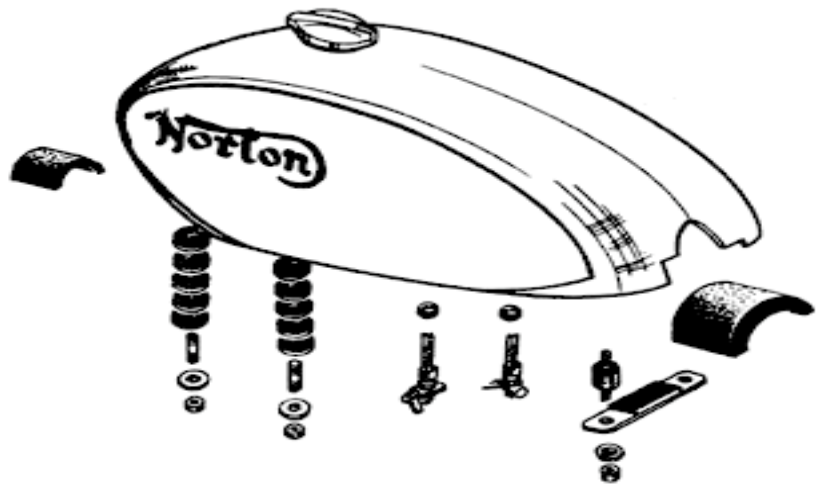
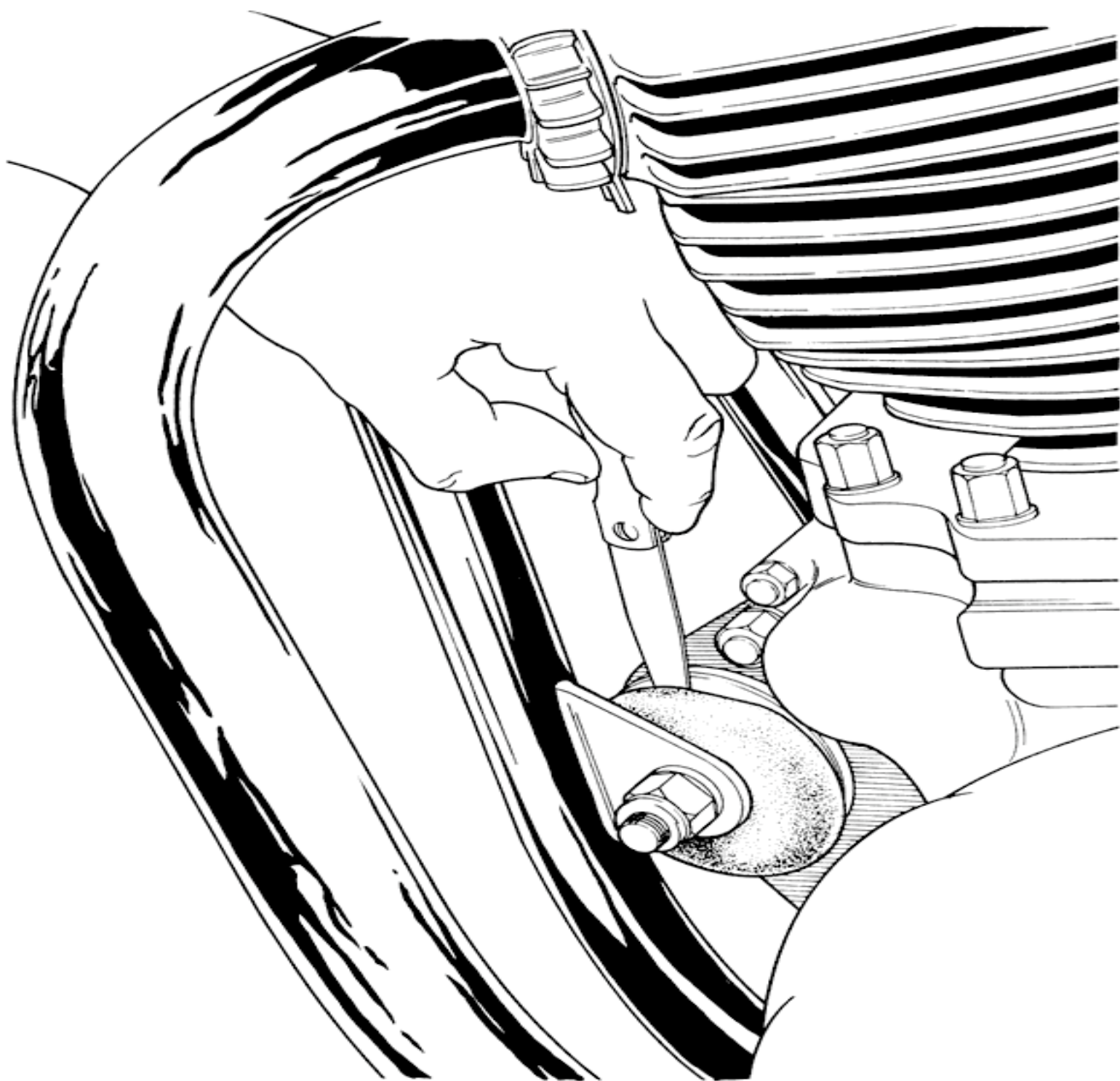
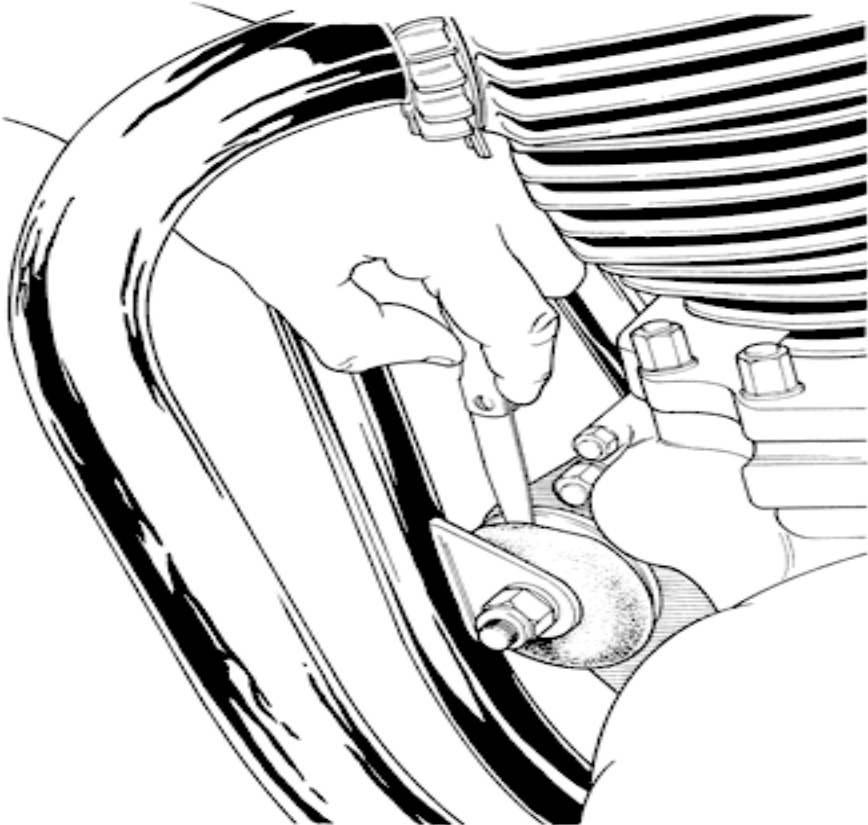


Fig. F11  
Fuel tank fixings

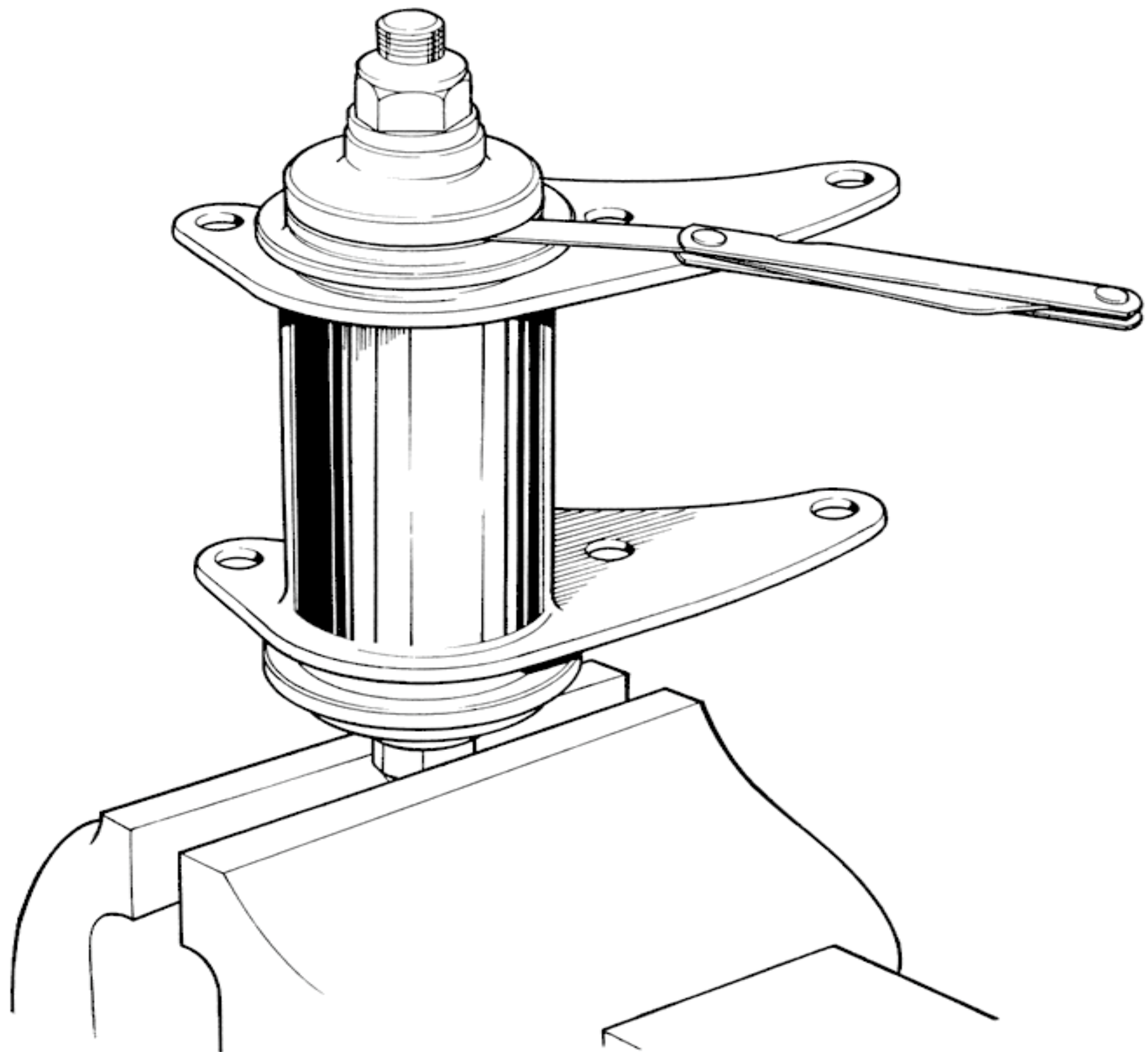




*Fig. F12    Checking front mounting clearance*



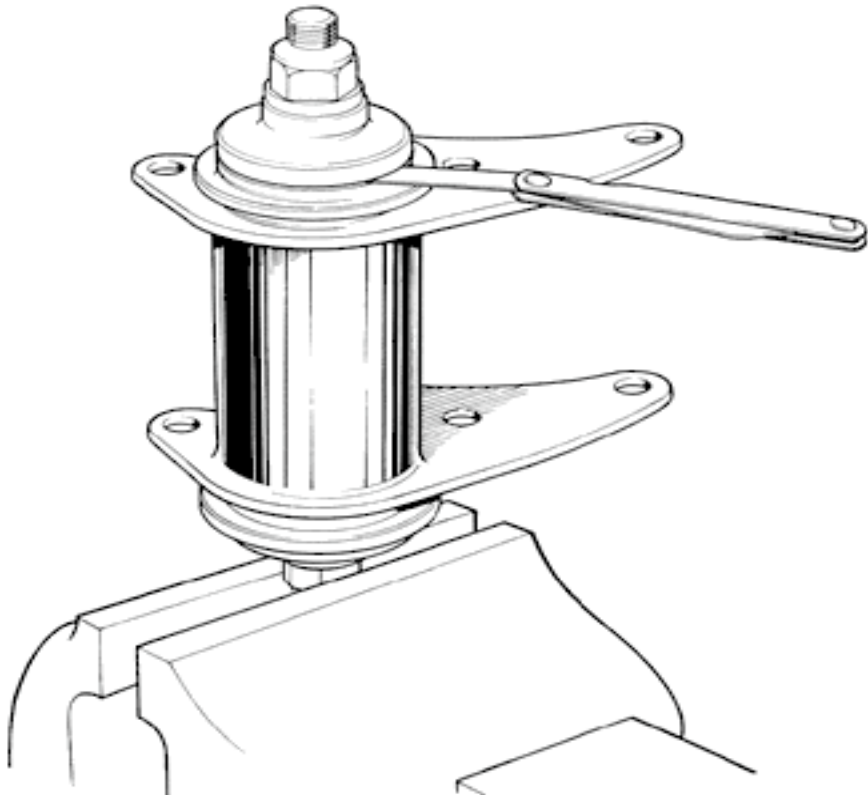
*Fig. F12*    *Checking front mounting clearance*



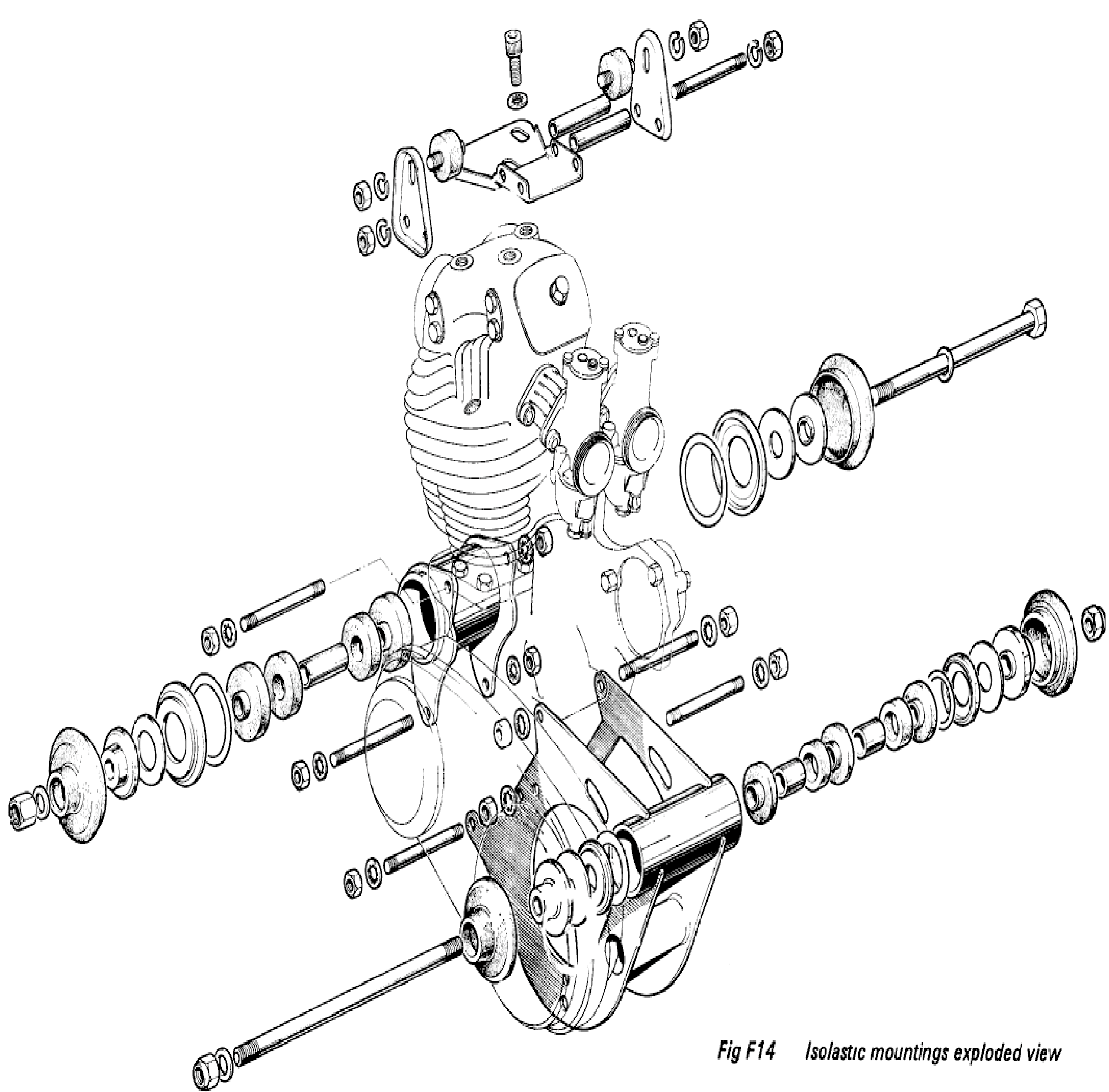
*Fig. F13*

*Method 2. Holding front mounting in a vice for checking.*





**Fig. F13** *Method 2. Holding front mounting in a vice for checking.*



*Fig F14 Isolastic mountings exploded view*

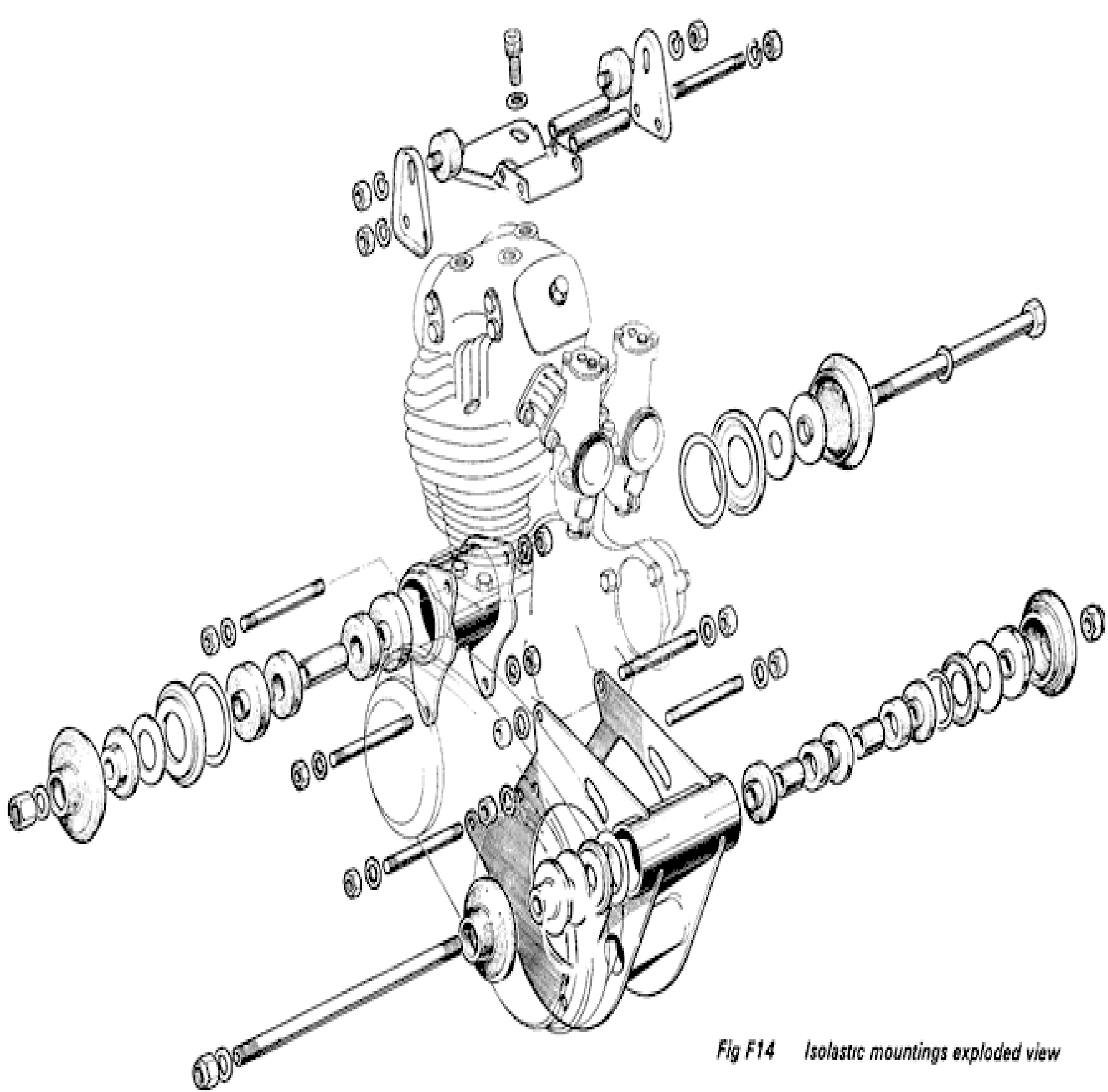
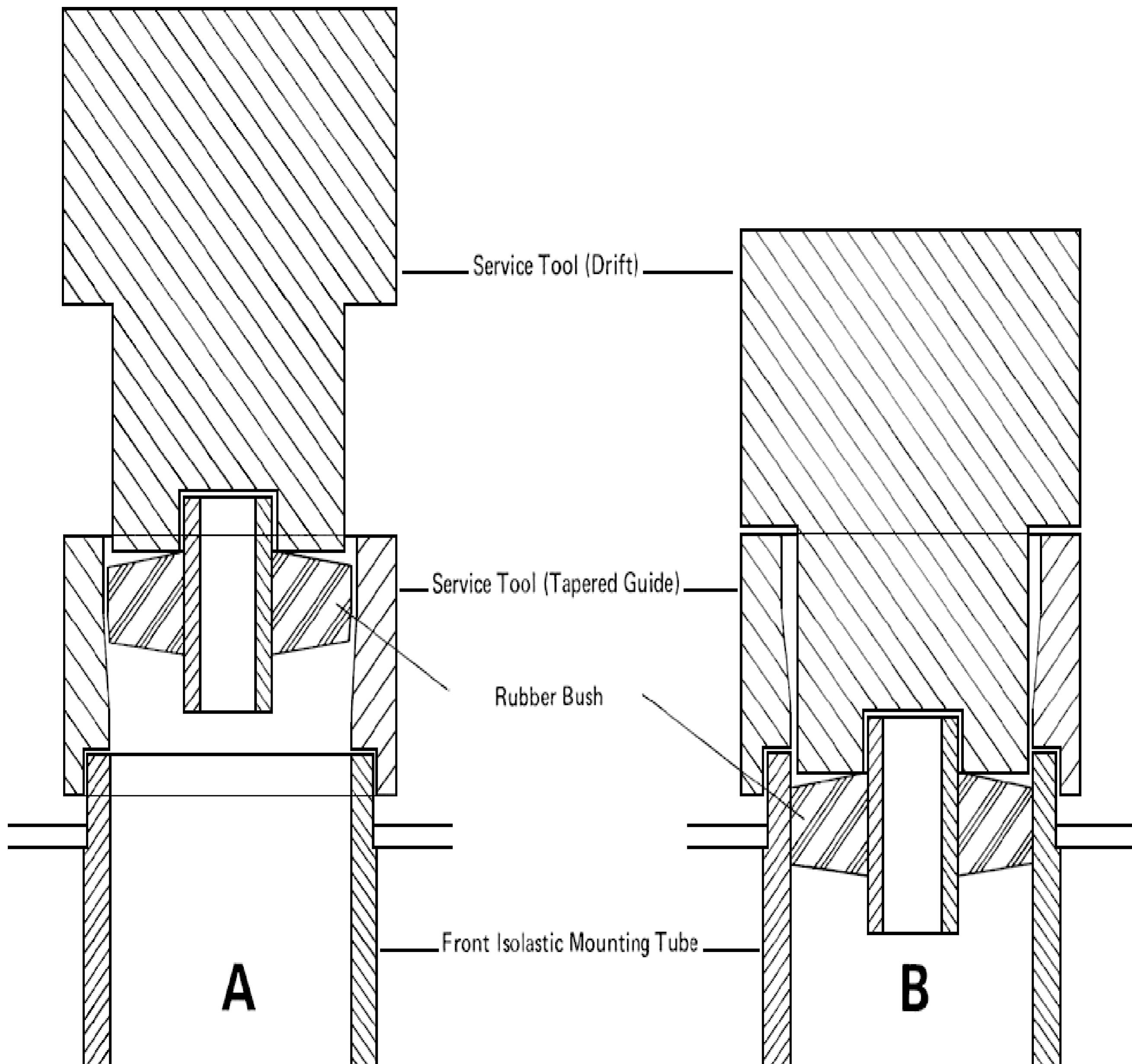


Fig F14 Isolastic mountings exploded view



*Fig. F15 Using service tool 063971 to insert front Isolastic rubber bushes*

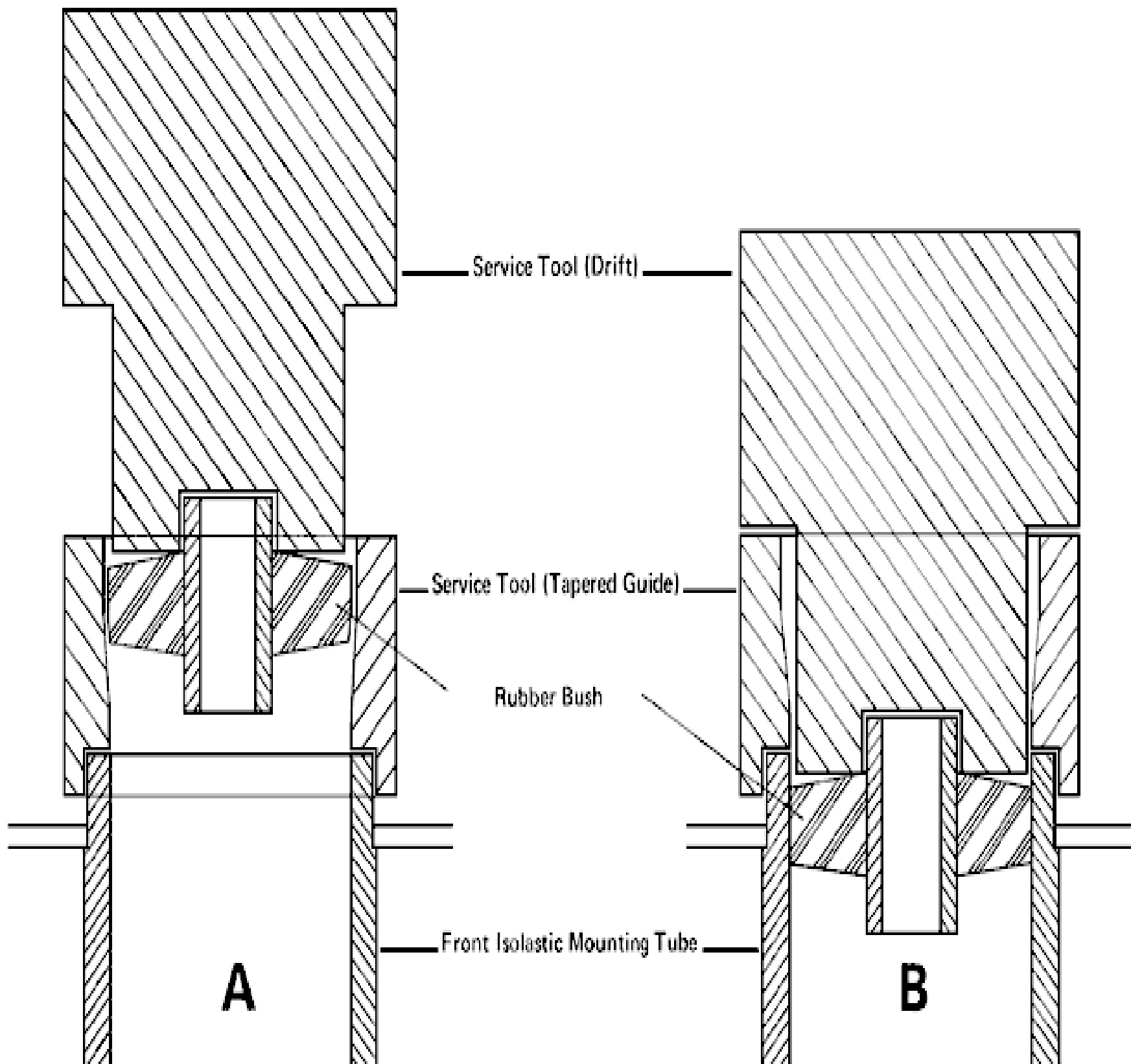
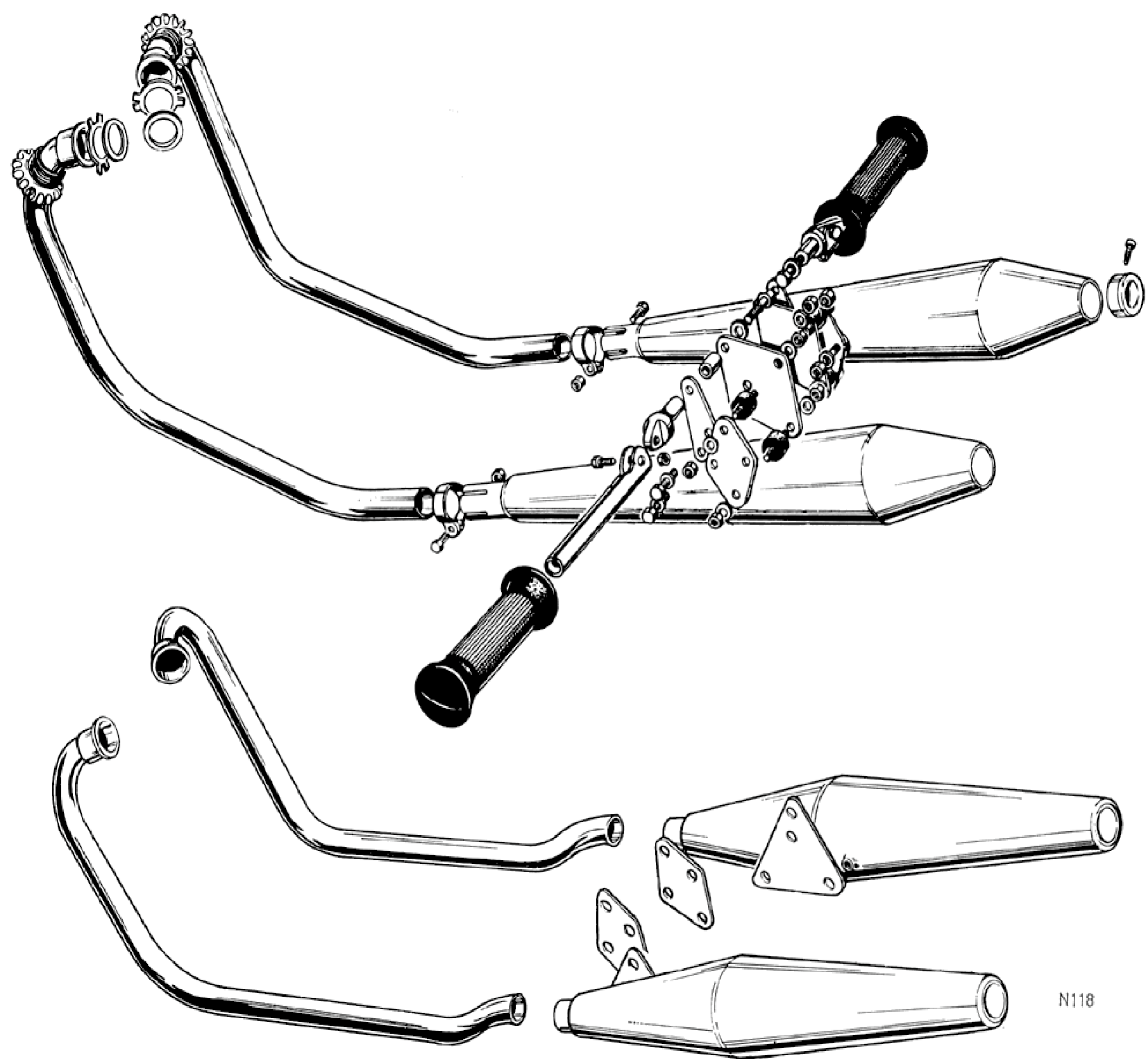
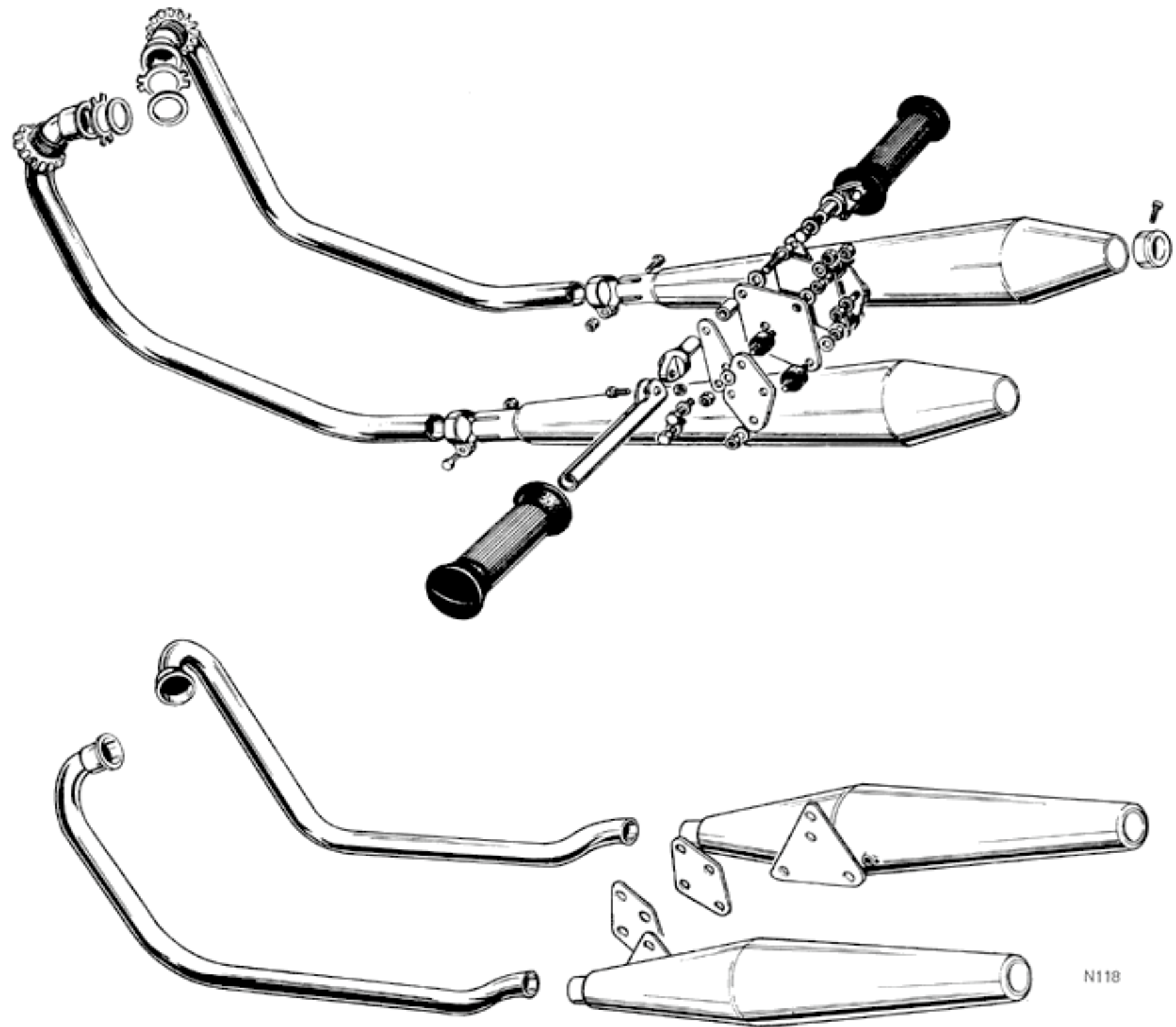


Fig. F15 Using service tool 063971 to insert front Isolastic rubber bushes



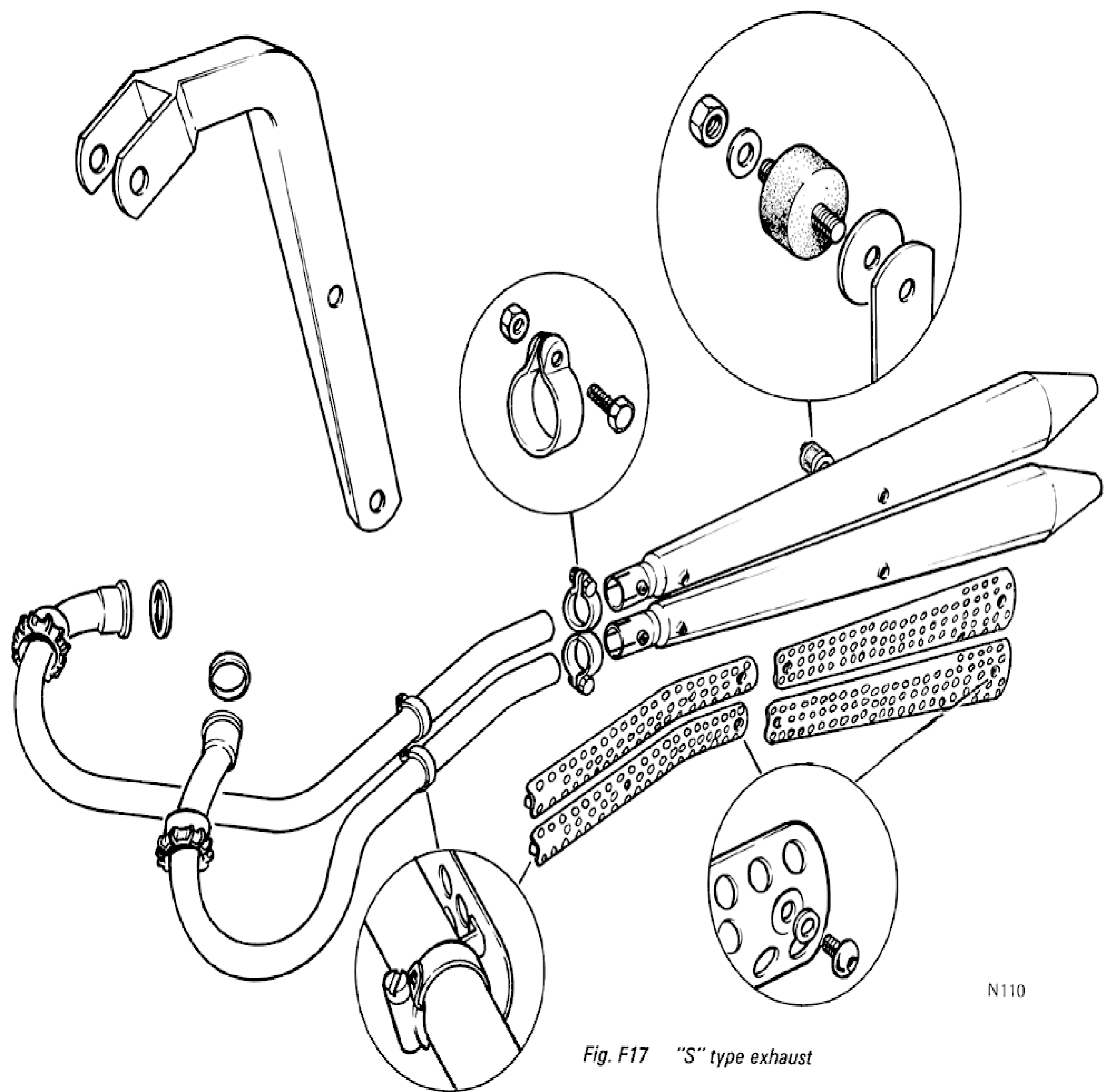
N118

*Fig. F16 Low level exhausts*



N118

Fig. F16 Low level exhausts



N110

Fig. F17 "S" type exhaust



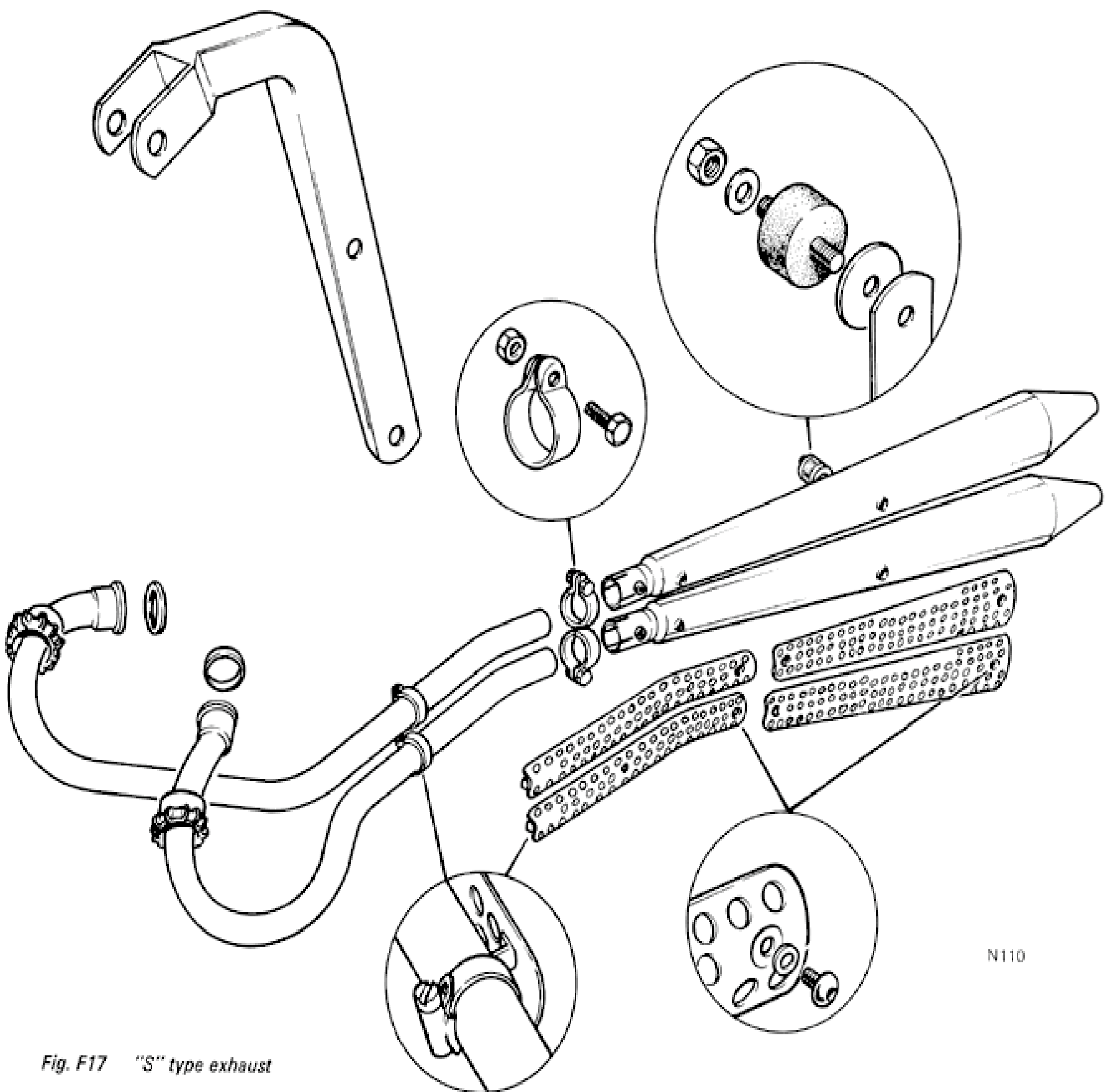
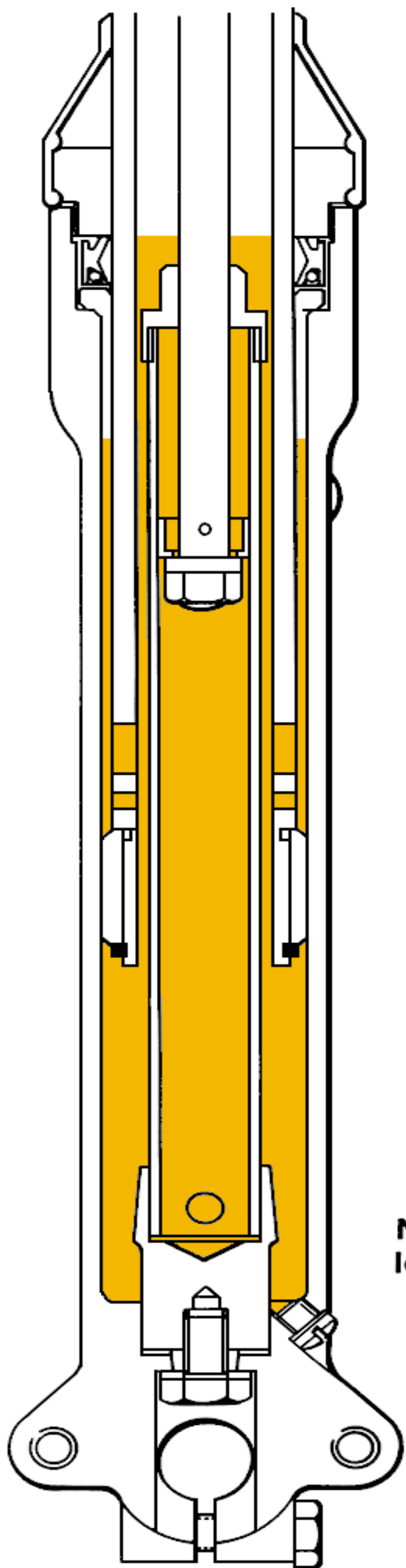


Fig. F17 "S" type exhaust

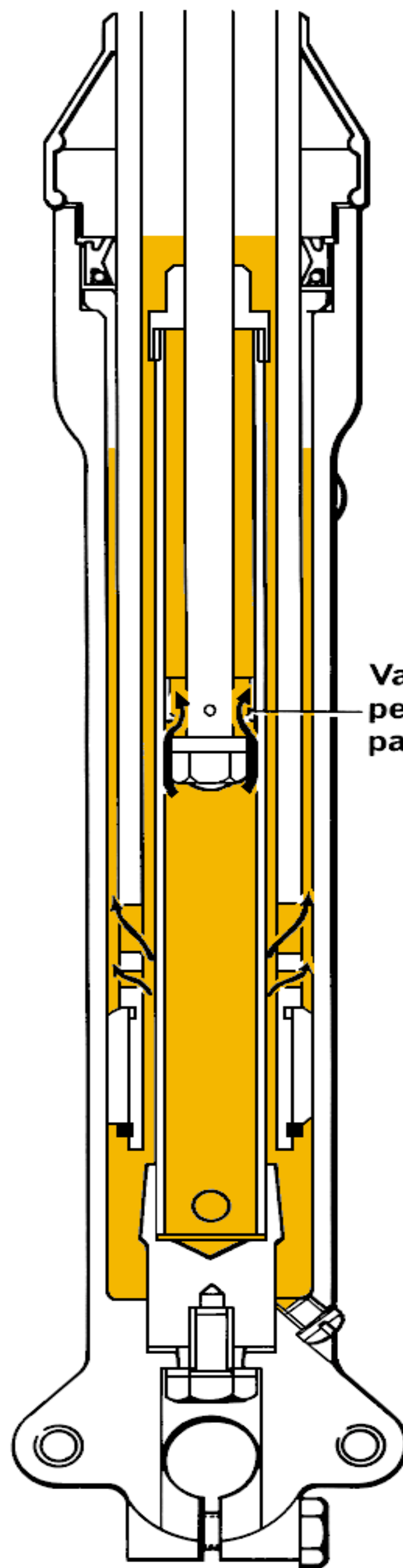
N110

# AT REST (STATIC)

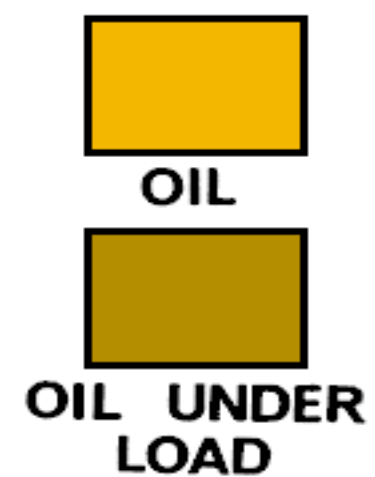
# COMPRESSING C1



**NOTE: All forks shown less main spring**



**Valve lifted as far as peg permitting oil to pass cutaway seat washer**

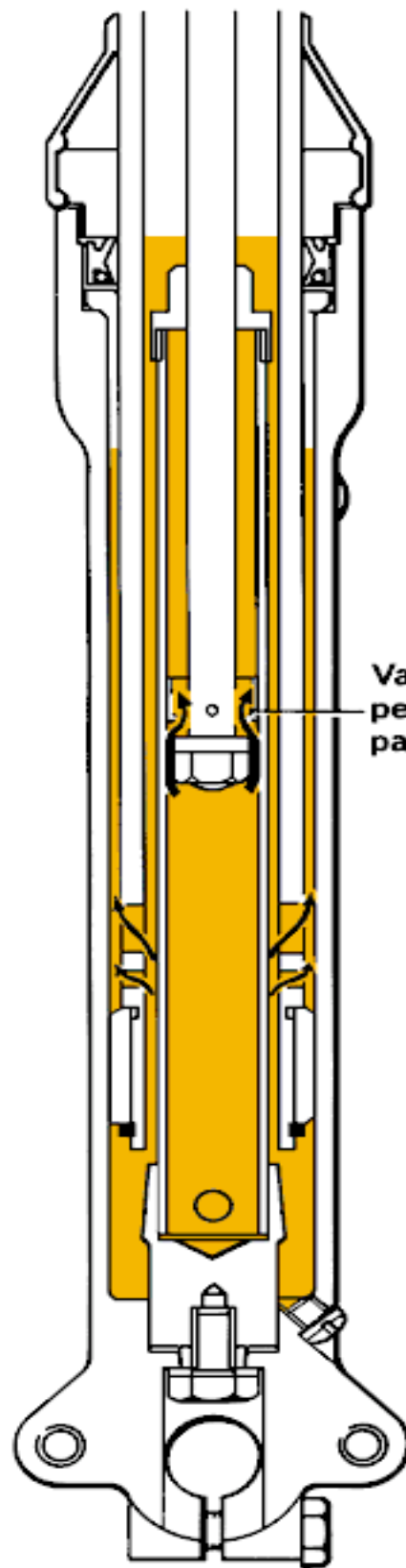
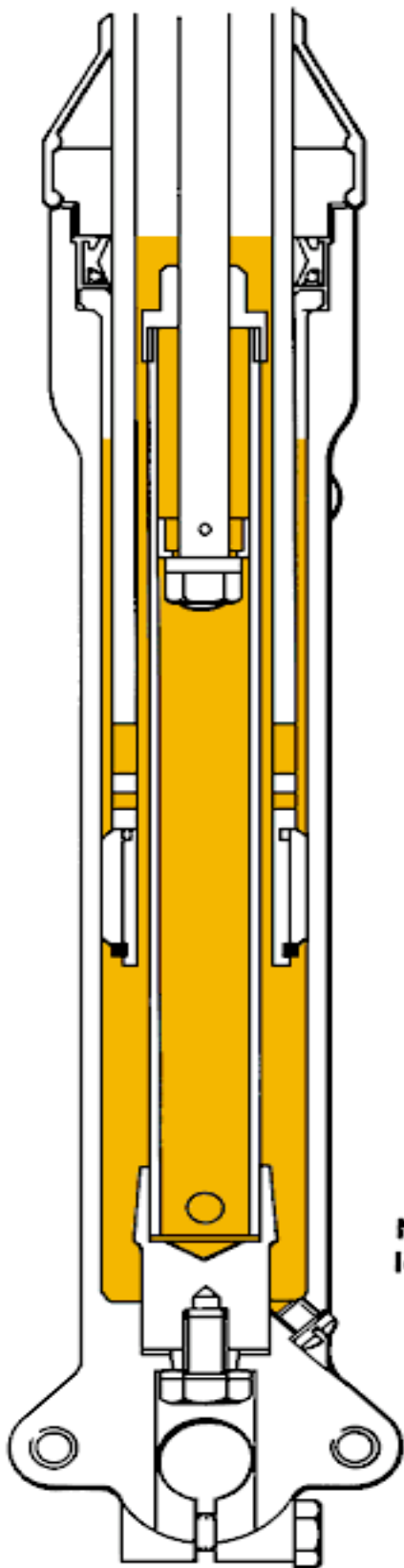


N129

*Fig. G2 Fork at rest, compressing, extending, and almost fully extended*

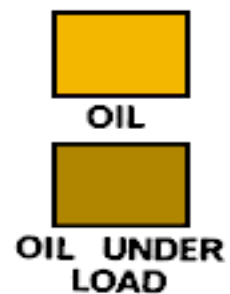
# AT REST (STATIC)

# COMPRESSING C1



**NOTE: All forks shown less main spring**

**Valve lifted as far as peg permitting oil to pass cutaway seat washer**

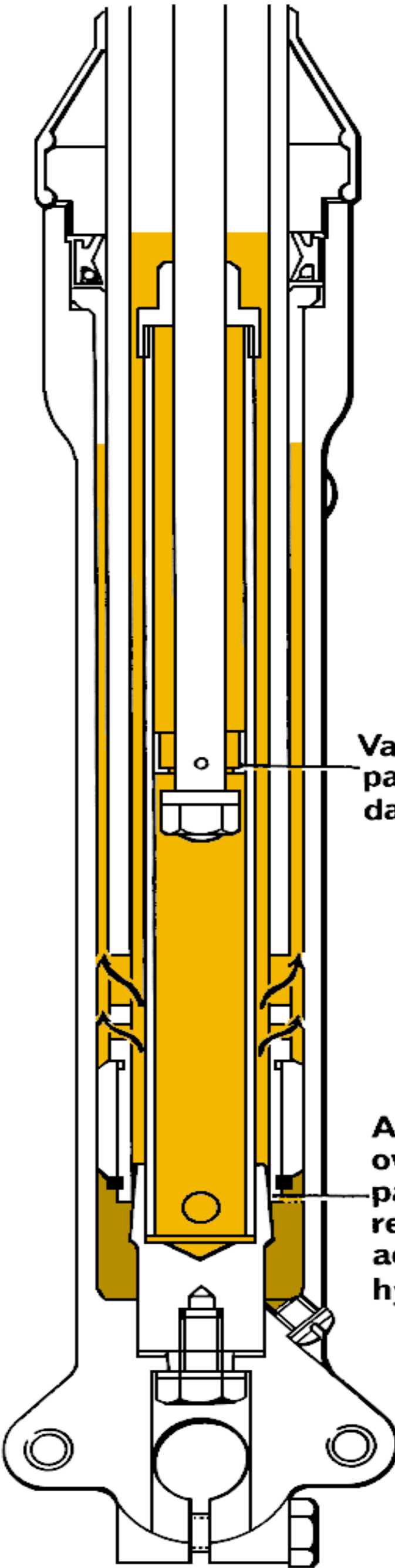


N129

*Fig. G2 Fork at rest, compressing, extending, and almost fully extended*

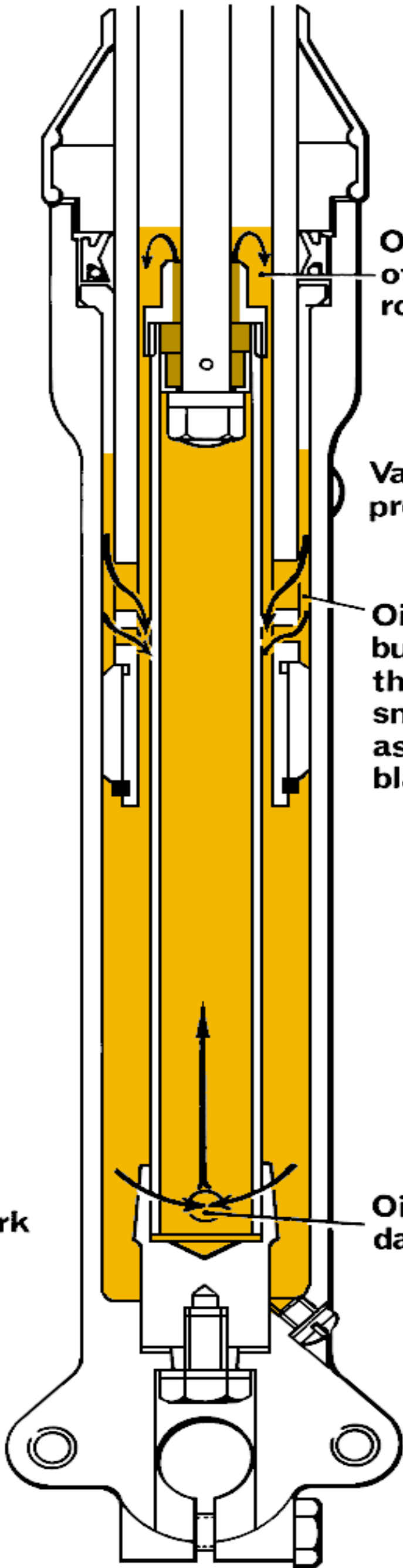
# FINAL COMPRESSION C2

# EXTENDING



Valve still lifted and oil passing to top half of damper body

As stanchion passes over damper tube taper, oil passage progressively restricted to slow down fork action and finally provide hydraulic bump stop



Oil forced out of damper between rod and body

Valve closed onto seat preventing oil passage

Oil trapped between bushes forced back through big hole then small hole into stanchion as big hole becomes blanked off

Oil sucked into damper body

Fig. G2 Fork at rest, compressing, extending, and almost fully extended

## FINAL COMPRESSION C2

## EXTENDING

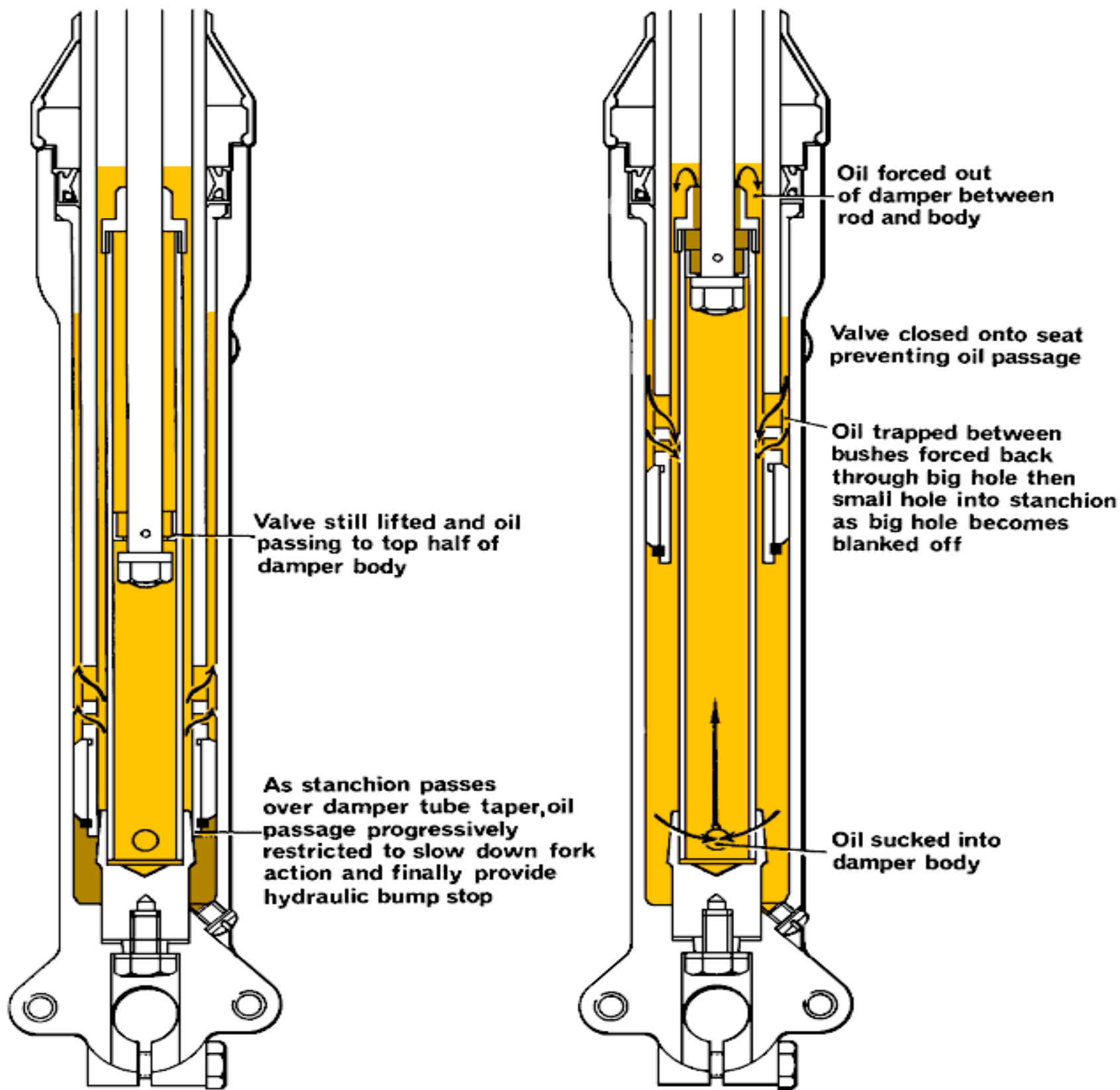
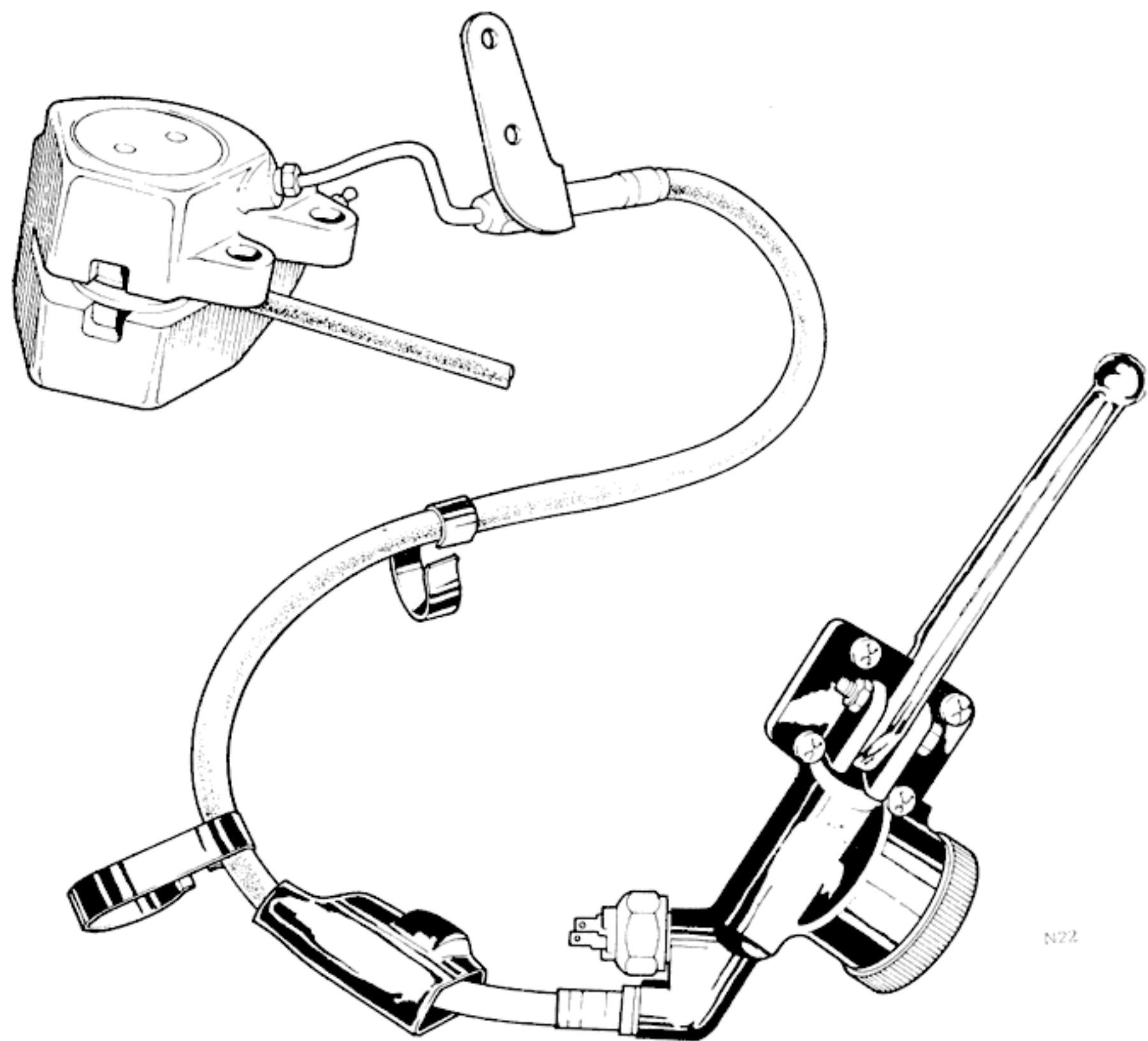
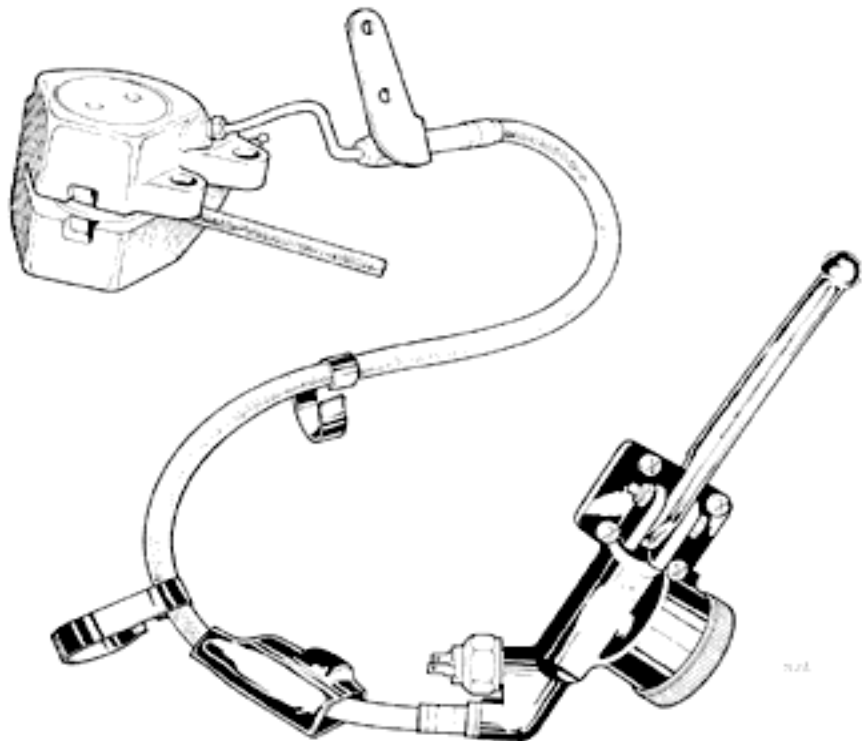


Fig. G2 Fork at rest, compressing, extending, and almost fully extended

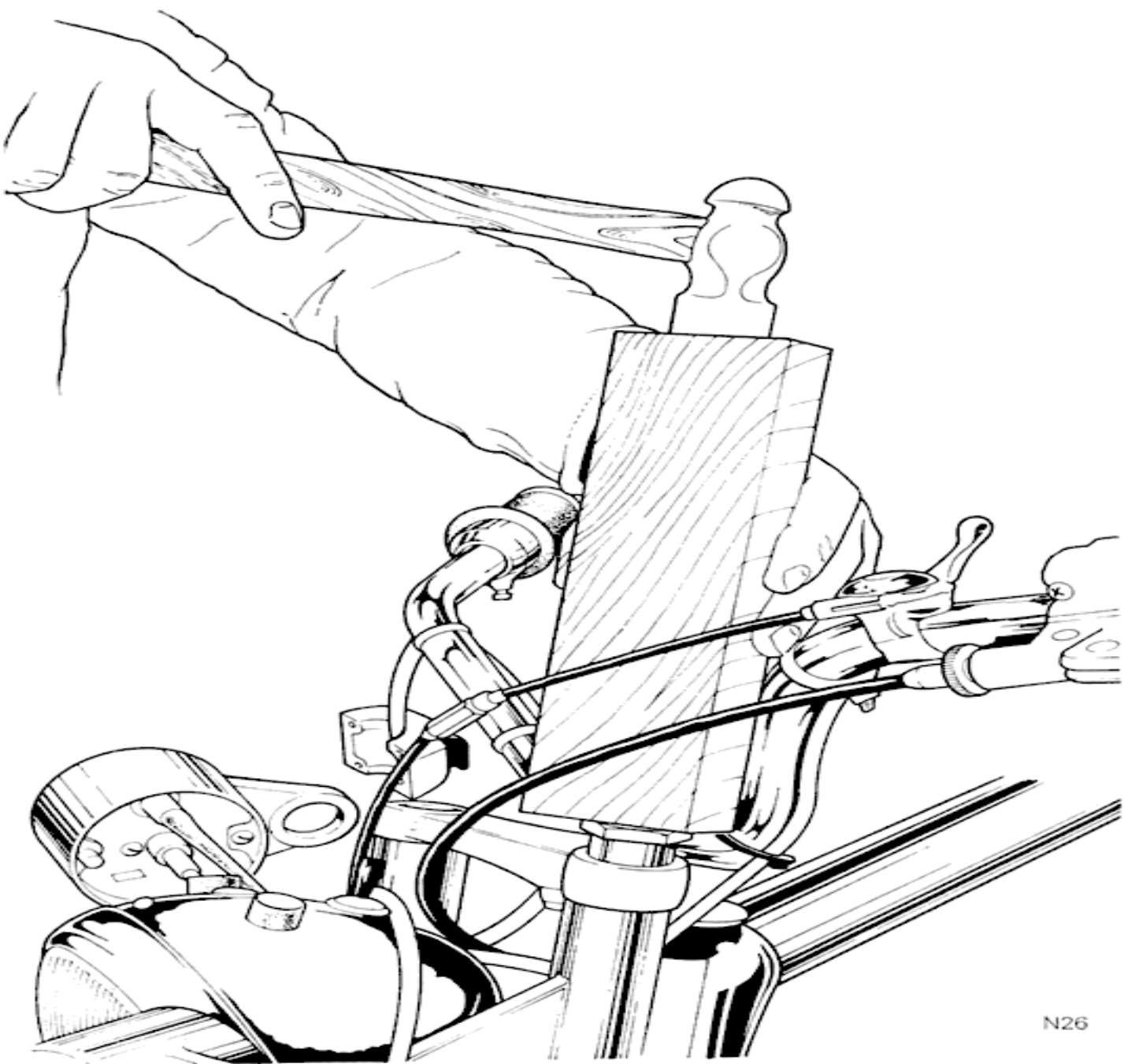


N22

*Fig. G3 Hydraulic system removed complete—note spacer between brake pads*



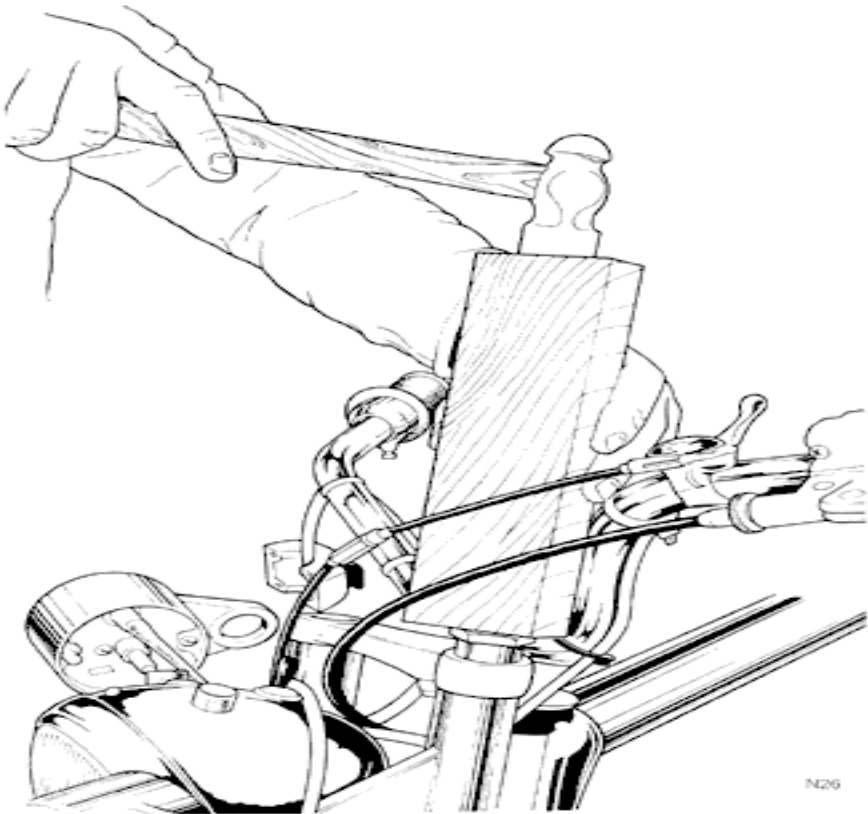
*Fig. G3 Hydraulic system removed complete—note spacer between brake pads*



N26

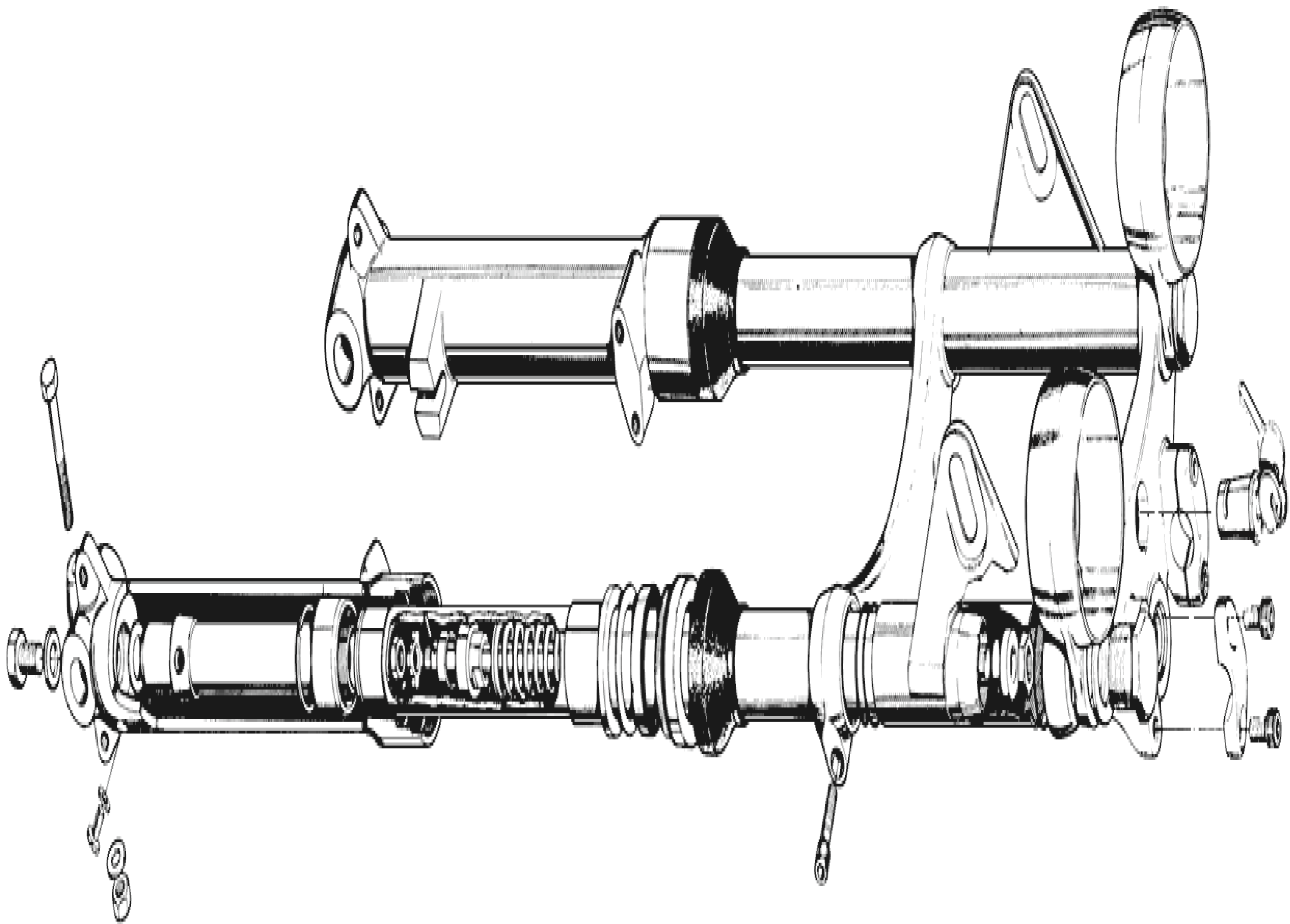
*Fig. G4 Shocking main tubes free of upper yoke*



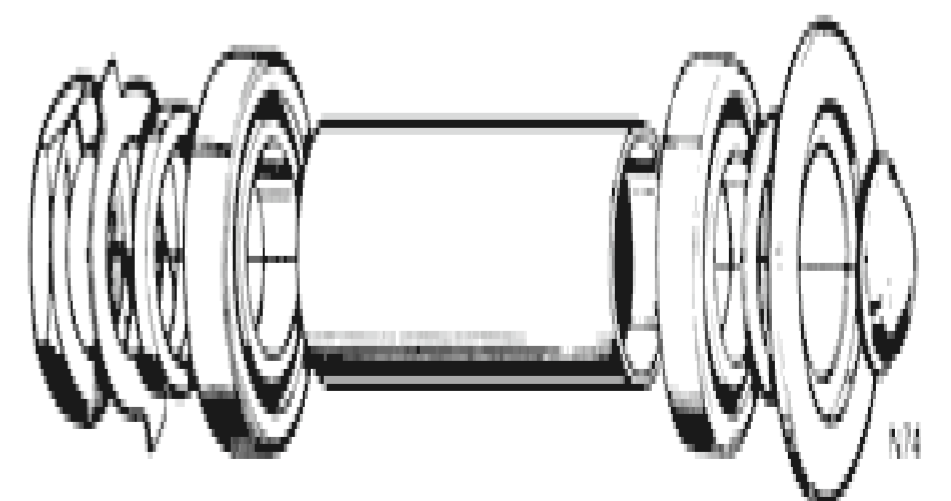


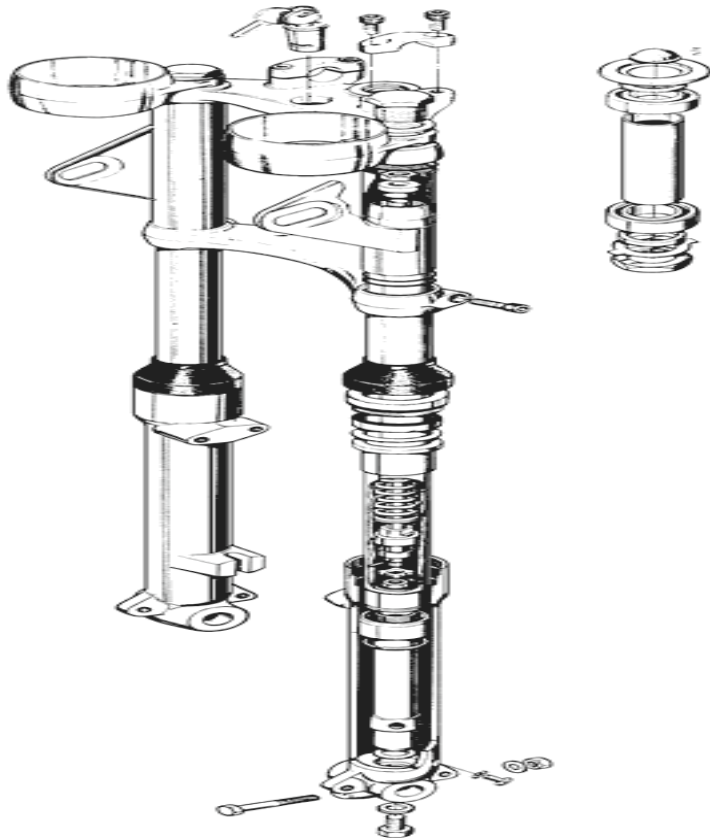
N26

**Fig. G4** Shocking main tubes free of upper yoke

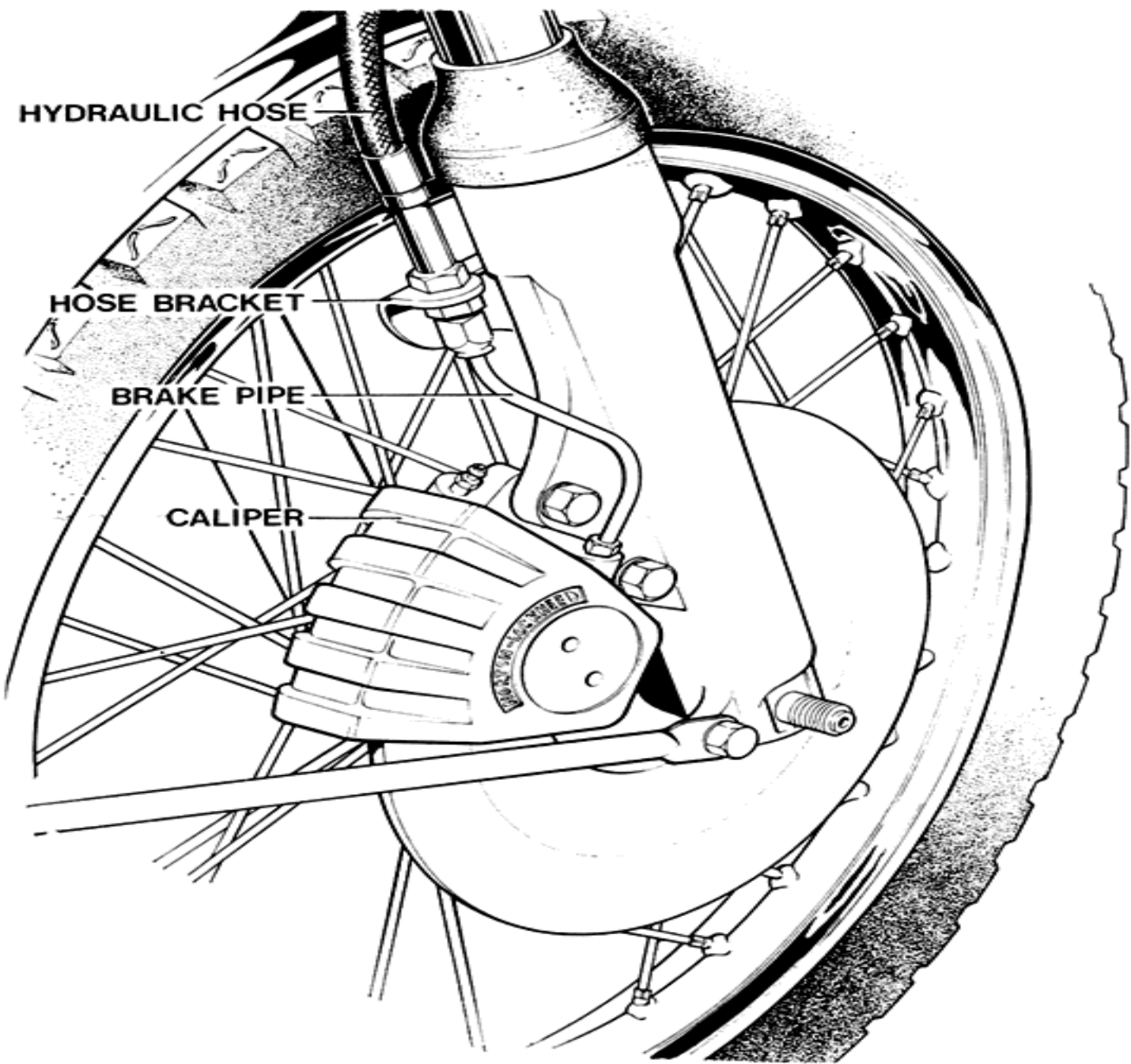


*Fig. G5 Front fork exploded view*





*Fig. G5 Front fork exploded view*



**Fig. G6**     *Hydraulic system fittings to fork leg*

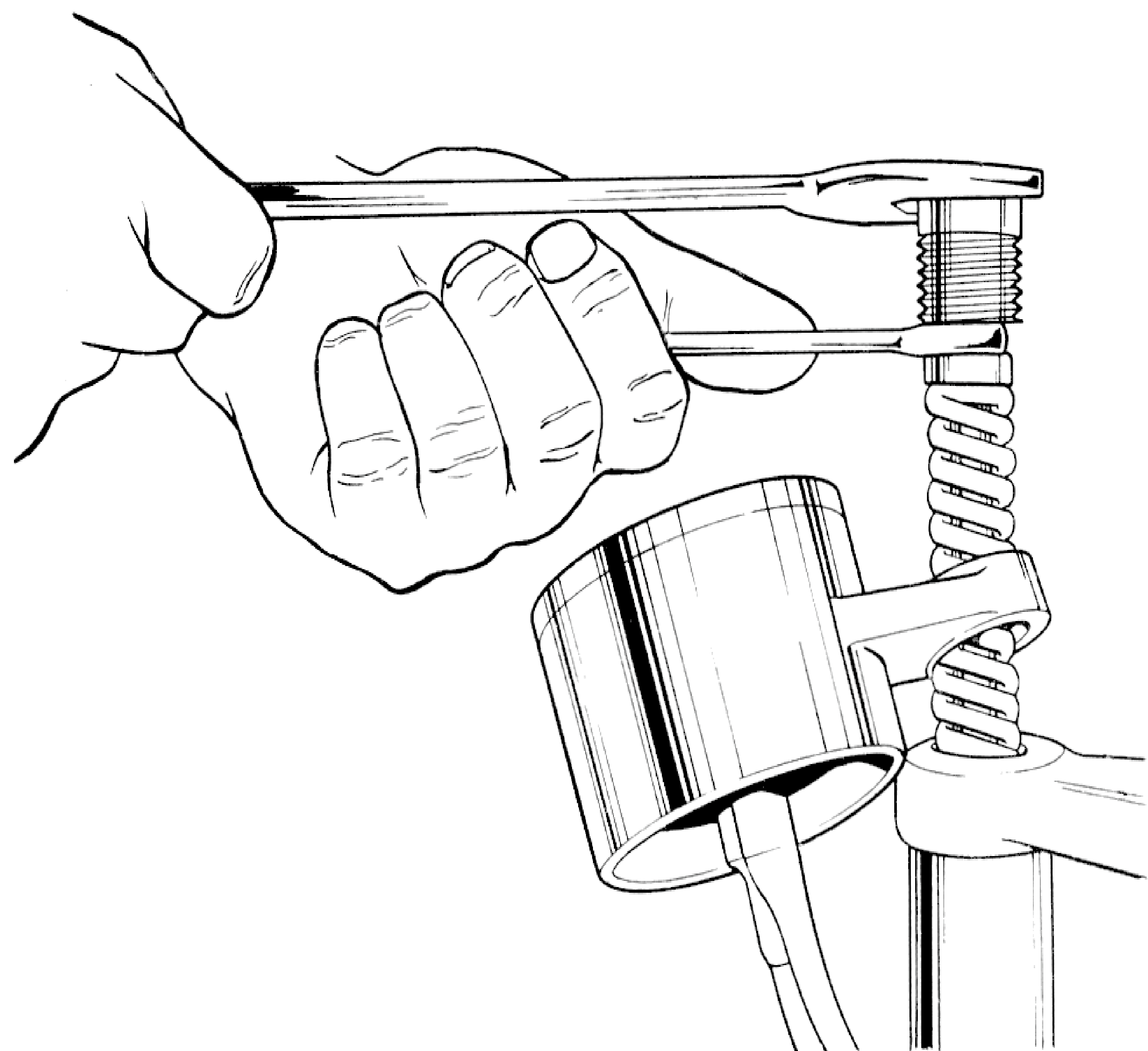
HYDRAULIC HOSE

HOSE BRACKET

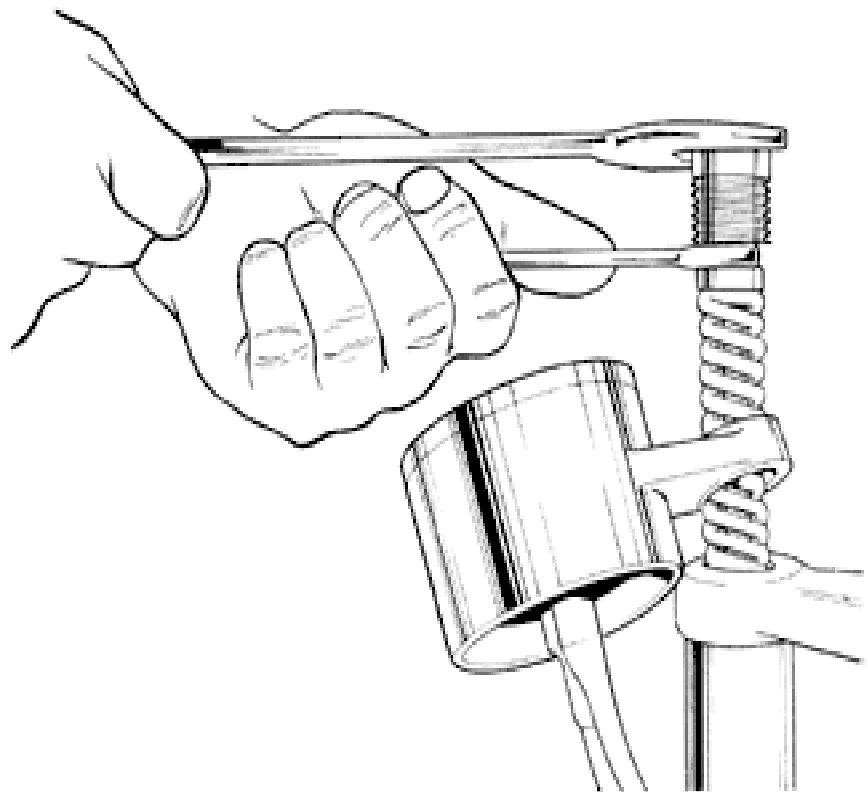
BRAKE PIPE

CALIPER

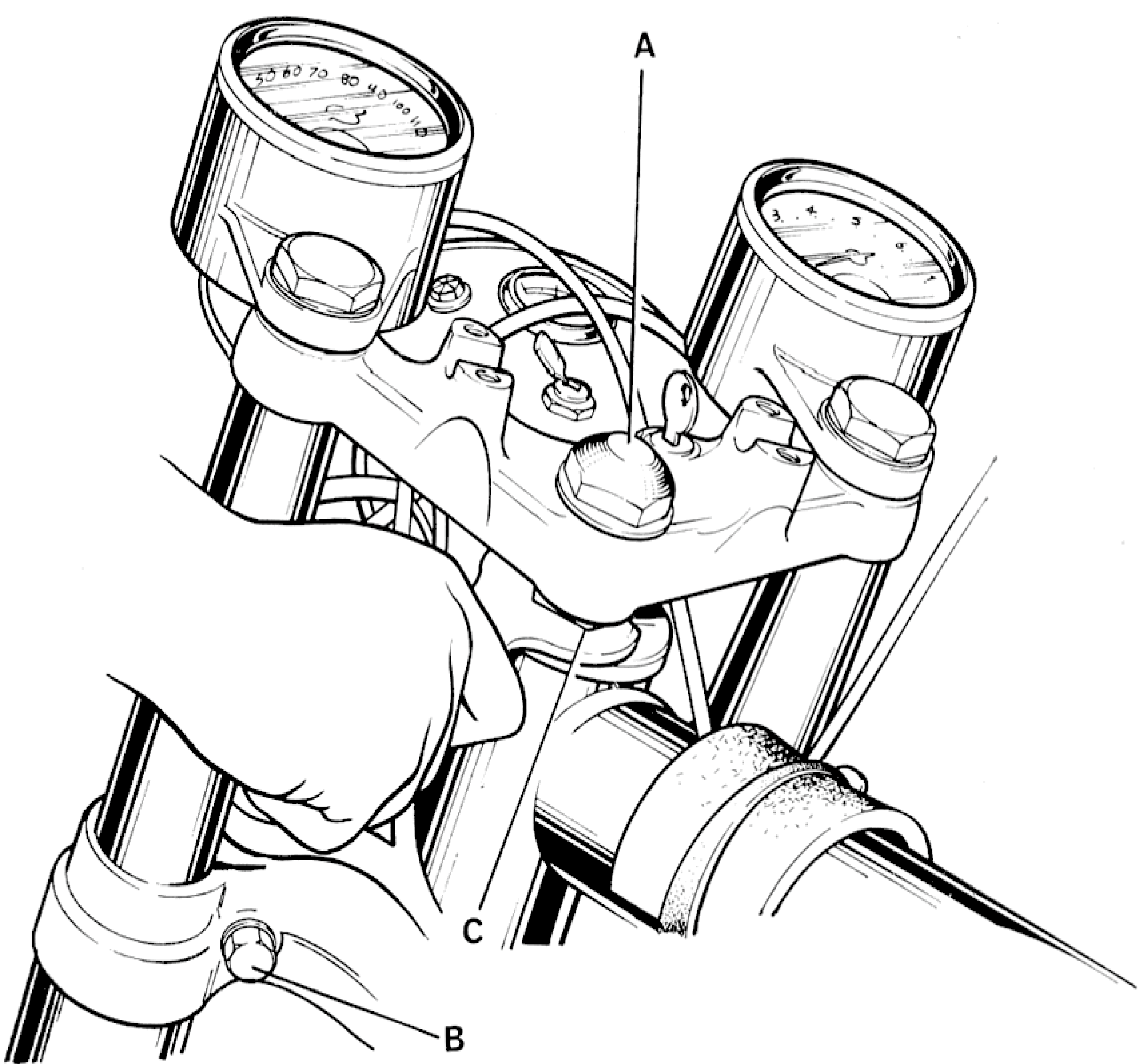
*Fig. G6 Hydraulic system fittings to fork leg*



*Fig. G7 Releasing damper rod from fork top bolts.*

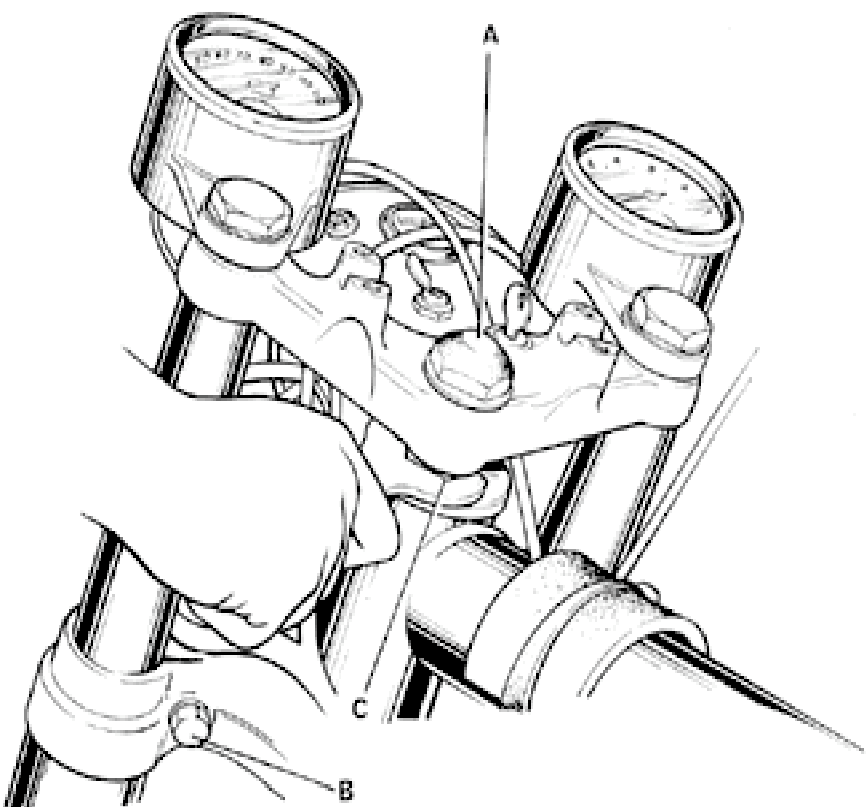


*Fig. G7 Releasing damper rod from fork top bolts.*

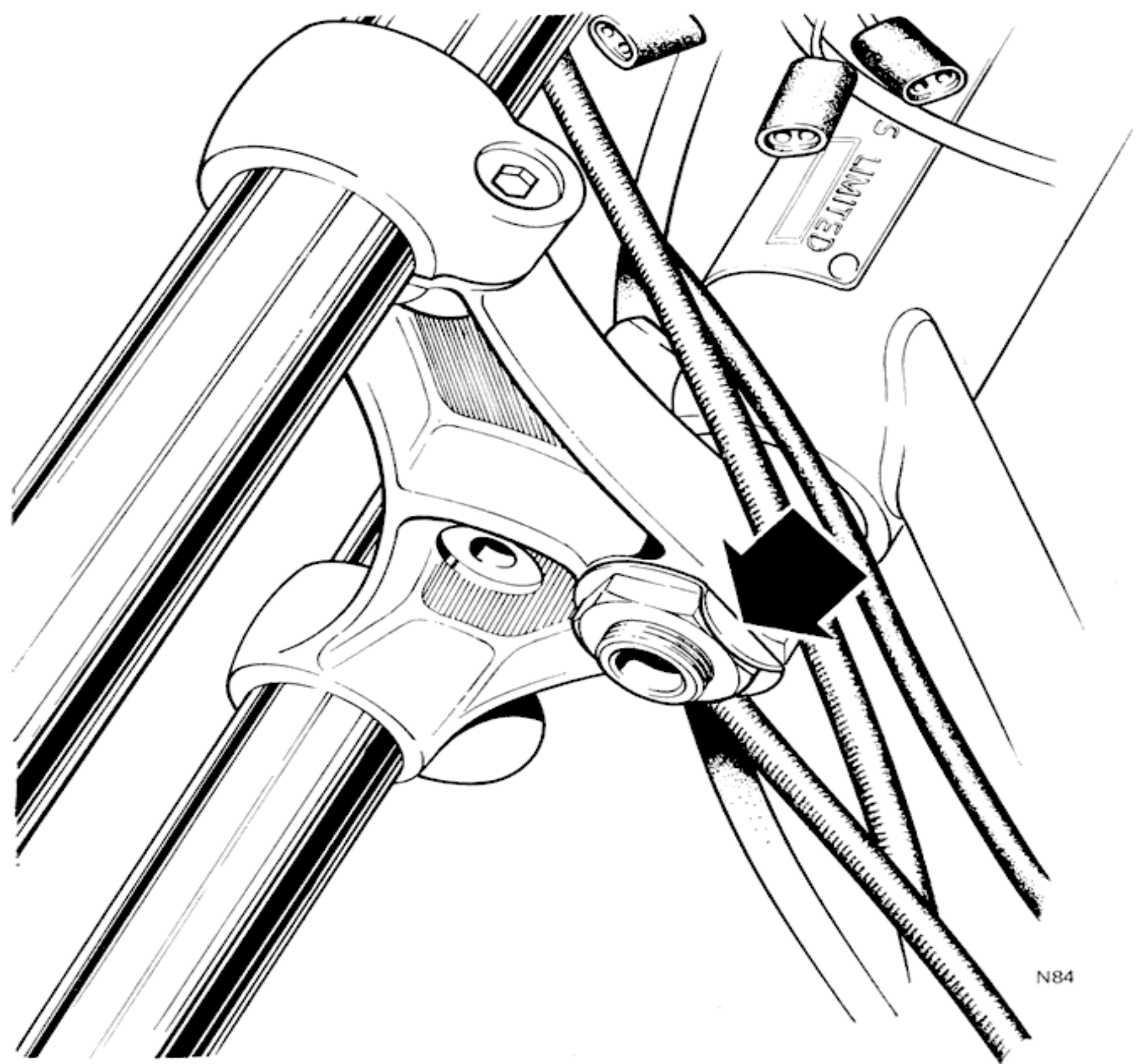


*Fig. G8     Steering head adjustment—pre 1971*



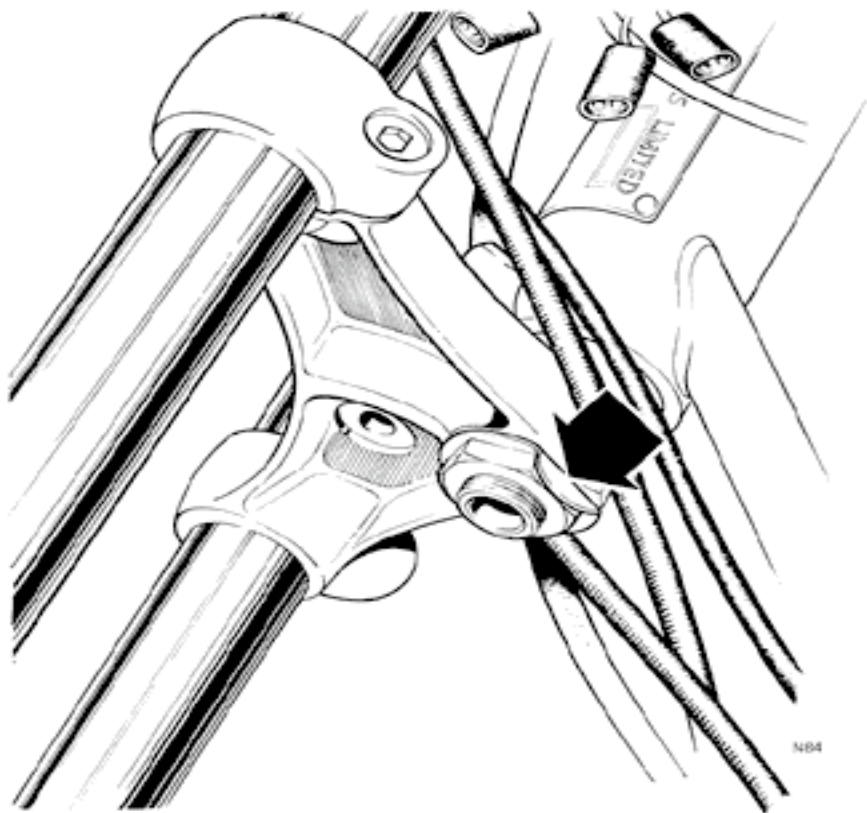


*Fig. G8 Steering head adjustment—pre 1971*

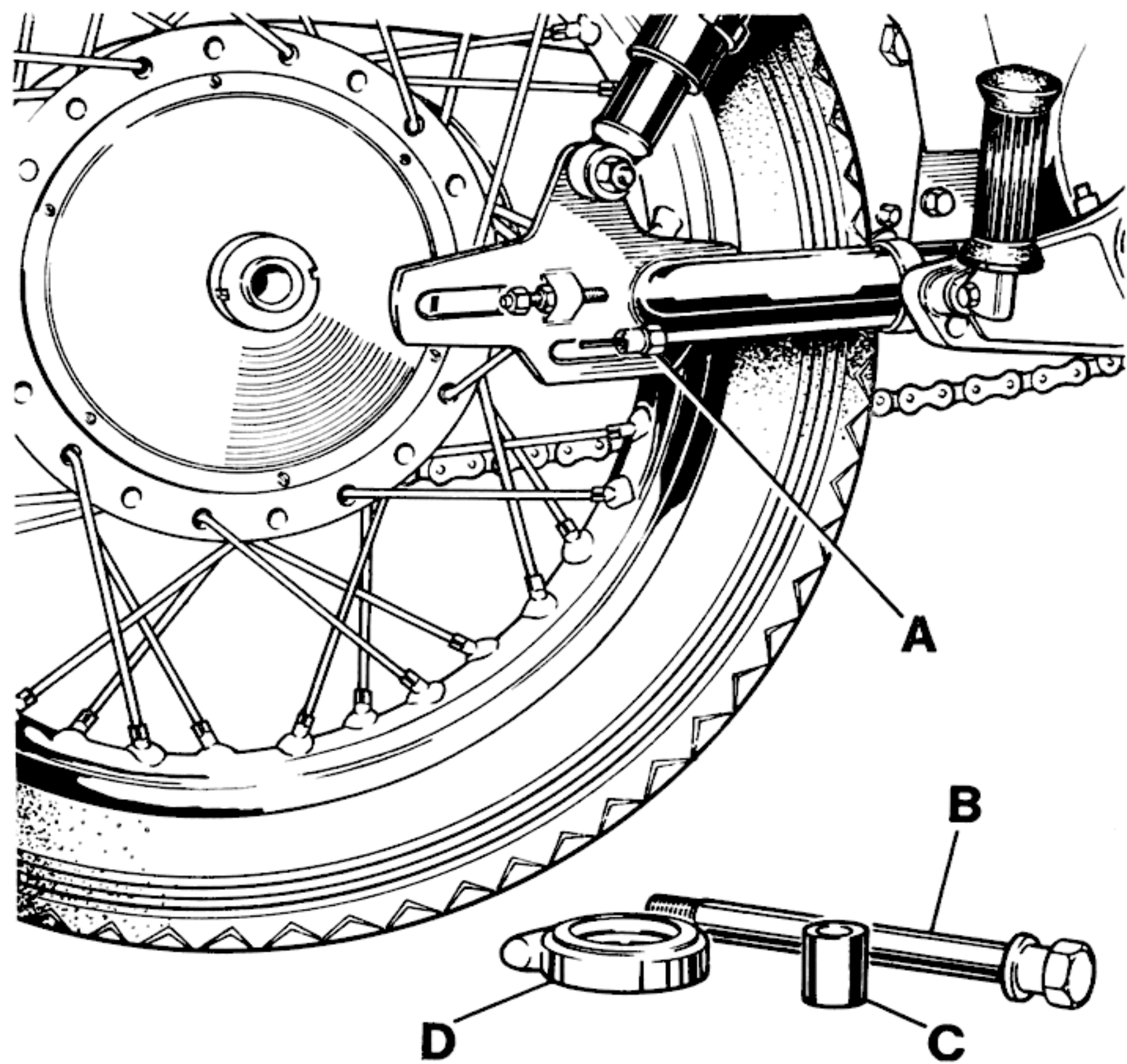


N84

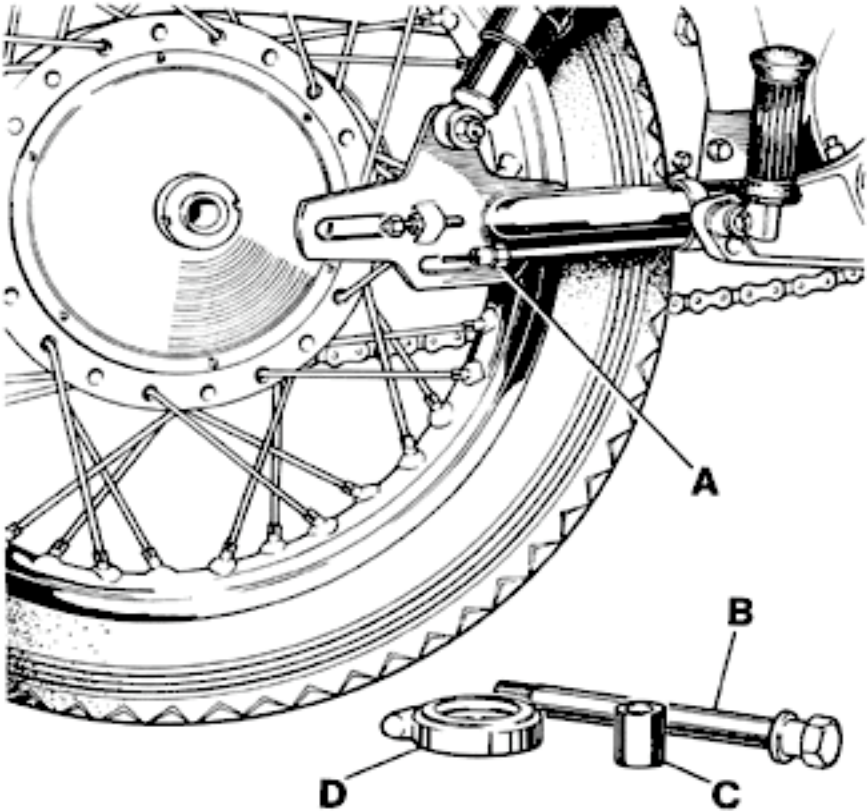
*Fig. G9      Showing stem nut tab washer locked to nut*



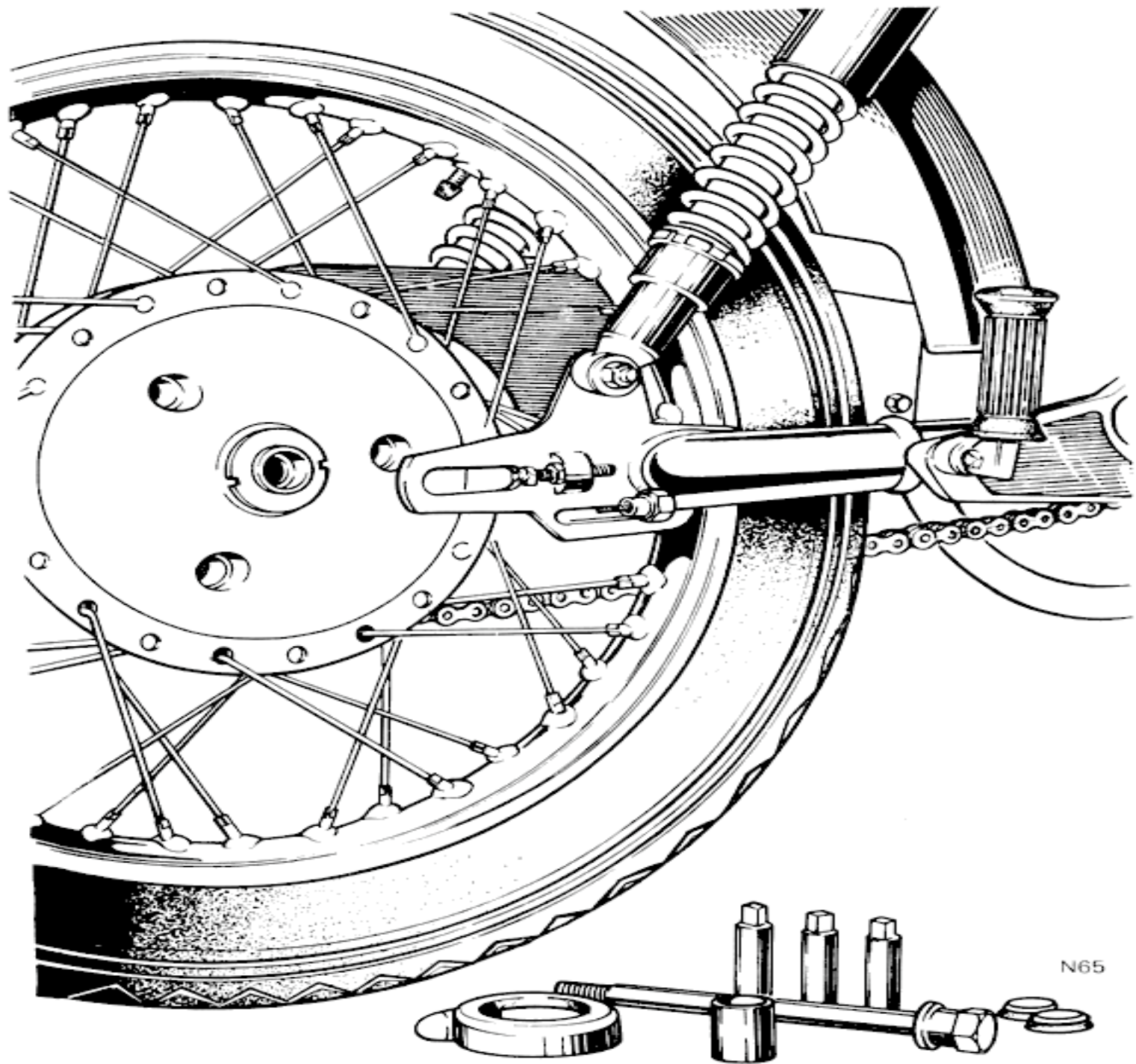
*Fig. G9 Showing stem nut tab washer locked to nut*



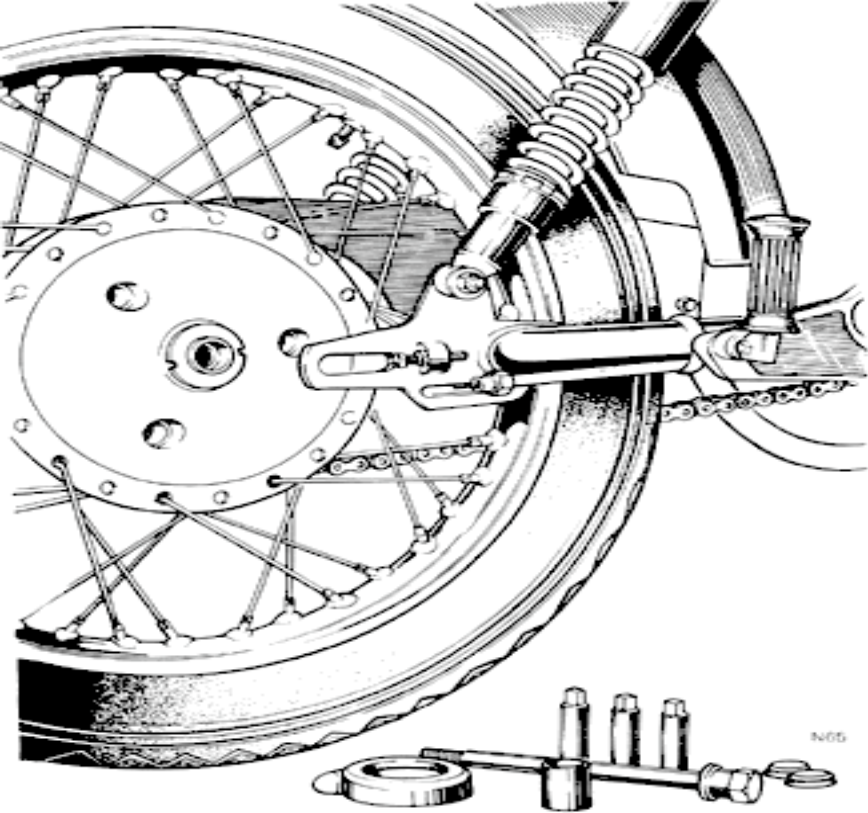
*Fig. H1 Rear wheel removal post—1971*



*Fig. H1 Rear wheel removal post—1971*

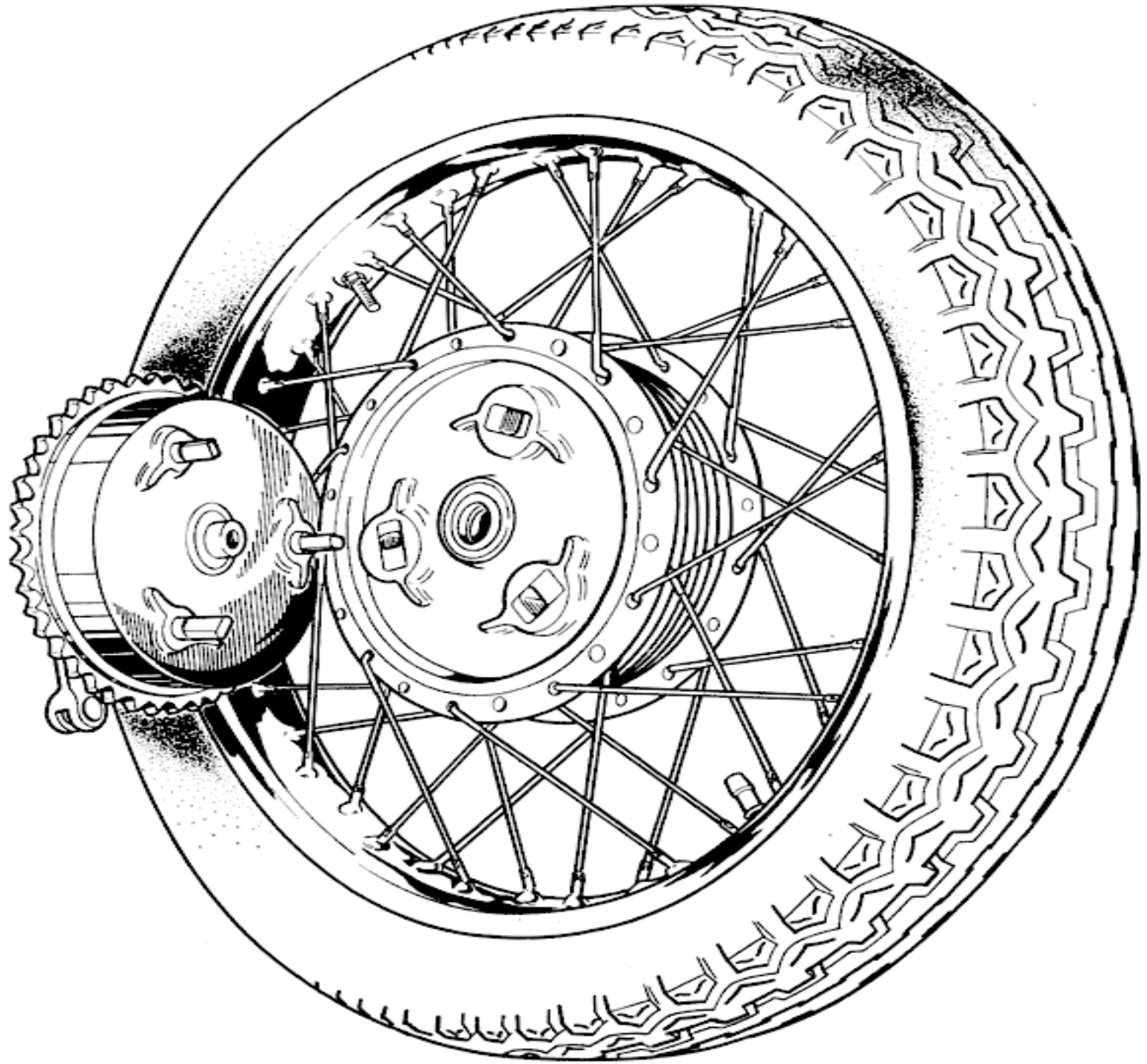


*Fig. H2 Rear wheel removal pre-1971*



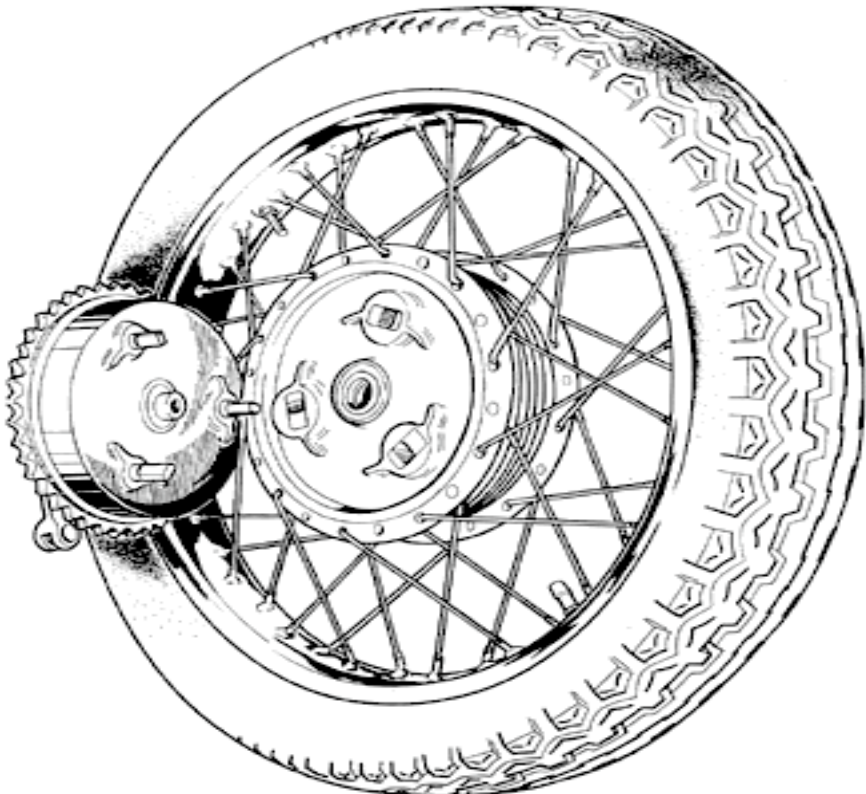
N65

*Fig. H2 Rear wheel removal pre-1971*

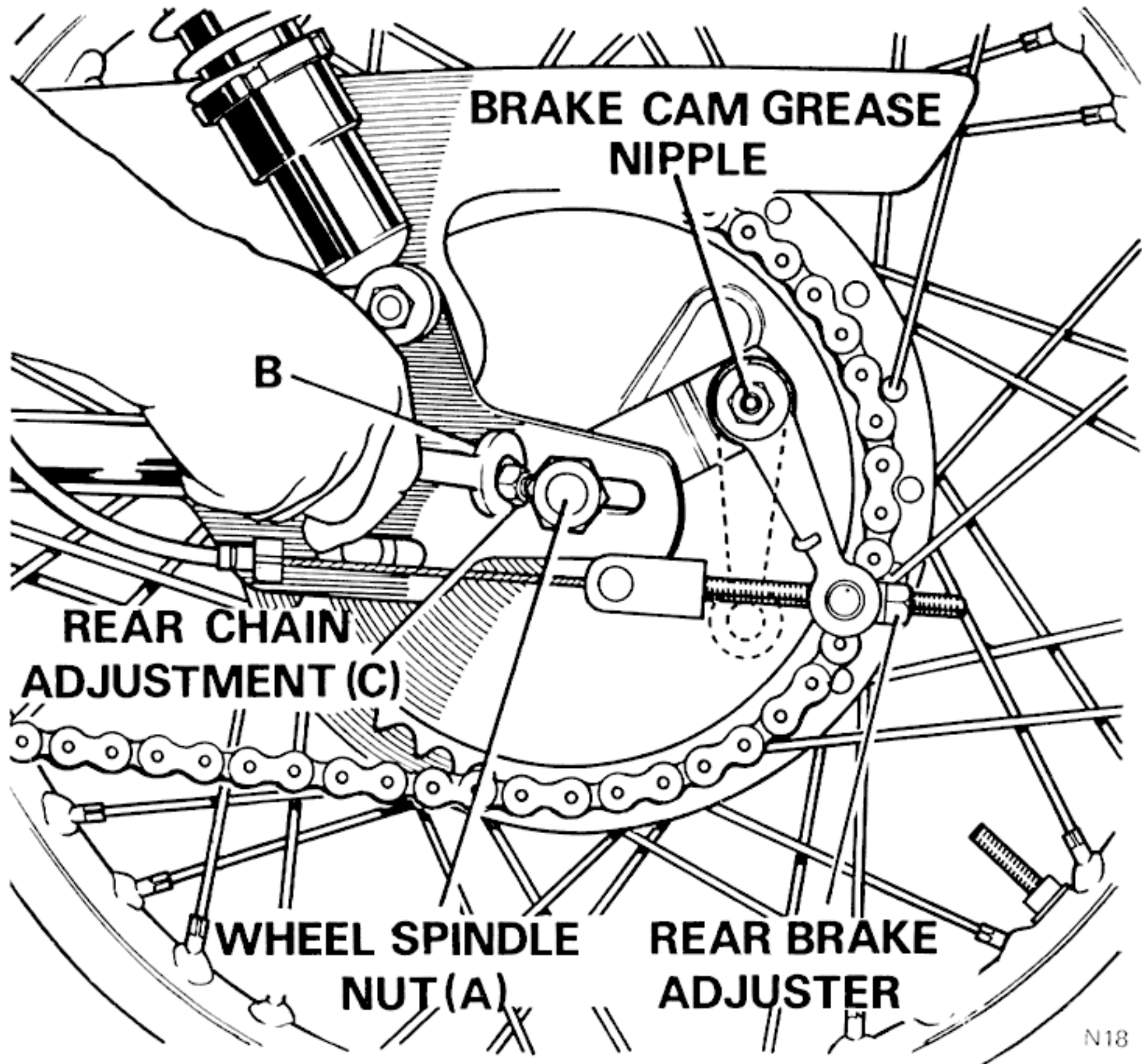


*Fig. H3 Paddles and shock absorbing pads*

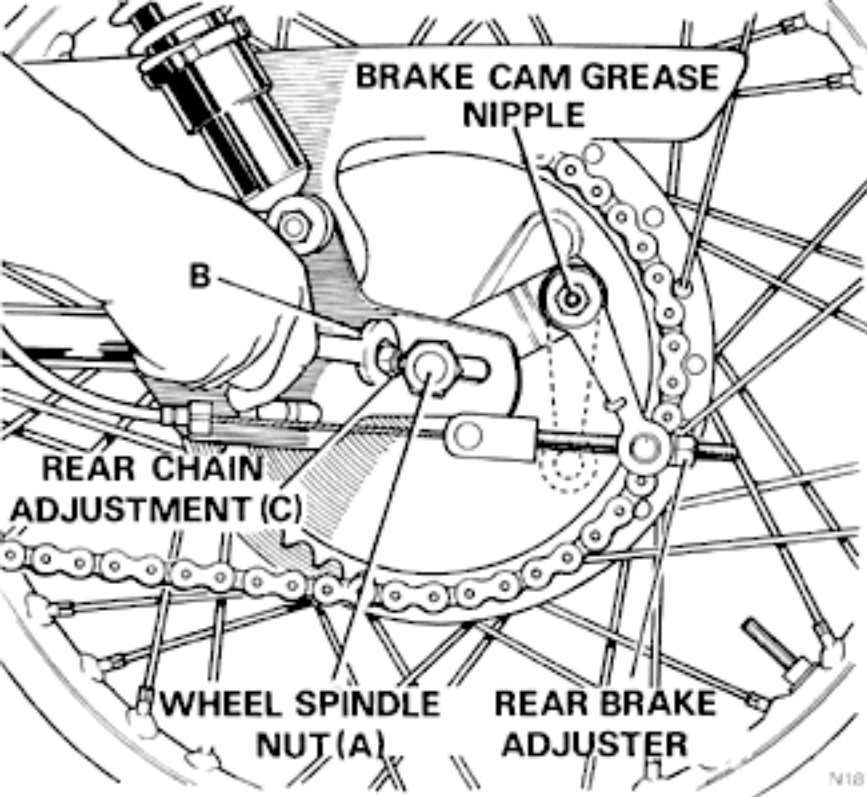




*Fig. H3 Paddles and shock absorbing pads*



*Fig. H4 Rear wheel features*



N18

*Fig. H4 Rear wheel features*

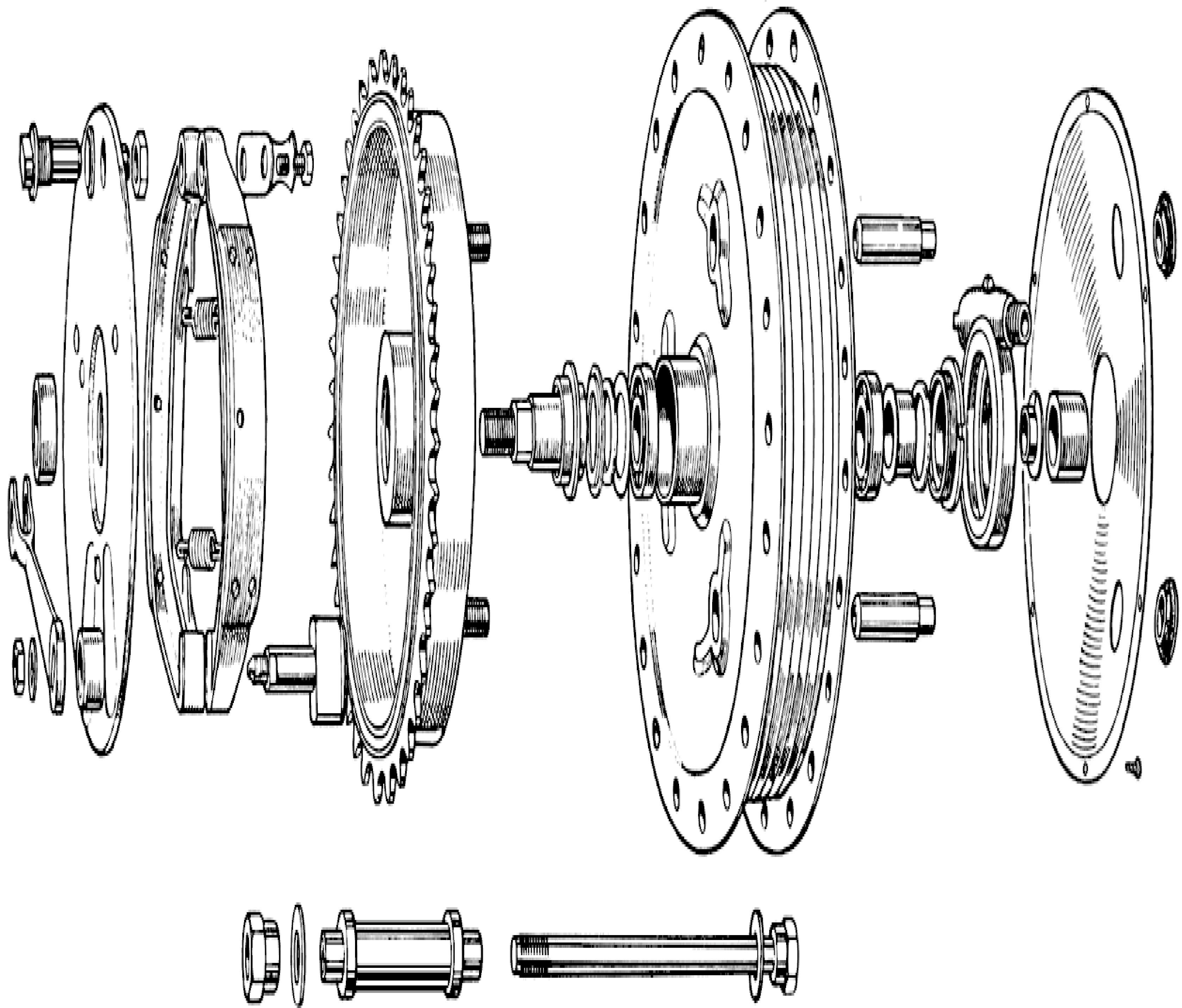


Fig. H5 1970 type rear wheel exploded

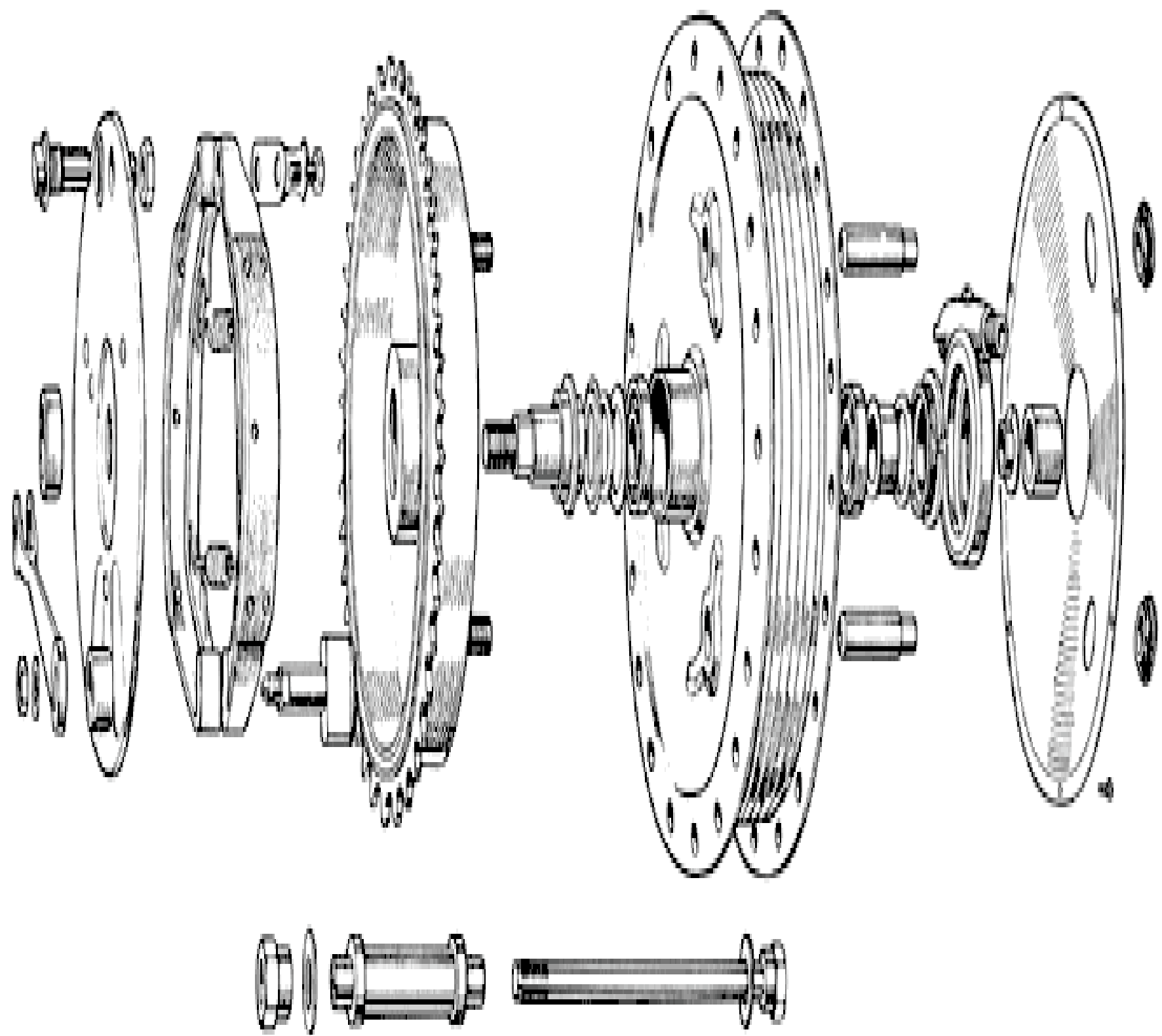


Fig. H5 1970 type rear wheel exploded

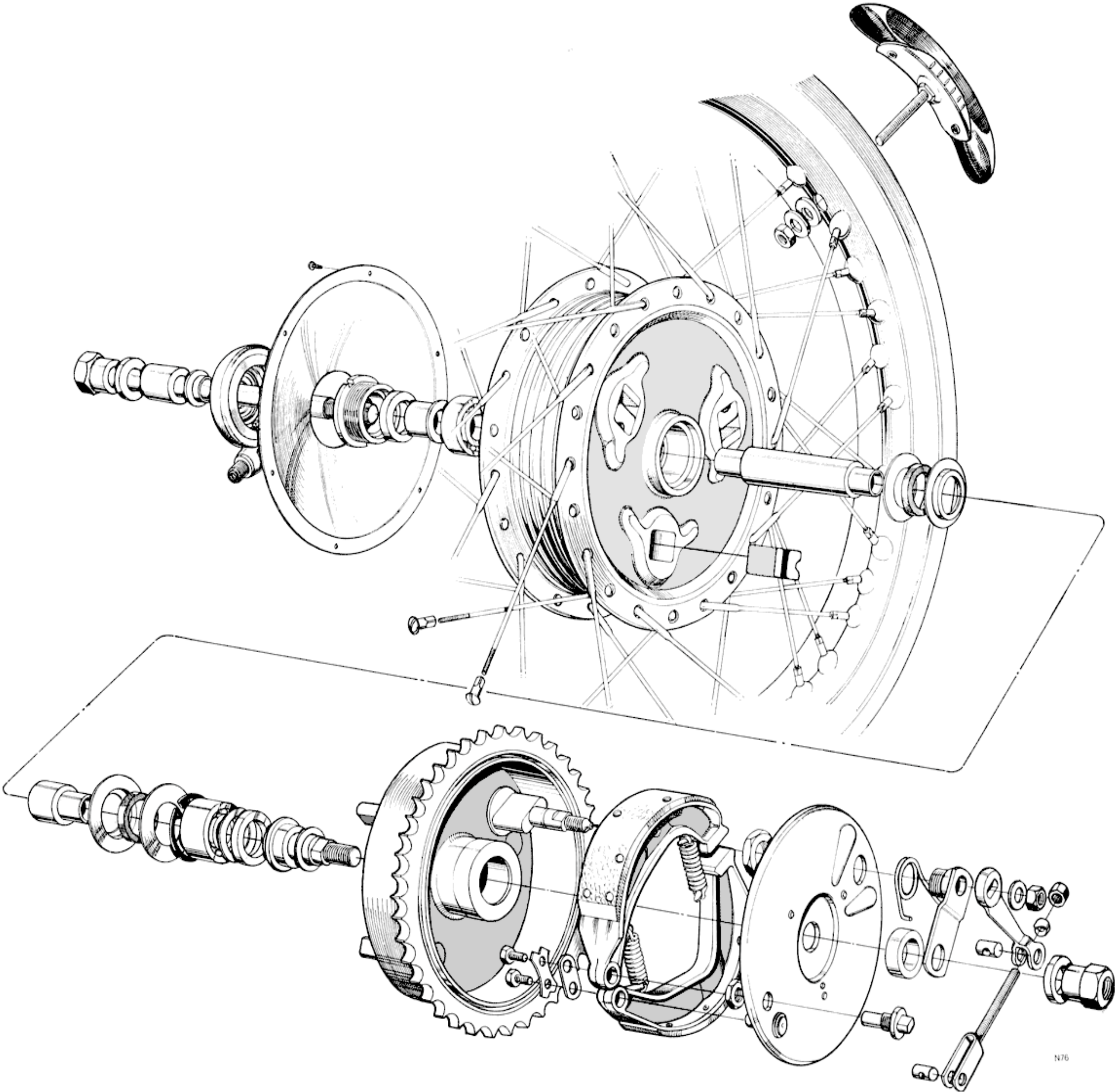


Fig. H6 1971 onwards rear wheel exploded

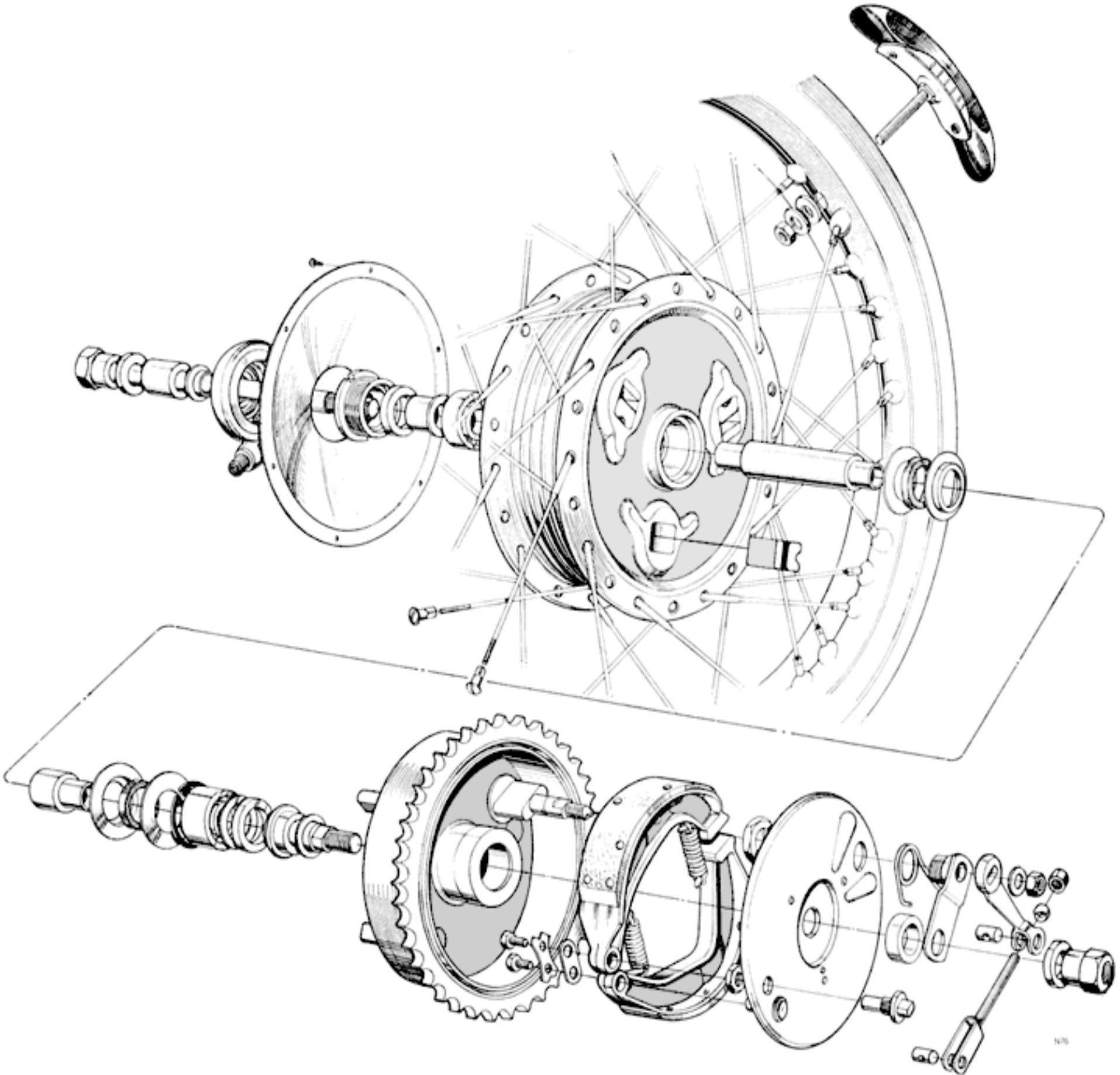
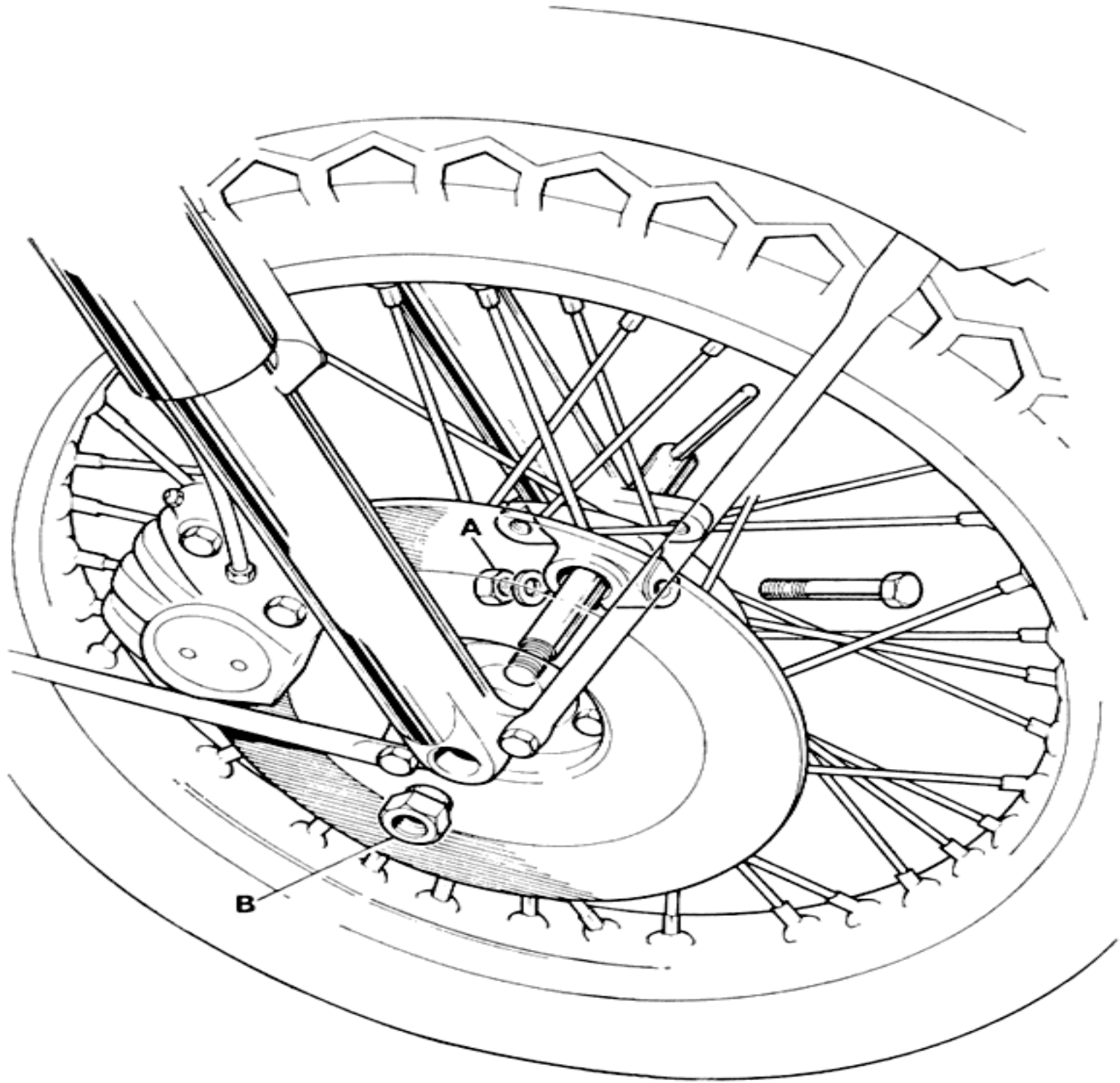
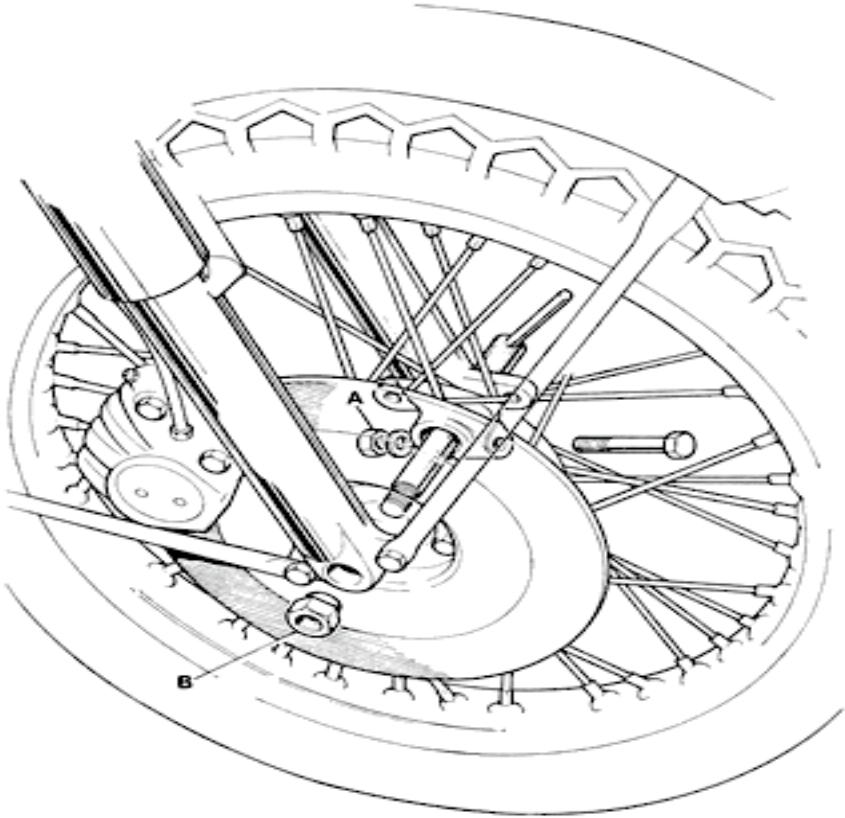


Fig. H6 1971 onwards rear wheel exploded

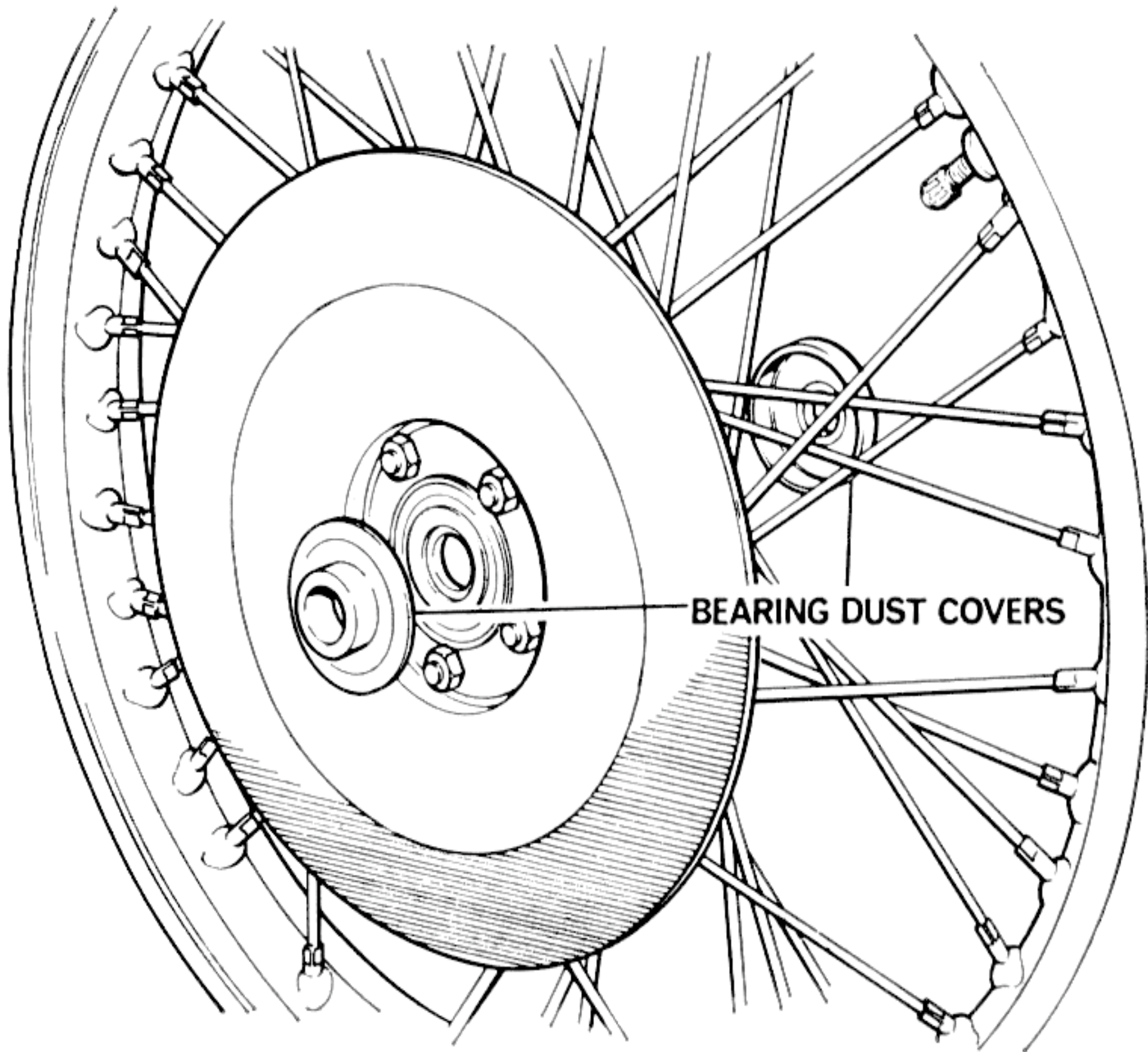


**Fig. H7**      *Disc brake front wheel removal*

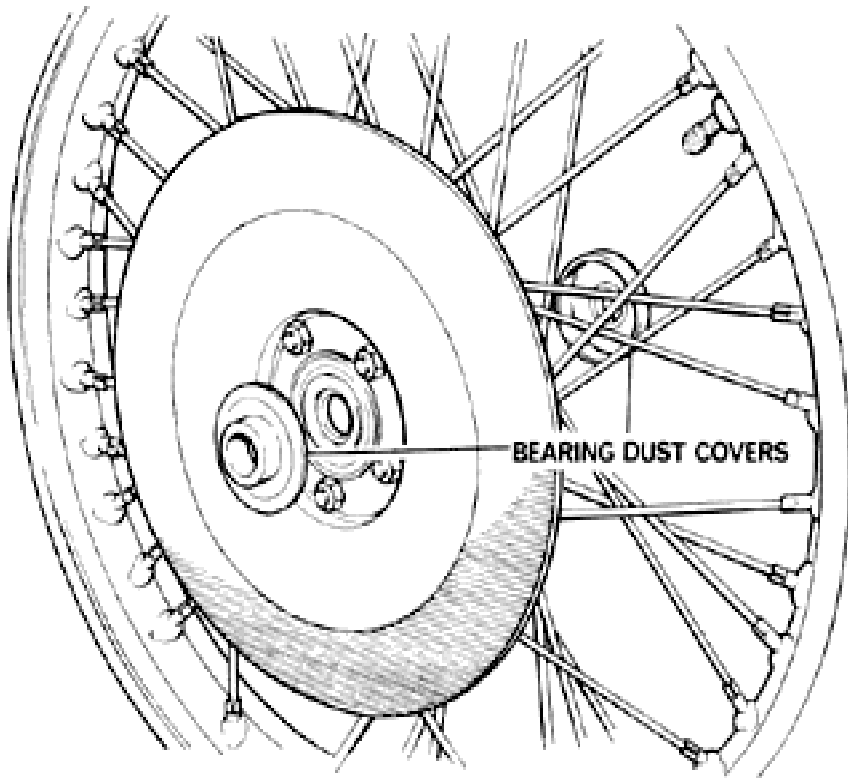




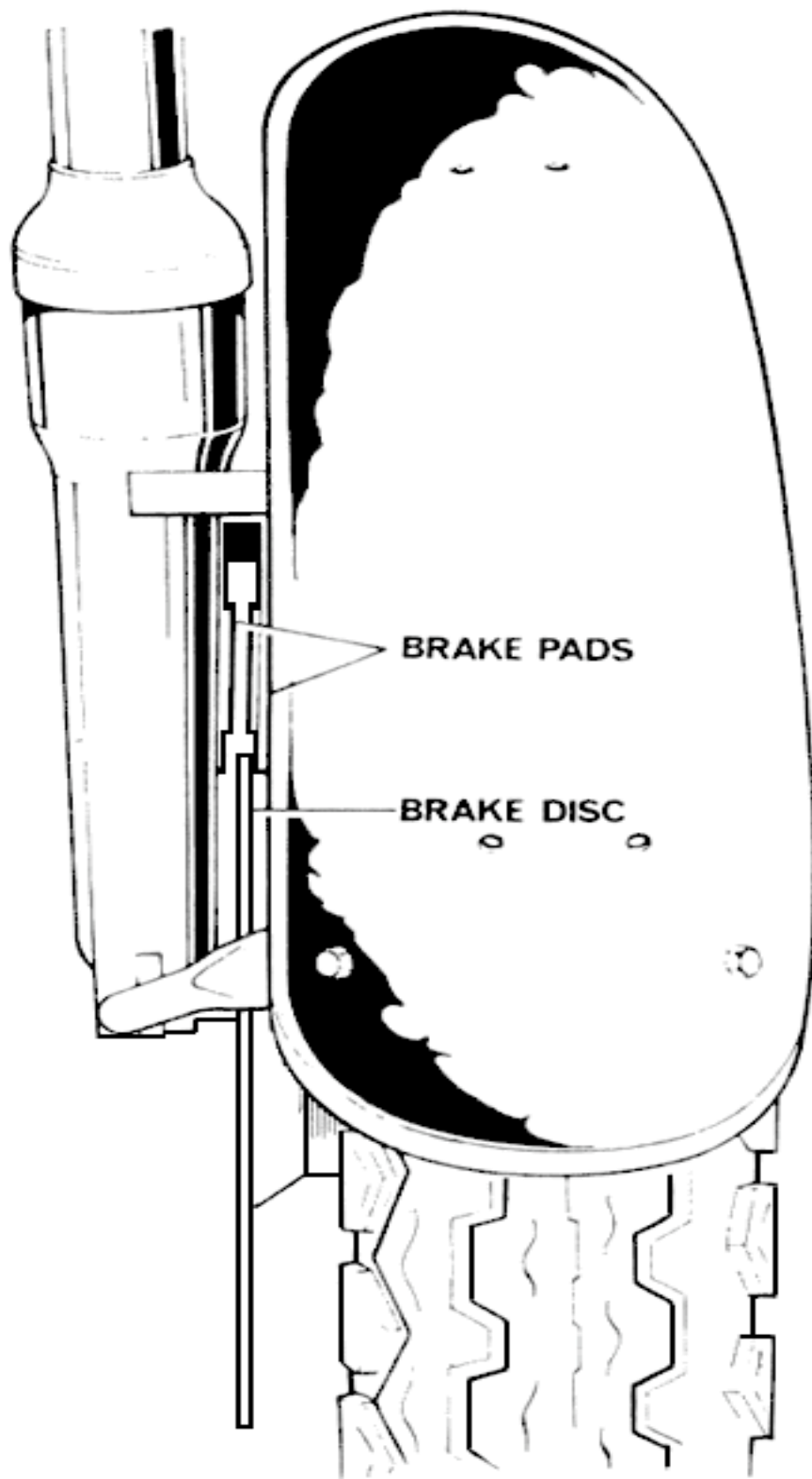
*Fig. H7 Disc brake front wheel removal*



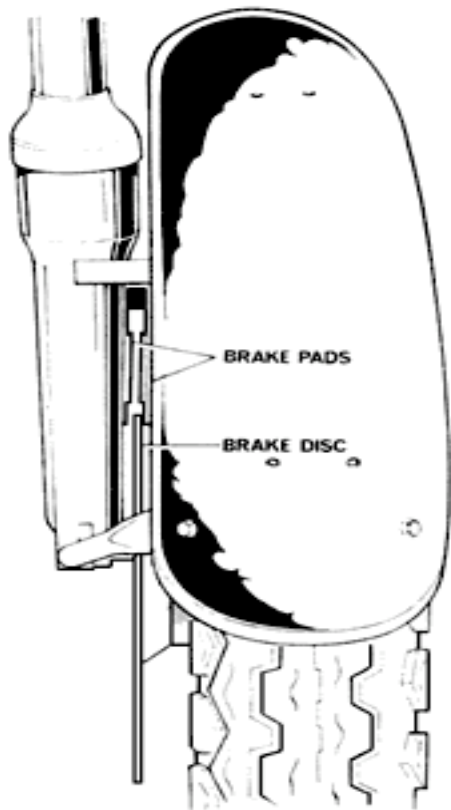
*Fig. H8 Disc brake wheel*



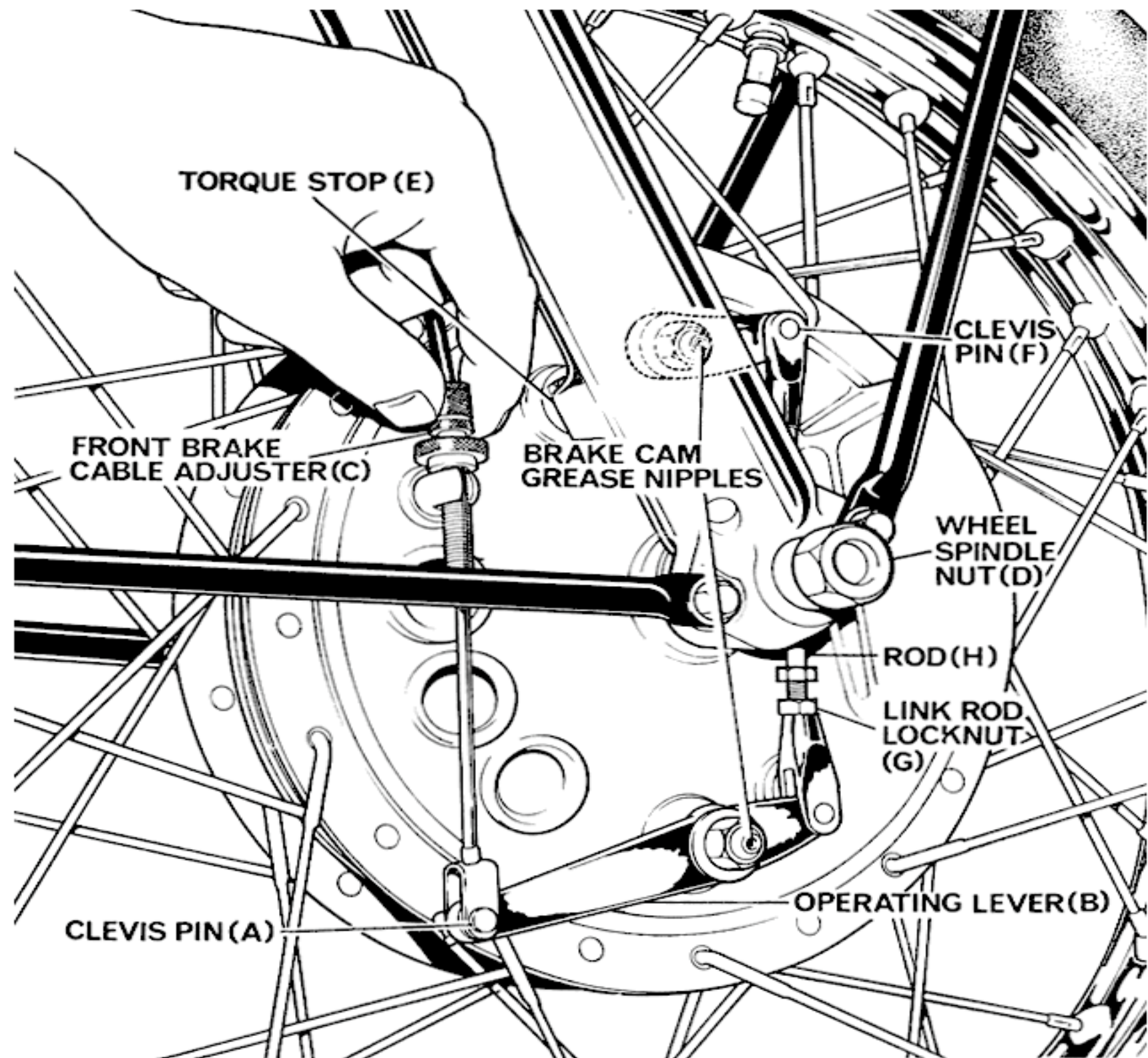
*Fig. H8 Disc brake wheel*



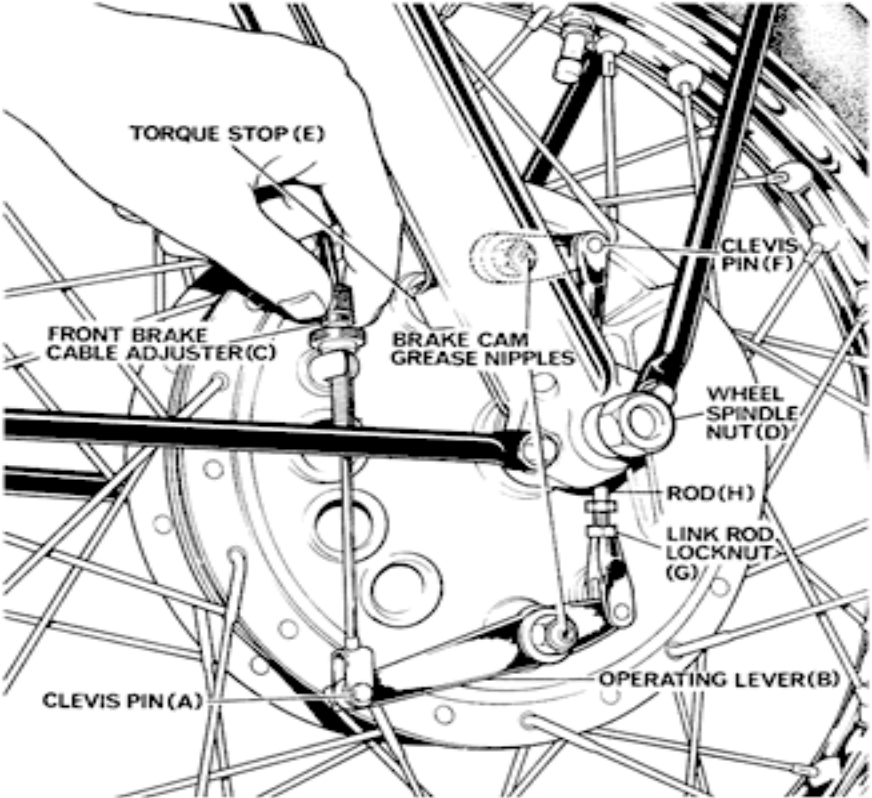
*Fig. H9 Guiding brake disc between brake pads*



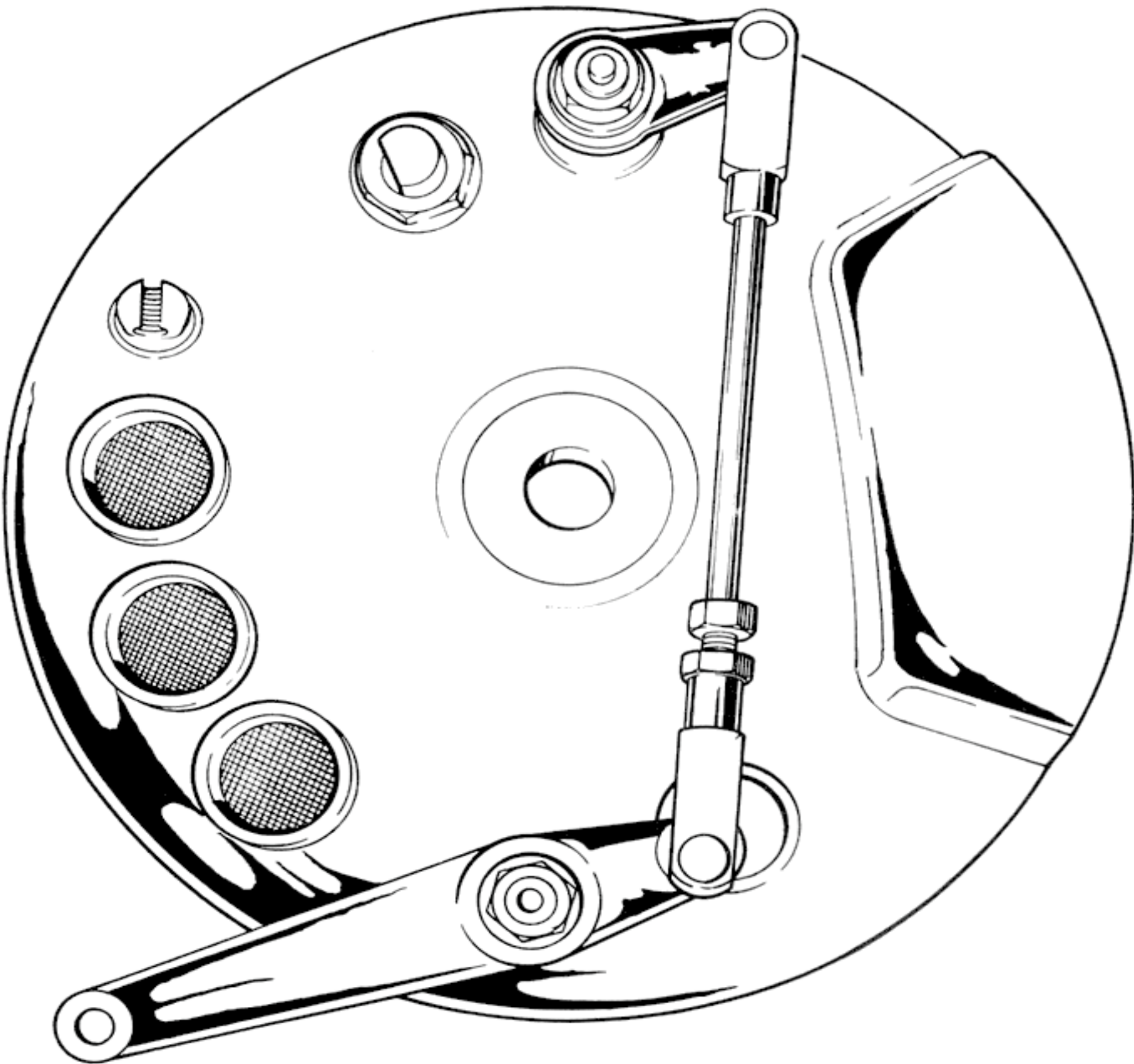
*Fig. H9 Guiding brake disc between brake pads*



*Fig. H10 Drum front brake external features*

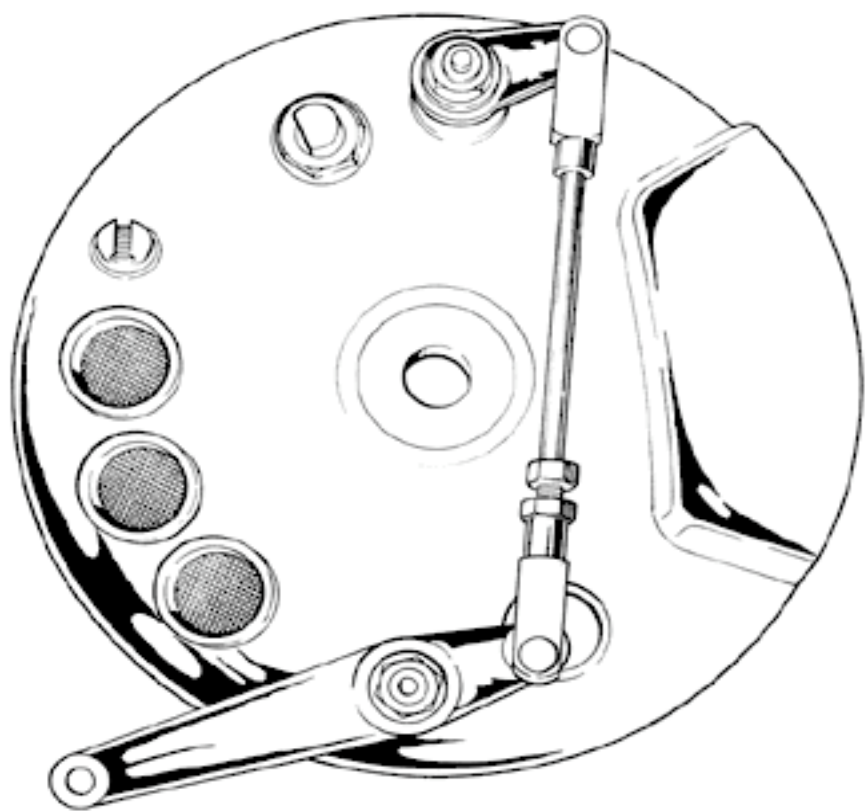


*Fig. H10 Drum front brake external features*

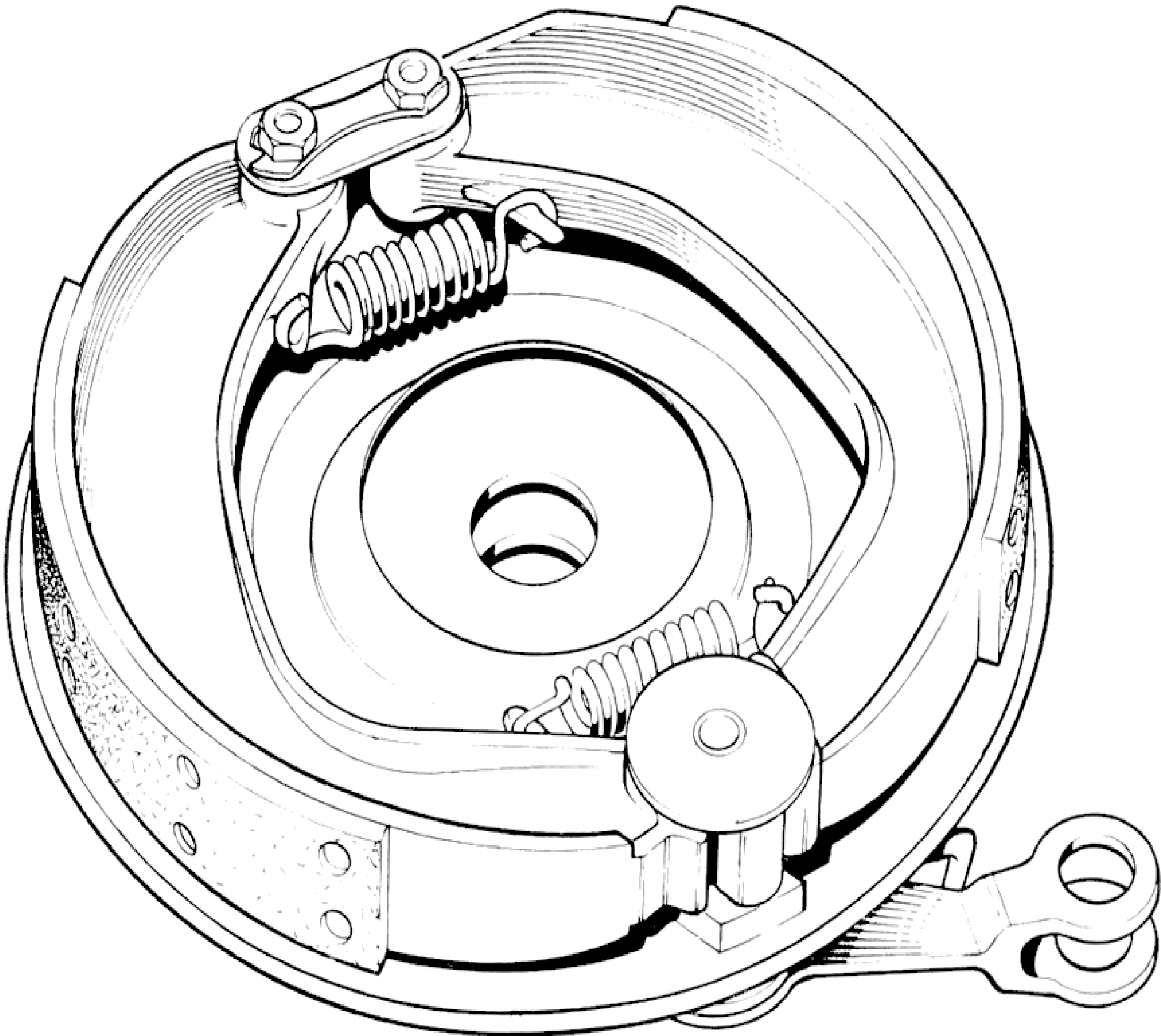


*Fig. H11 Twin leading shoe brake plate showing link rod*

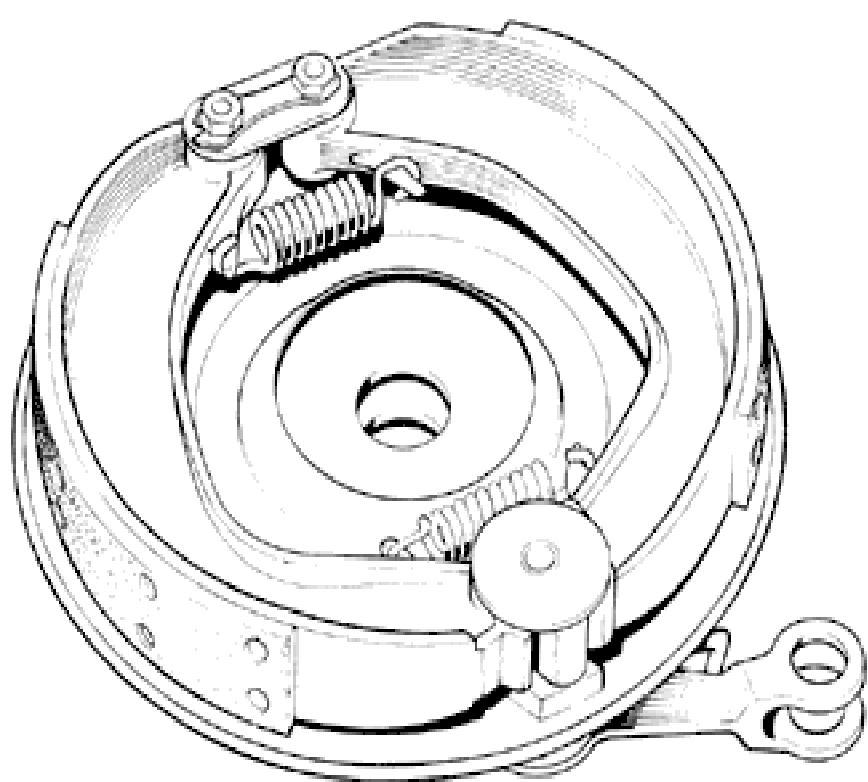




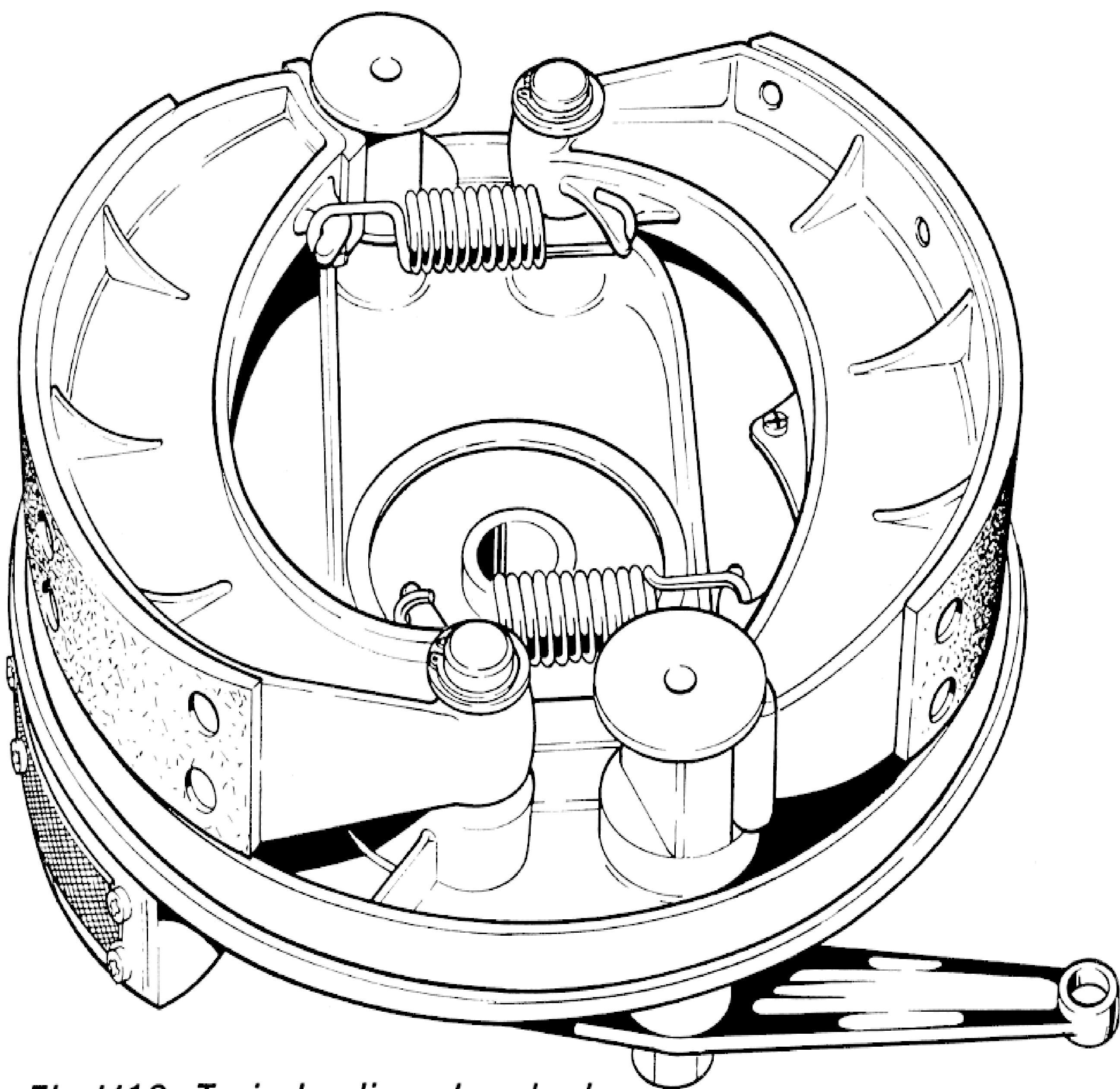
*Fig. H11 Twin leading shoe brake plate showing link rod*



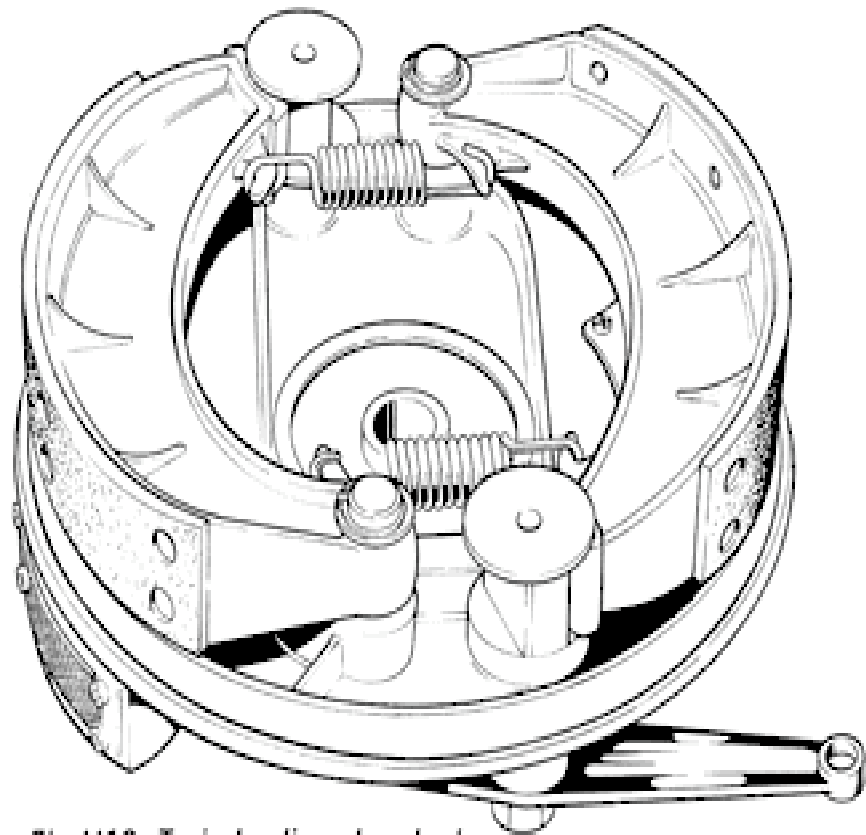
*Fig. H12 Rear brake plate with brake shoes assembled*



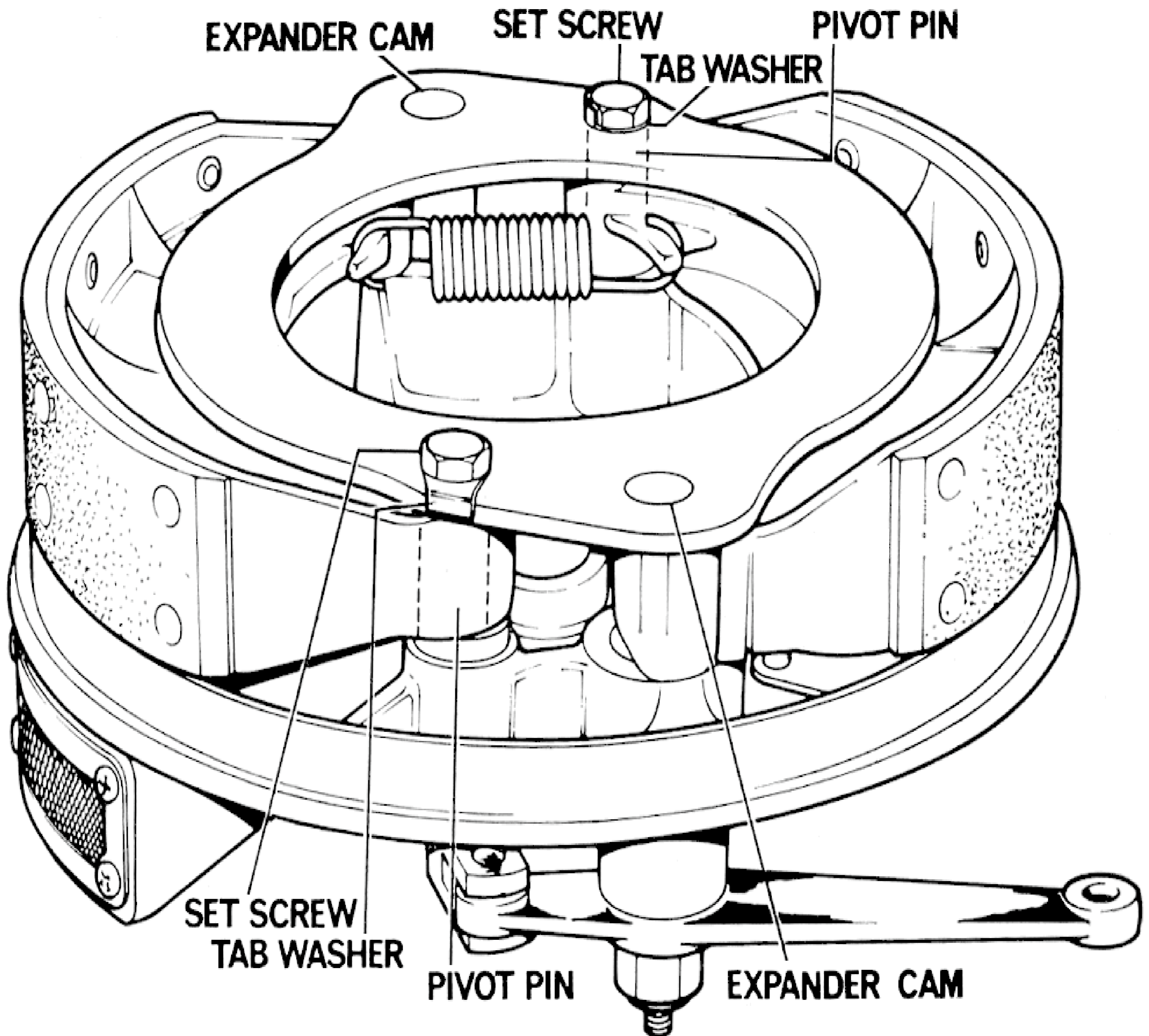
*Fig. H12 Rear brake plate with brake shoes assembled*



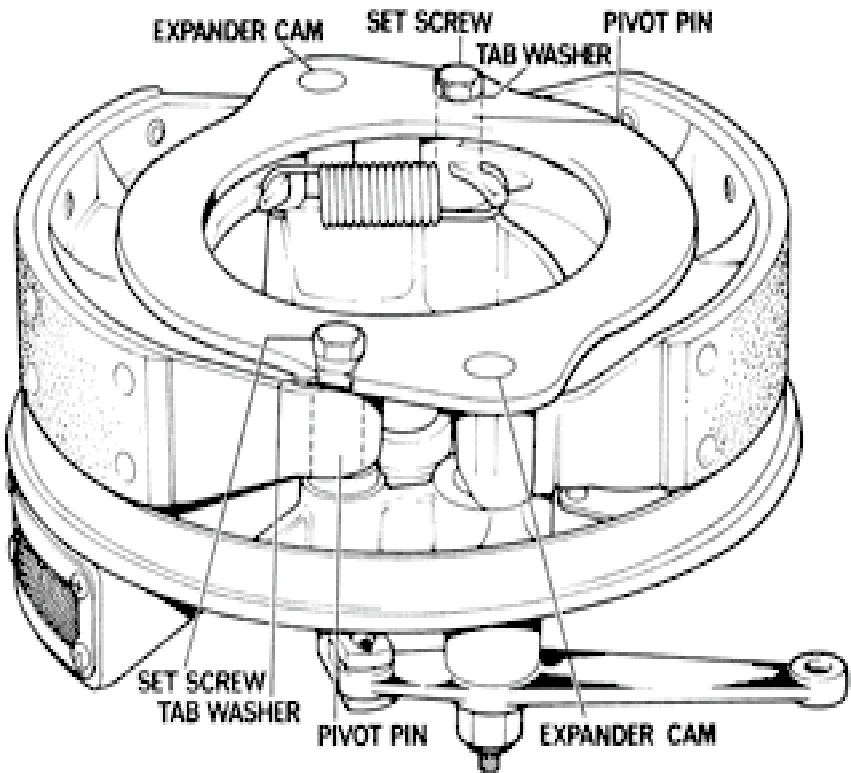
*Fig.H13 Twin leading shoe brake*



*Fig.H13 Twin leading shoe brake*

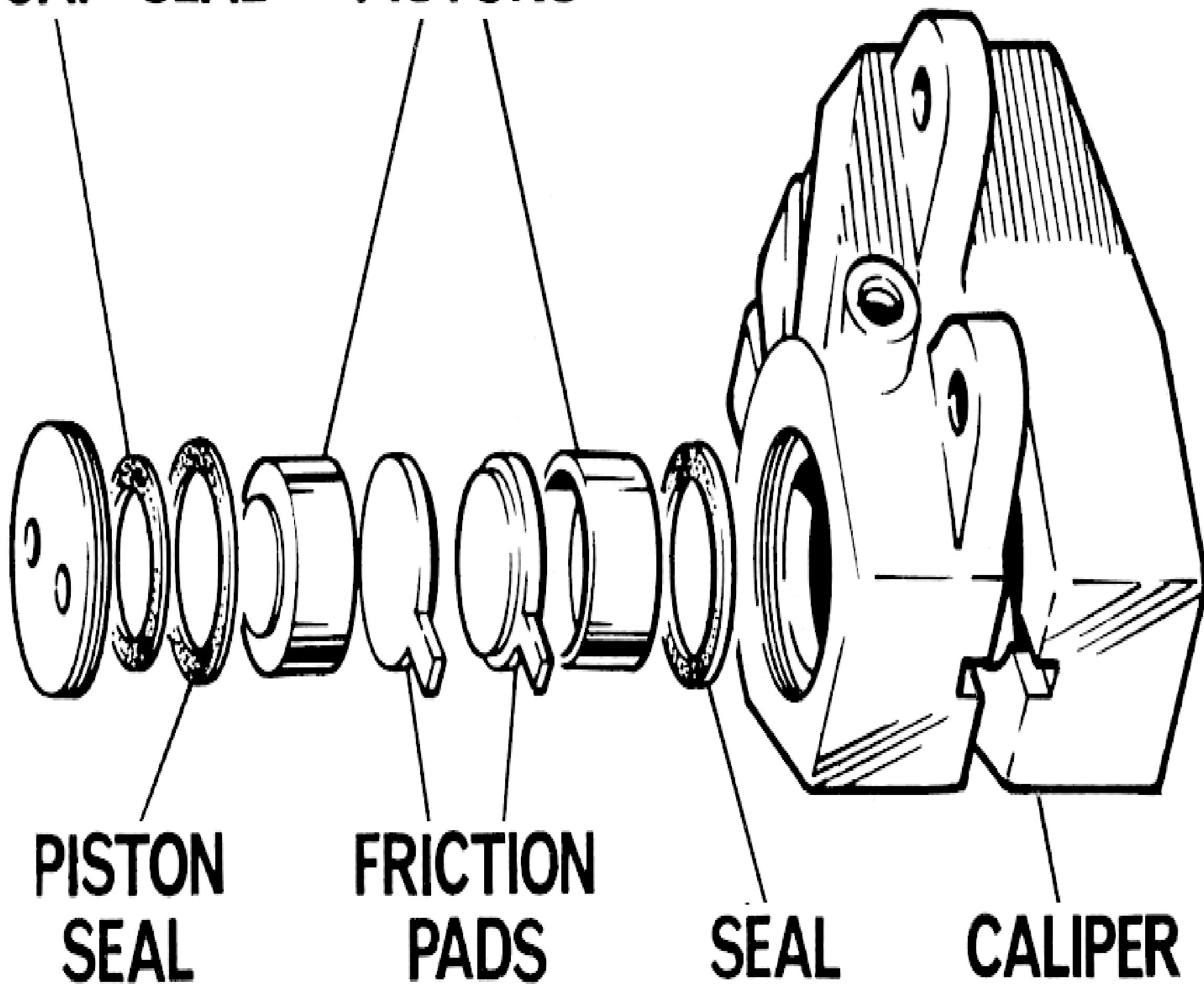


*Fig.H14 Twin leading shoe brake with high performance modification*



*Fig.H14 Twin leading shoe brake with high performance modification*

**CAP SEAL      PISTONS**

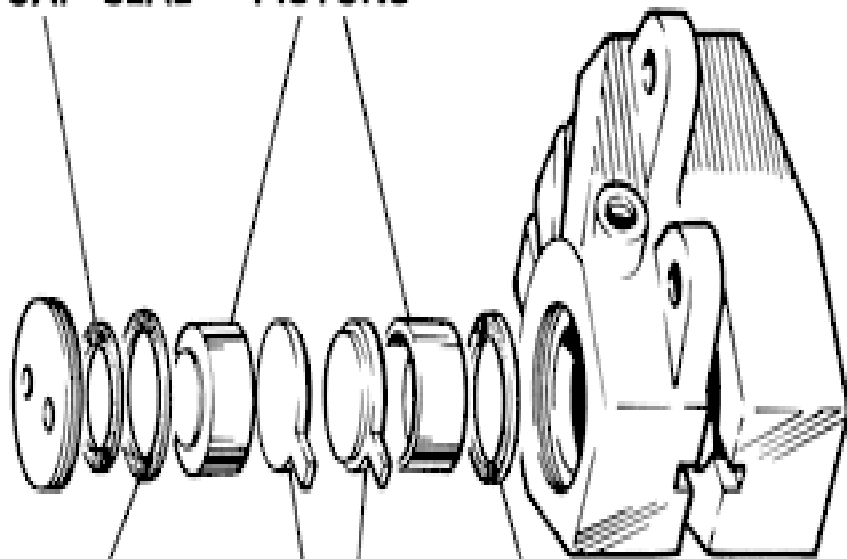


*Fig. H15 Exploded view of caliper group*



**CAP SEAL**

**PISTONS**



**PISTON  
SEAL**

**FRICION  
PADS**

**SEAL**

**CALIPER**

*Fig. H15 Exploded view of caliper group*

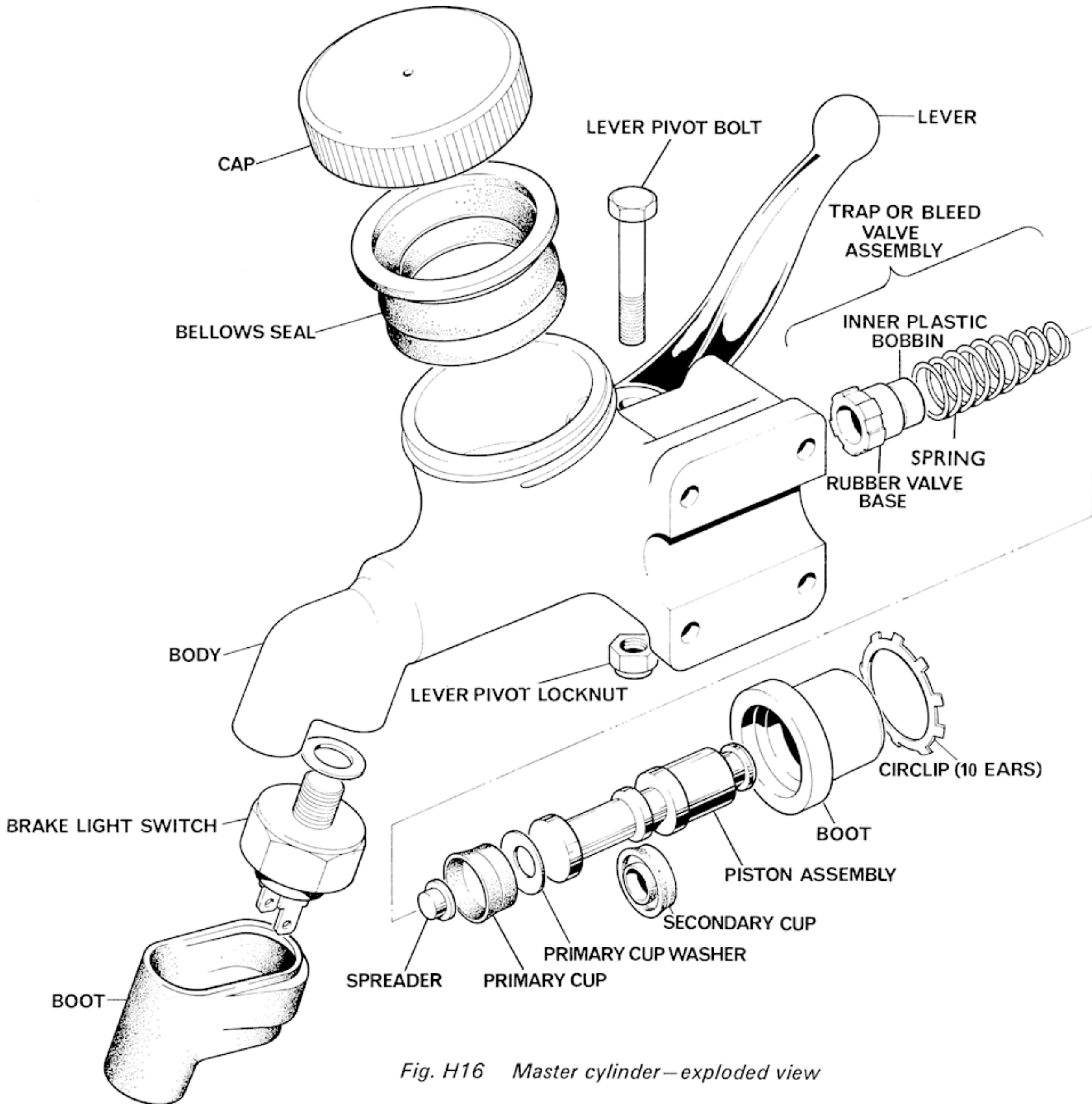


Fig. H16 Master cylinder—exploded view

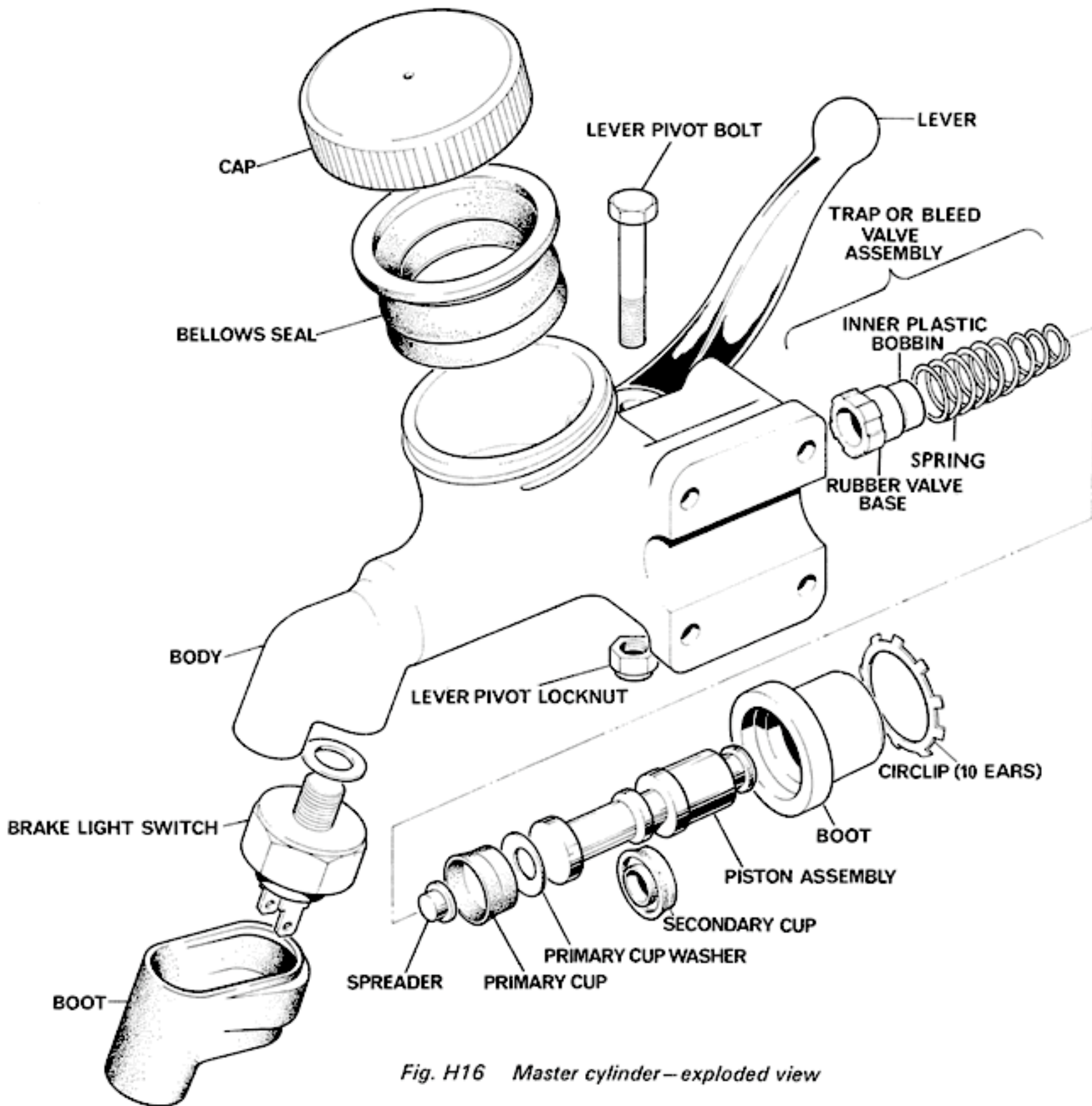
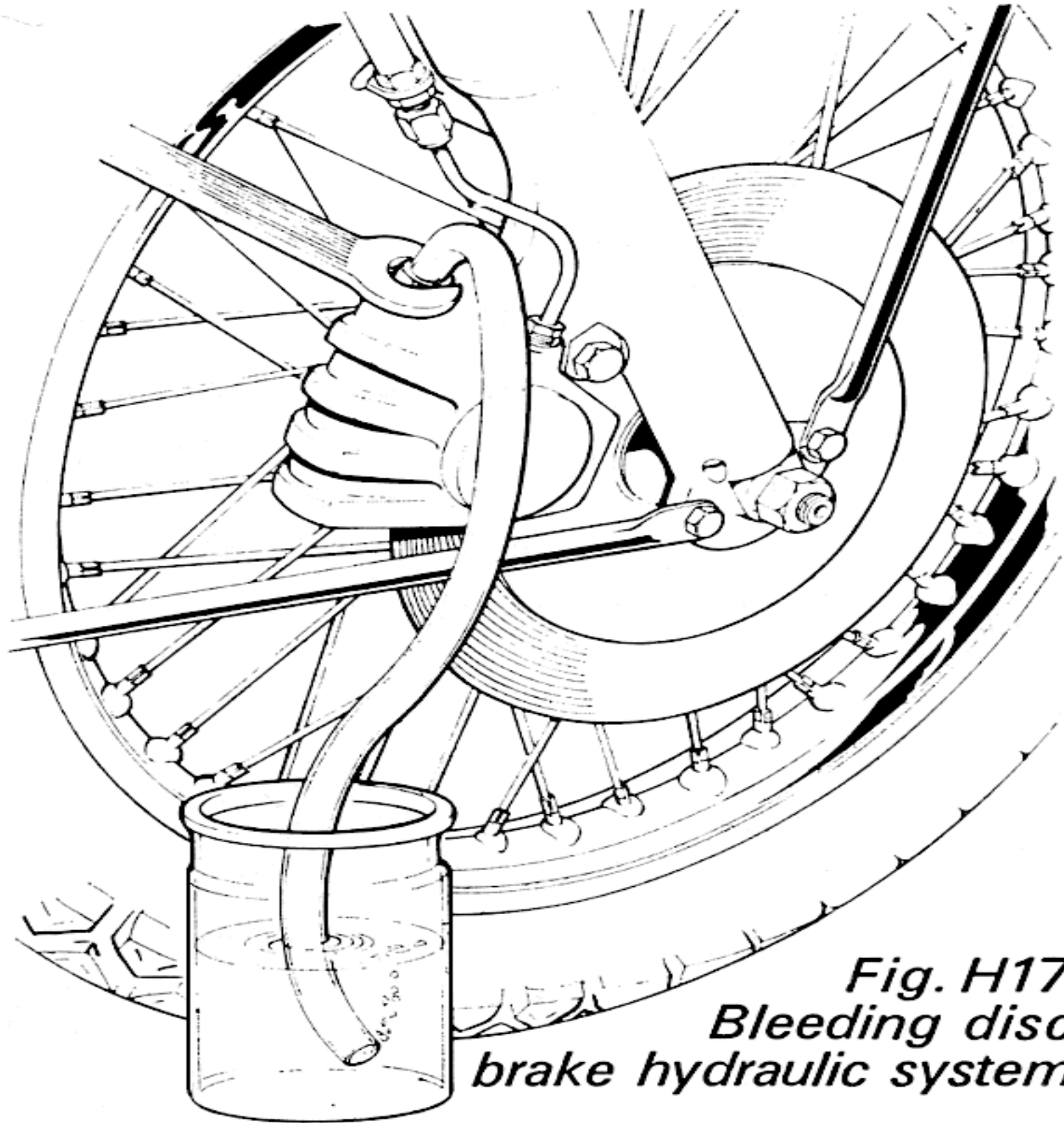
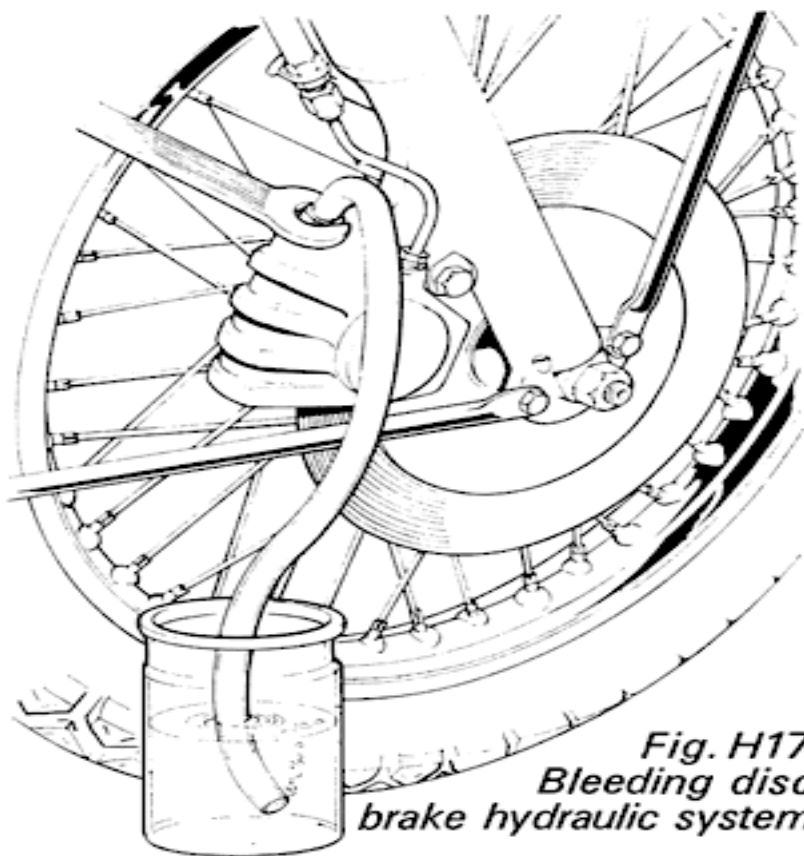


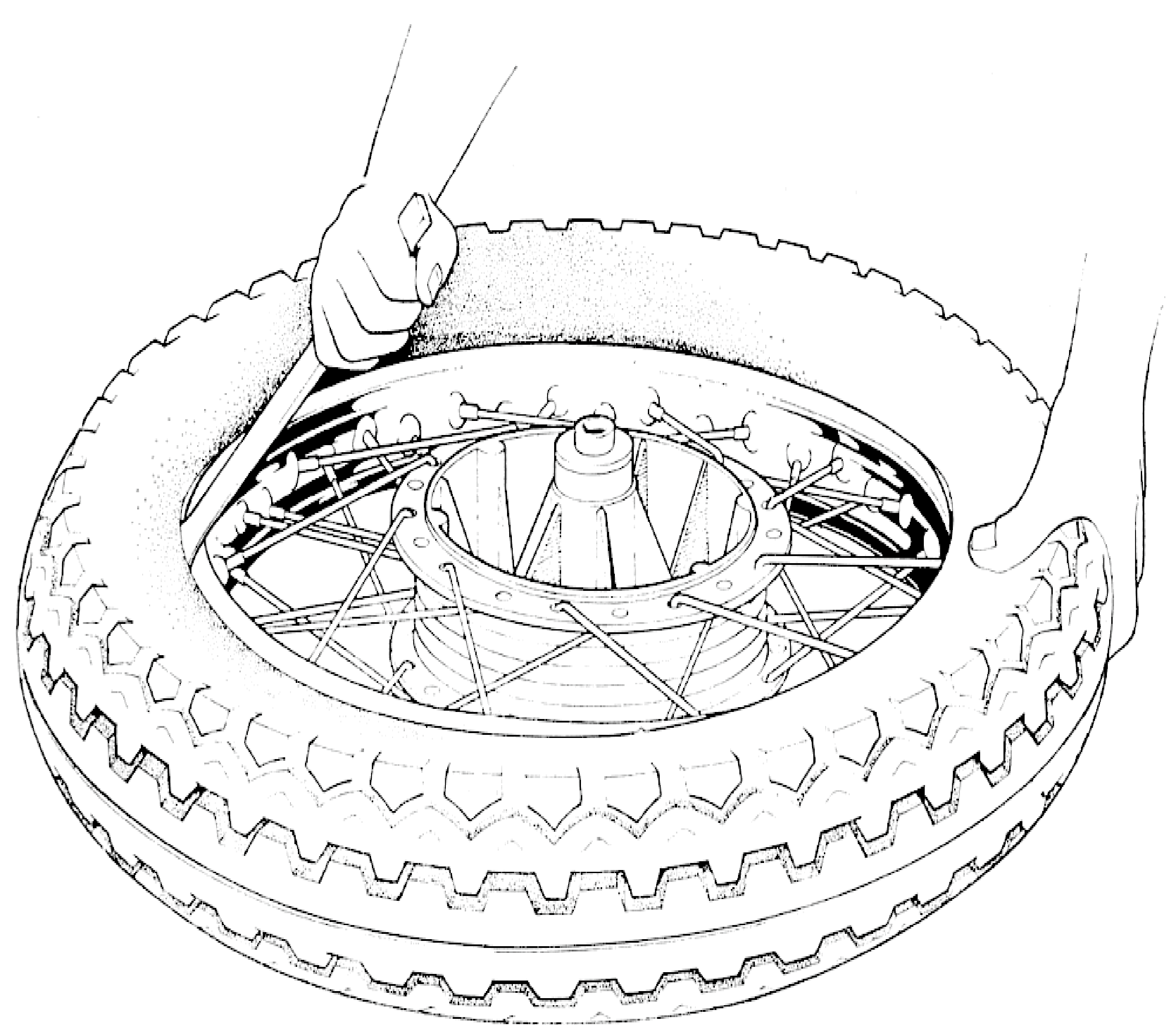
Fig. H16 Master cylinder—exploded view



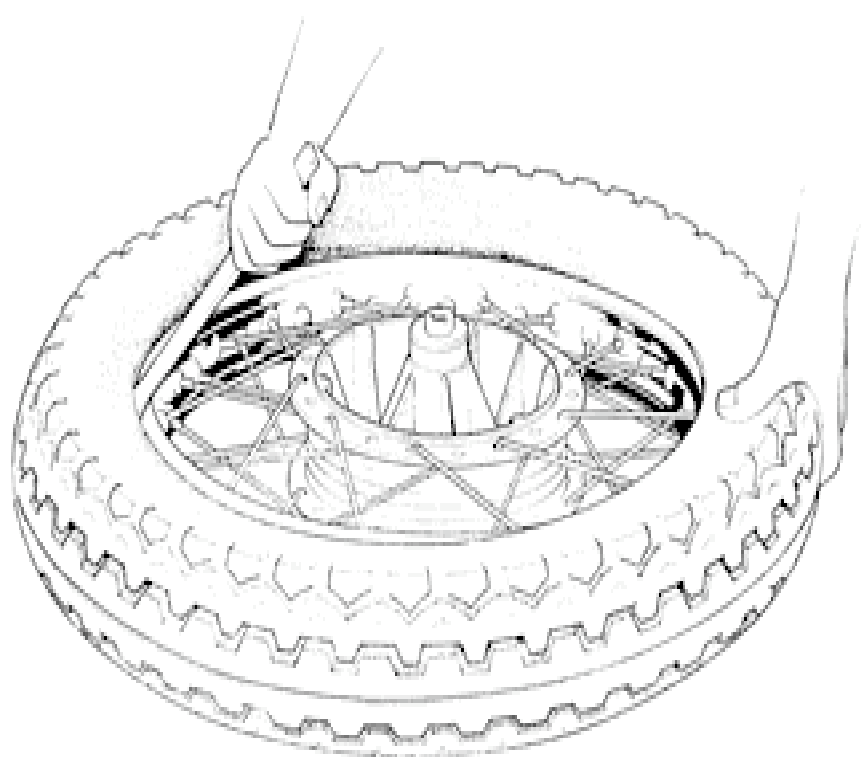
**Fig. H17**  
**Bleeding disc**  
**brake hydraulic system**



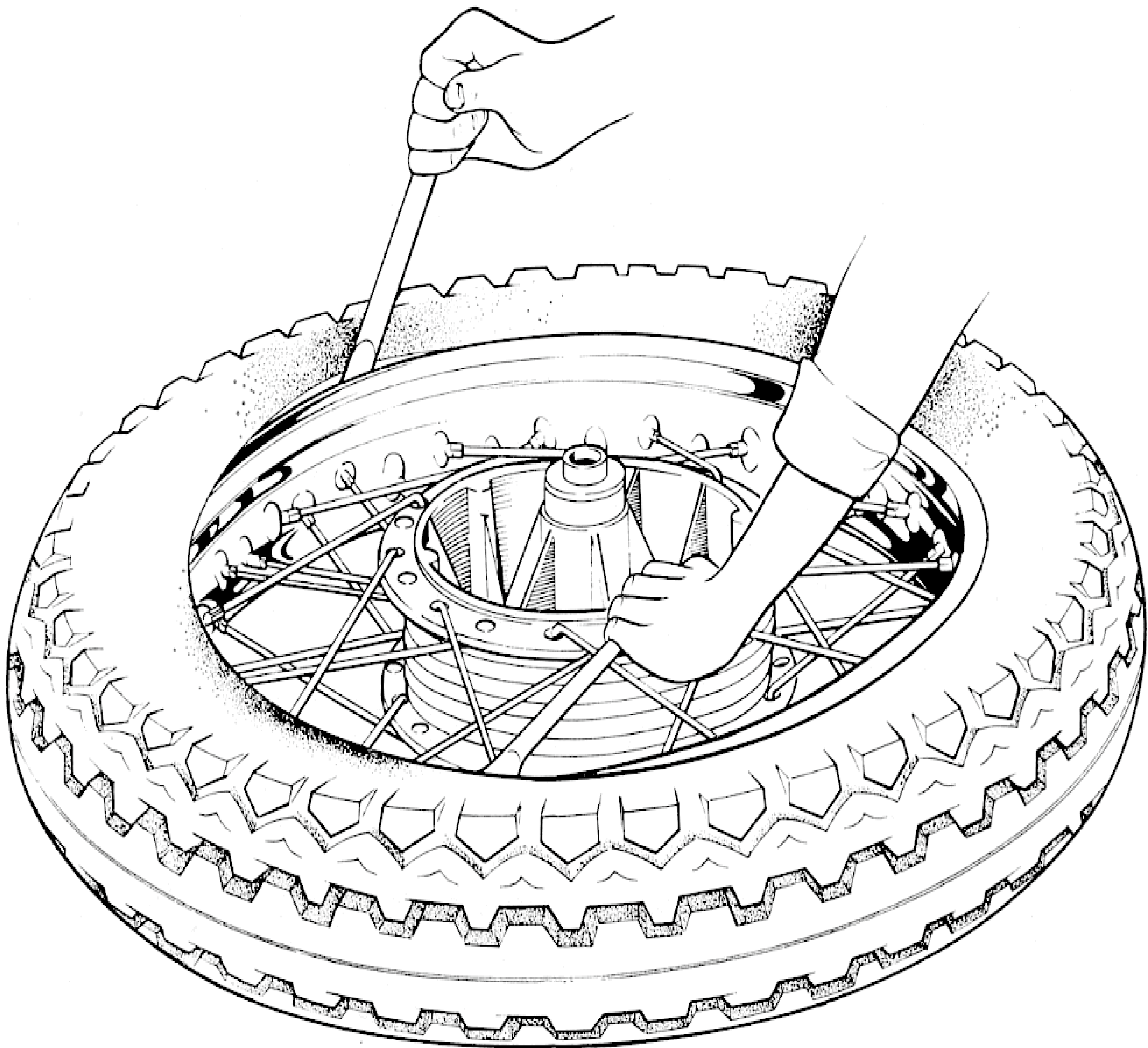
**Fig. H17**  
**Bleeding disc  
brake hydraulic system**



*Fig.H18 Levering close to valve whilst pressing opposite bead down into rim*

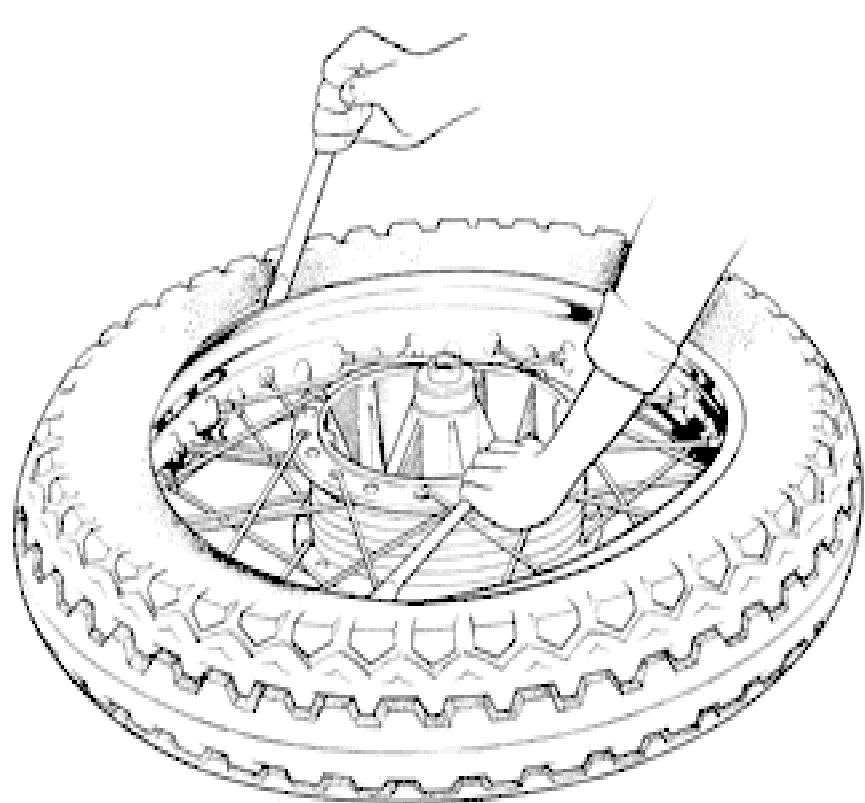


*Fig.H18 Levering close to valve whilst pressing opposite bead down into rim*

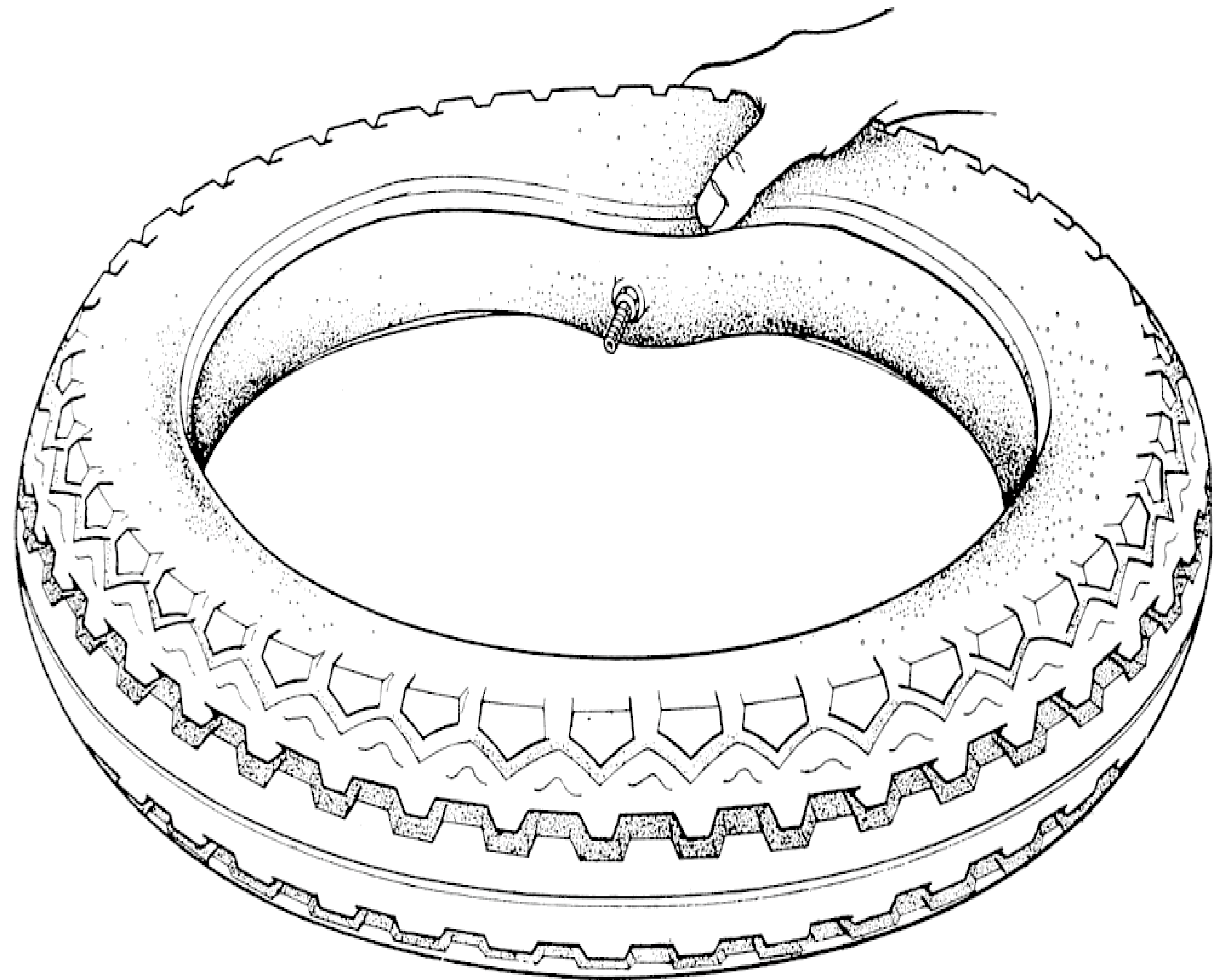


*Fig. H19 Two tyre levers in use to remove first bead of tyre*

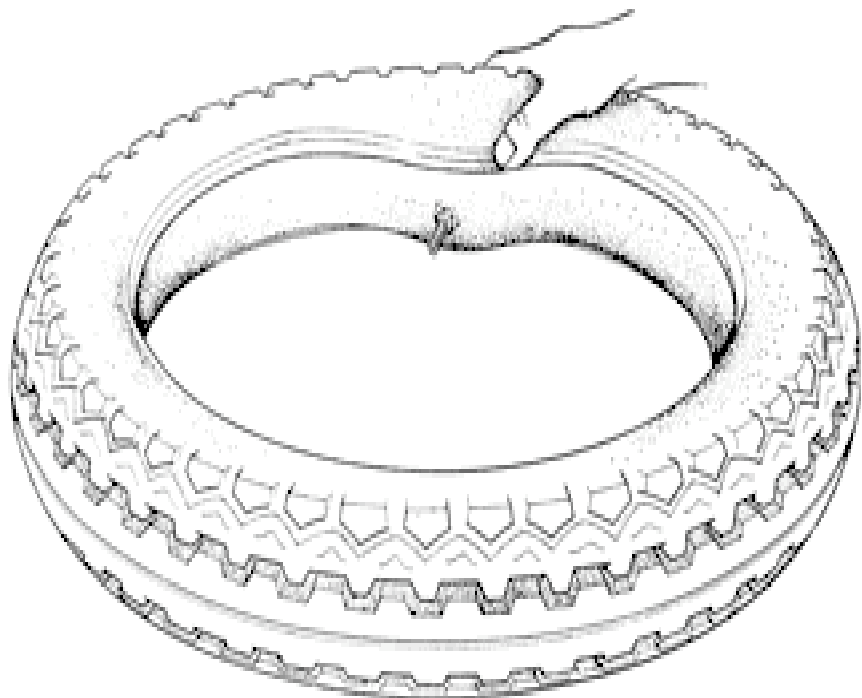




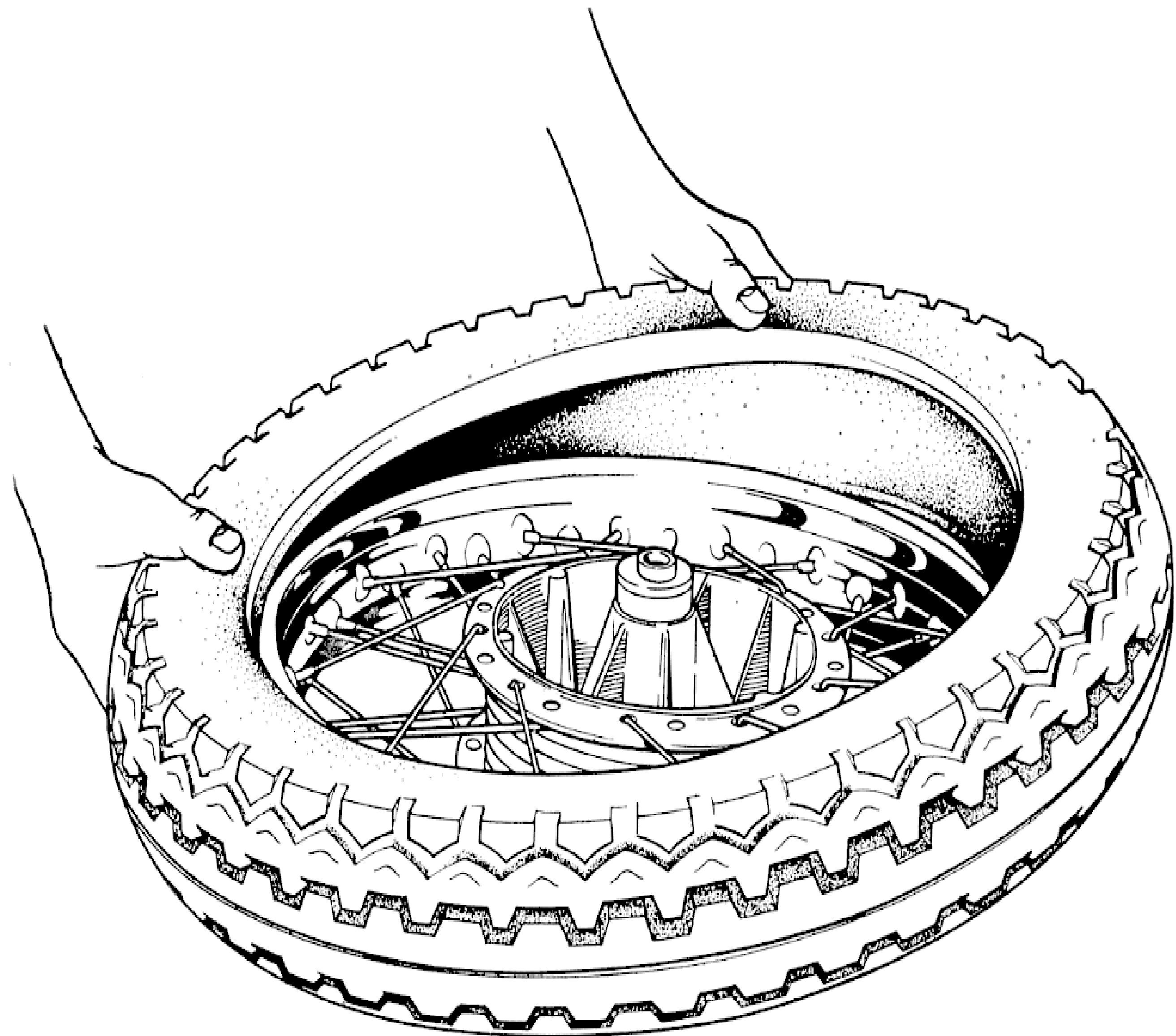
*Fig. H19 Two tyre levers in use to remove first bead of tyre*



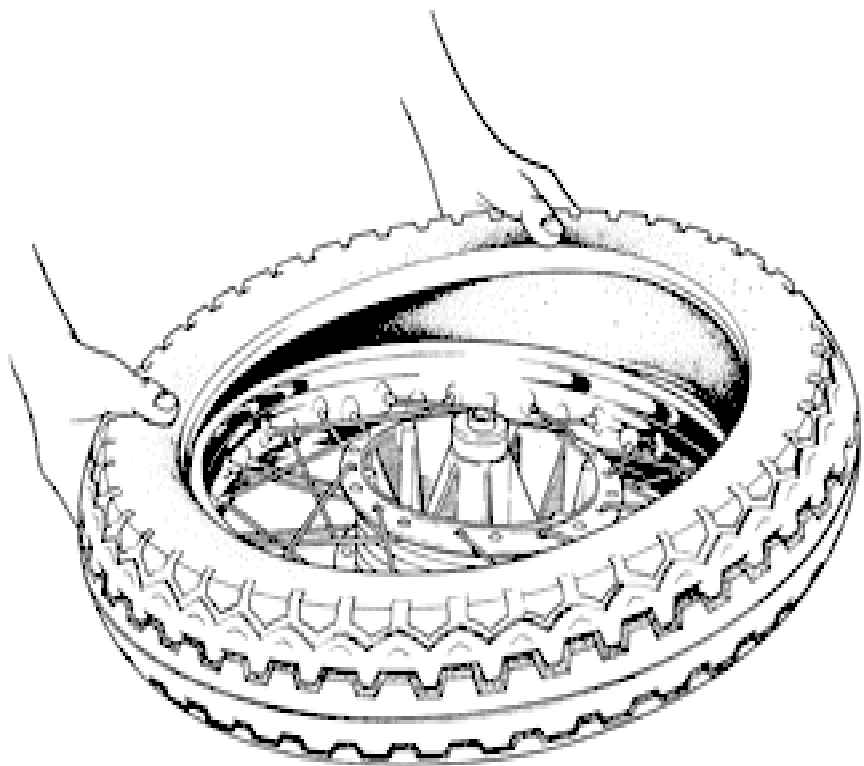
*Fig.H20 Tube within cover squeezing cover to hold valve protruding*



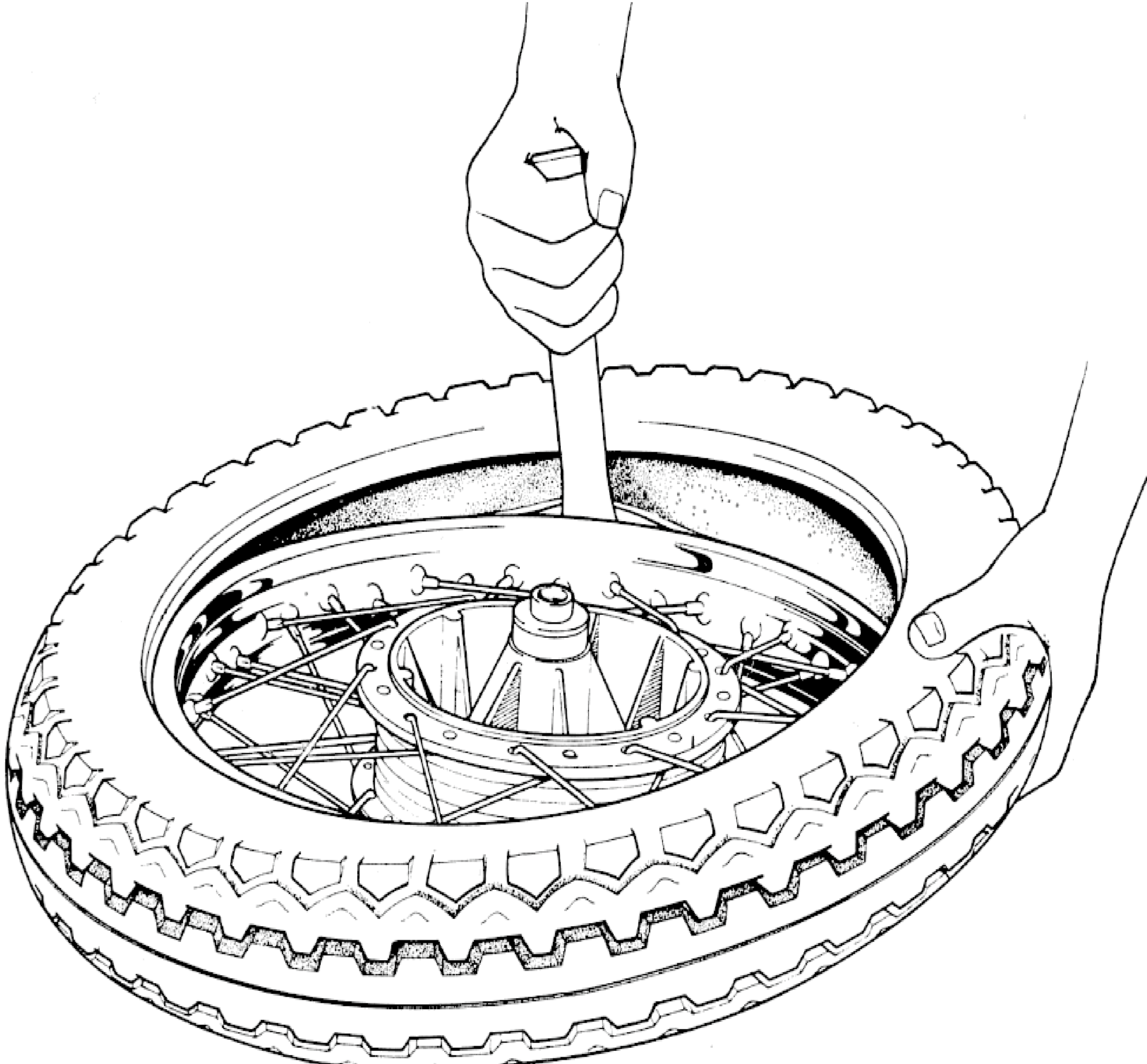
*Fig.H20 Tube within cover squeezing cover to hold valve protruding*



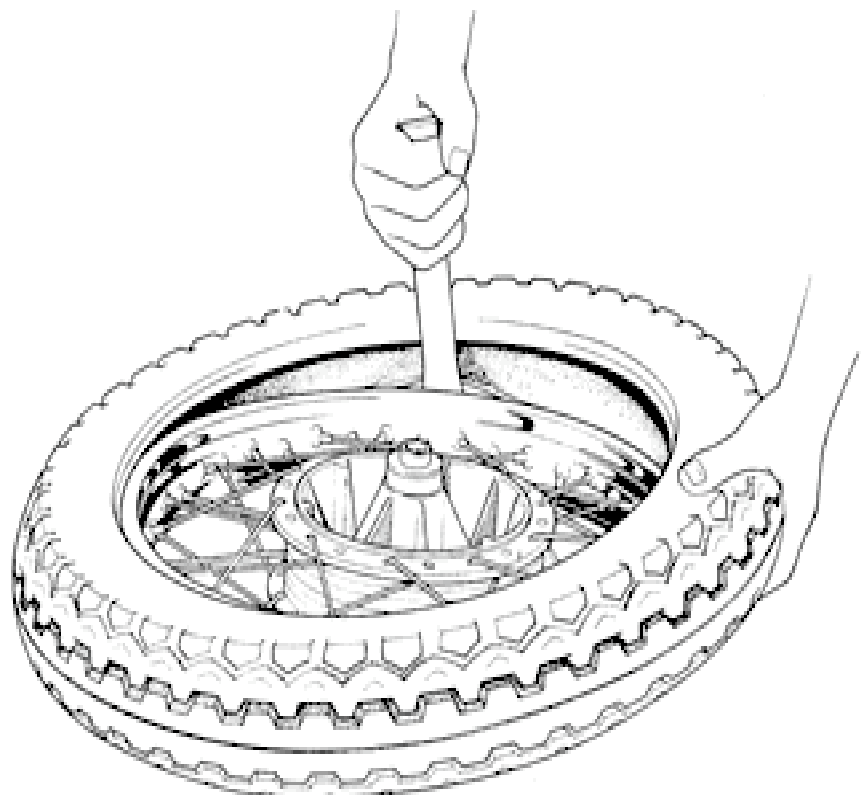
*Fig.H21 Refitting tyre to wheel with valve engaged in rim hole*



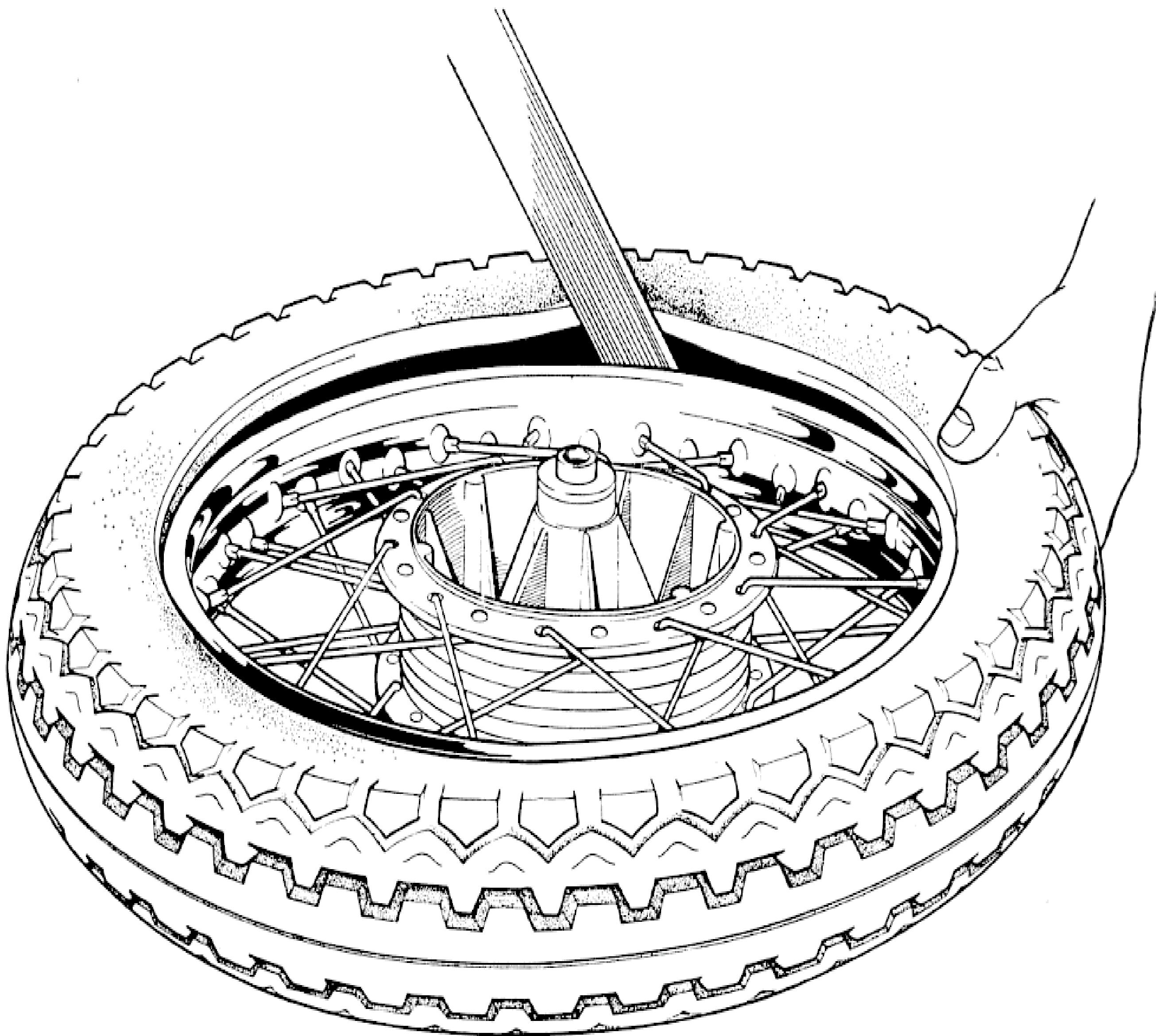
*Fig.H21 Refitting tyre to wheel with valve engaged in rim hole*



*Fig. H22 First bead being levered into the rim*

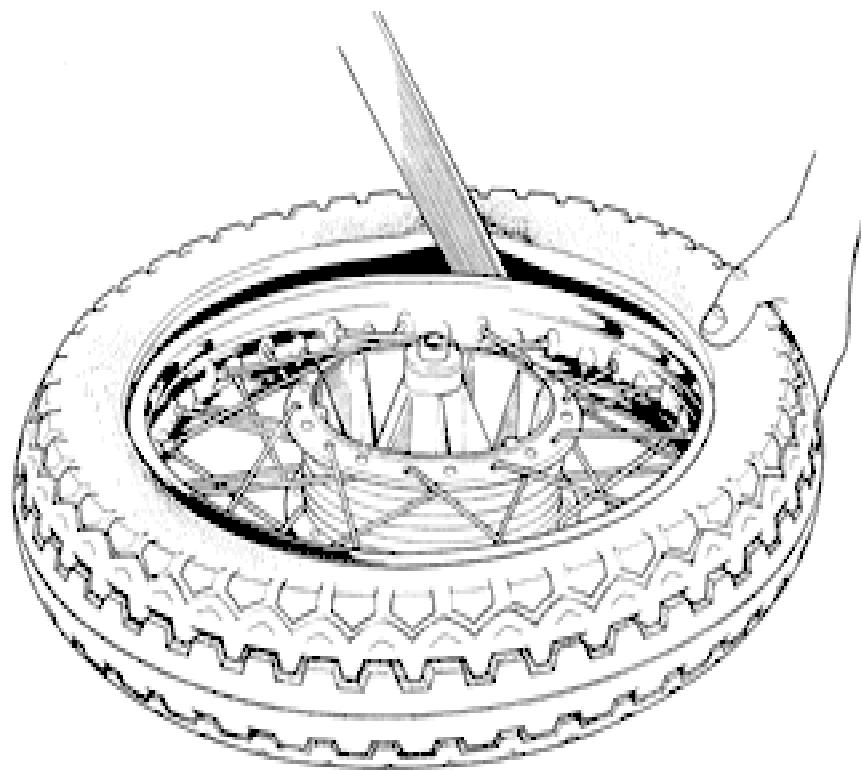


*Fig. H22 First bead being levered into the rim*

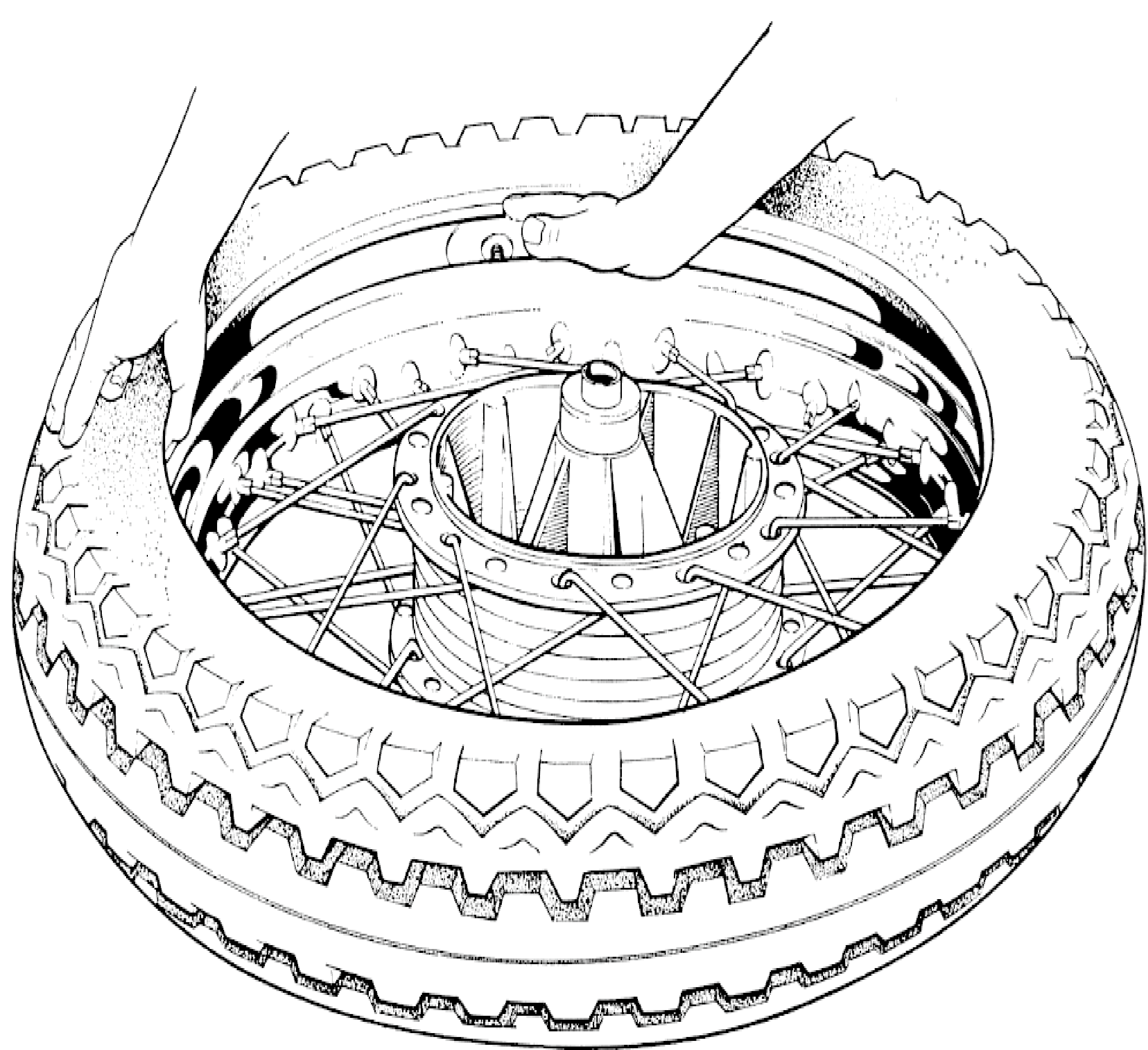


*Fig.H23 Careful levering of second bead over wheel rim*

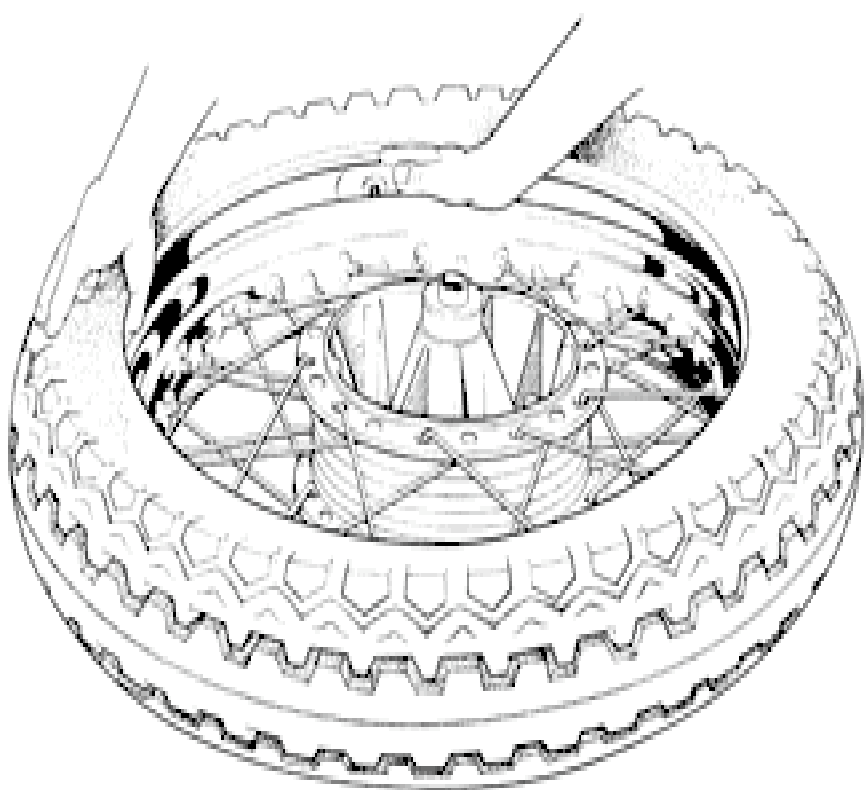




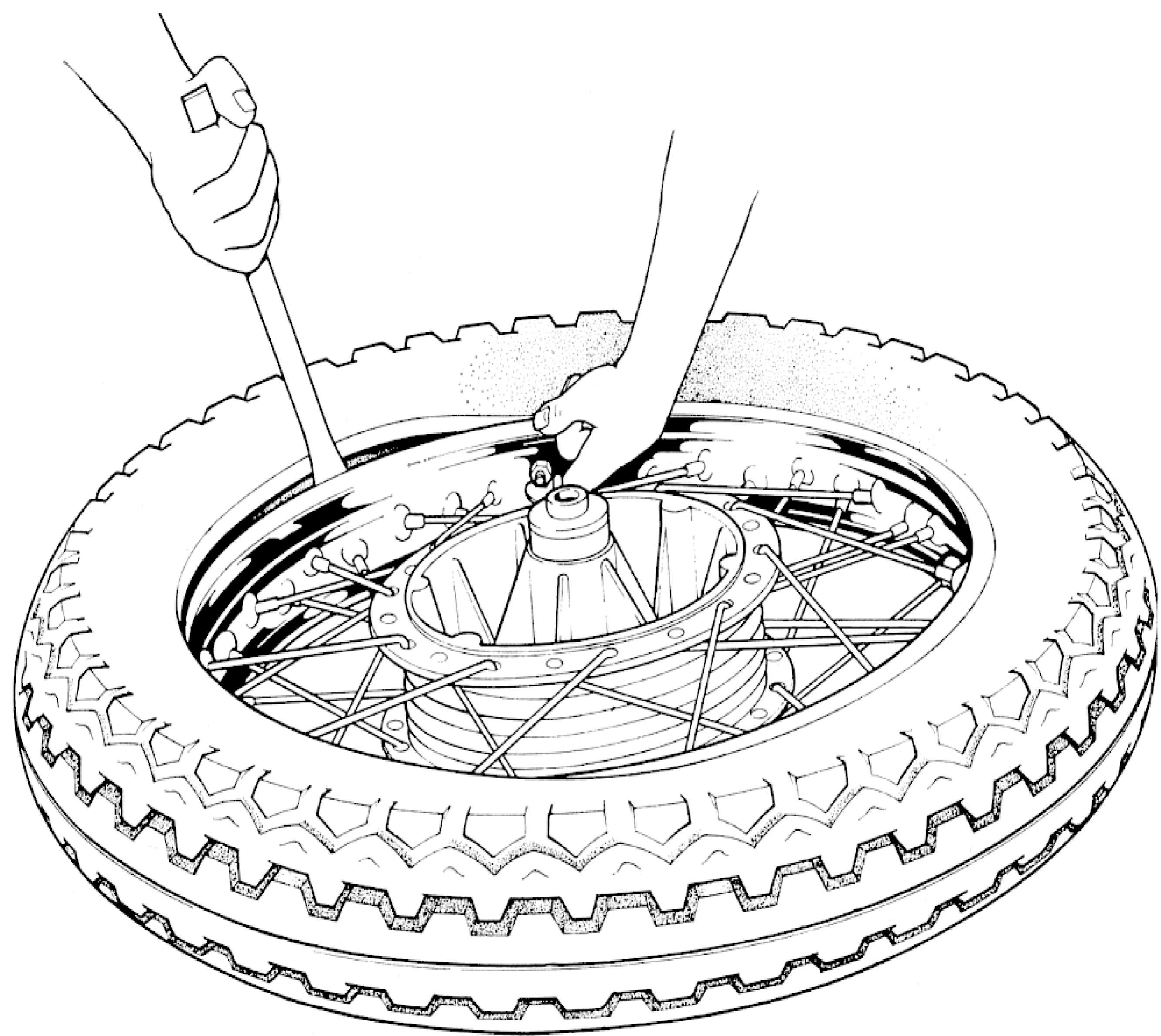
*Fig.H23 Careful levering of second bead over wheel rim*



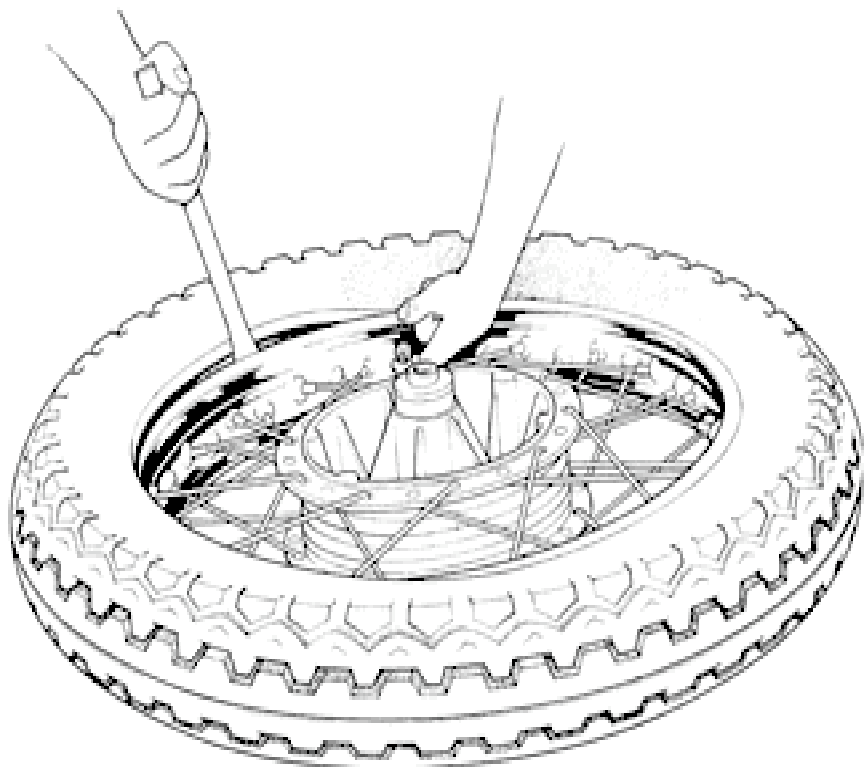
*Fig. H24 Lifting cover and engaging security bolt to rim*



*Fig.H24 Lifting cover and engaging security bolt to rim*



*Fig.H25 Pressing security bolt back through rim whilst levering second bead into position*



*Fig.H25 Pressing security bolt back through rim whilst levering second bead into position*

alternator

one ohm  
resistance      voltmeter

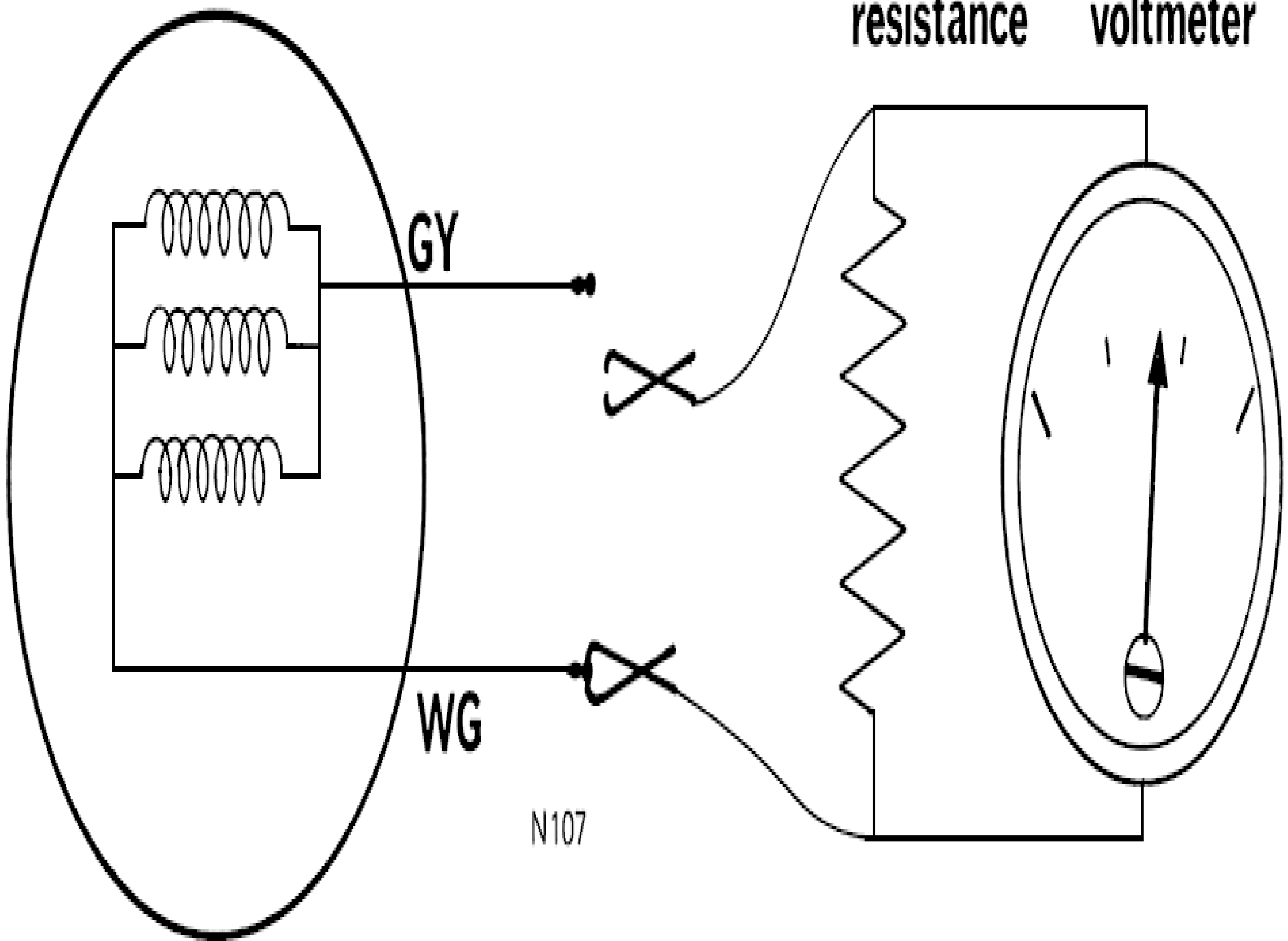


Fig. J1 Alternator test

alternator

one ohm

resistance

voltmeter

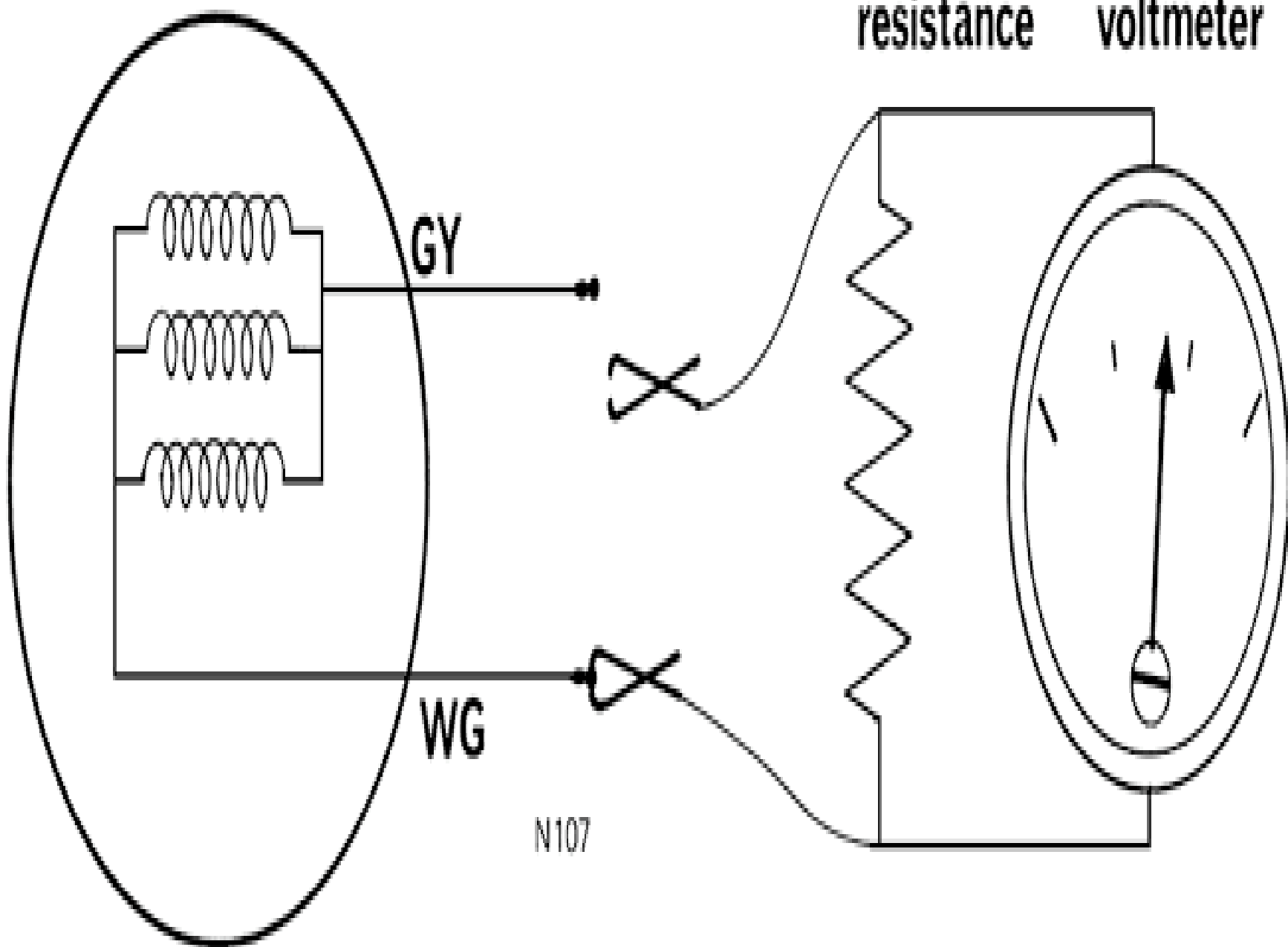


Fig. J1 Alternator test

from the harness

remove  
the centre  
connector



machine  
frame

rectifier

one ohm  
resistance

D.C.  
voltmeter



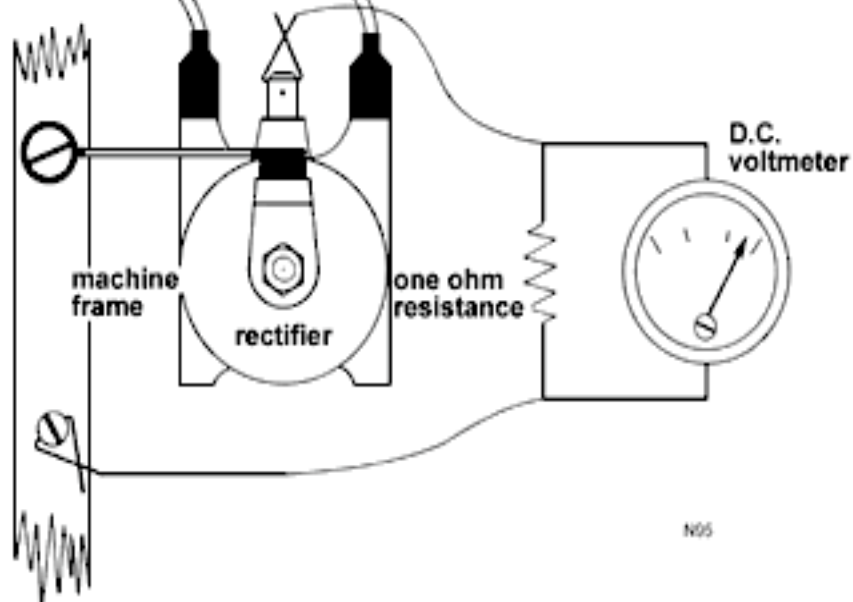
N95

*Fig. J2 Rectifier test connections*



from the harness

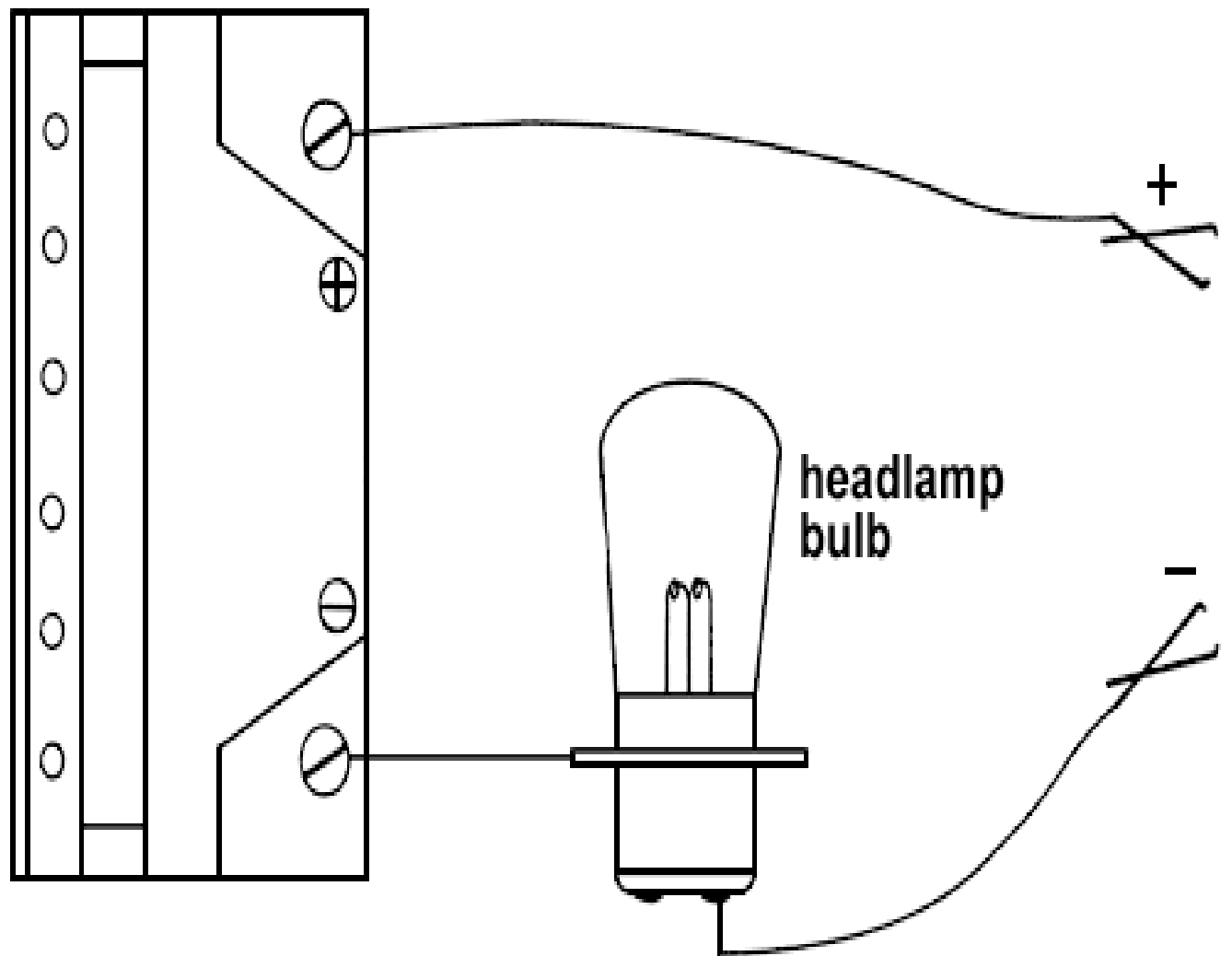
remove  
the centre  
connector



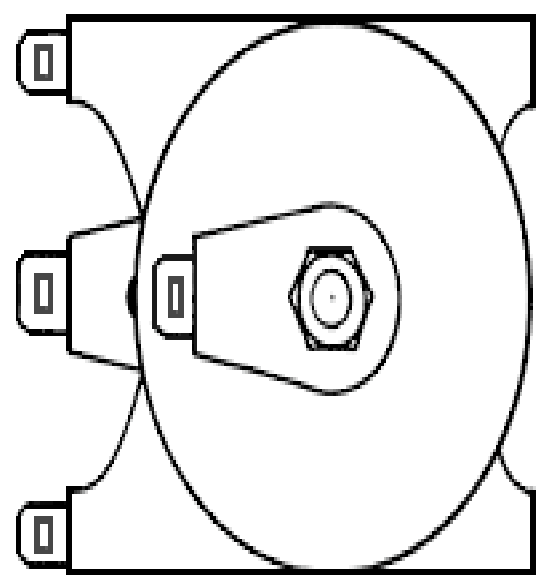
N05

Fig. J2 Rectifier test connections

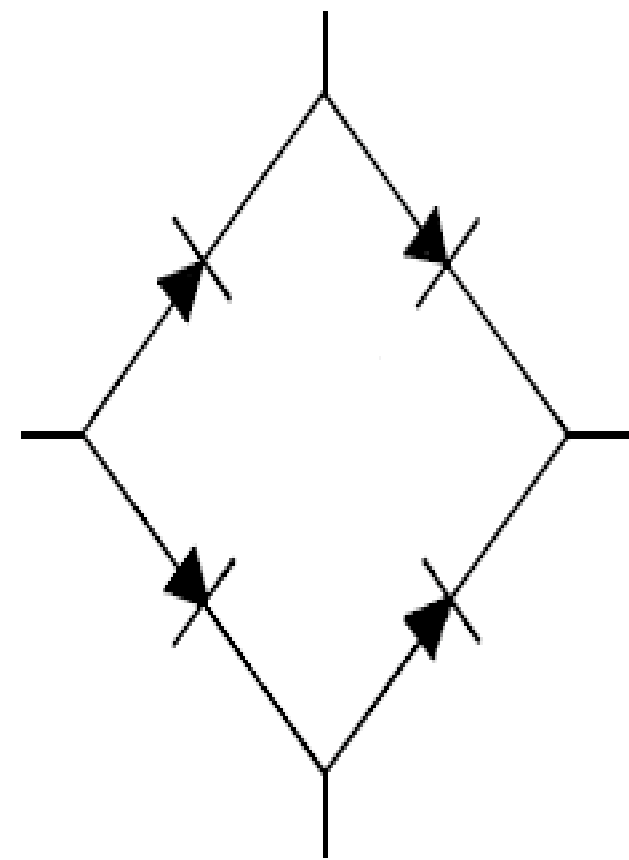
battery



rectifier

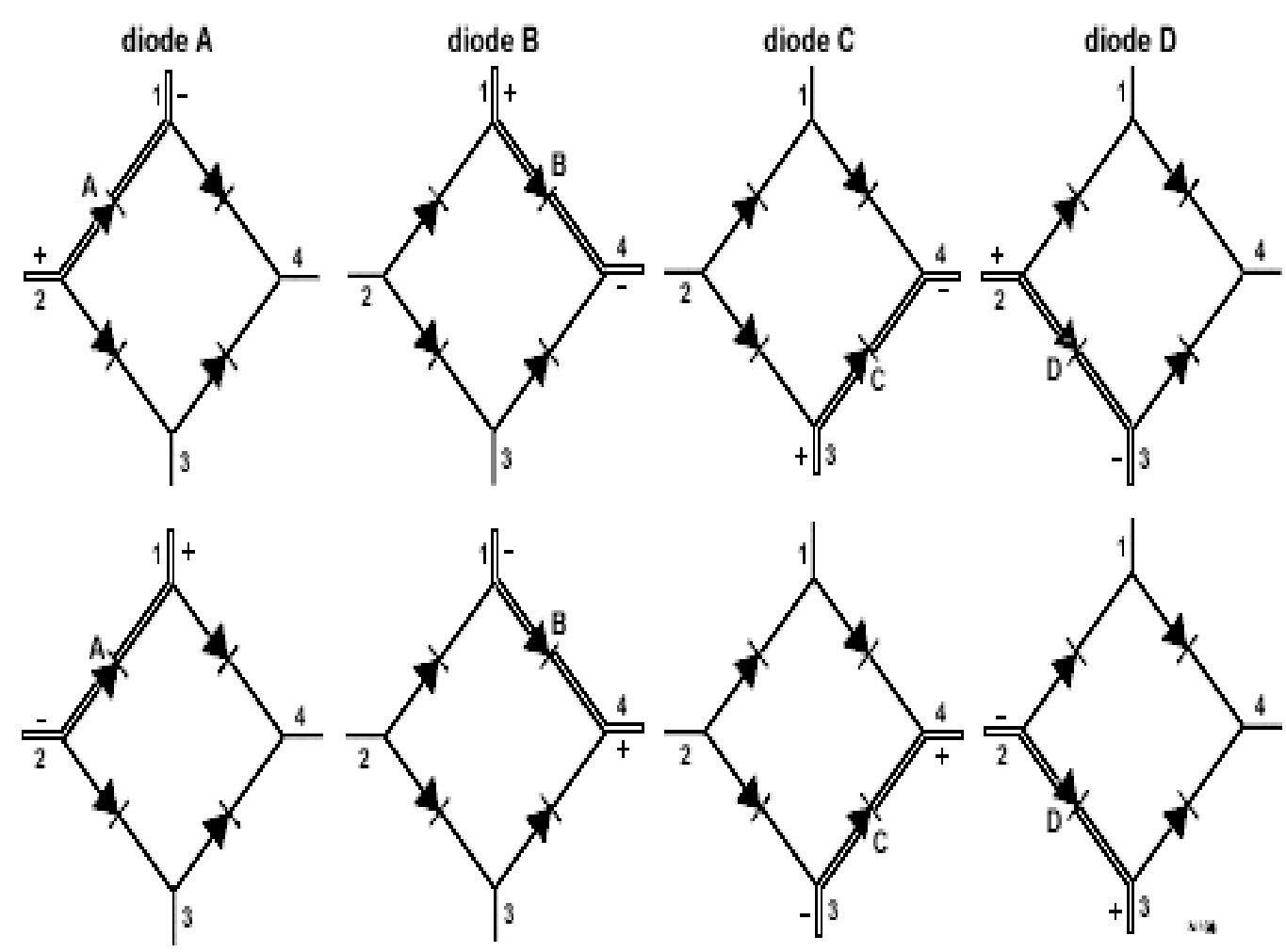


diode arrangement



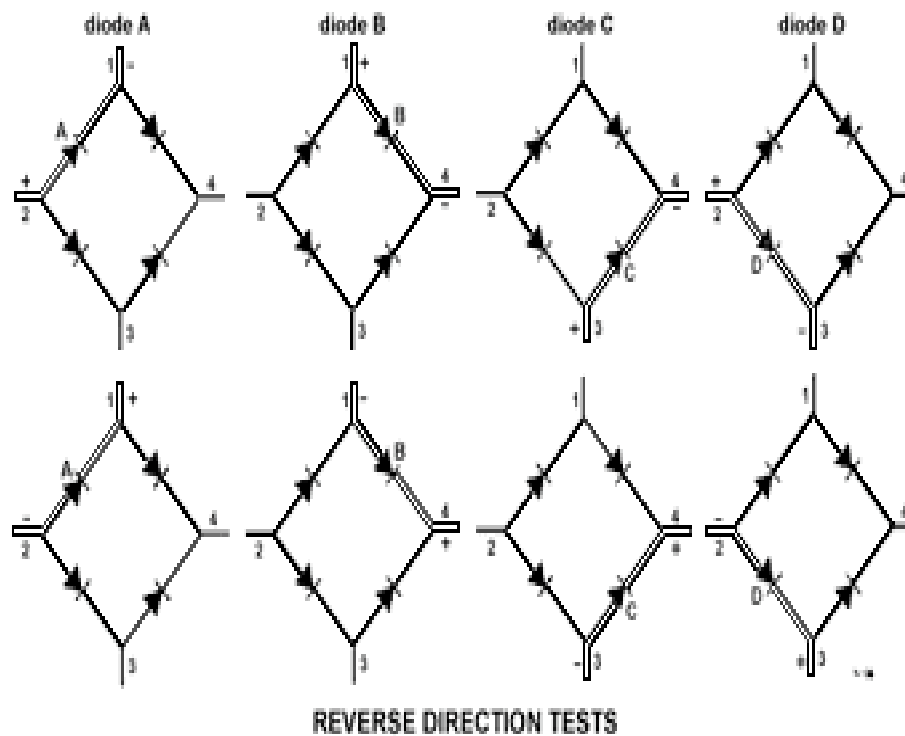
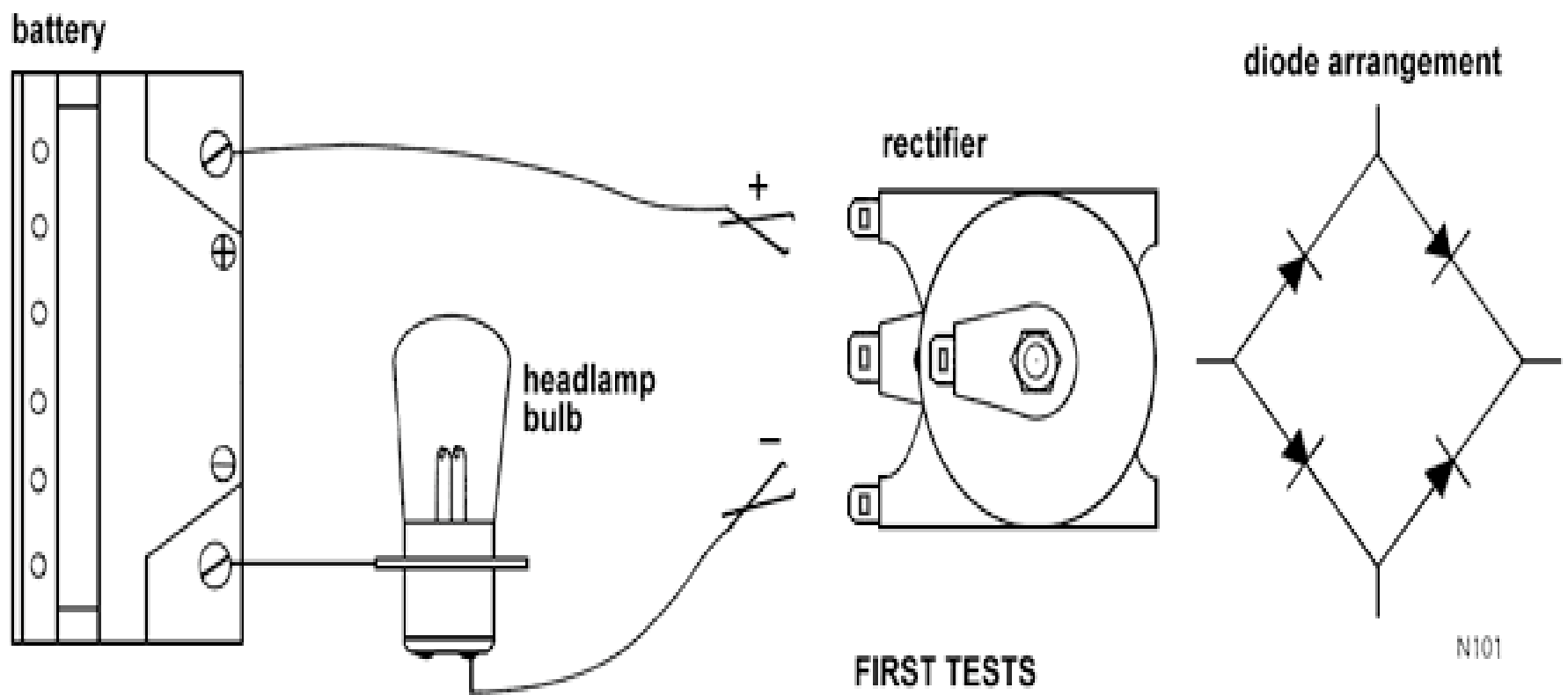
FIRST TESTS

N101

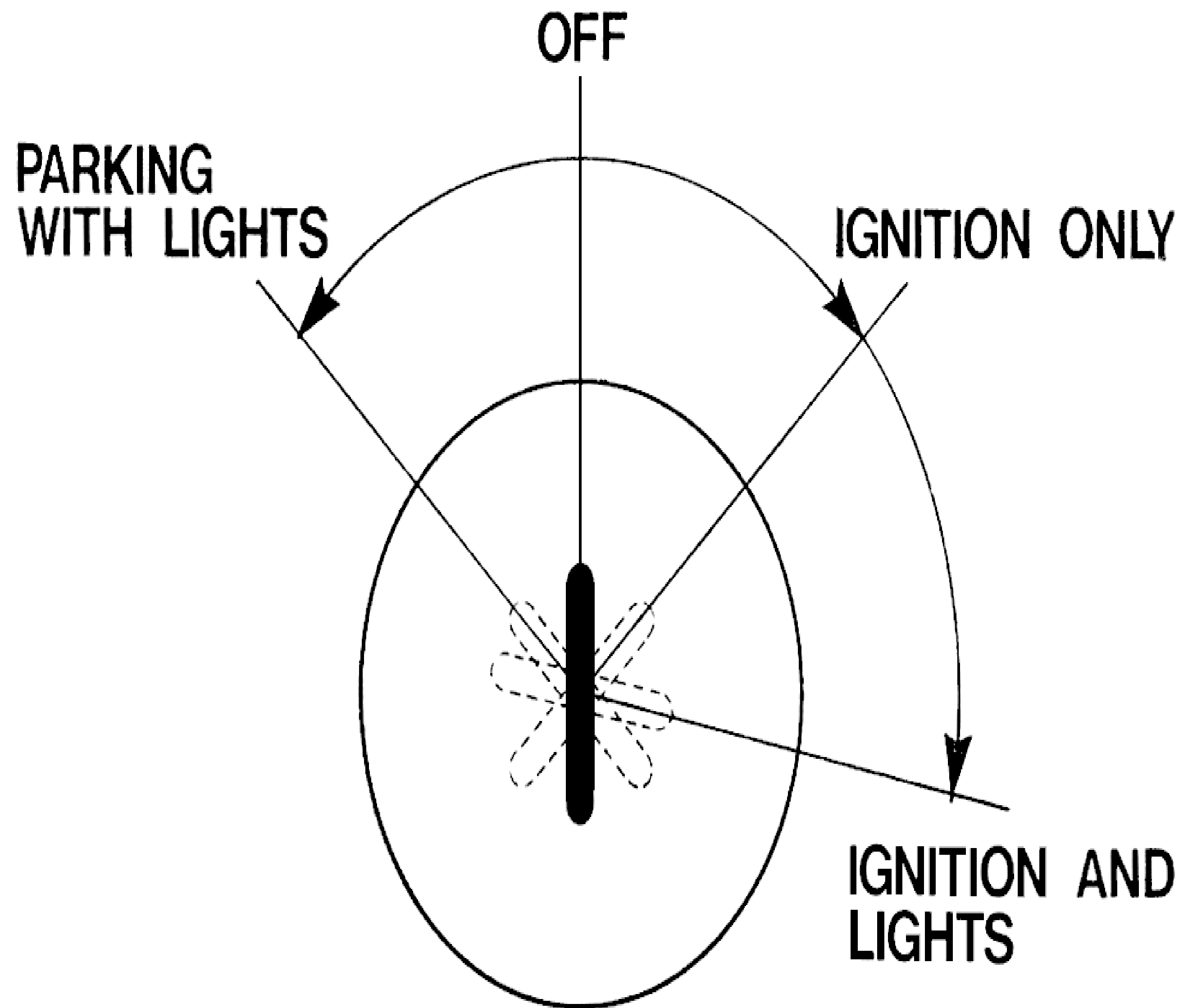


REVERSE DIRECTION TESTS

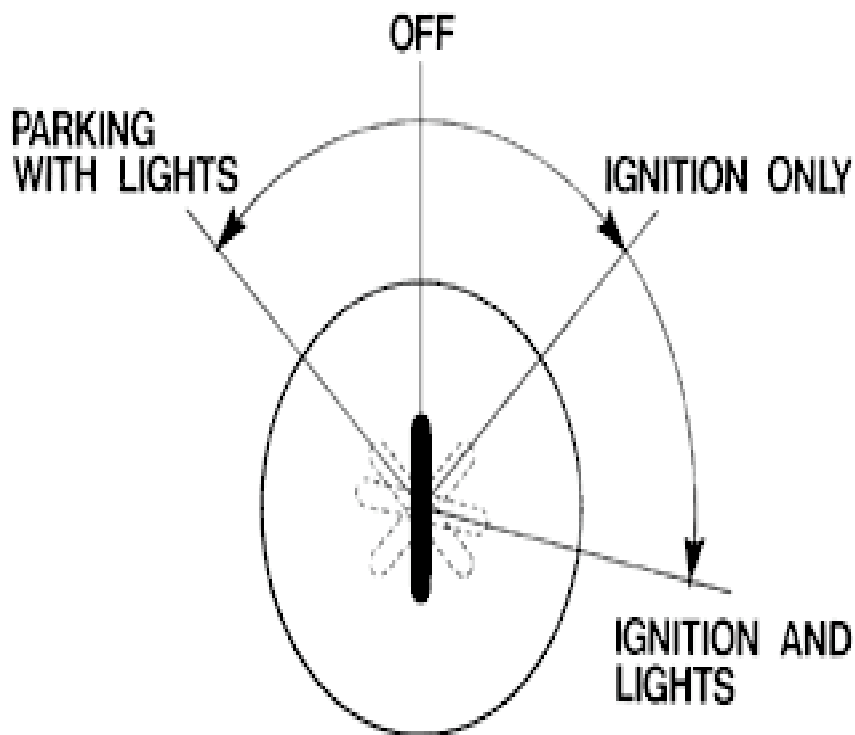
Fig. J3 Bench testing rectifier



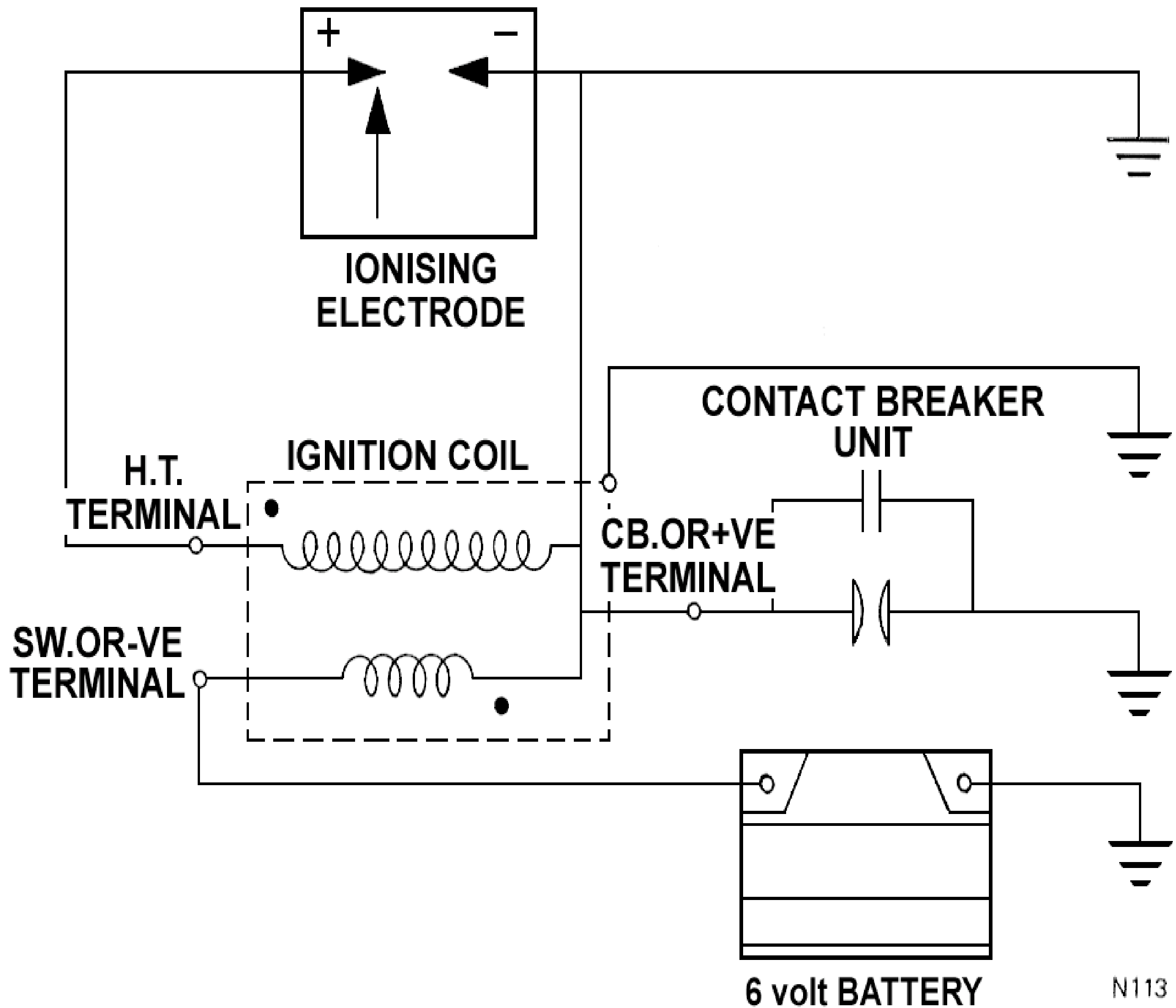
*Fig. J3 Bench testing rectifier*



*Fig. J4 Master switch positions*

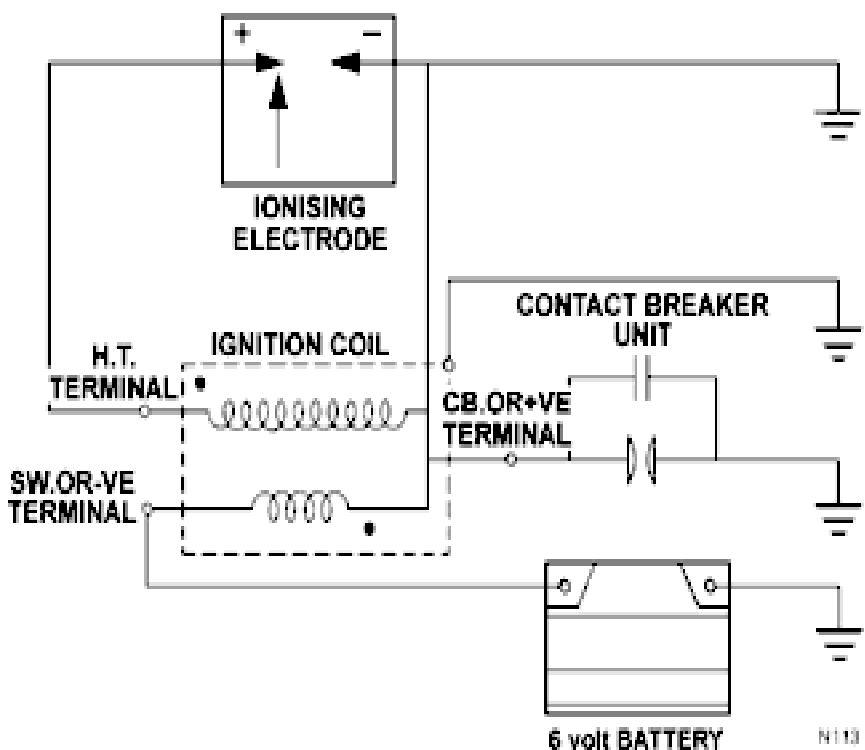


*Fig. J4 Master switch positions*



N113

*Fig. J5 Ignition coil testing arrangements incorporating 3 point test*



N113

*Fig. J5 Ignition coil testing arrangements incorporating 3 point test*

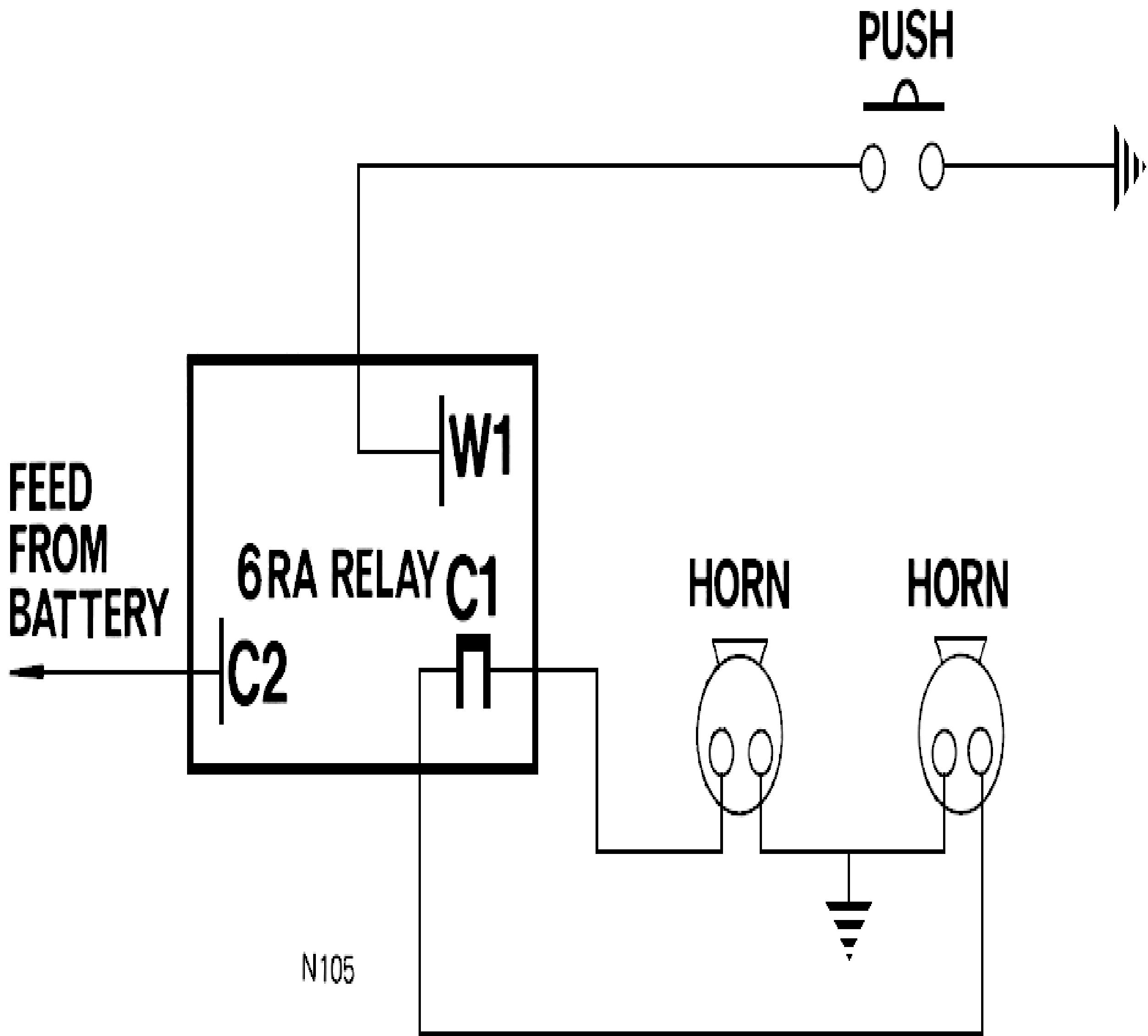


Fig. J6 Alternating horn circuit



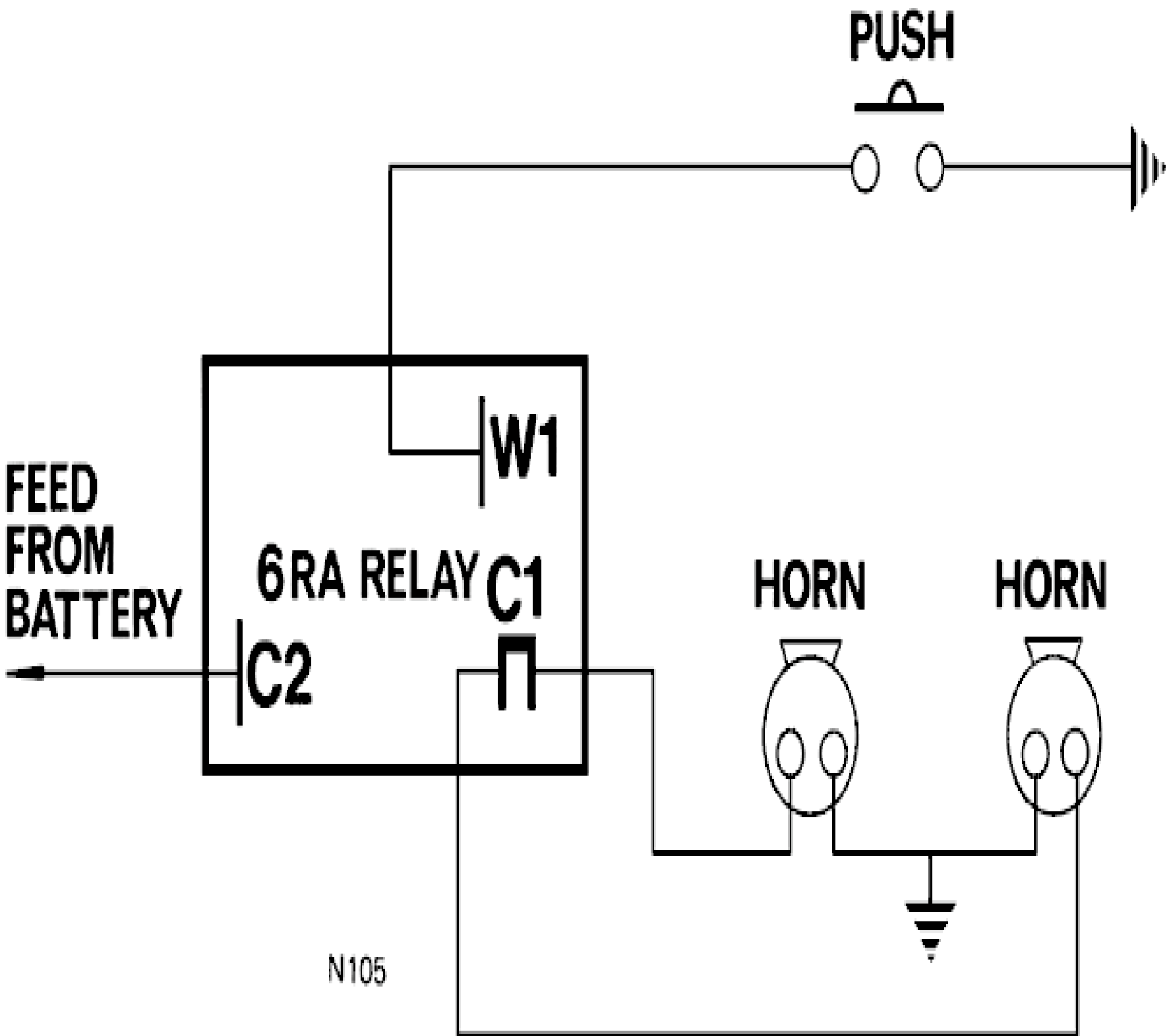
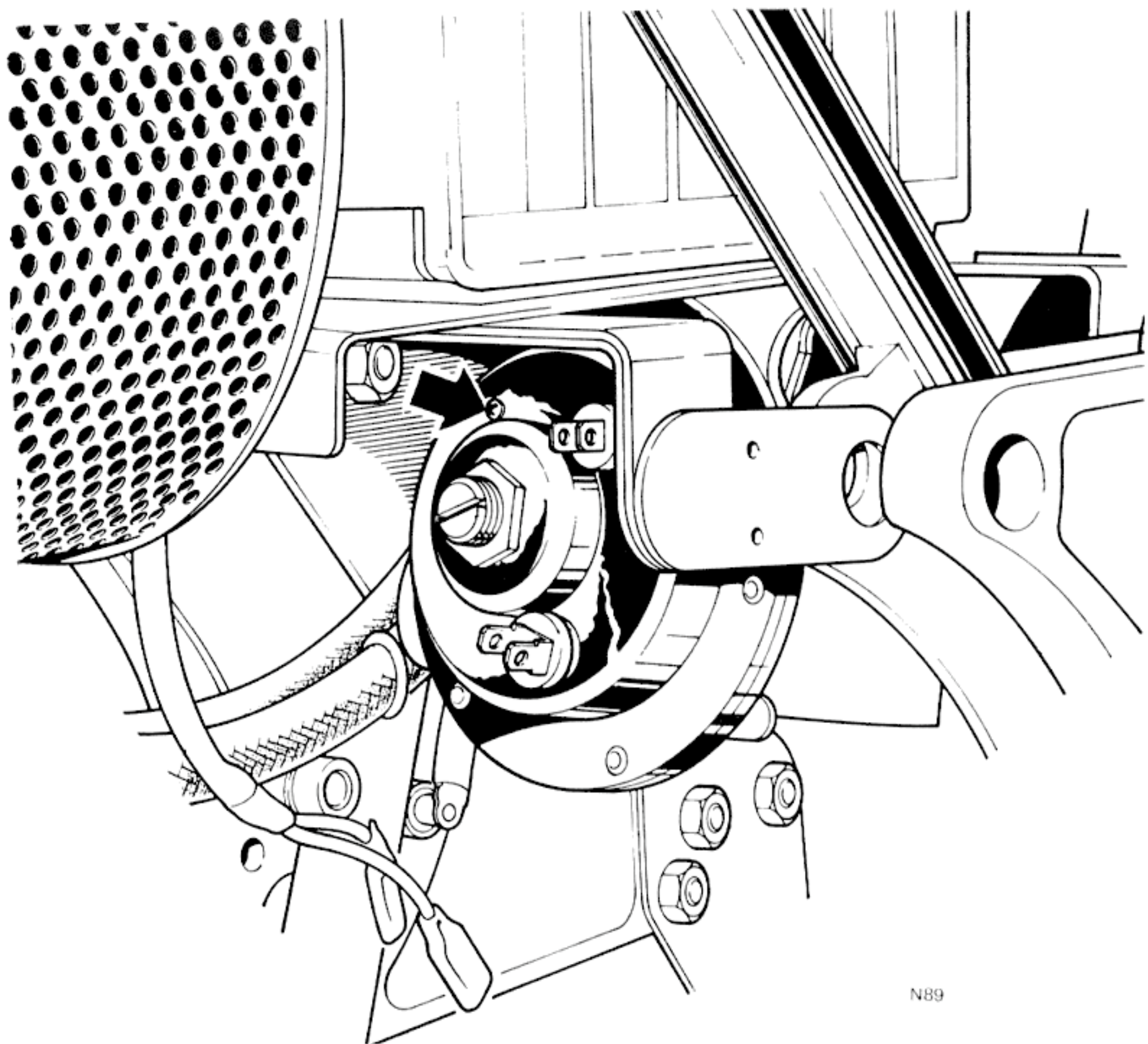
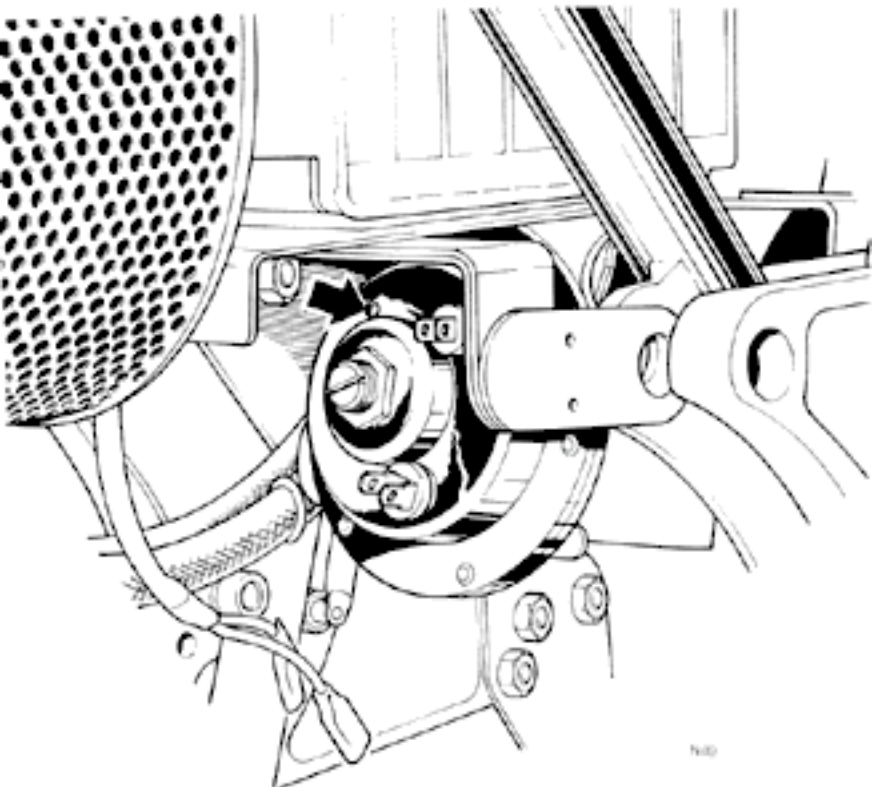


Fig. J6 Alternating horn circuit



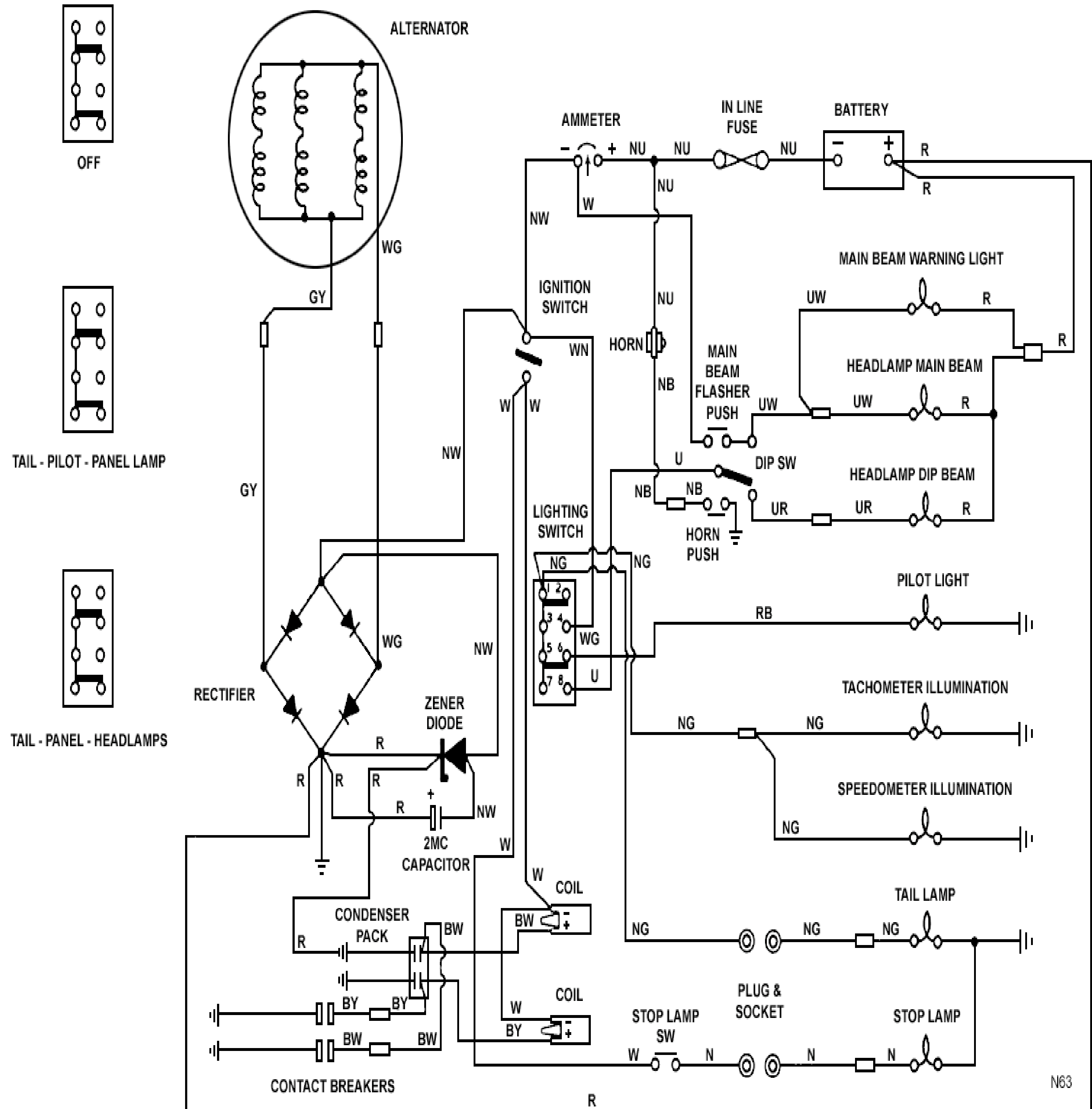
N89

*Fig. J7 Horn in position—note cross headed adjuster screw for horn contact breaker (arrowed)*



*Fig. J7 Horn in position—note cross headed adjuster screw for horn contact breaker (arrowed)*

Fig. J9 Pre-1971 wiring diagram All Models



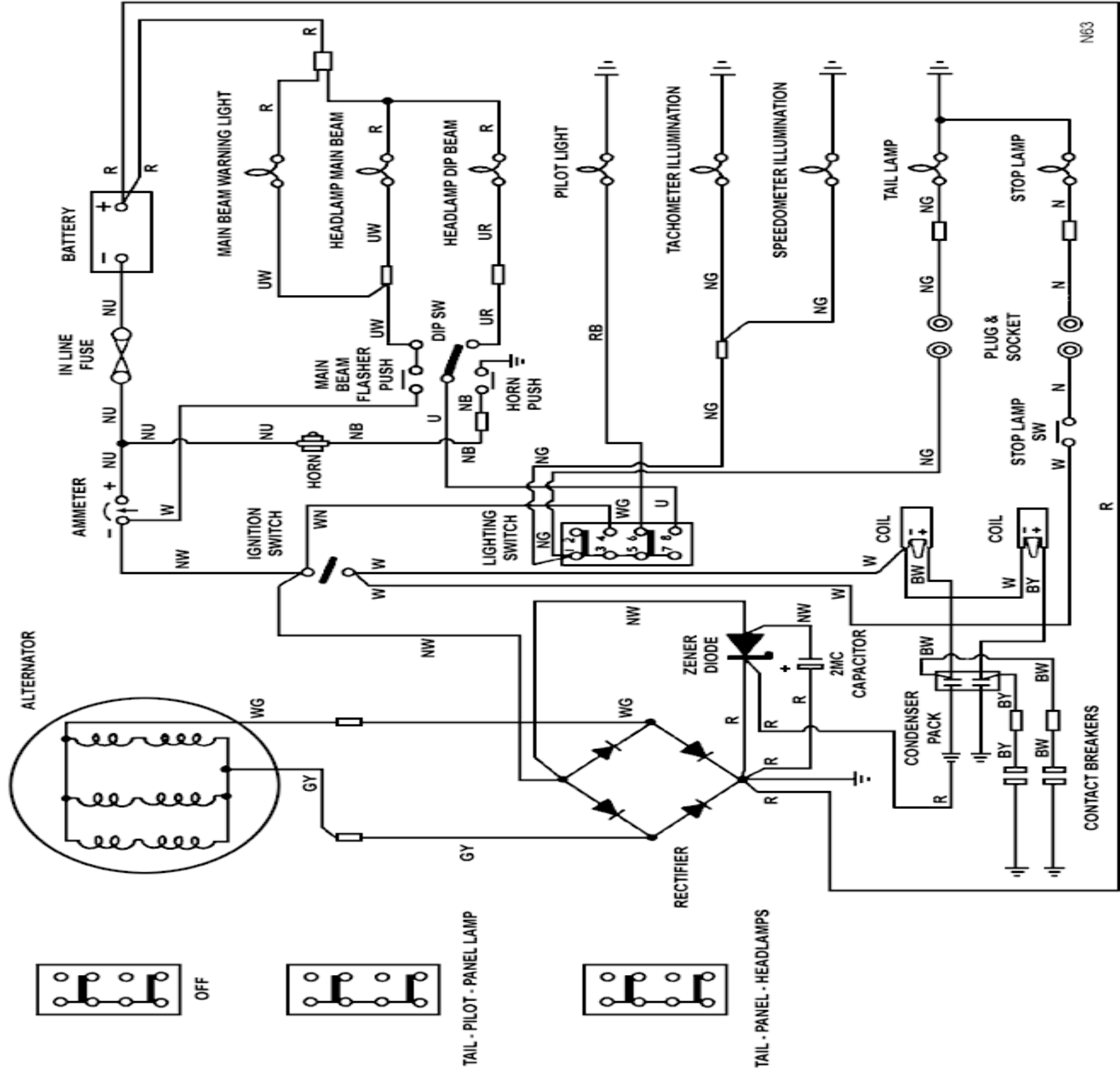
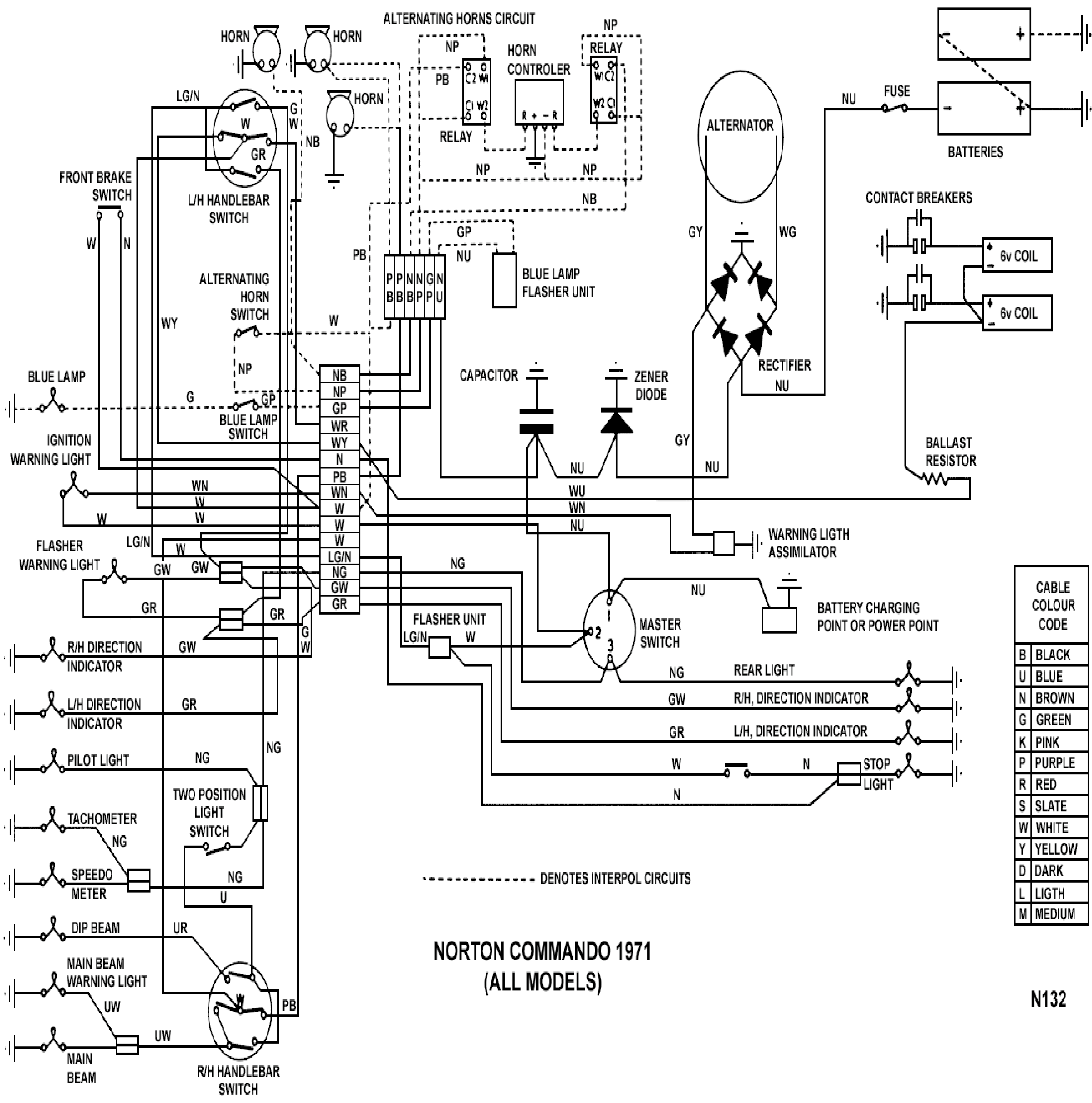


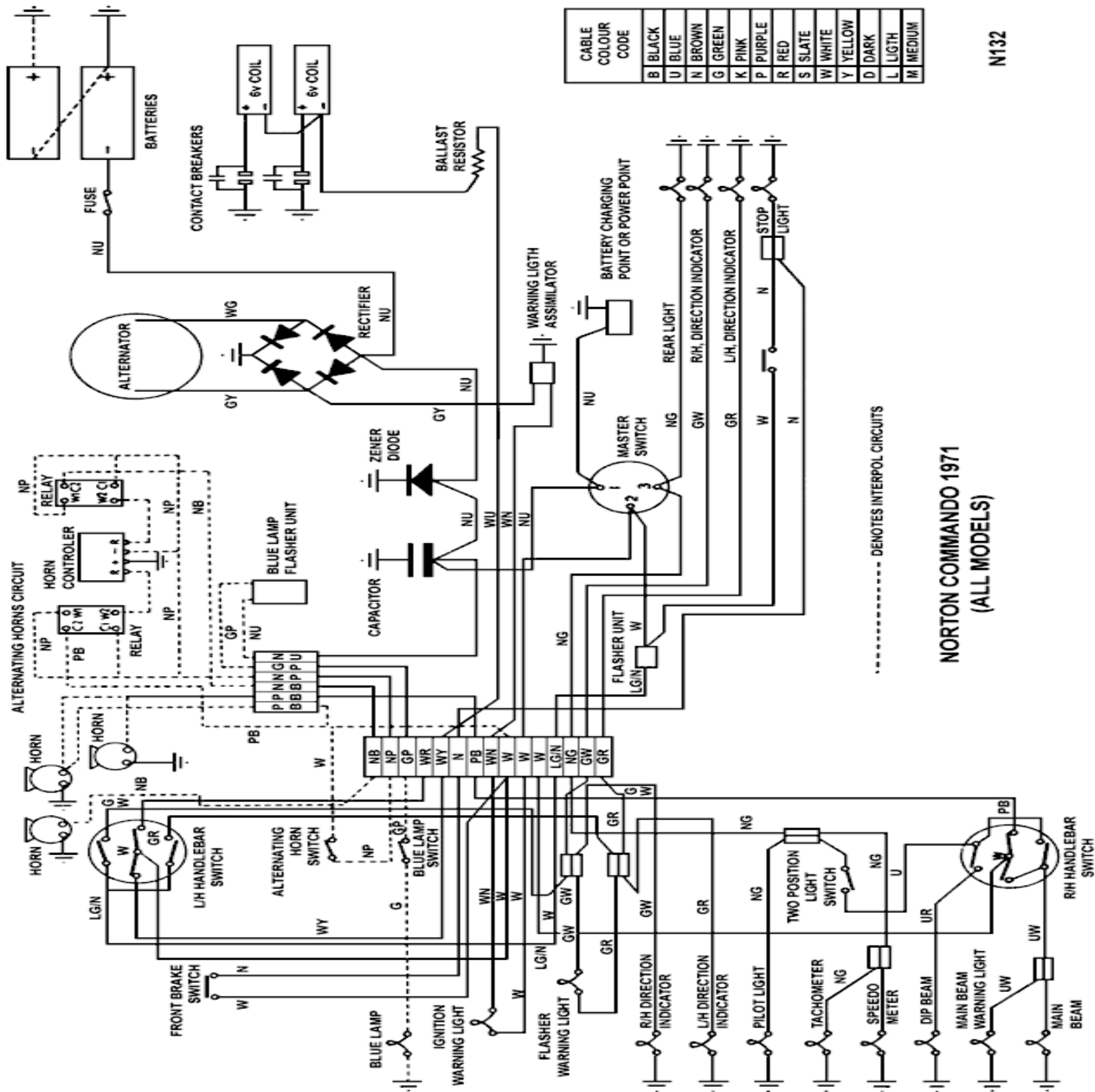
Fig. J9 Pre-1971 wiring diagram All Models

Fig. J10 1971 wiring diagram. All models



| CABLE COLOUR CODE |        |
|-------------------|--------|
| B                 | BLACK  |
| U                 | BLUE   |
| N                 | BROWN  |
| G                 | GREEN  |
| K                 | PINK   |
| P                 | PURPLE |
| R                 | RED    |
| S                 | SLATE  |
| W                 | WHITE  |
| Y                 | YELLOW |
| D                 | DARK   |
| L                 | LIGHT  |
| M                 | MEDIUM |

NORTON COMMANDO 1971 (ALL MODELS)



**NORTON COMMANDO 1971  
(ALL MODELS)**

Fig. J10 1971 wiring diagram. All models

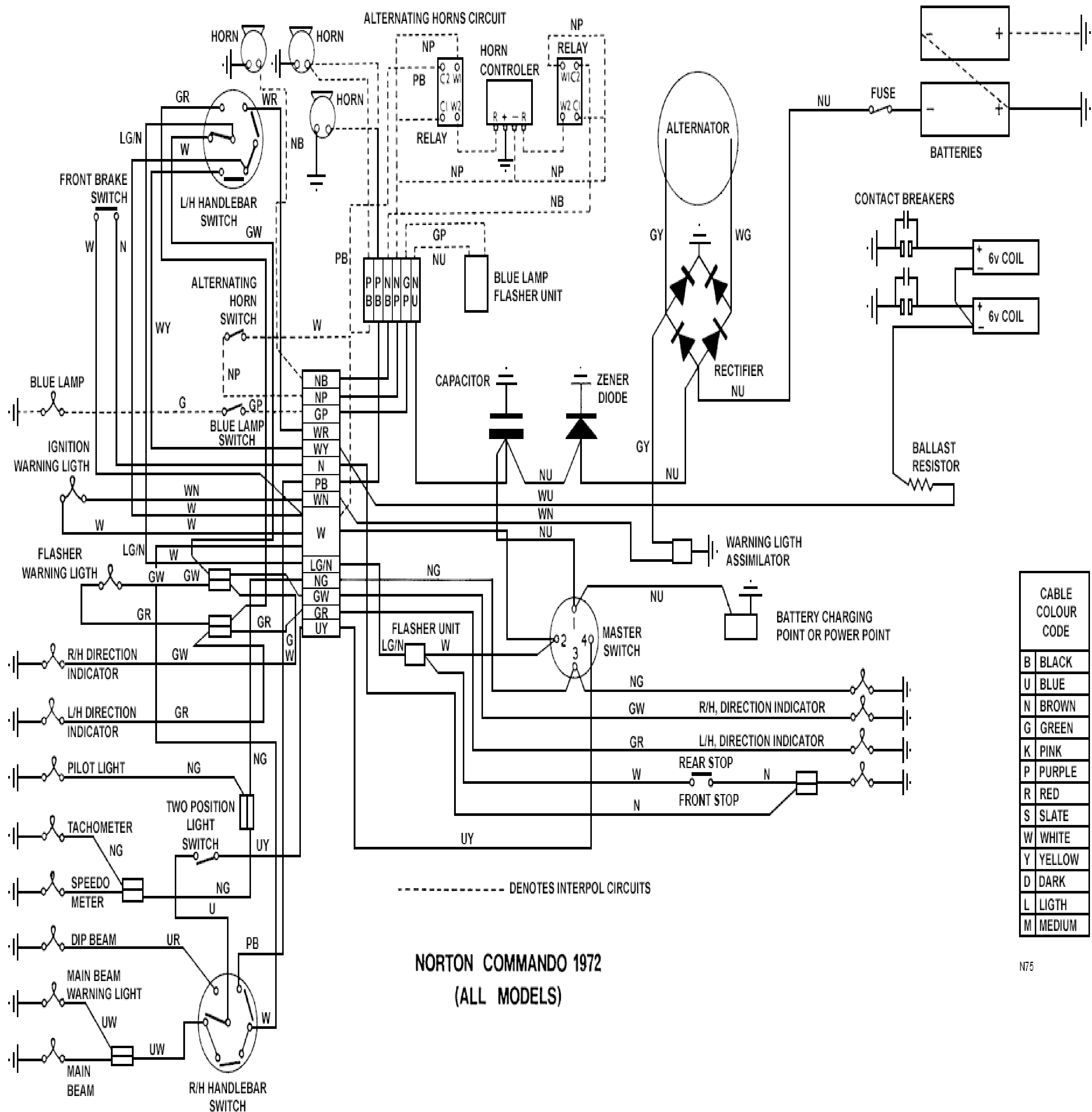
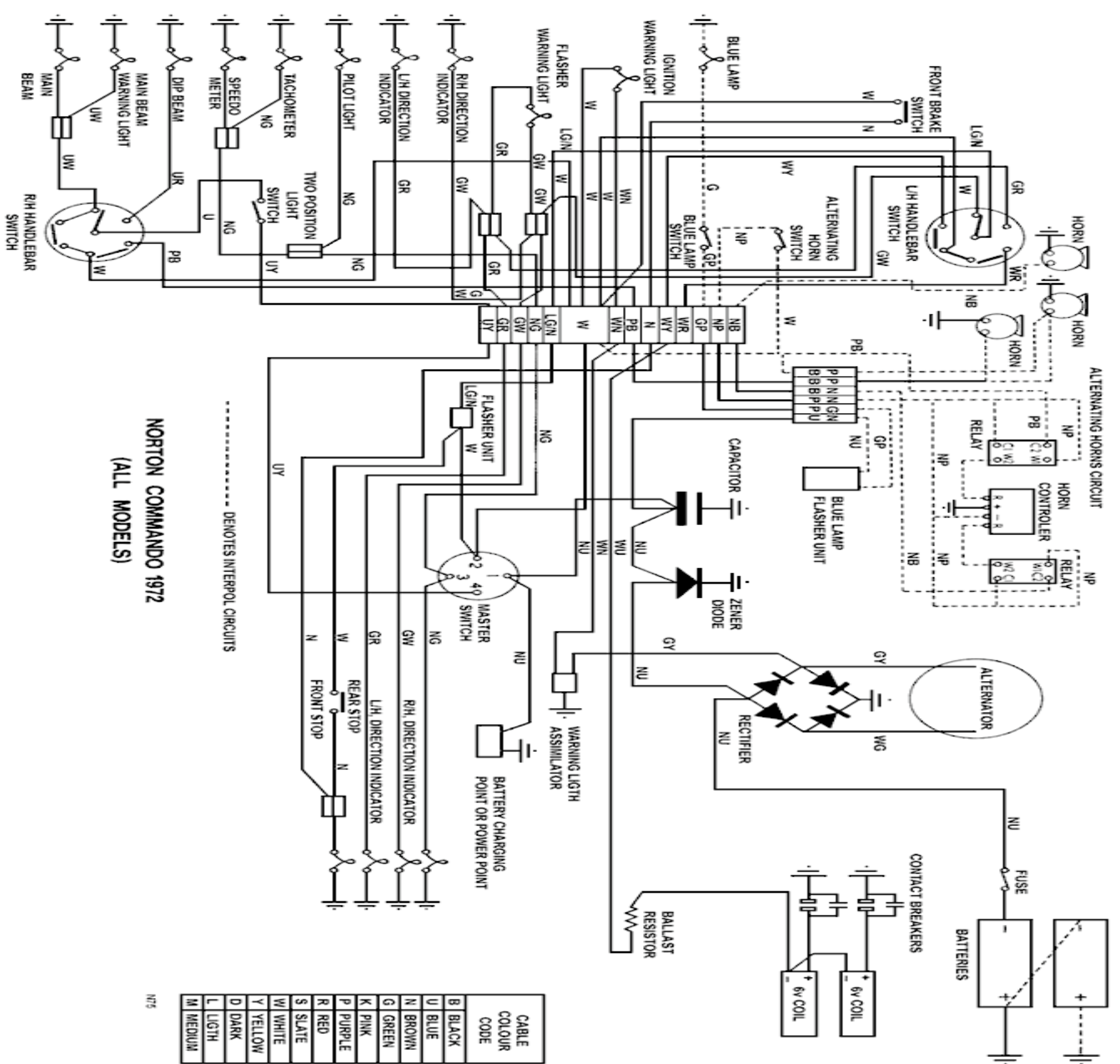


Fig. J11 1972 wiring diagram. All models

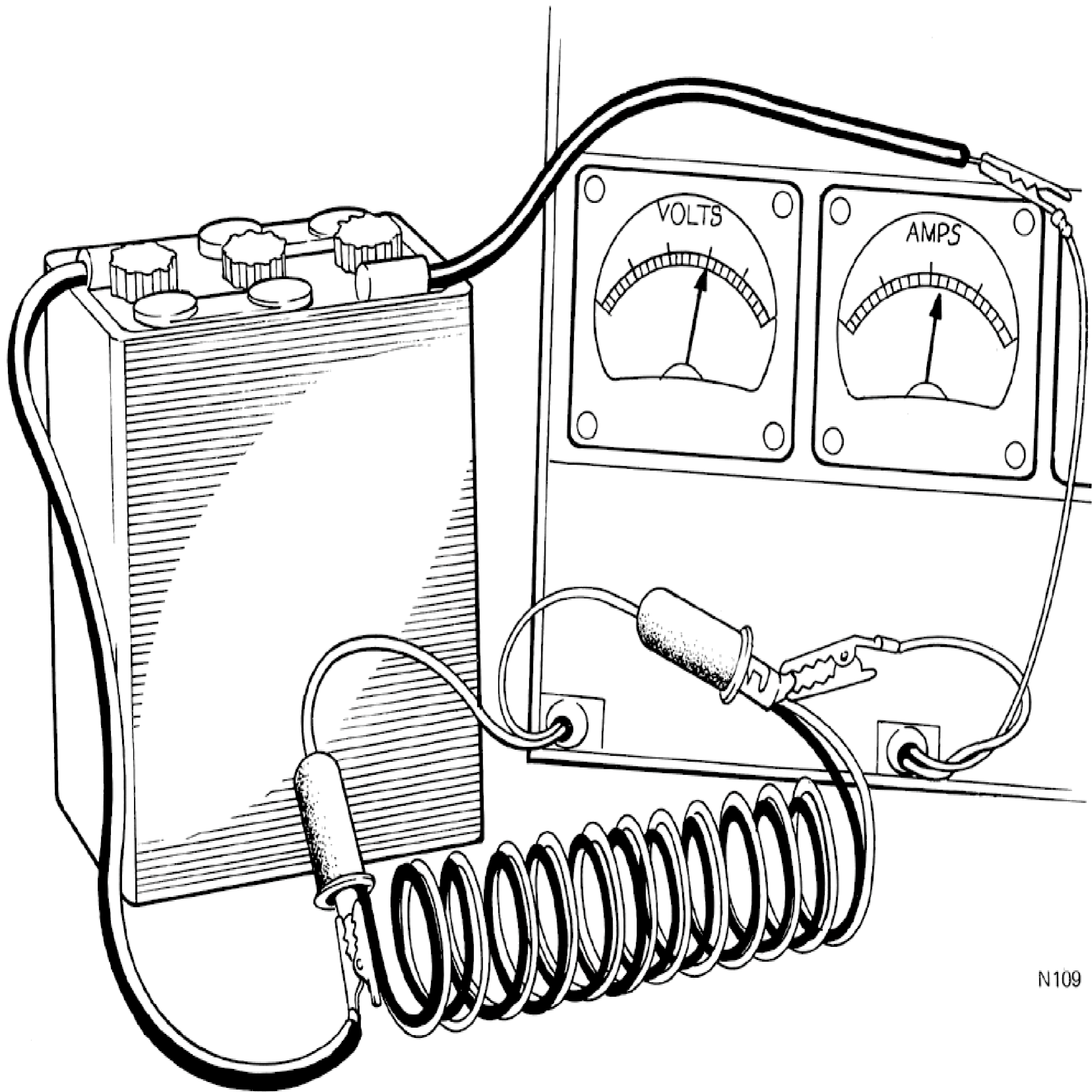


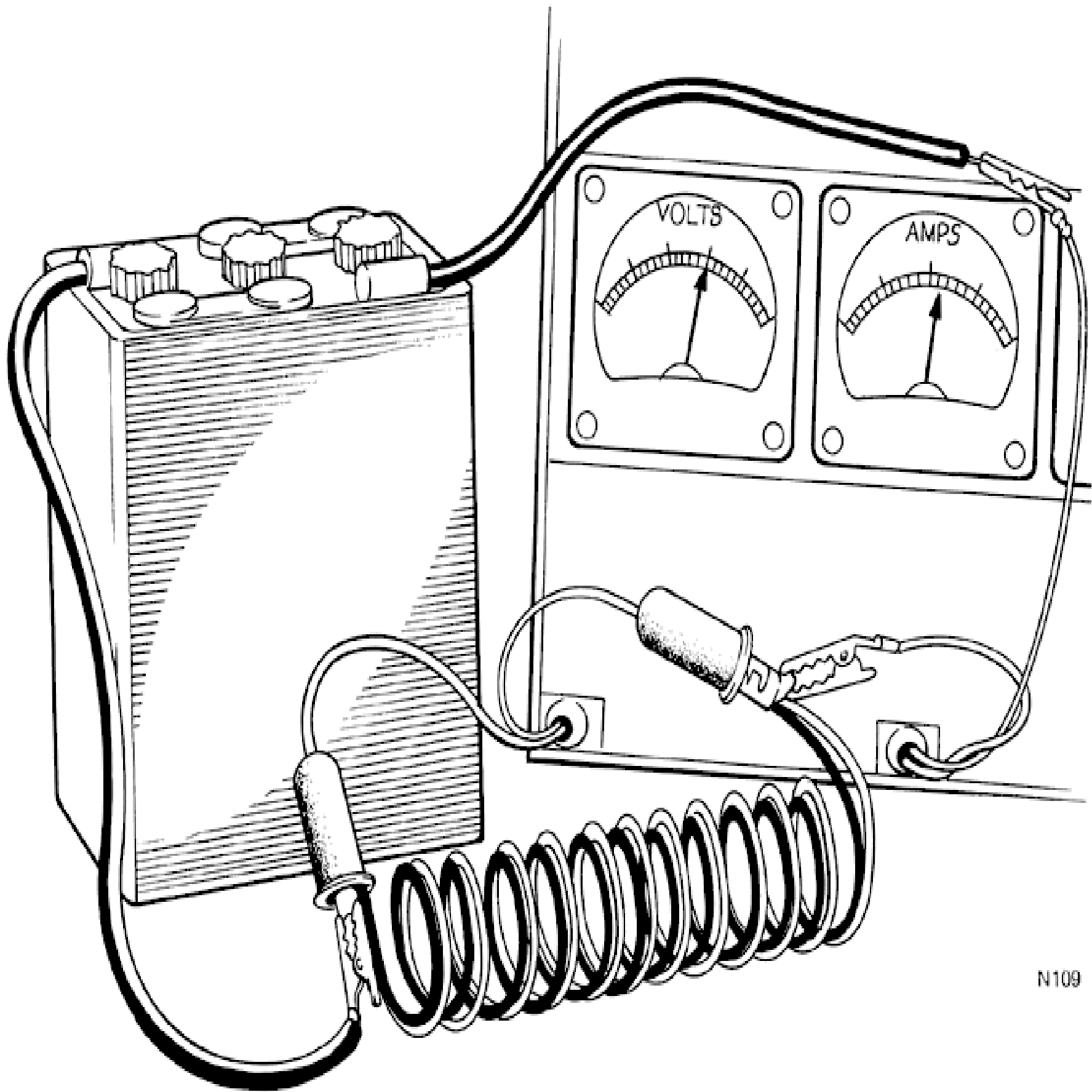


NORTON COMMANDO 1972  
(ALL MODELS)

| CABLE COLOUR | CODE       |
|--------------|------------|
| B            | BLACK      |
| U            | BLUE       |
| N            | BROWN      |
| G            | GREEN      |
| K            | PINK       |
| P            | PURPLE     |
| R            | RED        |
| S            | SLATE      |
| W            | WHITE      |
| Y            | YELLOW     |
| D            | DARK LIGHT |
| M            | MEDIUM     |

Fig. J11 1972 wiring diagram. All models





| UNIT                         | CASTROL                   | B.P.                         | SHELL                 | MOBIL                               | ESSO                        | TEXACO                     |
|------------------------------|---------------------------|------------------------------|-----------------------|-------------------------------------|-----------------------------|----------------------------|
| Engine and Primary Chaincase | Castrol GTX or Castrol XL | BP Super Visco-Static 20W/50 | Shell Super Motor Oil | Mobiloil Super or Mobiloil 20W/50   | Uniflo                      | Havoline Motor Oil 20W/50  |
| Gearbox                      | Castrol Hypoy             | BP Gear Oil SAE 90 EP        | Shell Spirax 90 EP    | Mobilube GX90 or HD90               | Esso Gear Oil GX 90/140     | Multigear Lubricant EP 90  |
| Swinging Arm Bushes          | Castrol Hi-Press          | BP Gear Oil SAE 140 EP       | Shell Spirax 140 EP   | Mobilube C140 or HD 140             | Esso Gear Oil GX 90/140     | Multigear Lubricant EP 140 |
| Hubs and Frame Parts         | Castrol LM Grease         | BP Energrease L2             | Shell Retinax A or CD | Mobilgrease MP or Mobilgrease Super | Esso Multi Purpose Grease H | Marfak All-Purpose Grease  |
| Front Forks                  | Castrolite                | BP Super Visco-Static 10W/40 | Shell Super Motor Oil | Mobiloil Super                      | Uniflo                      | Havoline Motor Oil 10W/30  |
| Rear Chain                   | Castrol Graphited Grease  | BP Energrease A0             | Shell Retinax A or CD | Mobilgrease MP or Mobilgrease Super | Esso MP Grease Moly         | Marfak All-Purpose Grease  |
| Easing Rusted Parts          | Castrol Penetrating Oil   | BP Penetrating Oil           | Shell Easing Oil      | Mobil Handy Oil                     | Esso Penetrating Oil        | Graphited Penetrating Oil  |

|           |                                 |                        |                                    |   |                                      |
|-----------|---------------------------------|------------------------|------------------------------------|---|--------------------------------------|
|           | Engine and<br>Primary Chaincase | Gearbox                | Telescopic Forks                   | Wheel Bearings,<br>Swinging Forks and<br>Steering Races | Easing Rusted<br>Parts               |
| DUCKHAM'S | Duckham's Q20/50                | Duckham's Hypoid<br>90 | Duckham's Q5500                    | Duckham's LB 10<br>Grease                               | Duckham's Adpanel<br>Penetrating Oil |
| SUN OIL   | Sunoco Special<br>Motor Oil     | Sunep 1070             | Sunoco Special<br>Motor Oil 20W/50 | Sunep 1130  | —                                    |
| FILTRATE  | Filtrate Super<br>20W/50        | Filtrate EP 90         | Filtrate A.T.<br>Fluid 'F'         | Filtrate Super<br>Lithium Grease                        | —                                    |

- ① ENGINE OIL TANK
- ② GEARBOX
- ③ PRIMARY CHAINCASE
- ④ CONTROL CABLES
- ⑤ TELESCOPIC FORK
- ⑥ SWINGING ARM
- ⑦ WHEEL HUBS
- ⑧ ⑧ BRAKE CAMS
- ⑨ BRAKE PEDAL PIVOT

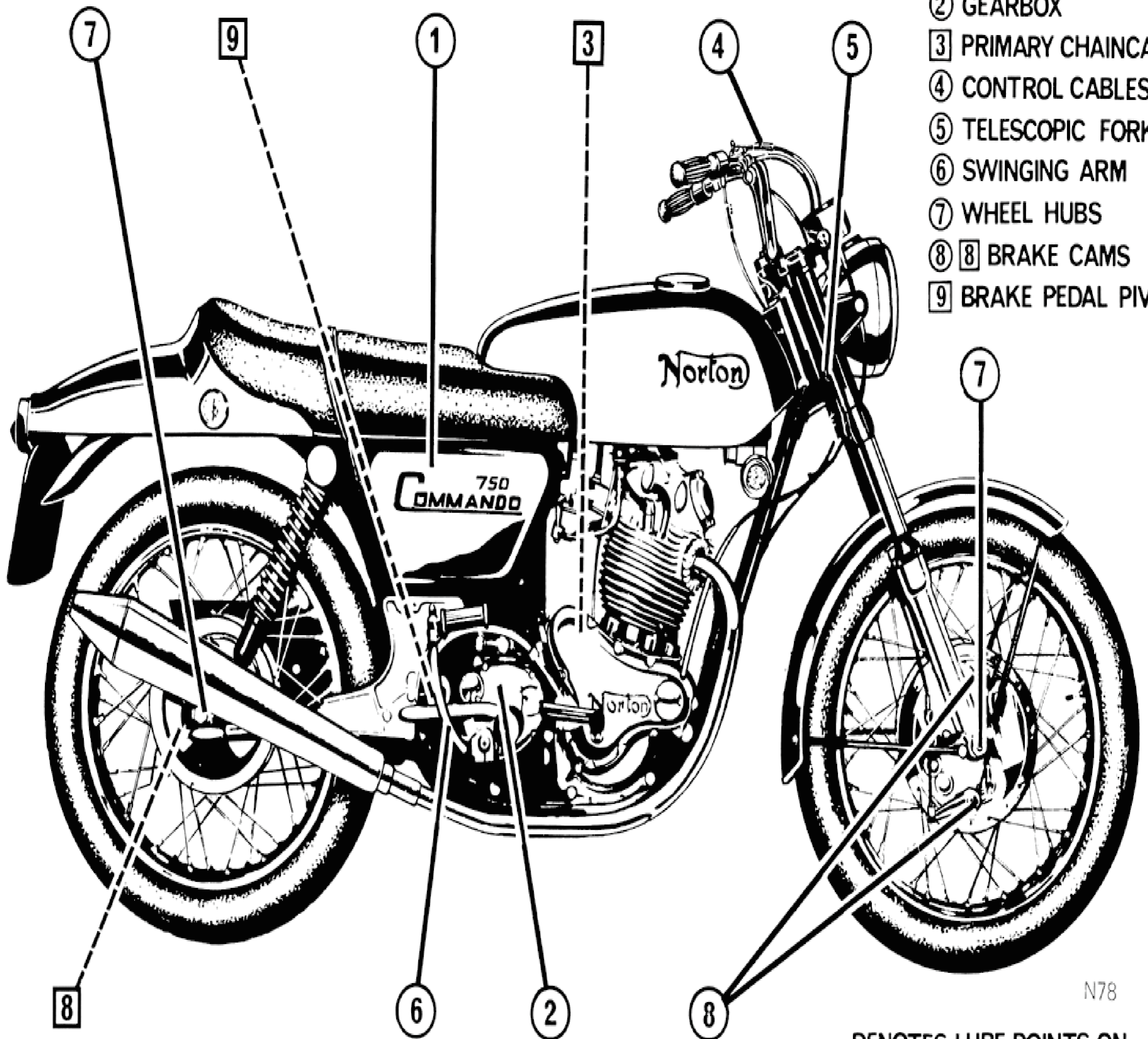


Fig. K1 Lubrication chart

N78

Footnote:

- DENOTES LUBE POINTS ON LEFT SIDE OF MOTORCYCLE
- DENOTES LUBE POINTS ON RIGHT SIDE OF MOTORCYCLE

① ENGINE OIL TANK

② GEARBOX

③ PRIMARY CHAINCASE

④ CONTROL CABLES

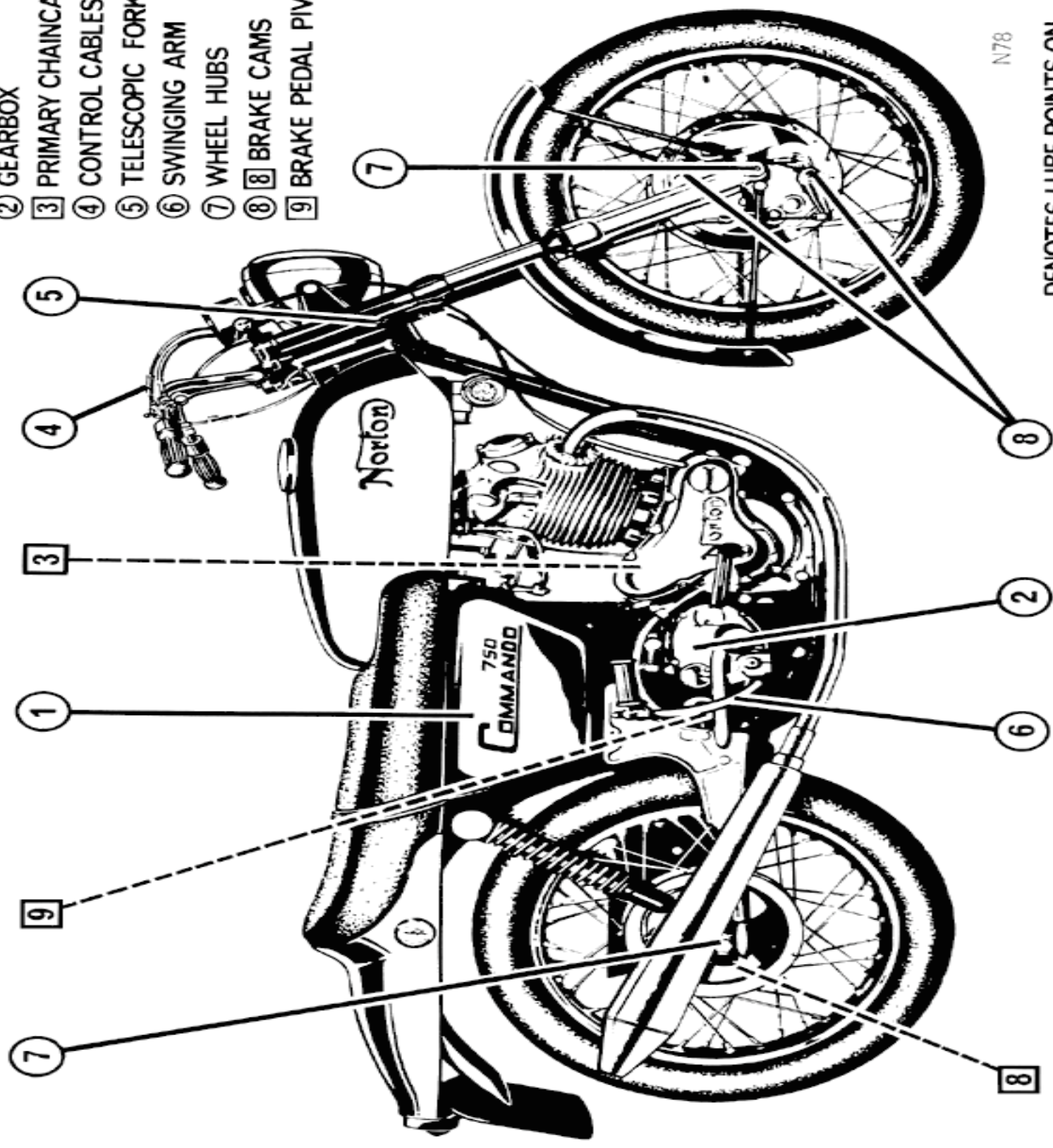
⑤ TELESCOPIC FORK

⑥ SWINGING ARM

⑦ WHEEL HUBS

⑧ BRAKE CAMS

⑨ BRAKE PEDAL PIVOT



N78

□ DENOTES LUBE POINTS ON

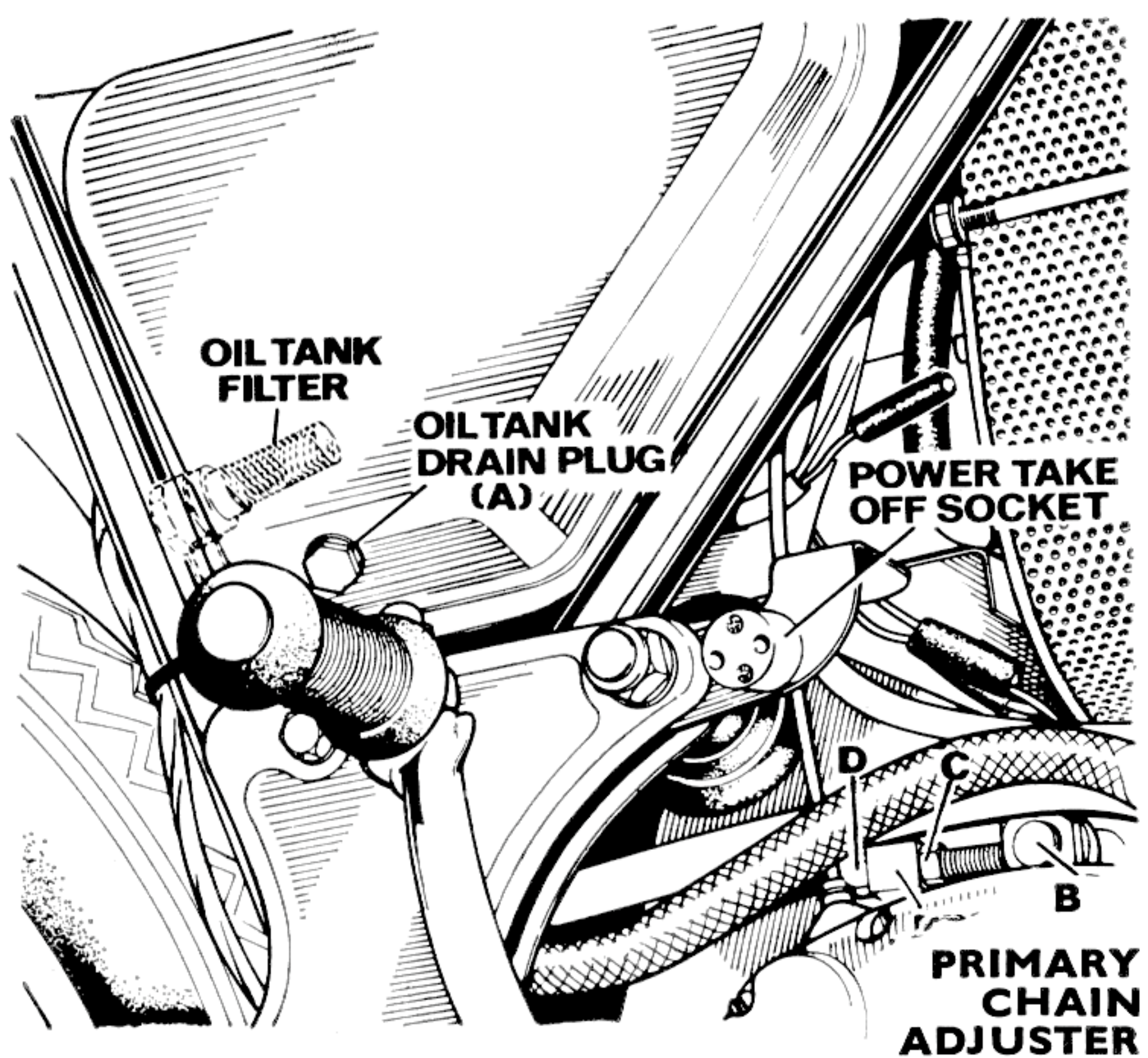
LEFT SIDE OF MOTORCYCLE

○ DENOTES LUBE POINTS ON

RIGHT SIDE OF MOTORCYCLE

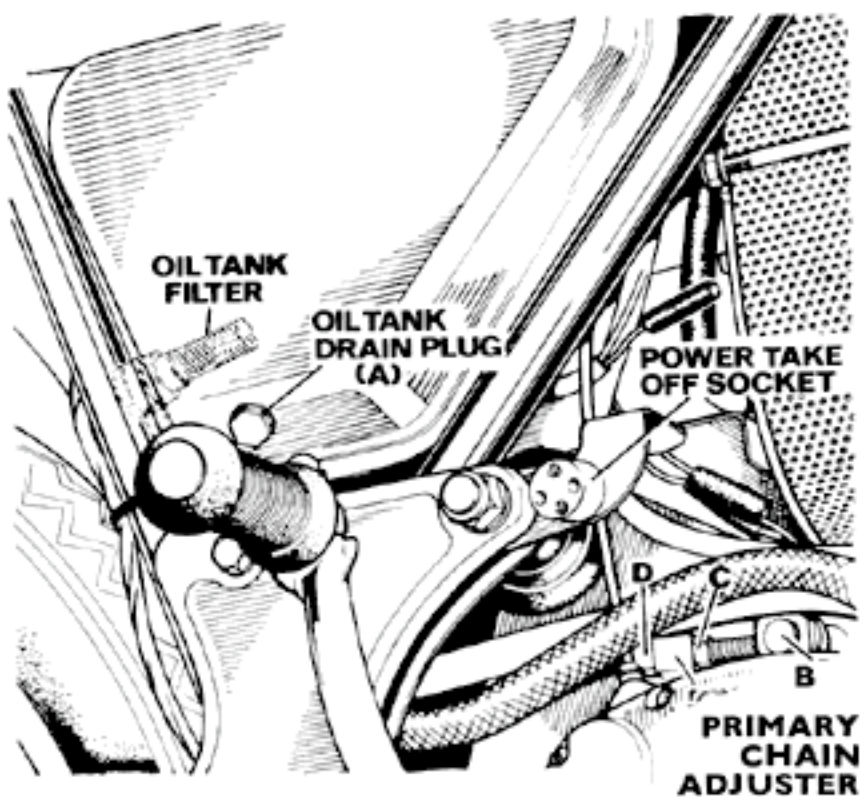
Footnote:

Fig. K1 Lubrication chart

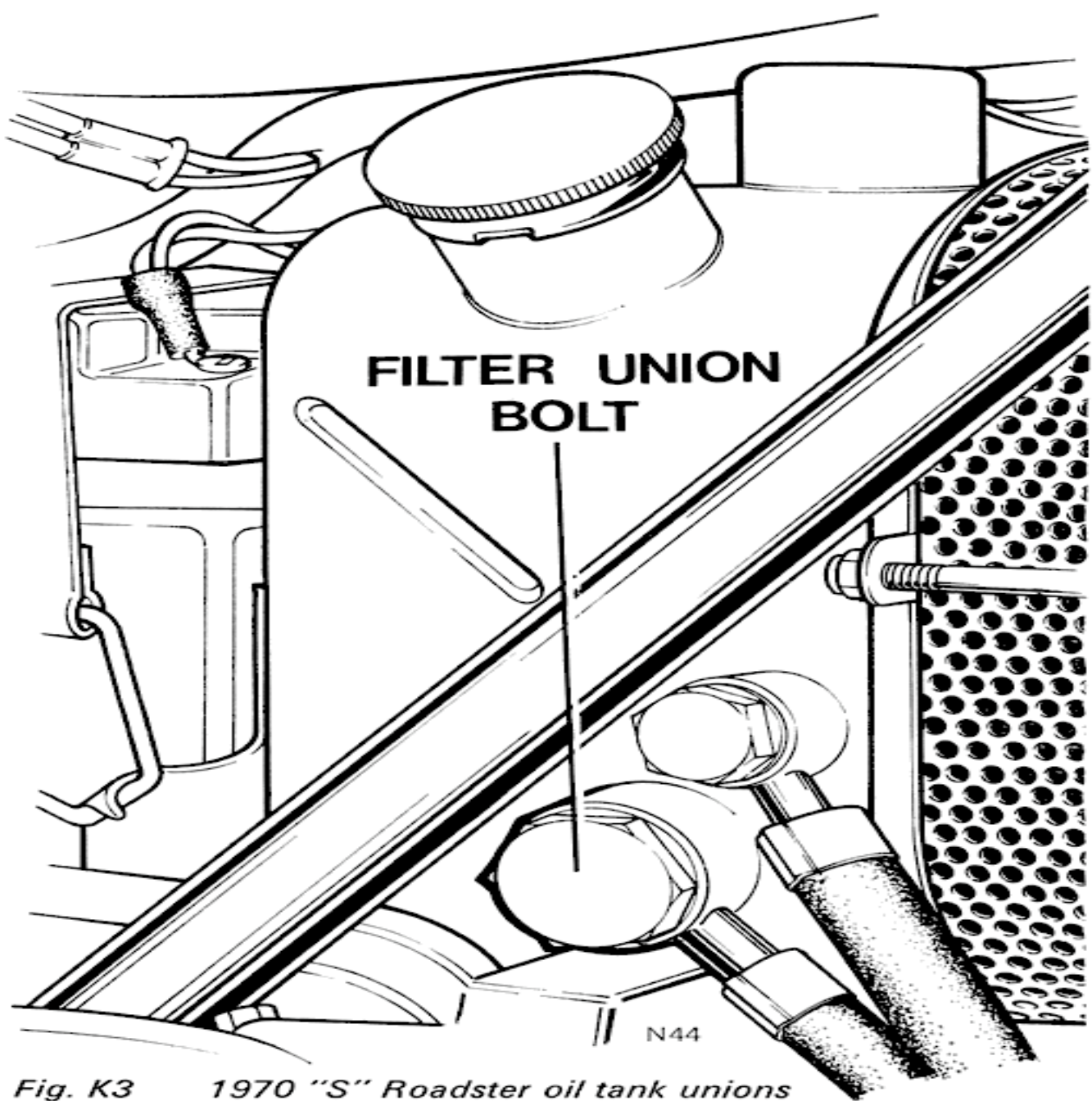


*Fig. K2 Oil tank filter and drain plug*

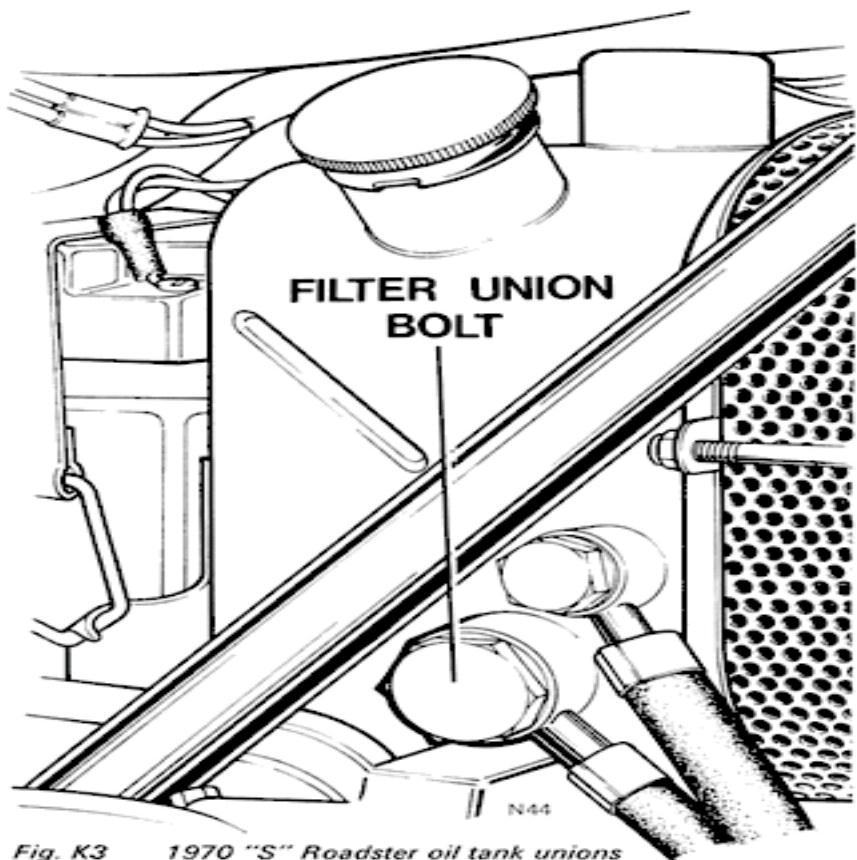




*Fig. K2 Oil tank filter and drain plug*



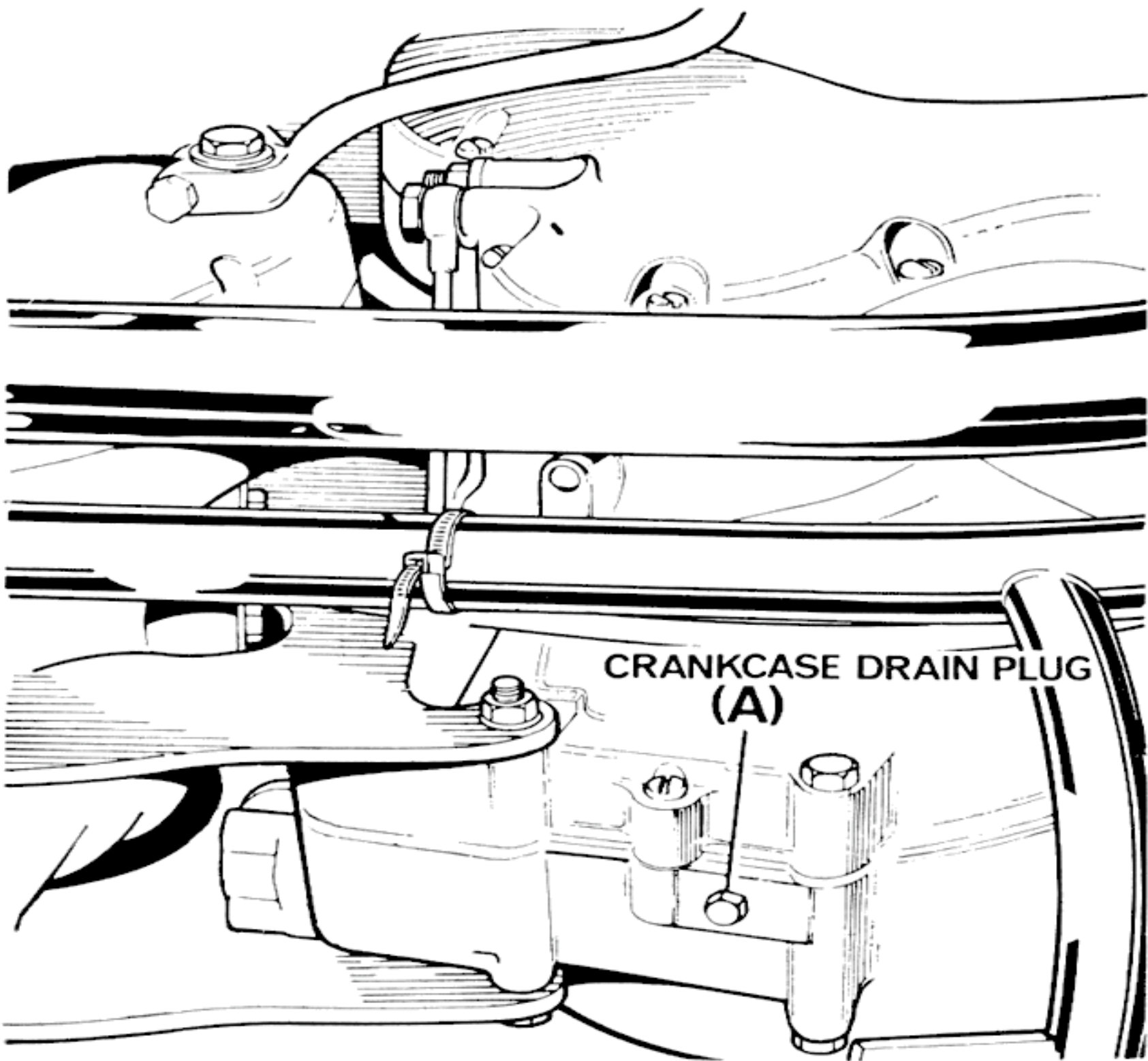
*Fig. K3 1970 "S" Roadster oil tank unions*



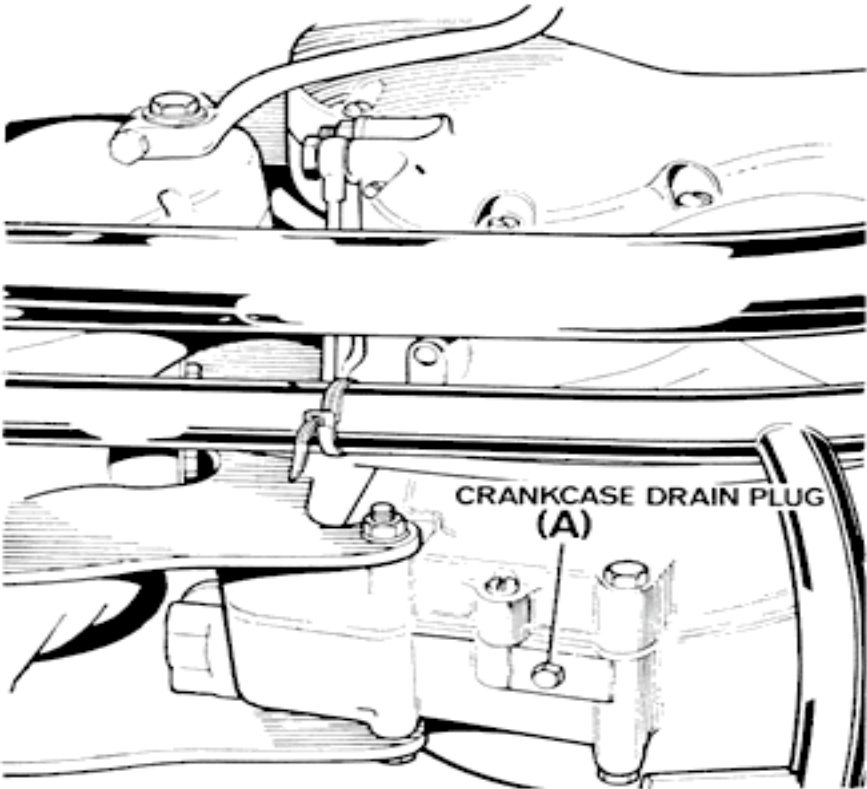
**FILTER UNION  
BOLT**

N44

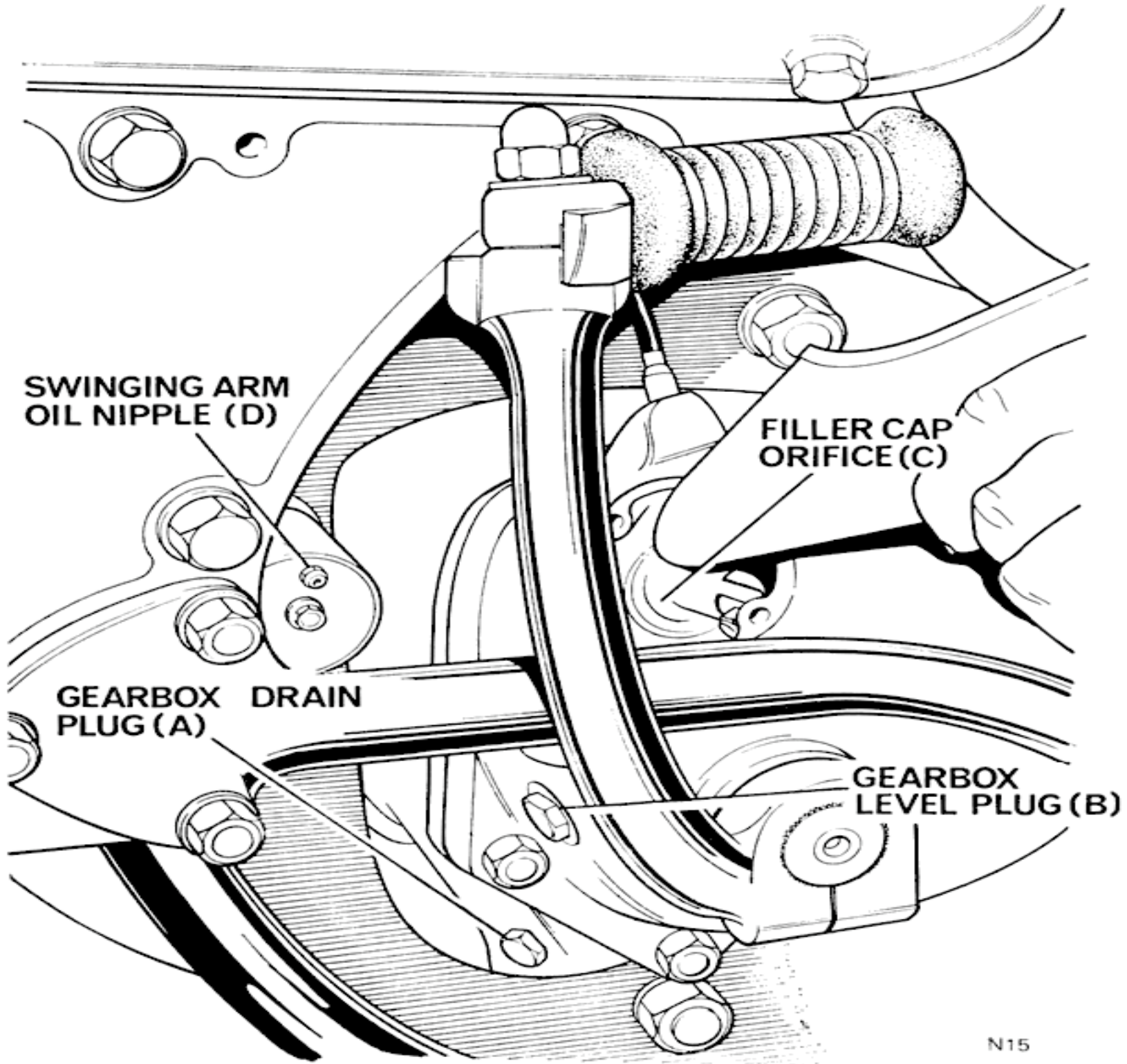
*Fig. K3 1970 "S" Roadster oil tank unions*



*Fig. K4      Crankcase drain plug (post 1972)*

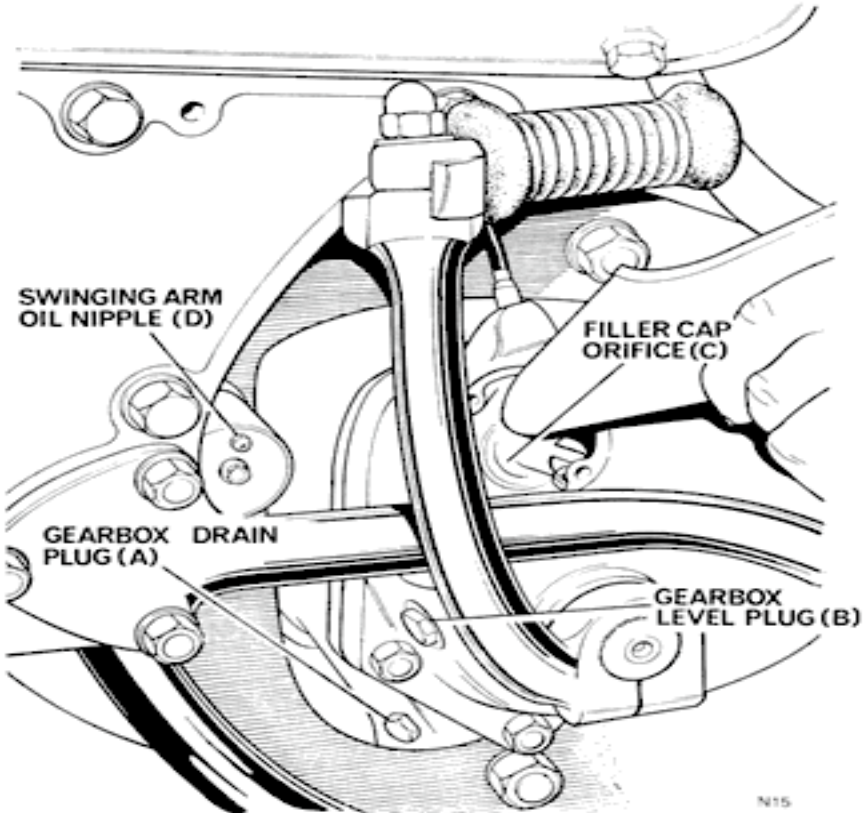


*Fig. K4 Crankcase drain plug (post 1972)*



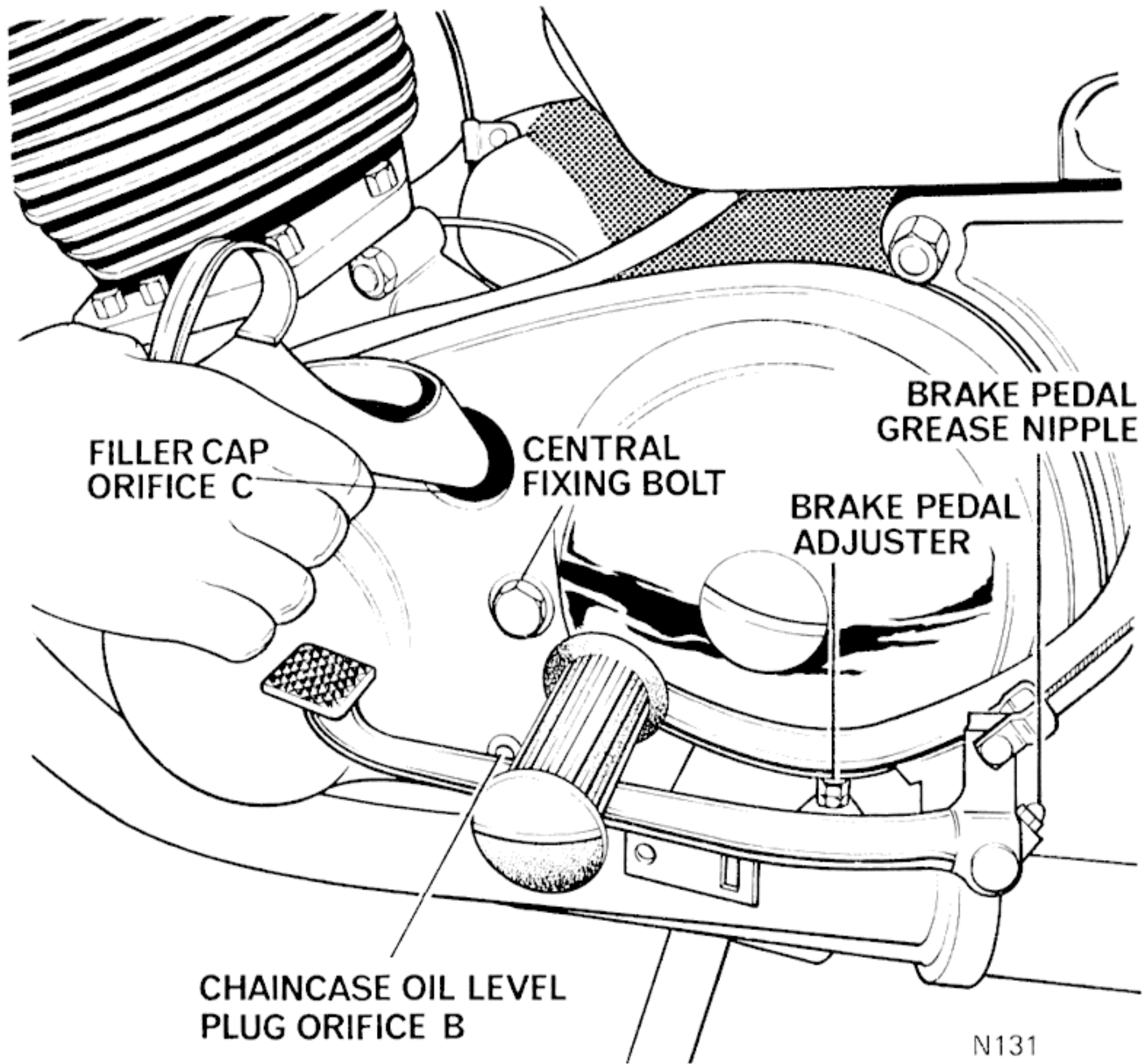
N15

*Fig. K5 Gearbox drain and level plugs*



N15

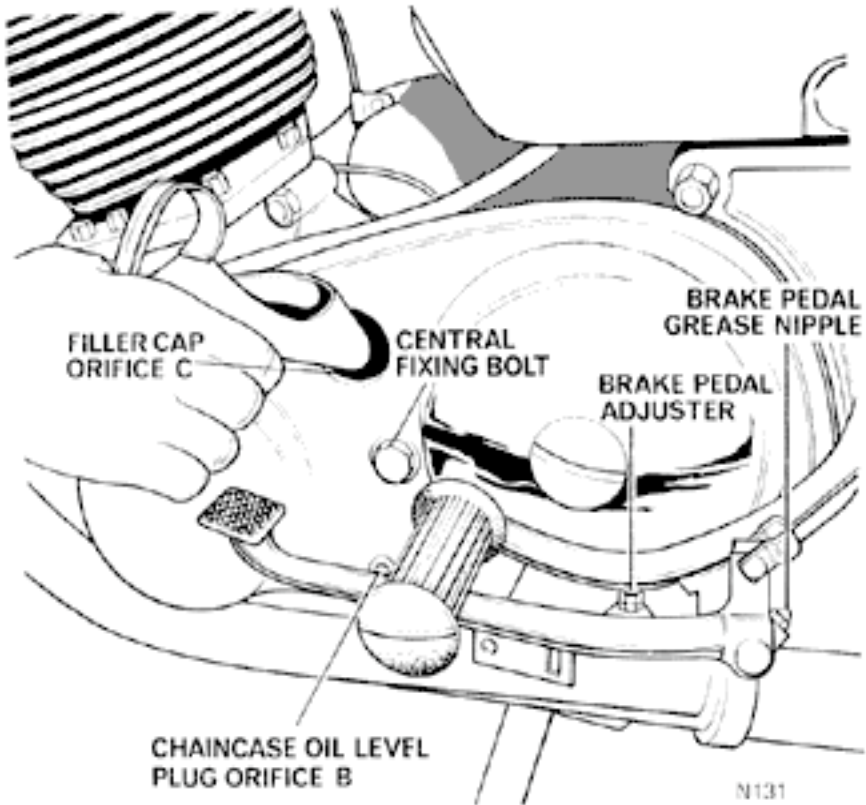
*Fig. K5 Gearbox drain and level plugs*



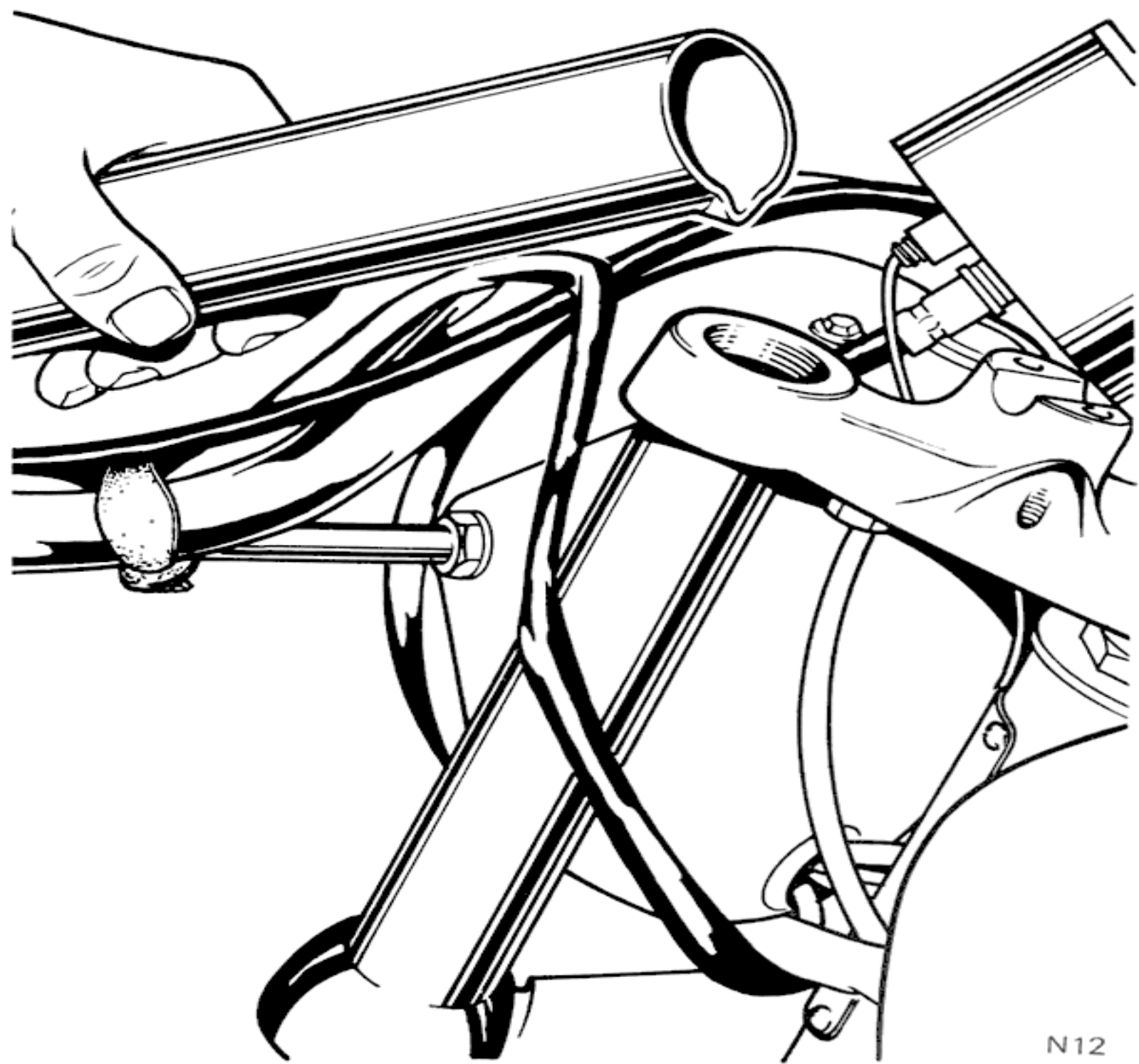
N131

*Fig. K6 Primary chaincase plugs*



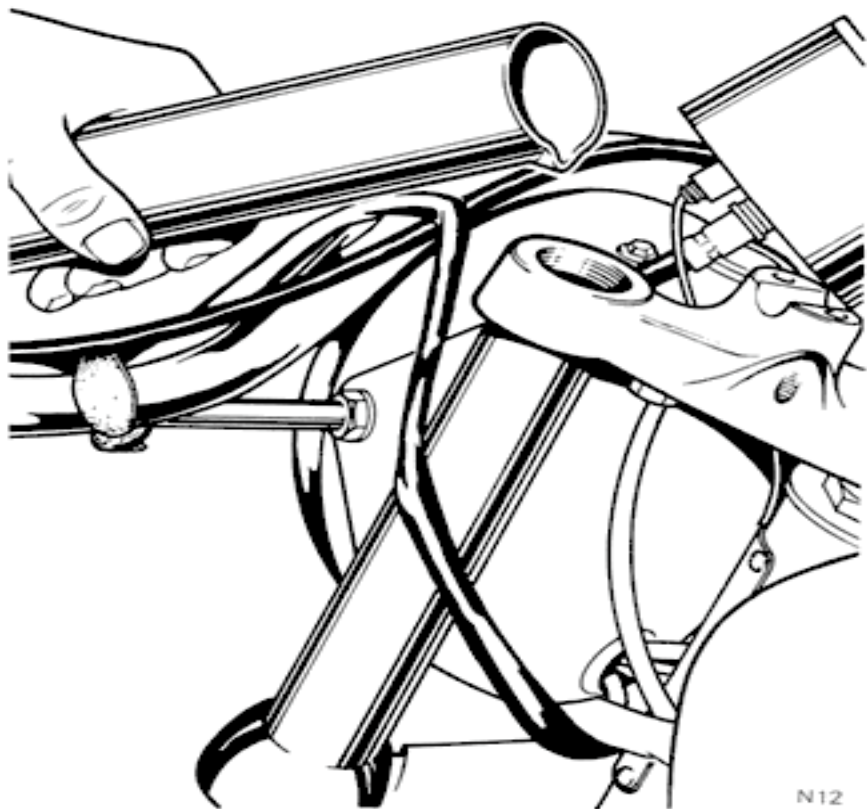


*Fig. K6 Primary chaincase plugs*



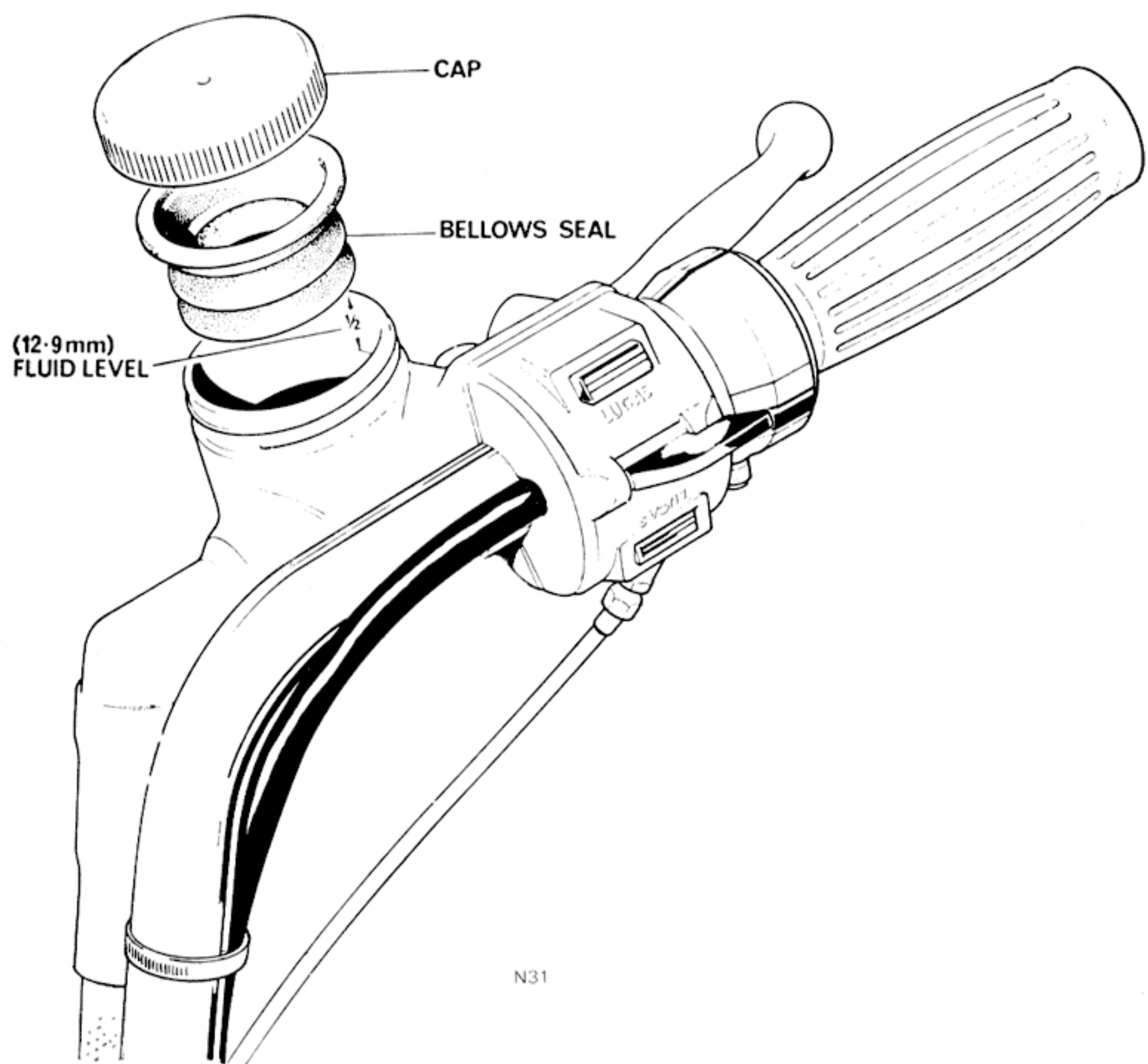
N12

*Fig. K7 Refilling fork leg with cap bolt removed*

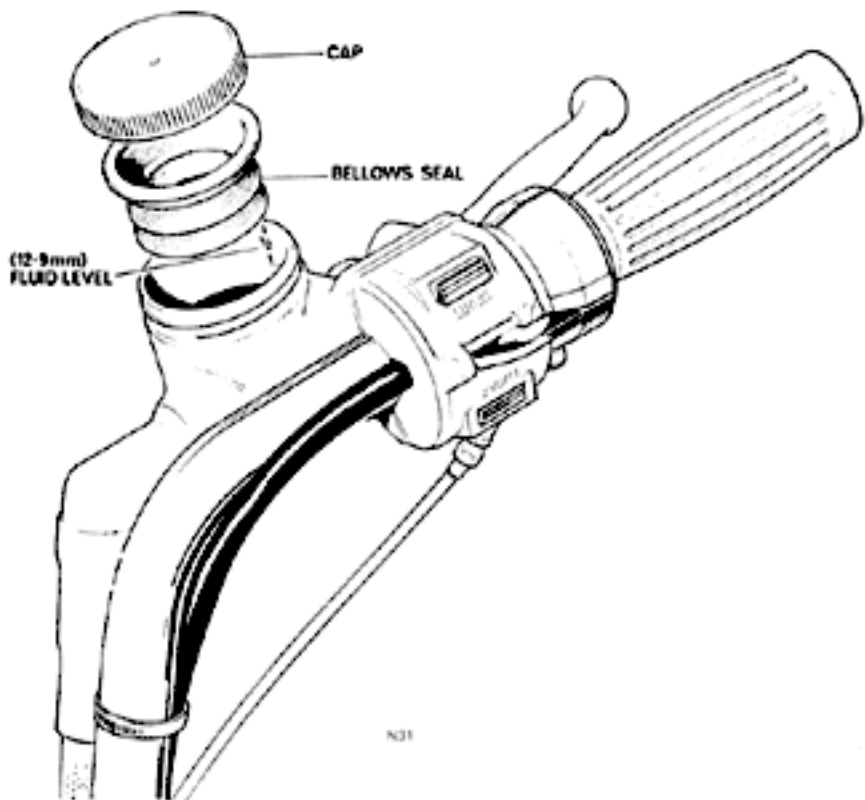


N12

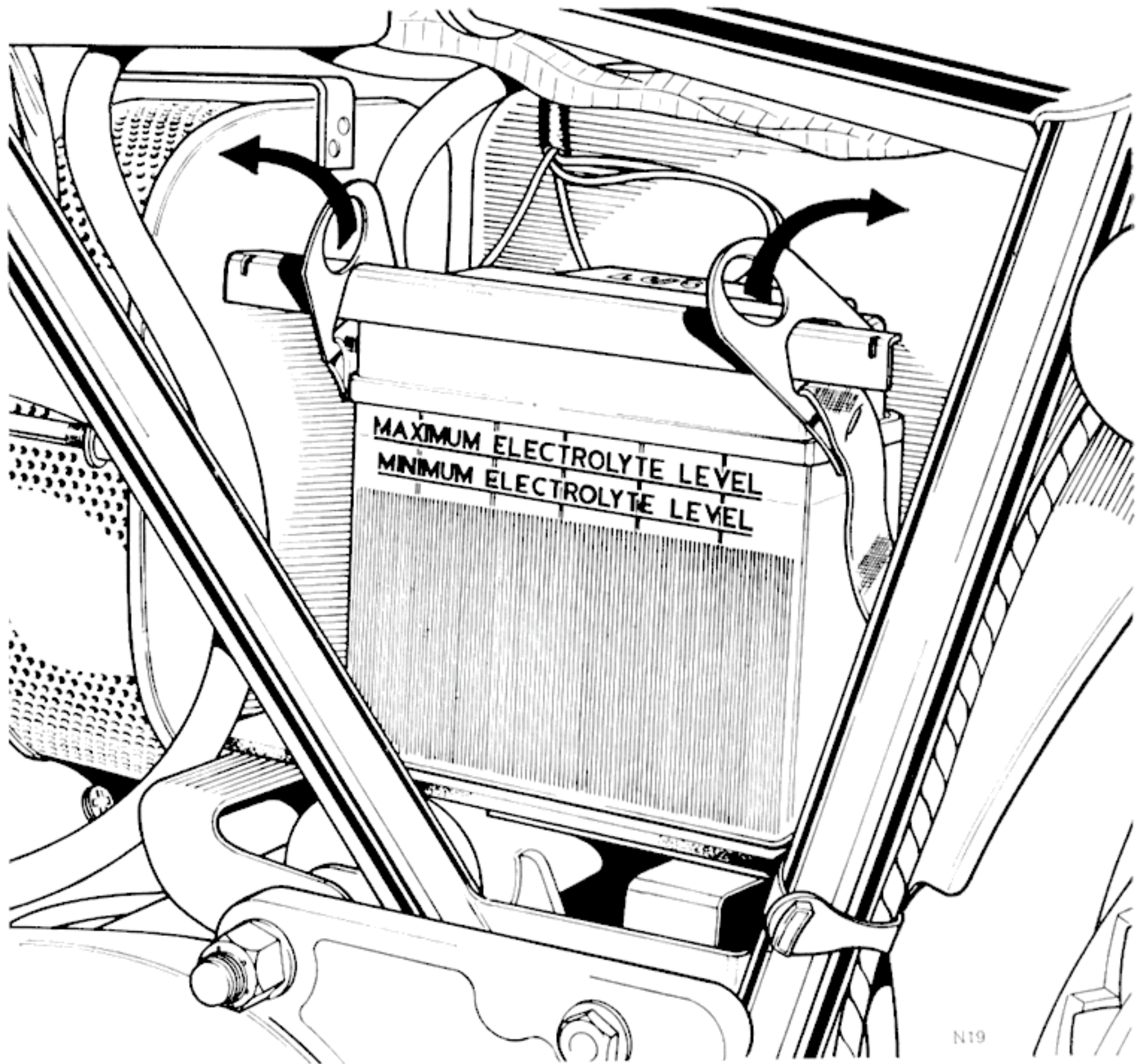
*Fig. K7 Refilling fork leg with cap bolt removed*



*Fig. K8 Checking master cylinder hydraulic fluid level*

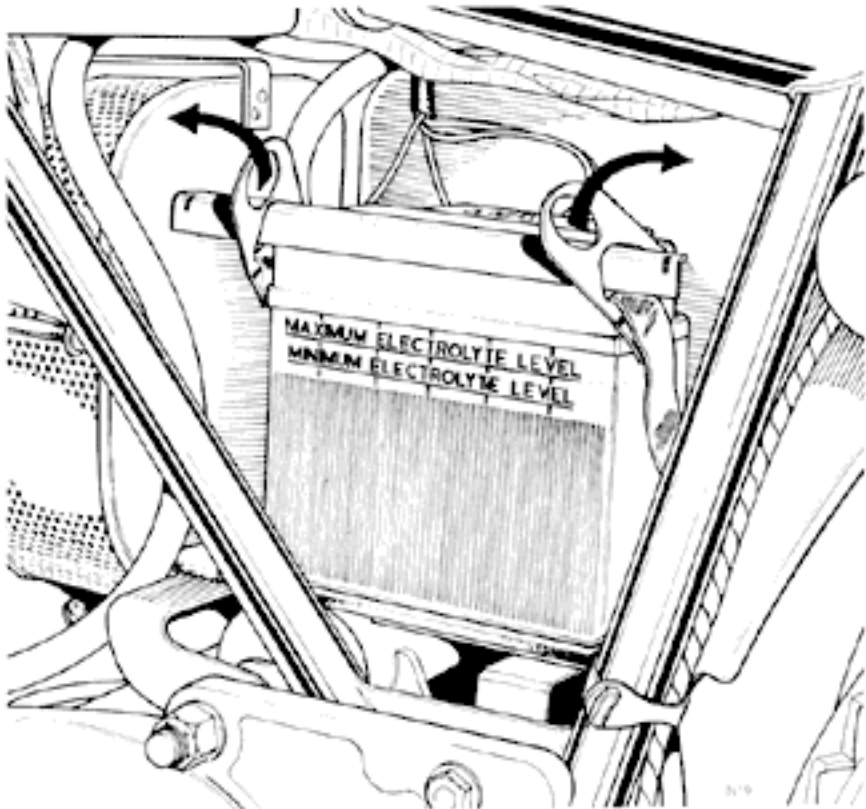


**Fig. K8** *Checking master cylinder hydraulic fluid level*



N19

*Fig. K9 Battery electrolyte level mark (illustrated—Lucas battery)*



*Fig. K9 Battery electrolyte level mark (illustrated—Lucas battery)*