

TRIGGER CONTROL for ASC HUBS and other FIXED CONVERSIONS.

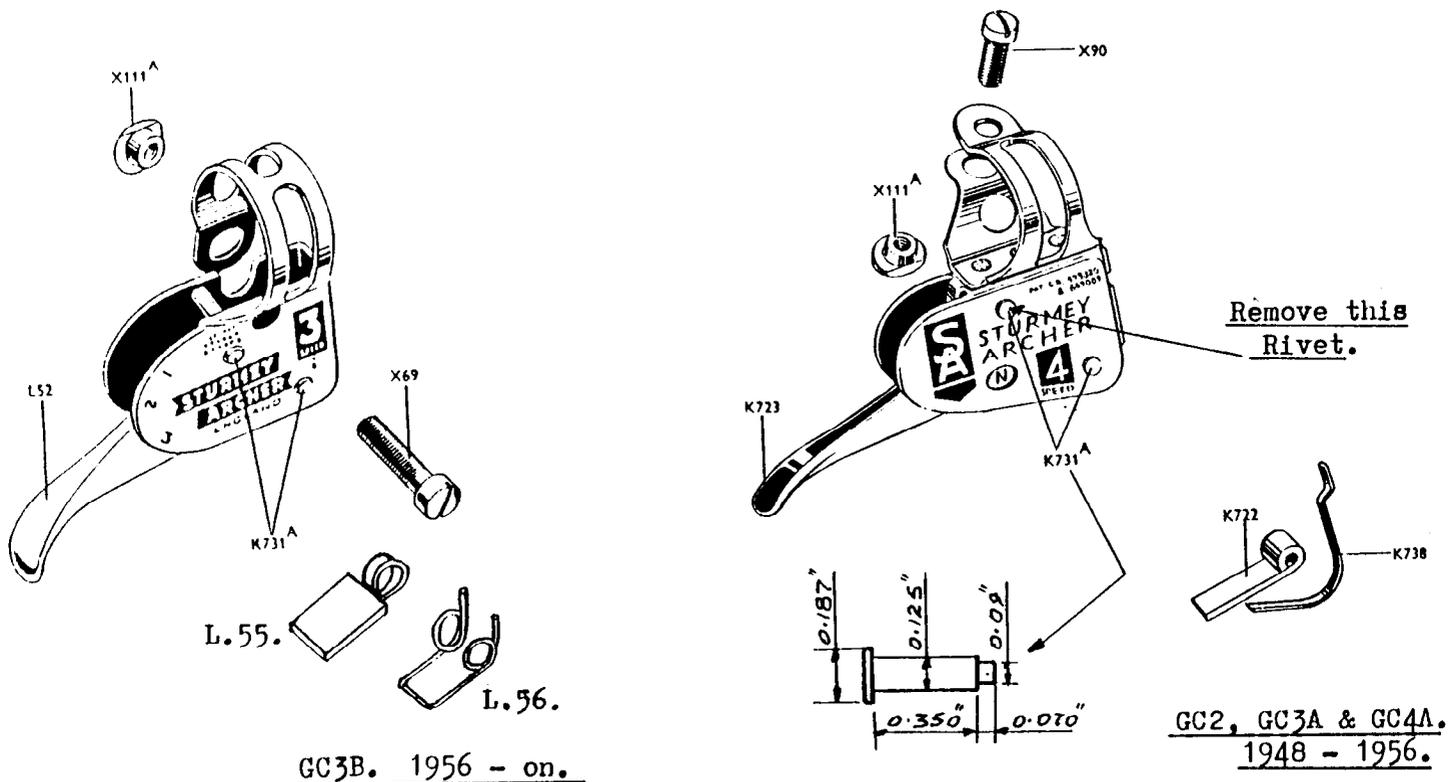
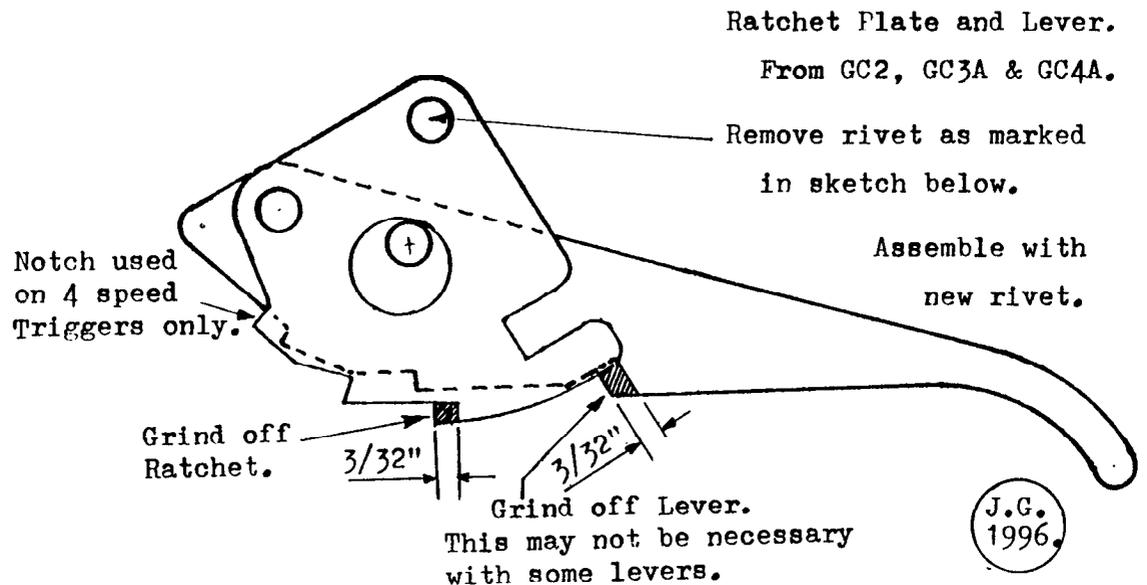
The standard 3 speed hub requires an Indicator movement of $9/32"$ and $3/16"$. The Ratchet Plate of the Trigger Control for these hubs has the notches cut to suit this movement.

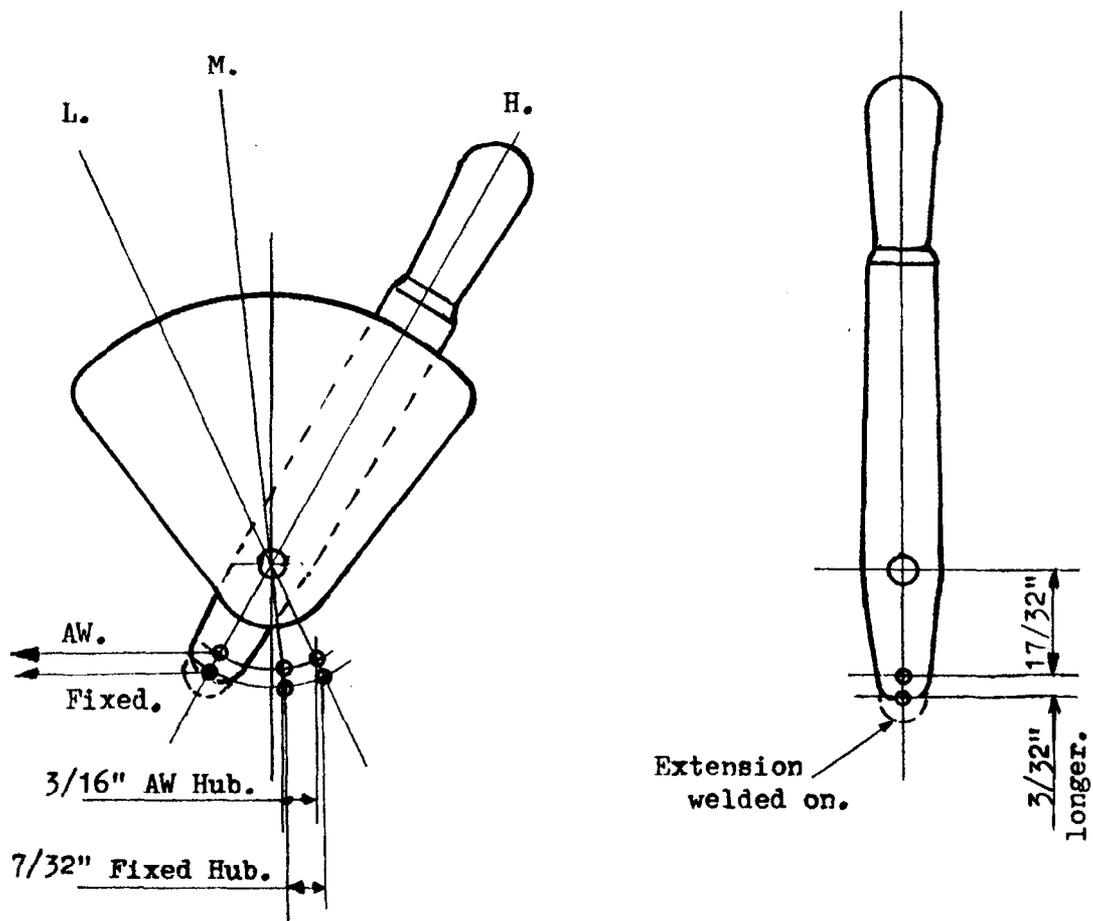
The ASC hubs require an Indicator movement of $9/32"$ and $7/32"$.

As the correct control, (GC2A.), is virtually impossible to find, some means of modifying the AW type controls would seem to be the best solution.

With this in mind I have stripped and attempted to modify each of the various controls issued since 1938.

I have found that the only ones that can be modified relatively easily are the models using the large Spring K.738 and Pawl K.722. See diagram below.





CROSS-BAR CONTROL MODIFICATION FOR OPERATING FIXED HUBS.

The standard three speed hub requires a movement of $3/16$ " between Middle and Low gear.

The fixed hubs require a movement of $7/32$ " between Middle and Low gears.

This can be obtained by welding an extension to the standard lever and drilling a new $1/16$ " diam. hole $3/32$ " lower. There will be some additional slack wire in high gear but this is of no consequence.

TRIGGER CONTROLS. (Identification.)

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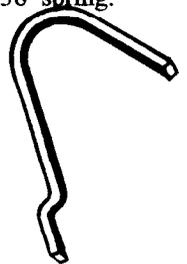
1937 First Trigger Control. Patent No.498,820.
I have not been able to examine this first model to check the Spring or Pawl.

1938-1948	For three speed hubs,	GA249.	Model GC3.	with K.733A spring.
" "	For four speed hubs.		Model GC4.	
1947-1948	For ASC hubs.		Model GC7.	



1948-1953	For three and four speed hubs.	GA241.	Model GC2.	with K.738 spring.
1948-1963	For ASC hubs,	GA241A.	Model GC2A.	

From 1950 to 1953 the GC2 had a small window to show the setting.

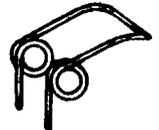


1953-1956	For three speed hubs. (not ASC.)	GA244A.	Model GC3A.
1953-1970	For four speed hubs.	GA246A.	Model GC4A.

The latter two models had the numbers 1,2,3, or 1,2,3,4, as appropriate, stamped on the medallion.

1956- On.	For three speed hubs.	GA244B.	Model GC3B.	with L.56 spring.
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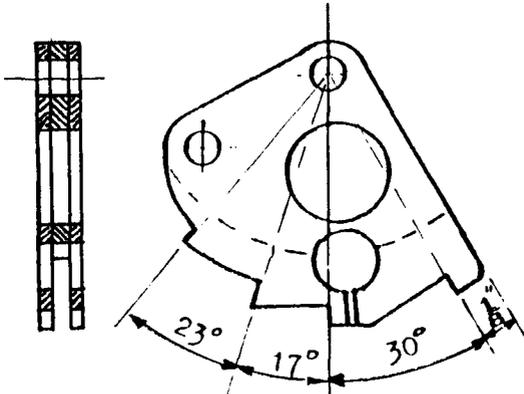
(Smaller body and bolt passes through medallion.)



Above Springs actual size.

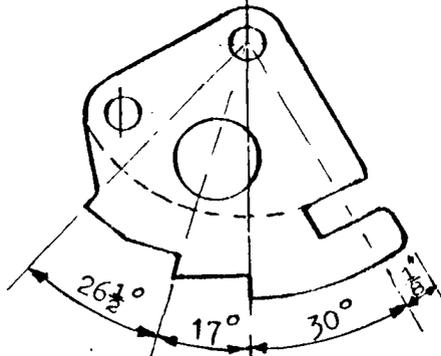
RATCHET PLATES for S.A. TRIGGERS.

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Ratchet Plate for **GC3 & GC4.** 1938-1948.
For 3 and 4 speed hubs.
Dimensions measured from an actual plate.

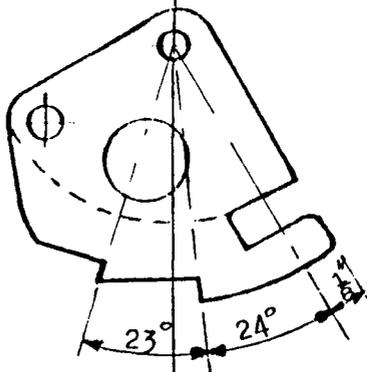
A similar plate, but with notches to suit, was used for **GC7** triggers for **ASC** hubs. 1947-1948.



Ratchet Plate for **GC2.** 1948-1953.
For 3 and 4 speed hubs.
Also Ratchet Plate for **GC3A.** 1953-1956.
For 3 speed hubs. (Not ASC.)
Also Ratchet Plate for **GC4A.** 1953-1970.
For 4 speed hubs.

Dimensions from S.A. Drg. No. 3610736, dated 23.6.50.

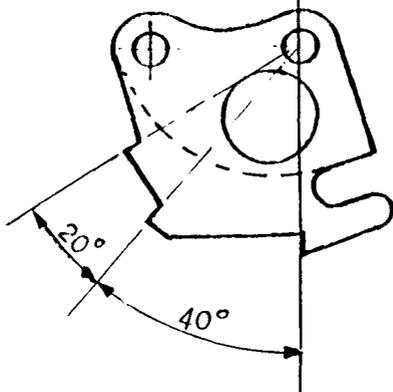
In 1956 a smaller trigger **GC3B** was introduced for the 3 speed hubs. However I understand that the larger **GC4A** continued to be used for four speed hubs until they were discontinued in 1970.



Ratchet Plate for **GC2A.** 1948-1963.
For fixed 3 speed hub **ASC.**

Notches measured from an actual plate.

It is believed that this trigger was used until the hub was discontinued in 1963.



Ratchet Plate for **GC3B.** 1956- on.
For 3 speed hubs.

Dimensions measured from an actual plate.

JG.1996.

Scale 1.5 Full size.

TRIGGER CONTROL.

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The control is always carefully adjusted on every completely assembled bicycle leaving the factory, but as it may become deranged in transit we suggest that before delivery to customer, the control is checked to make sure the following points are in order.

1. The cable should be so arranged that acute angles do not occur at any point. Check specially at point where it leaves control casing and at the fulcrum clip. Acute angles will cause undue wear and eventual fraying of strands and impede smooth gear change.
2. There must be ample slack in the outer casing to allow for full steering movement without strain and the stranded steel inner wire must not foul on the frame throughout its length.

GENERAL MAINTENANCE.

The cable ferrule is fixed in control casing and should never be detached. If this is loose it will allow the inner wire to bend at this point, and it may result in fraying the wire.

The lower rivet in control casing should not be moved except when new pawl is required nor must the upper rivet be disturbed except to fit new lever or ratchet plate.

LUBRICATION.

An occasional drop of oil on moving parts is necessary to maintain easy action of the control. Over-oiling is undesirable as surplus oil attracts dirt and grit. Occasionally detach cable and wire from fulcrum clip, slip the outer cable back and oil inner wire.

Occasionally apply a trace of vaseline to the pulley bearings.

Should it ever be necessary to replace Pawl Spring or Control Wire proceed as follows:—

TO REMOVE CONTROL WIRE. Fig. 1.

Detach complete control from handlebar.

Pull outer cable clear of ferrule on casing (A).

Pull trigger back until nipple appears at casing cut-away (B).

Pass inner wire through ferrule slots, and push pawl inwards past wire (C). The pawl spring may now be removed (D).

Push inner wire through until enough slack is given to allow nipple to be removed from hole (E).

Withdraw wire complete.

TO REPLACE CONTROL WIRE. Fig. 2.

Pass wire, nipple first, through hole in front of casing and between pawl and ratchet until enough is through to allow nipple to be inserted in ratchet plate. The ratchet plate hole must be opposite cut-away in casing (F).

Pull slack wire back.

Fit pawl spring and push pawl upwards with a small screwdriver, until lever and ratchet plate can be pushed under it (G).

Pull wire taut, pass it through ferrule slot, and push outer cable into ferrule (H). Fix cable stop on top tube at other end of cable.

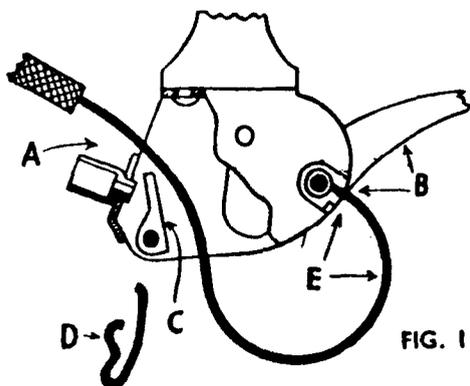


FIG. 1

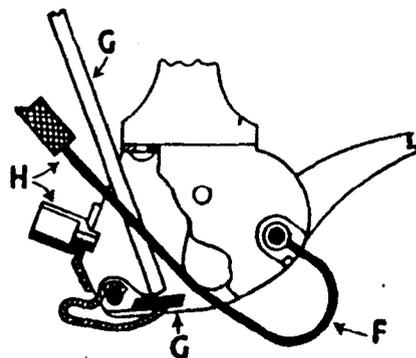


FIG. 2

TRIGGER CONTROLS

Four different types of trigger control are in use and very little maintenance is required on any type.

The early type controls were known as GC3 for three-speed hubs and GC4 for four-speeds. These can be recognised by the pawl spring, the top loop of which stands clear of the control casing. (See Fig. 2,

In this case a slotted ferrule or cable guide is fitted in the control casing, and should not be disturbed or loosened. If it should be forced out, a new one must be fitted and rivetted lightly into position by spreading the split end; this entails removal of the internal mechanism and when re-assembling, new rivets must be used.

The following notes cover all the points which normally require attention.

GC3 and GC4 Maintenance

To REMOVE CONTROL WIRE:—

Detach complete control from handlebar. Pull outer cable clear of ferrule on casing (A). Pull trigger back until nipple appears at casing cutaway (B). Pass inner wire through ferrule slots and push pawl inwards past wire (C). The pawl spring may now be removed (D). Push inner wire through until enough slack is given to allow nipple to be removed from home (E). Withdraw wire complete.

To REPLACE CONTROL WIRE:—

Pass wire, nipple first, through hole in front of casing and between pawl and ratchet until enough is through to allow nipple to be inserted in ratchet plate. The ratchet plate hole must be opposite cutaway in casing (F). Pull slack wire back. Fit pawl spring and push pawl upwards with a small screwdriver until lever and ratchet plate can be pushed under it (G). Pull wire taut, pass it through ferrule (H). Fix cable stop on top tube at other end of cable.

Pawl and Pawl Spring

The method of removing pawl spring is indicated in the above instructions concerning removal of control wire. If a new pawl is required, the rivet holding the original pawl must be removed and a new pawl and rivet fitted.

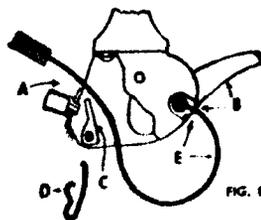


FIG. 1

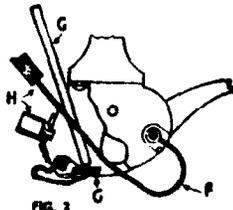


FIG. 2

GC.3 & GC.4.

GC2 Maintenance

The present type of control is known as GC2 and is used for either 3- or 4-speed gears. This type can be recognised by the marking on the quadrant which states, "3- or 4-speed", and by the cable guide or ferrule which is part of the control wire and unscrews from the casing.

Models issued since the end of 1949 have a small window in the outside casing, and letters stamped upon the control lever appear in this window to indicate which gear is engaged. Both window and non-visible types are known as the GC2 type since there is no other difference in the working parts.

To REMOVE CONTROL WIRE:—

It is not usually necessary to remove control from handlebar as the lever can be pulled far enough back to allow cable nipple to pass between pawl and ratchet plate. Procedure is: Detach (1) inner wire from indicator chain at hub; (2) outer casing from fulcrum clip. Pull cable ferrule (F) upward until screw thread engages that of control casing at (B), then unscrew ferrule.

Pull lever right back beyond gear position to stop (A) push inner wire through to detach nipple from ratchet plate, then pull wire out between pawl and ratchet at (C) and finally through threaded hole (B).

To FIT CONTROL WIRE:—

Pull lever right back beyond bottom gear position to stop (A) and insert wire through threaded hole (B) and between pawl and ratchet plate at (C). Wire nipple (D) is then fitted into notch (E) and cable ferrule (F) screwed into (B) until it rotates freely. Keeping tension on wire, push lever forward into top gear position. Control is then ready for re-connection.

Pawl and Pawl Spring

These two parts are designed so that they cannot drop out through breakage of control wire, or during removal or replacement. They should not normally need renewal, therefore, they are not readily detachable.

If a new part is required, both rivets (G and H) must be removed and the complete trigger mechanism withdrawn. New rivets must be used in re-assembly.

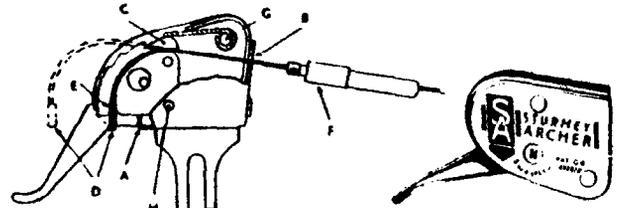
Control Type GC2A for ASC Hub Only

The maintenance instructions for this control are exactly the same as those for the GC2. The pawl, pawl spring and lever are the same as those in the GC2 but the other internal parts are not interchangeable. This control is distinguishable from the GC2 by the medallion which bears type letters "ASC" and the ratchet is marked "3".

We have a service scheme for trigger control repairs, details of which can be obtained from our depot.

Lubrication of Trigger Controls

An occasional drop of R.I. "All Purpose" Oil on moving parts is necessary to ensure easy action. Occasionally the outer casing of the control cable should be removed from the fulcrum clip so that the inner wire can be exposed and lubricated.



GC.2 & GC.2A

HUB GEAR CONTROLS

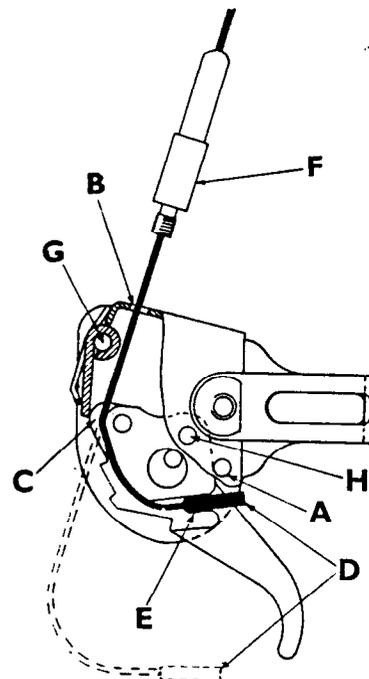
The gear-control mechanism of Sturmey-Archer hubs is either a trigger control or else a small lever in a quadrant, connected by means of a wire cable to the indicator coupling which protrudes from the hub itself.

Before 1953 the type of *trigger control* known as the GC2 was used for both three- and four-speed gears. It can be recognized by the words '3- or 4-speed' on the medallion, and by the cable guide or ferrule which is part of the control wire and unscrews from the casing. Later models of that type (also known as the GC2) have a small window in the outside casing, through which letters on the control lever, showing the gear in use, are seen.

Since 1953 separate models have been supplied for three-speed (the GC3A) and four-speed hubs (GC4A). They are similar to the earlier GC2 except that the number of steps on the control lever is different and, of course, the medallions show whether they are designed for three-speed or four-speeds. The latest type of GC4A have the numbers 1, 2, 3, 4, stamped on the outer edge of the medallion, to indicate the gear position.

The latest and slightly smaller three-speed control known as the GC3B has the numbers 1, 2, 3, stamped on the outer edge of the medallion, to indicate the gear positions. It also has a rather shorter lever and a different pawl spring and pawl.

The GC2A control, *for ASC hubs only*, has the same pawl, pawl spring, and lever as the GC2, but the *other internal parts are not interchangeable*. It can be recognized by the letters 'ASC' on the medallion.



To remove the wire from a trigger control

The control itself need not be detached from the handlebar, if the lever can be pulled far enough back to allow the cable nipple to pass between the pawl and the ratchet plate.

1. Detach the inner wire from the indicator chain at the hub.
2. Detach the outer casing from the fulcrum clip and pull the cable ferrule (F) upwards until the screw thread engages with that of the control casing at B, and then unscrew the ferrule.
3. Pull the lever right back beyond the bottom gear position to stop A, and push the inner wire through to detach the nipple from the ratchet plate.
4. Pull the wire out between the pawl and the ratchet plate at C and through threaded hole B.

To fit a wire to the trigger control

1. Pull the lever right back beyond the bottom gear position to stop A.
2. Insert the wire through the threaded hole B and between the pawl and the ratchet plate at C.
3. Fit wire nipple (D) into notch E.
4. Screw cable ferrule (F) into control casing at B until it rotates freely.
5. Keeping tension on the wire, push the lever forward into the top-gear position.
6. Control is now ready for re-connection to hub.

The *pawl and pawl spring* are designed so that they cannot drop out if the control wire breaks or when it is being removed or replaced. Normally, they should not need to be renewed and so they are not easily detachable. If a new part has to be fitted, both rivets (G and H) must be removed and the complete trigger mechanism withdrawn. New rivets will have to be used when the new part has been fitted.



GC. 3B.