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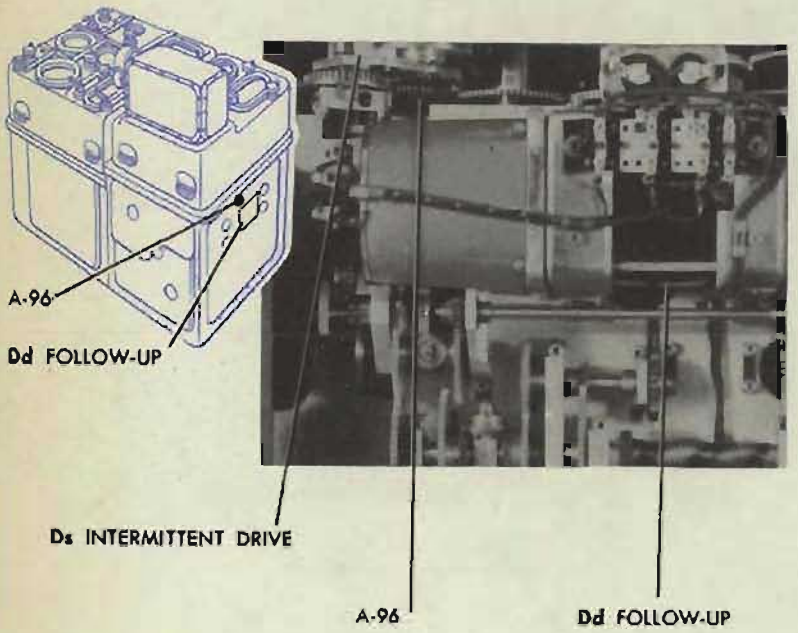
A-96 Ds INTERMITTENT DRIVE to Ds INDICATING COUNTER



Location

A-96 is under cover 7, on the input to the *Ds* intermittent drive. A-96 is omitted on Mods 1, 3, 4, 8, and 12.

Check

Decrease *Ds* and observe the output gear of the intermittent drive. It should stop turning when the *Ds* counter reaches 320 mils. The intermittent drive is then at its low cutout point.

Adjustment

If the intermittent drive does not cut out when *Ds* reads 320 mils, make A-96 slip-tight.

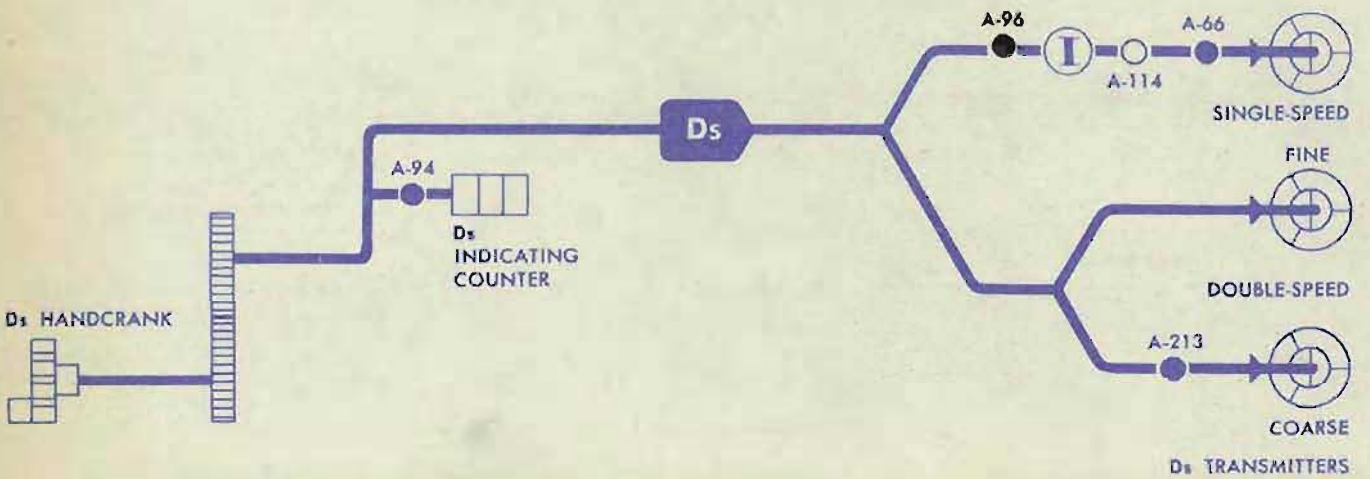
Turn *Ds* in a decreasing direction until the output gear stops turning. Hold the large gear in the intermittent drive and turn the *Ds* handcrank to set the counter at 320.

Tighten A-96.

Recheck

Increase *Ds* until the intermittent drive output gear stops turning. The *Ds* counter should read 680 mils at the upper cutout point of the intermittent drive.

Check A-66.



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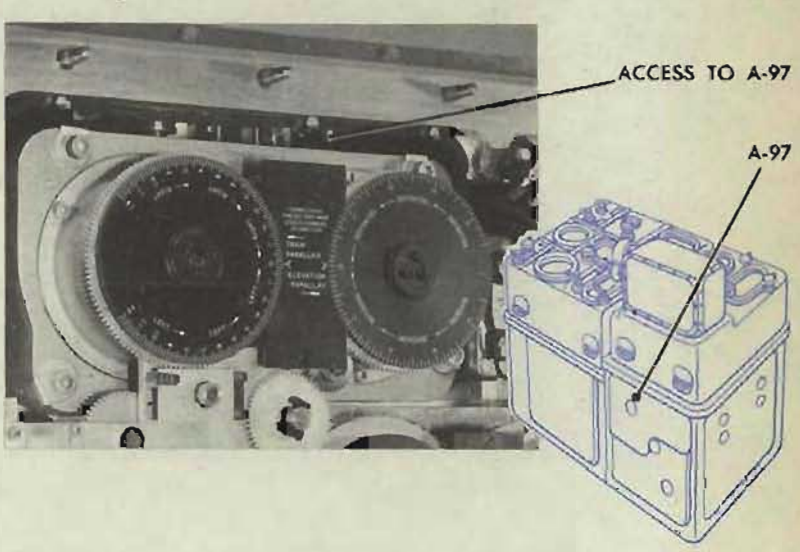
A-97 Vs INTERMITTENT DRIVE to Vs INDICATING COUNTER

Location

A-97 is under cover 6, 14 inches in from the access space at the top of the *Pv* transmitter. It is on the input shaft of the *Vs* intermittent drive. A-97 is omitted on Mods 1, 3, 4, 8, and 12.



Check

Turn the *Vs* handcrank in a decreasing direction.

Observe the output gear of the intermittent drive. It should stop turning when the *Vs* counter reads 2000'. The intermittent drive is then at its low cut-out point.

Adjustment

If the intermittent drive does not cut out when *Vs* reads 2000', make A-97 slip-tight.

Turn *Vs* in a decreasing direction until the drive does cut out. Hold the large gear in the intermittent drive by means of a gear pusher inserted through the access above the *Dd* follow-up under cover 7.

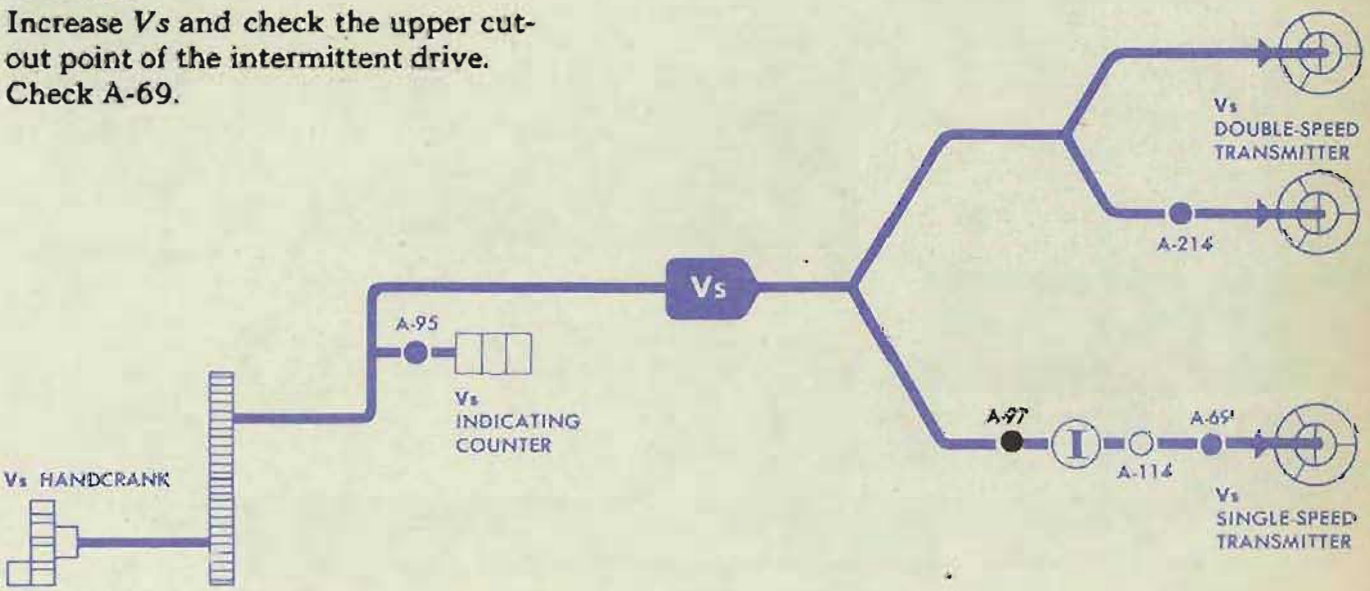
Bring the *Vs* counter to 2000' with the *Vs* handcrank.

Tighten A-97.

Recheck

Increase *Vs* and check the upper cut-out point of the intermittent drive.

Check A-69.



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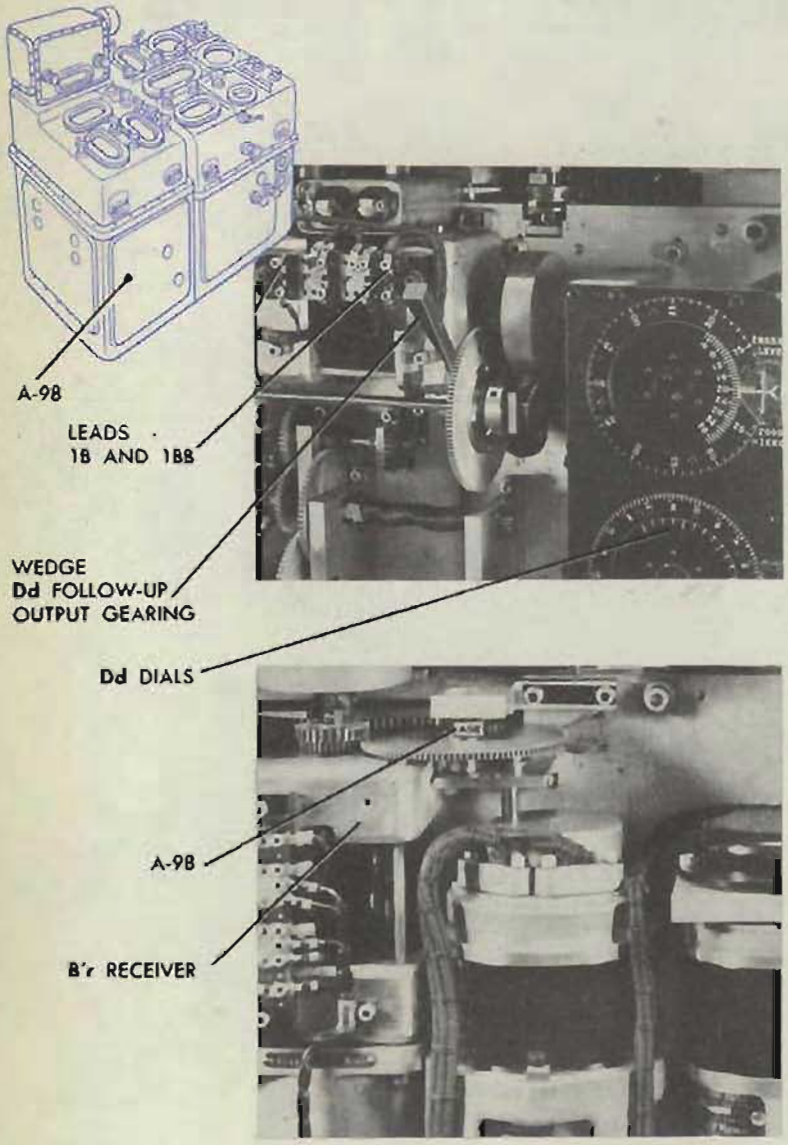
A-98 B'gr DIALS to B'r RECEIVER



Location

A-98 is under cover 8 on the response gearing of the *B'r* receiver.

Check

Remove leads 1B and 1BB from the *Dd* follow-up. Set *Dd* at 0° and wedge the output gearing.

Turn the power ON.

Turn the control switch to SEMI-AUTO.

Transmit *B'r* from the director. Read the value on the *B'gr* dials. *B'gr* should match the value of *B'r* being transmitted from the director.

Adjustment

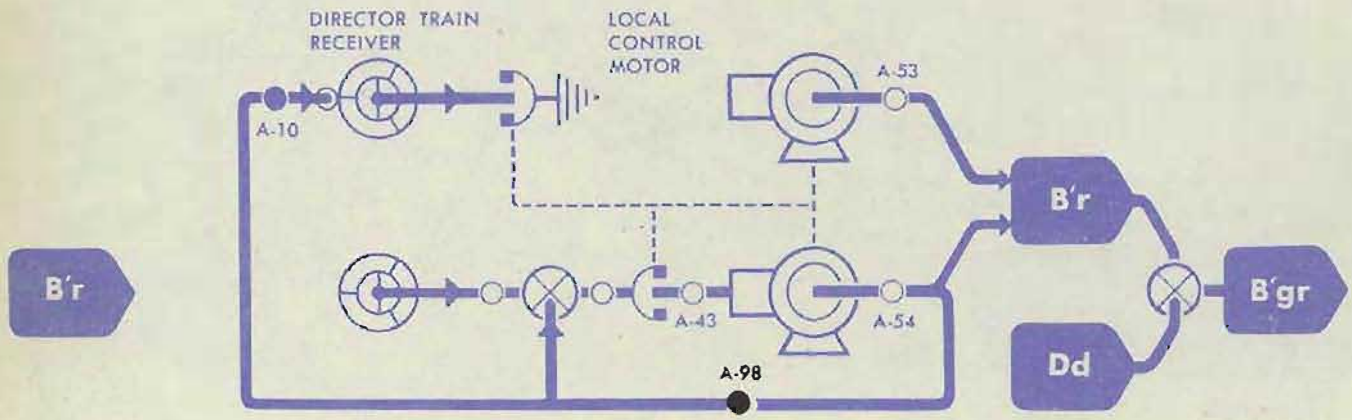
Make A-98 slip-tight.

Turn the gear directly beneath the gear on which clamp A-98 is mounted until the *B'gr* dials match the value transmitted from the director.

Tighten A-98 and recheck.

Caution

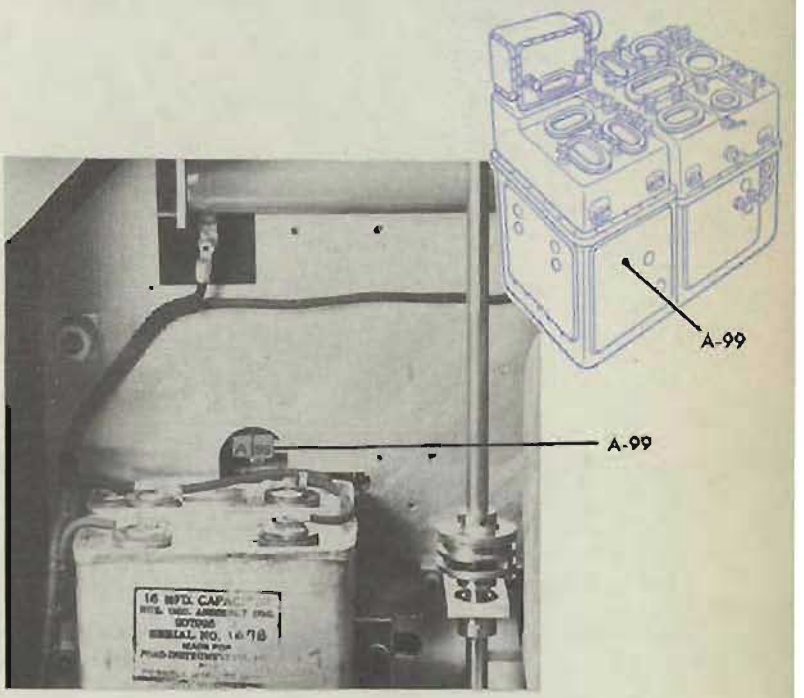
If A-98 is completely loosened, the receiver motor may run away.



A-99 DECK TILT COMPONENT SOLVER to B′r LINE

Location

A-99 is under cover 8 above the two 16-mfd. capacitors.
The deck tilt component solver is under cover 7. It is visible through the access below the *Vz* follow-up.



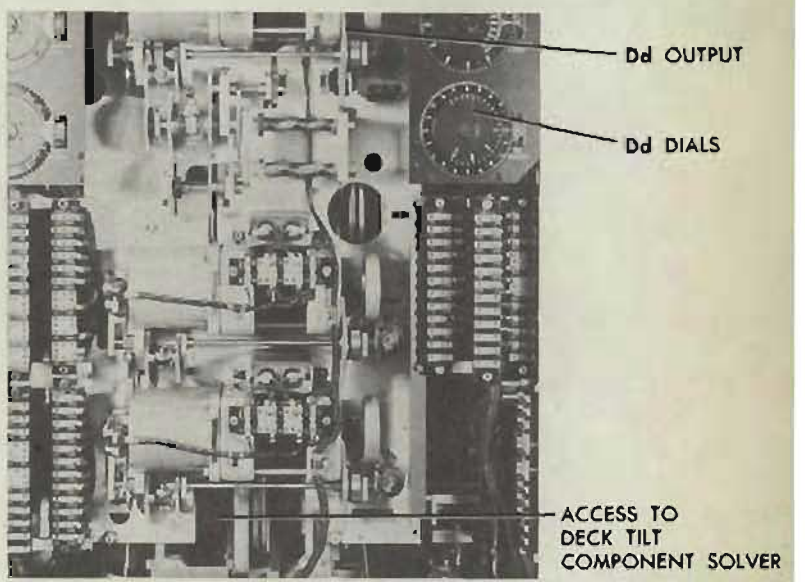
Check

Turn the power OFF.

Set *Dd* at 0° and wedge the follow-up output gear.
Set *B′gr* at 45° and wedge the line.

Increase *L* and observe the motion of the *L* sin *2B′r* rack of the deck tilt component solver. This is the rack which slides horizontally. It should move toward the rear of the computer as *L* is increased. If it does not, make both the coarse and fine adjustment given below.

If the direction of travel of the *L* sin *2B′r* rack is correct, set up a dial indicator to measure motion of the *L* cos *2B′r* rack (vertical slide). Turn *L* from limit to limit while observing the dial indicator. There should be no motion of the *L* cos *2B′r* rack for the entire travel of *L*. If the rack motion is greater than 0.002 inch, make the fine adjustment given below.



Coarse adjustment

Set *L* at 3200′.

Loosen A-99, and turn the gear below the clamp until the *L* sin *2B′r* rack is nearest the rear of the instrument. Make A-99 slip-tight.

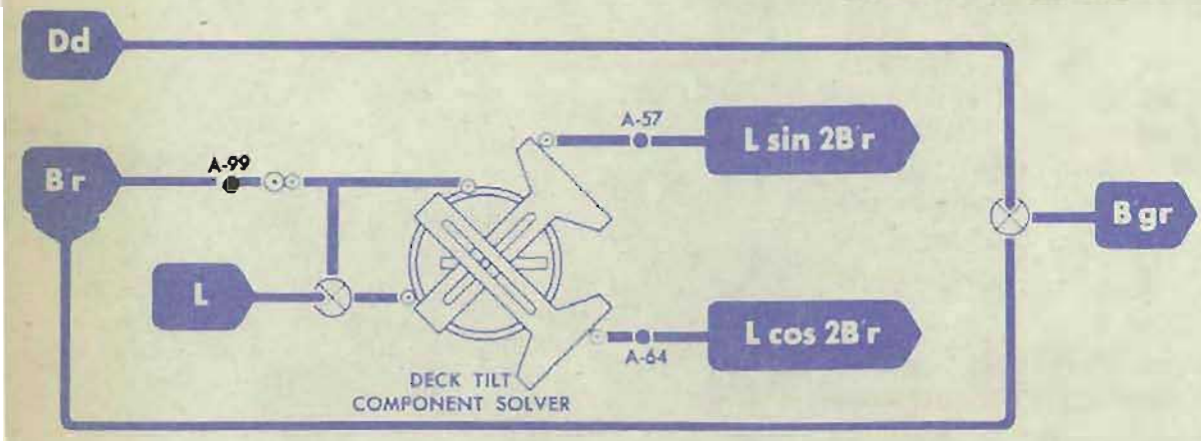
Fine adjustment

Check that *Dd* is at 0° and *B'gr* is at 45°. Set *L* at 2000′.

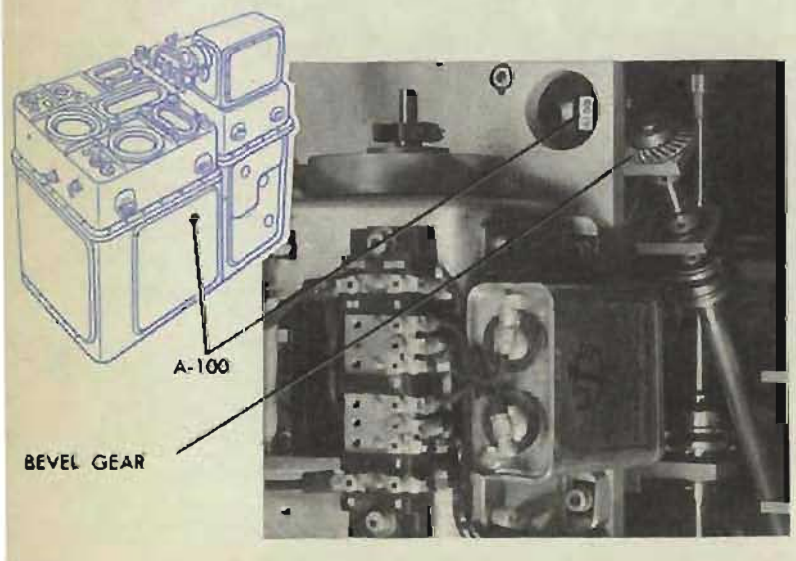
Set up a dial indicator to measure motion of the *L* cos *2B'r* rack (vertical slide), and observe the reading of the indicator. Increase *L* slowly, and turn the gear below A-99 to keep the indicator at its original reading. Continue until *L* has reached its upper limit of travel.

Tighten A-99, and recheck by turning *L* from its lower limit to its upper limit. There should be no motion of the dial indicator (limit 0.002 inch). Remove the dial indicator and all wedges.

Check A-57 and A-64.



A-100 ELEVATION WIND COMPONENT SOLVER to Ywgr LINE



Location

A-100 is under cover 5. It is visible through the small access hole above the *Dtwj* follow-up.

Check

Set *Br* at 90°.
Set *Bws* at 90°.
Set *So* and *Sw* at 0 knots.
Set *Ds* at 500 mils.

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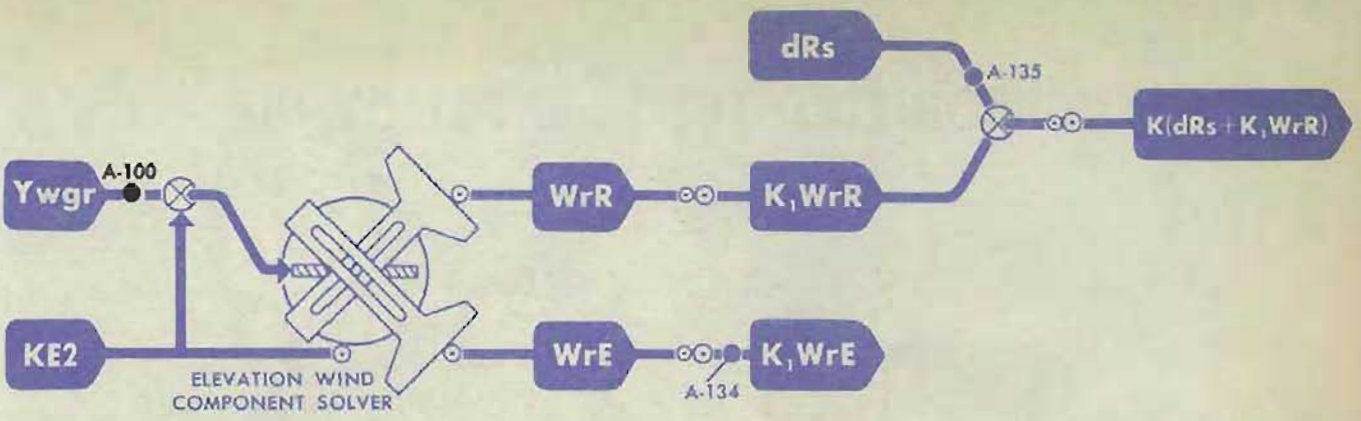


Turn the power ON.

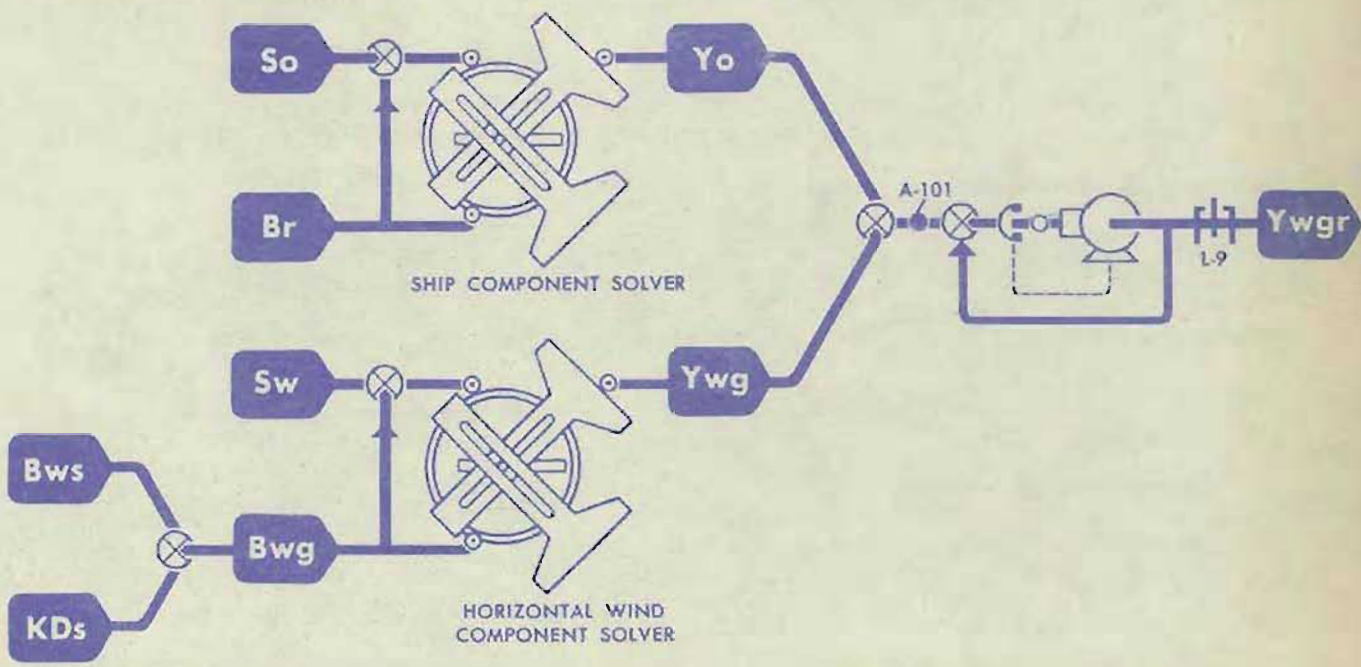
The input screw of the elevation wind component solver should be in such a position that rotation of the *E2* line produces no movement of the output racks.
Turn the *E2* line from 0° to 80°.
The *WrR* output rack can be seen under cover 3.

Adjustment

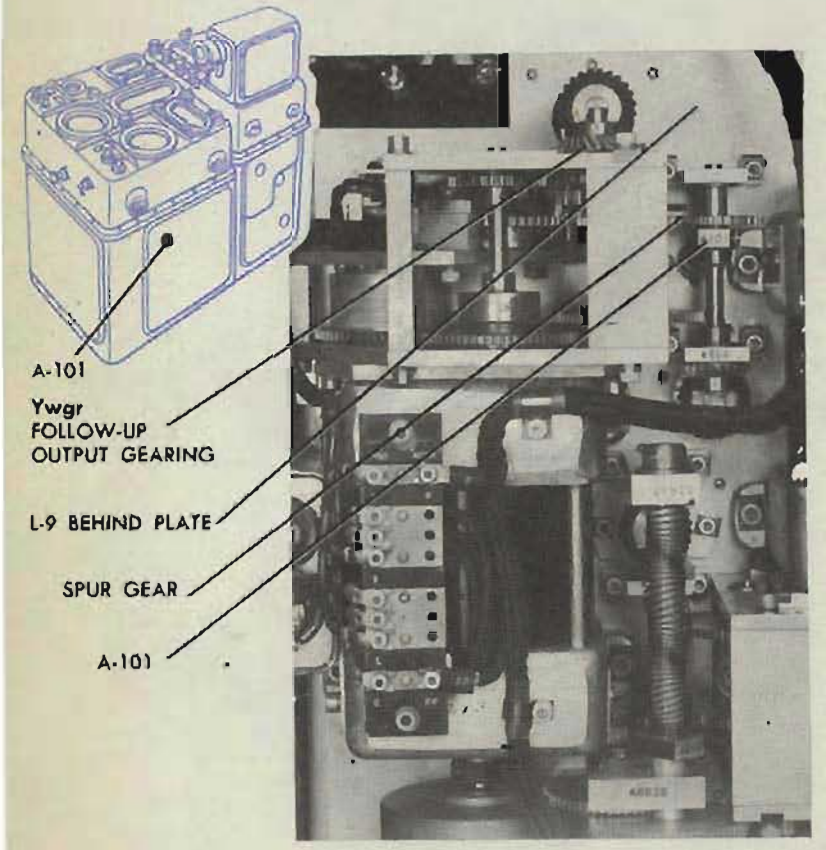
If there is any motion of the *WrR* output rack, make A-100 slip-tight.

Set *E2* at 78.95° and mark the position of the *WrR* rack.
Turn *E2* to 0°.
Turn the bevel gear near A-100 until the *WrR* rack is at its original position.

Tighten A-100 and recheck.
Check A-135 and A-134.



A-101 SYNCHRONIZING THE Ywgr FOLLOW-UP



Location

A-101 is under cover 5.

L-9 is behind the top of the follow-up mounting plate. It is in a horizontal position with its lower limit toward the front.

Check

Turn the power ON.

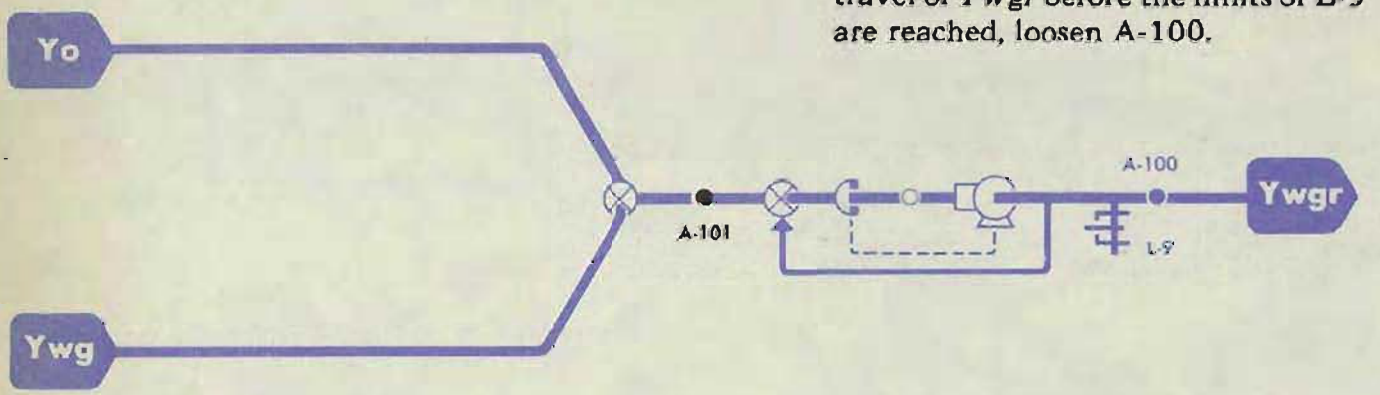
Set *Ds* at 500 mils.
Set *So* at 40 knots, and *Sw* at 60 knots.
Set *Co*, *Bw*, and *Br* at 0°.

The *Ywgr* follow-up should be synchronized at the lower limit, −100 knots.

CAUTION

Before making this adjustment, turn the power OFF and run *Ywgr* from one limit to the other by turning the *Ywgr* follow-up output gearing.

If there is any interference in the travel of *Ywgr* before the limits of L-9 are reached, loosen A-100.



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Adjustment

If the follow-up is not synchronized at the lower limit, make A-101 slip-tight.

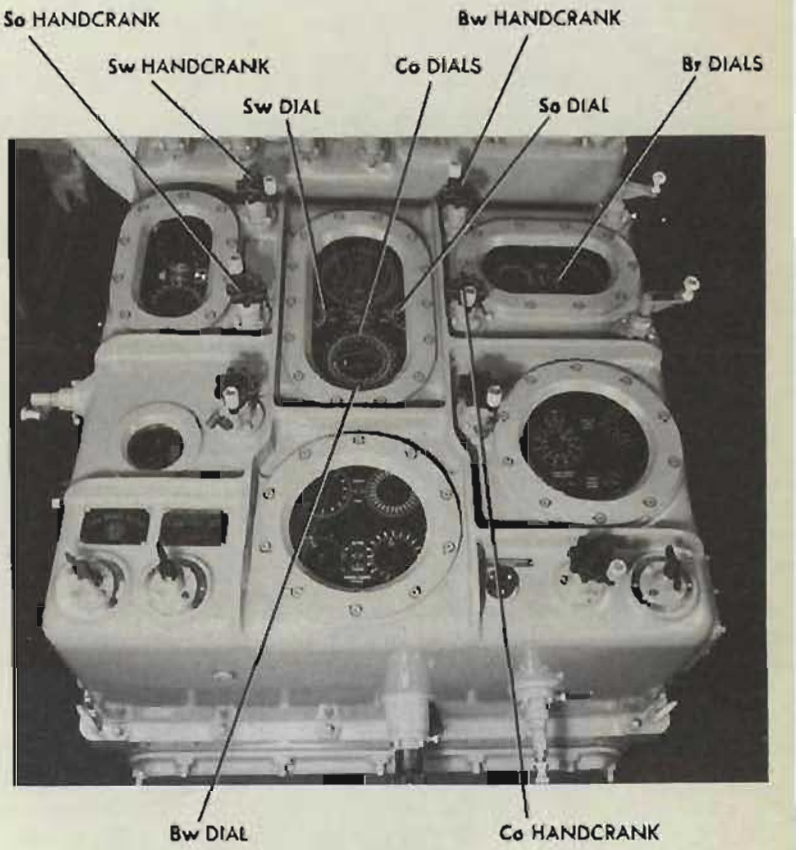
Turn the small spur gear above the clamp until the follow-up is synchronized at the lower limit.

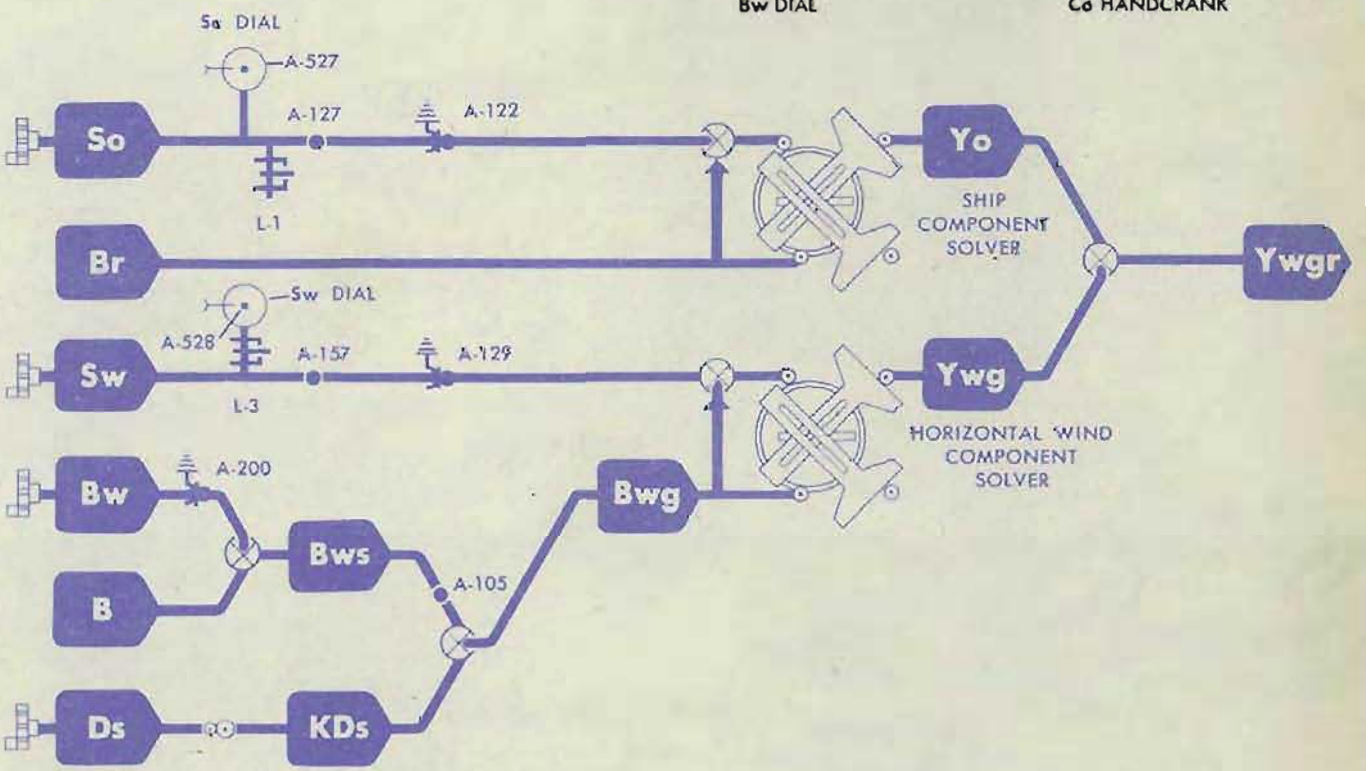
Change *Br* to 180°. The *Ywgr* follow-up should synchronize at the upper limit.

Tighten A-101 and recheck.

Increase *So* and note the value on the *So* dial at the moment the *Ywgr* follow-up stops driving. Repeat at the lower limit. The *So* dial should read the same value at both limits.

Readjust A-100.





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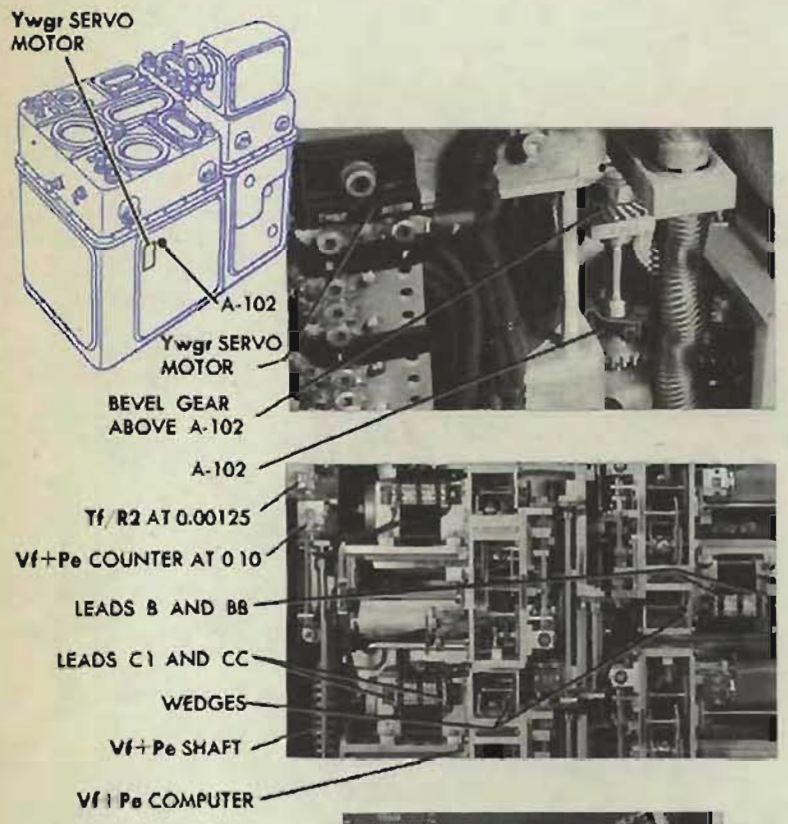
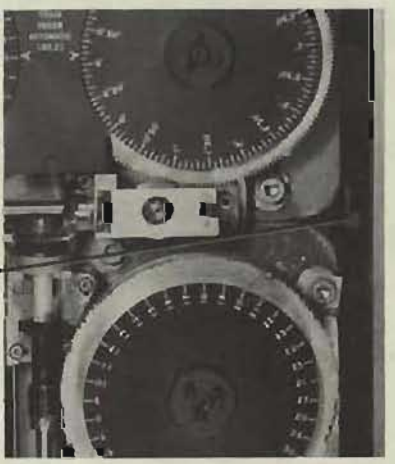
A-102 SYNCHRONIZING THE Dtwj FOLLOW-UP





Location

A-102 is under cover 5, to the rear of the *Ywgr* servo motor.

Check

Remove leads C1 and CC from the *Vf + Pe* ballistic computer.
Set the *Vf + Pe* counter at 100′ (010) and wedge the follow-up output gearing.

Remove leads B and BB from the *Tf/R2* ballistic computer.
Set the *Tf/R2* counter at 0.00125. (On Mods 8 and 12, set *Tf/R2* at 0.001184.)
Wedge the follow-up output gearing.

Turn the power ON.

Set *So*, *Sh*, and *Sw* at 0 knots.
Set *A*, *Br*, and *Bws* at 0°.
Set *I.V.* at 2550 f.s.
Set *Dj* at 0 mils.

The *Ds* master counter should read 500 mils.

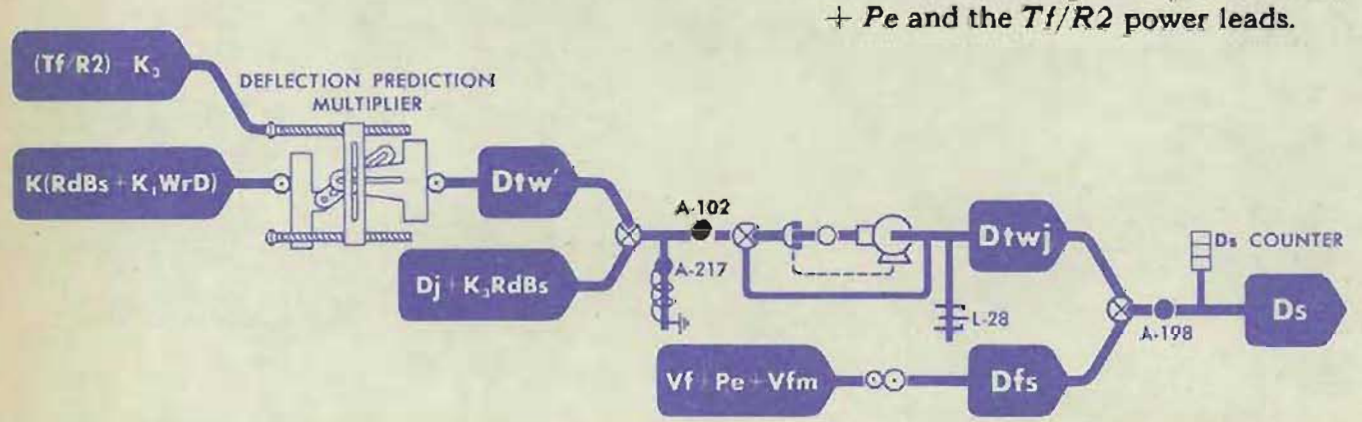
Adjustment

If the *Ds* counter does not read 500 mils, make A-102 slip-tight.

Hold the bevel gear 1½ inches above A-102, and turn the spur gear under A-102 until the *Ds* master counter reads 500 mils.

Tighten A-102 and recheck.

Remove the wedges. Replace the *Vf + Pe* and the *Tf/R2* power leads.



A-103 SYNCHRONIZING THE V FOLLOW-UP

Location

A-103 is under cover 5, to the rear of the *V* follow-up, 2 inches in from A-221.

The *Vs* master counter is under cover 6, behind the *Eb* servo motor.

Check

Remove leads C1 and CC from the *Vf + Pe* follow-up motor. Set *Vf + Pe* at 0 by turning the shaft leading to the counter. Wedge the gearing.

Remove leads B and BB from the *Tf/R2* follow-up motor. Set *Tf/R2* at its lower limit and wedge the line.

Turn the power ON.

Set *So*, *Sh*, *dH*, and *Sw* at 0 knots.
Set *A*, *Br*, and *Bws* at 90°.
Set *Vj* at 0 mils, *Ds* at 500 mils, and *I.V.* at 2550 f.s.

The *Vs* master counter should read 2000′.

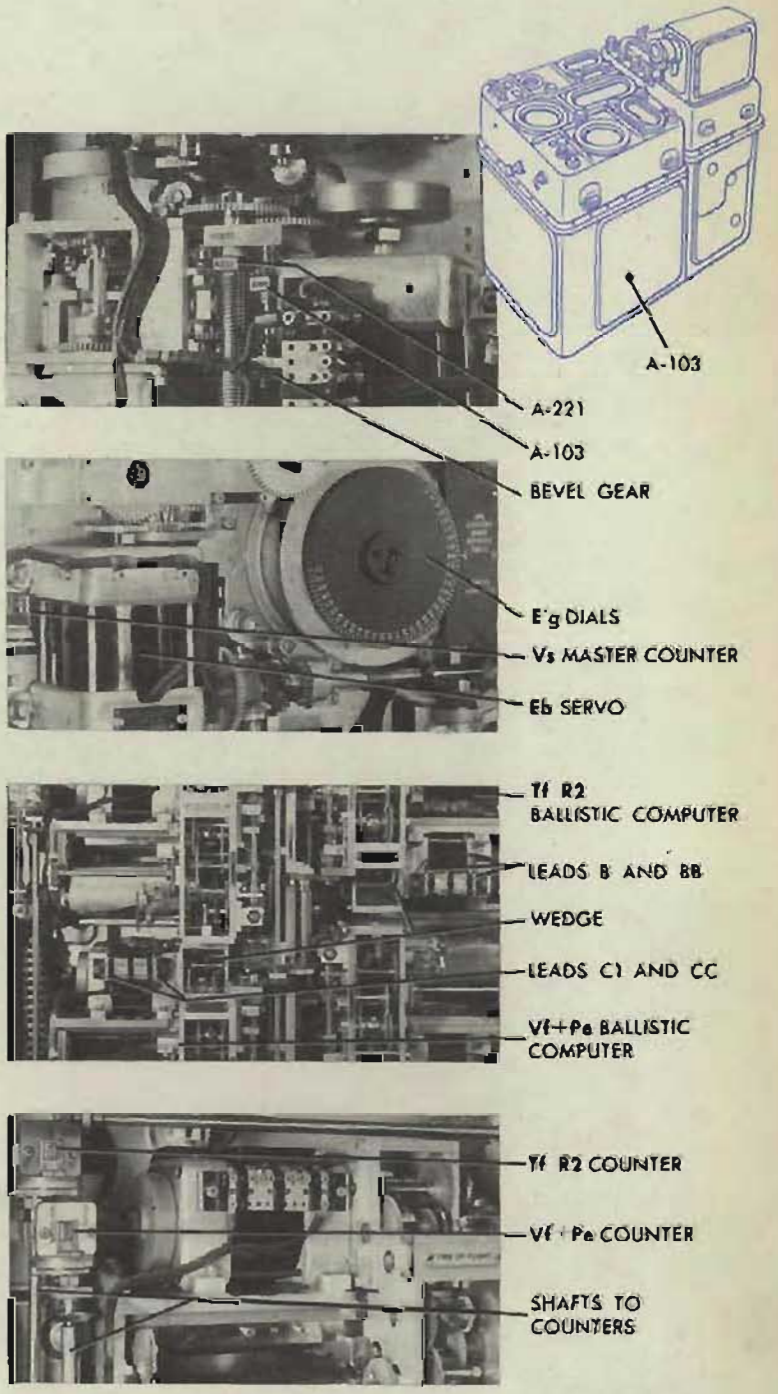
Adjustment

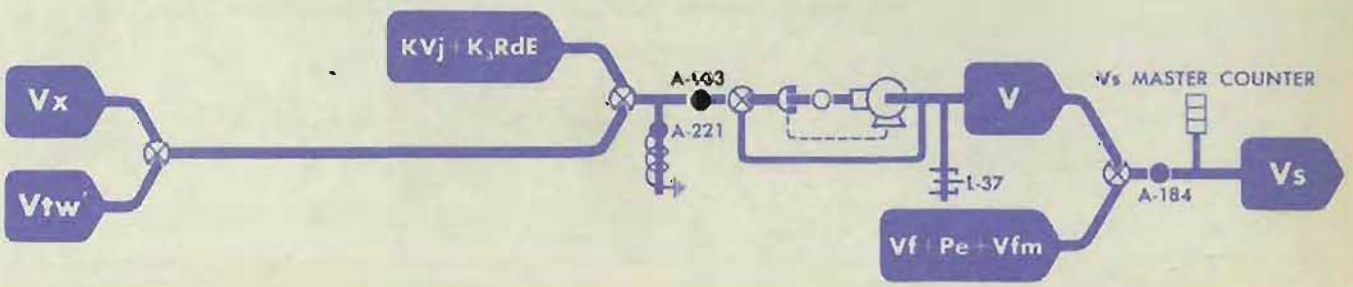
If the *Vs* counter does not read 2000′, make A-103 slip-tight.

Hold the bevel gear 1½ inches below A-103, and turn the spur gear above A-103 until the *Vs* master counter reads 2000′.

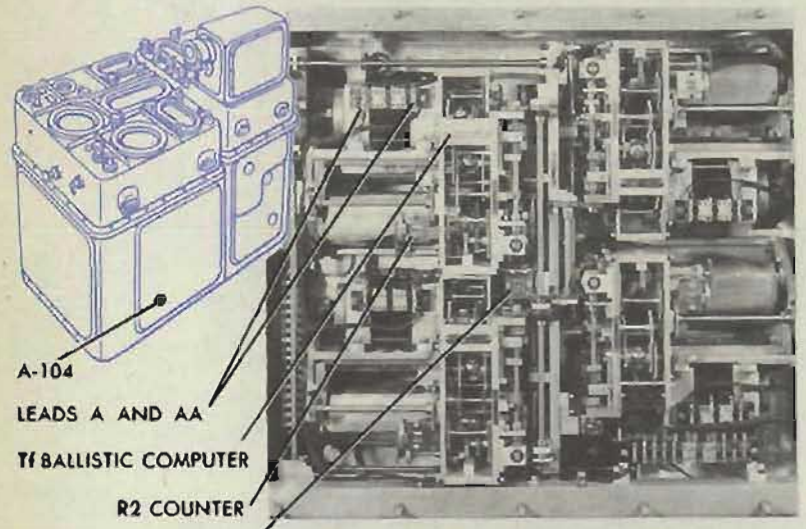
Tighten A-103 and recheck. All quantities must remain at the required values.

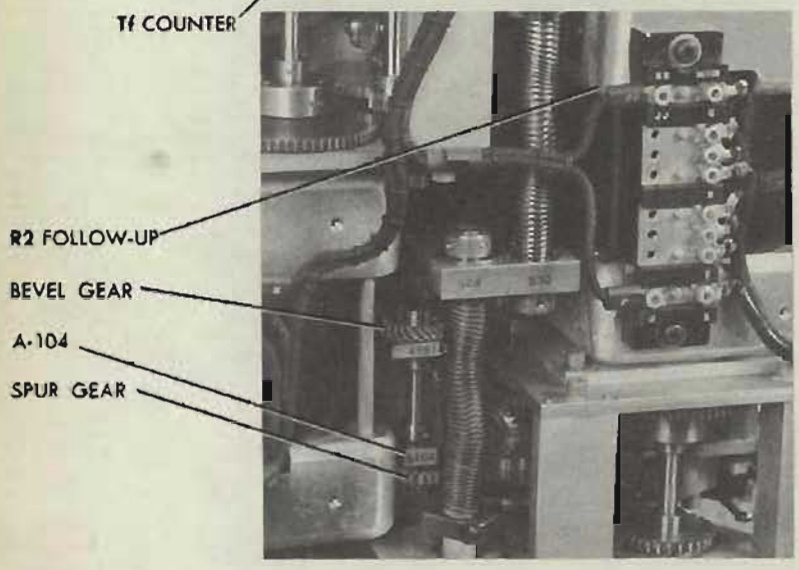
Remove the wedges. Replace the leads on the *Vf + Pe* and *Tf/R2* follow-ups.





A-104 SYNCHRONIZING THE R2 FOLLOW-UP





Location

A-104 is under cover 5, at the side of the *R2* follow-up.

Check

Turn the power ON.

Set *So*, *Sh*, *dH*, and *Sw* at 0 knots.
Set *I.V.* at 2550 f.s.
Set *A*, *Br*, and *Bws* at 90°.
Set *Rj* at 0 yards.
Set *Tf* at 5 seconds. (On Mods 8 and 12, set *Tf* at 8 seconds.) To set the *Tf* counter, disconnect leads A and AA, and turn the *Tf* follow-up output gearing. Then wedge the line.

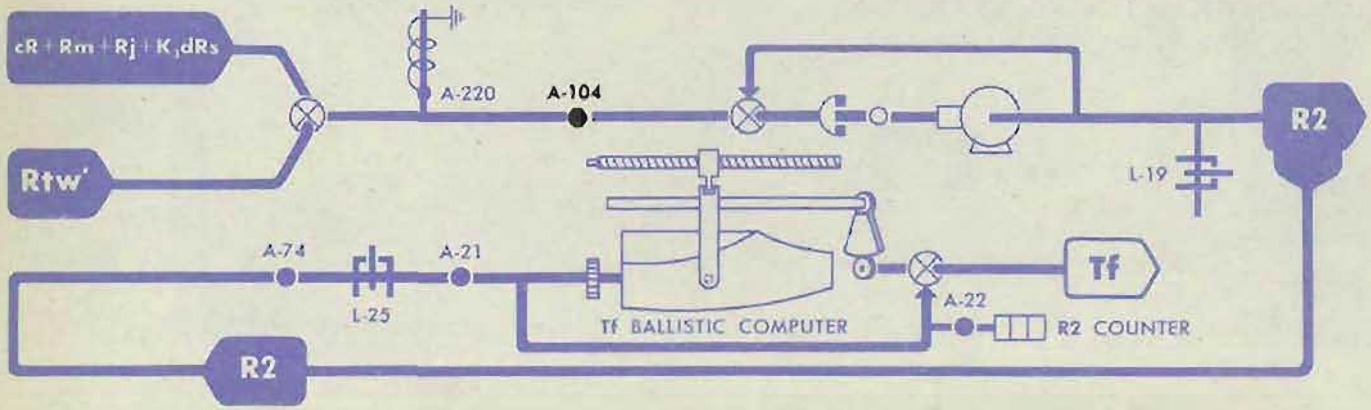
Set *cR* at 10,000 yards.

The *R2* follow-up should be synchronized and the *R2* counter in the *Tf* ballistic computer should read 10,000 yards.

Adjustment

If the *R2* counter does not read 10,000 yards, make A-104 slip-tight. Use a gear pusher to hold the bevel gear 1½ inches above the clamp, and use another gear pusher to turn the spur gear below the clamp, until the master *R2* counter reads 10,000 yards.

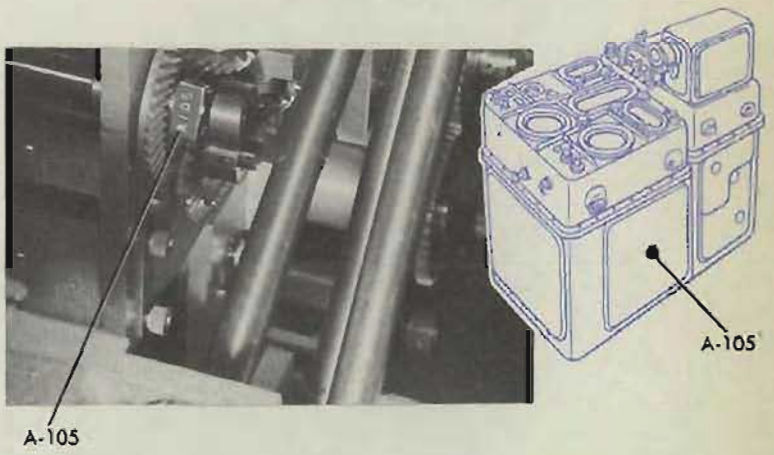
Tighten A-104 and recheck.
Remove the wedge from the *Tf* follow-up output gearing.
Reconnect the *Tf* power leads.



A-105 HORIZONTAL WIND COMPONENT SOLVER to Bws DIAL

Location

A-105 is under cover 5.



Check

Turn the power ON.

Set *Ds* at 500 mils.
Set *B* at 0°.
Set *Bw* at 90°.

The slot in the vector gear of the horizontal wind component solver should be positioned downward.

Mark the *Ywgr* follow-up output gearing for use as an indicator. Turn *Sw* from 0 to 60 knots.

There should be no output from the *Ywg* output rack.

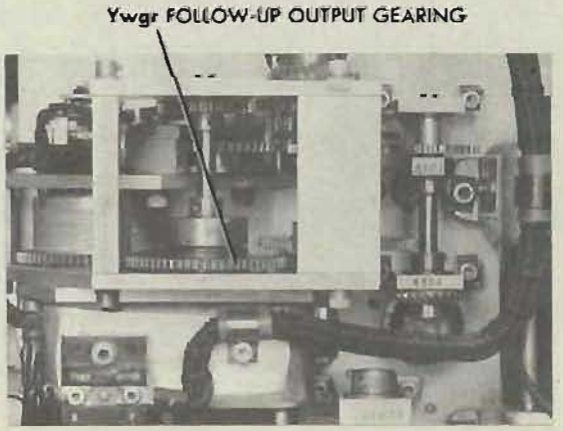
If the slot is correctly positioned, the *Xwg* output rack moves down as *Sw* is increased. The *Ywg* rack should not move.

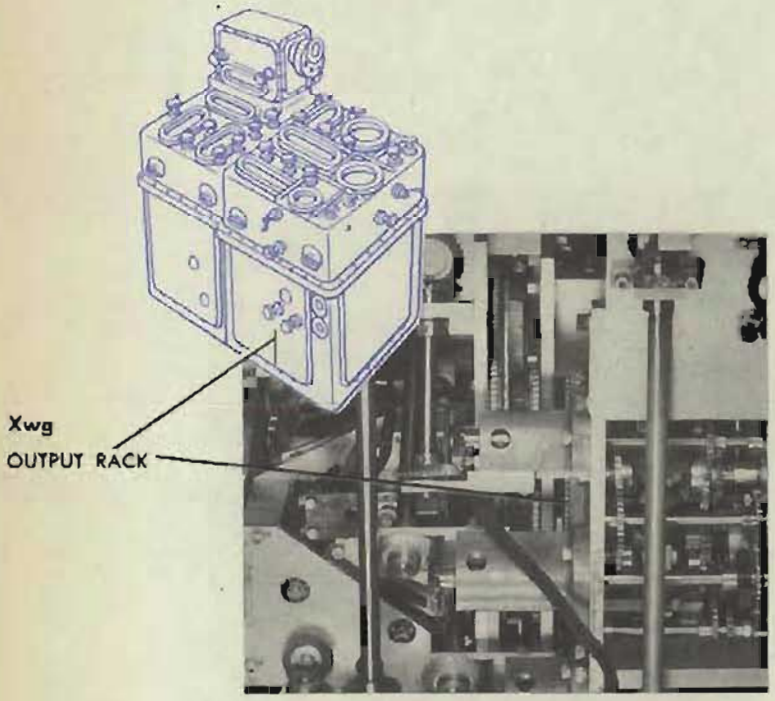
Output on the *Ywg* rack can be checked by movement of the *Ywgr* follow-up output gearing.

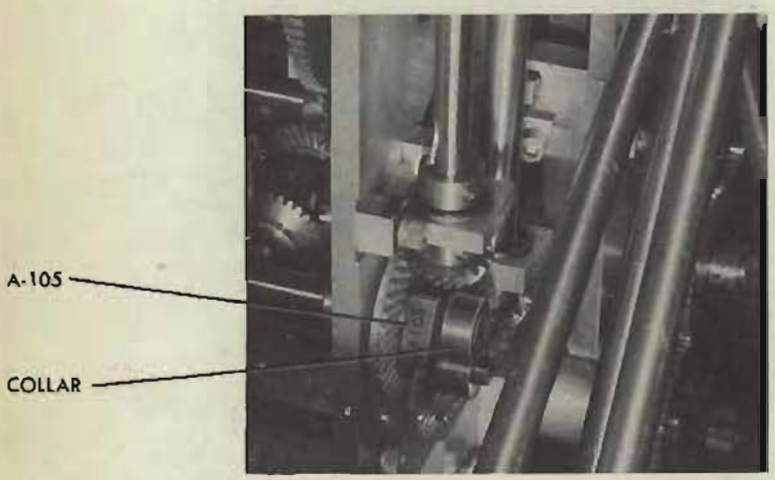
CAUTION

Before making this adjustment, turn *Ywgr* from one limit to the other by means of the *Ywgr* follow-up output gearing with the power OFF.

If there is any interference in the travel of *Ywgr* before the limits are reached, loosen A-100.





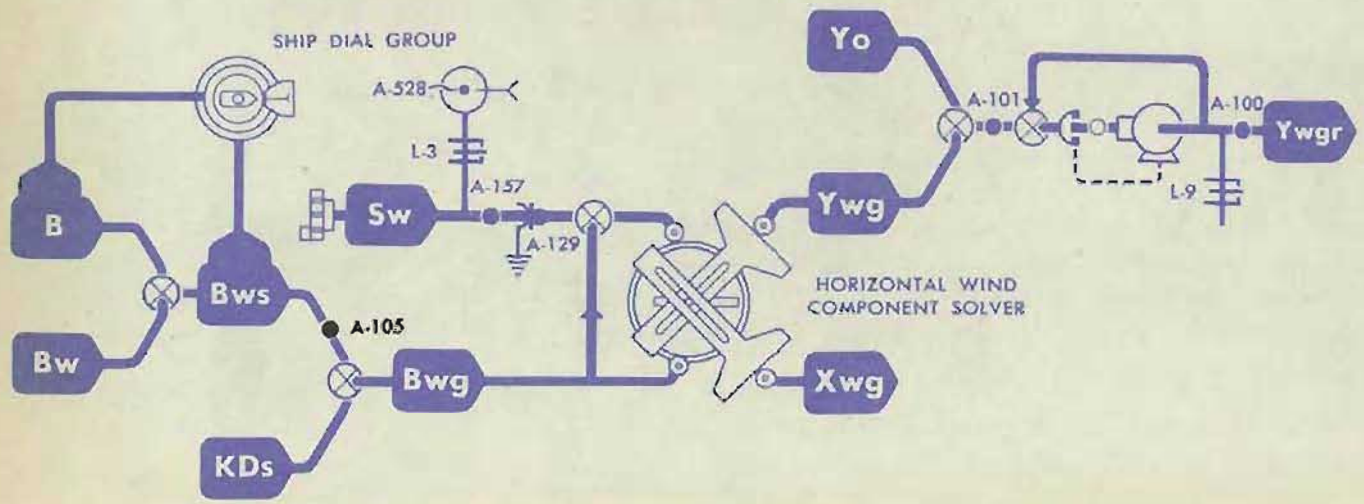


Adjustment

If *Xwg* does not move down, or if there is any output on the *Ywgr* follow-up as *Sw* is increased from 0 to 60 knots, make A-105 slip-tight. Move the vector gear until there is no output of *Ywg* for an input of *Sw*, and until the *Xwg* rack moves down when *Sw* is increased.

To move the vector gear, turn the collar next to A-105. *Bw* must not move off 90°. Tighten A-105, and recheck.

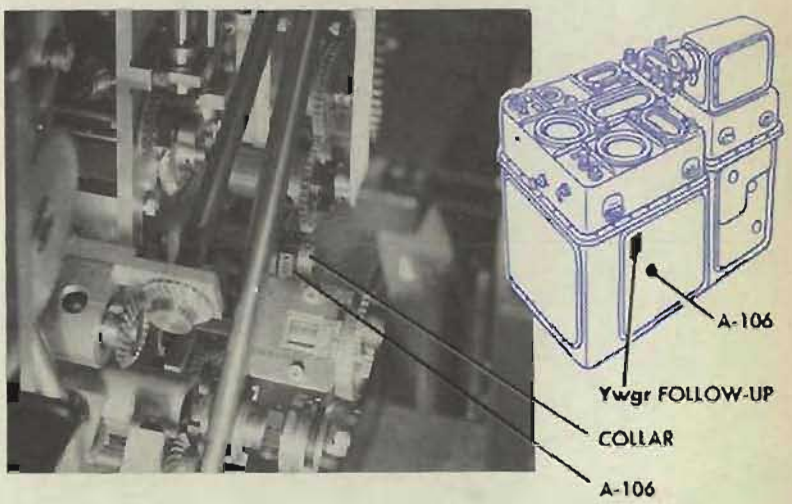
Check A-101, A-131.



A-106 ELEVATION WIND COMPONENT SOLVER to E2 COUNTER

Location

A-106 is under cover 5, at the lower center.
The *E2* master counter is under cover 4.



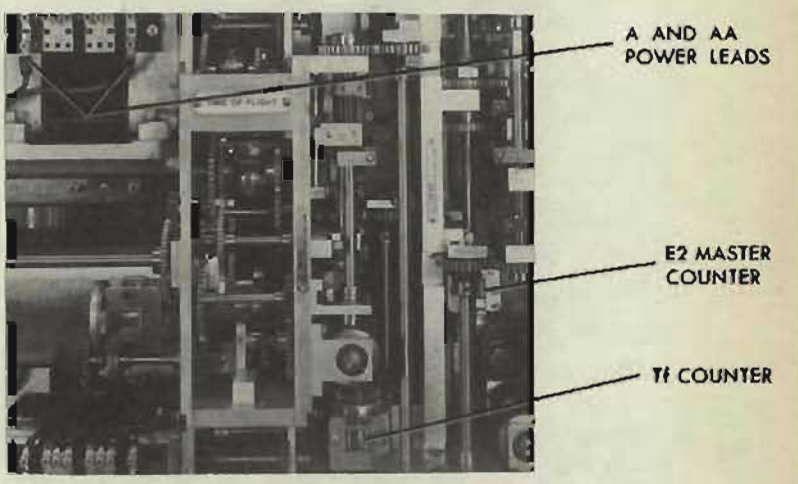
Check

Turn the power OFF.

Remove leads F and FF from the *Ywgr* follow-up. Remove leads A and AA from the *Tf* follow-up.

Set *E2* at 0°, with the sync *E* hand-crank at CENTER.
The elevation wind component solver vector gear should be positioned with the gear end of the lead screw at the top.

Set *E2* at 78.947°. (On Mods 8 and 12, set *E2* at 80.496°.)
Turn the *Ywgr* follow-up output line from limit to limit.
There should be no output of the *WrR* rack. The *WrR* rack can be seen from the left side of the instrument. If there is any apparent motion of the *WrR* rack, A-106 should be readjusted.



Adjustment

Loosen A-106. Turn the collar next to A-106 to position the vector gear, with the gear end of the lead screw toward the right of the instrument, until there is no output on the *WrR* rack for the entire travel of *Ywgr*. Tighten A-106.

Refining the adjustment

Turn the power ON.

Set *Tf* at its upper limit and wedge the gearing.

Set *E2* at 78.947°. (On Mods 8 and 12, set *E2* at 80.496°.)

Turn the *Ywgr* follow-up output gearing to one limit.

Mark a gear in the *R2* follow-up output gearing as an indicator.

Turn *Ywgr* to the other limit. If the *R2* indicating gear moves more than 2 teeth, loosen A-106. Turn the collar next to the clamp until the indicating gear has returned halfway to its original position. Tighten A-106 and recheck.

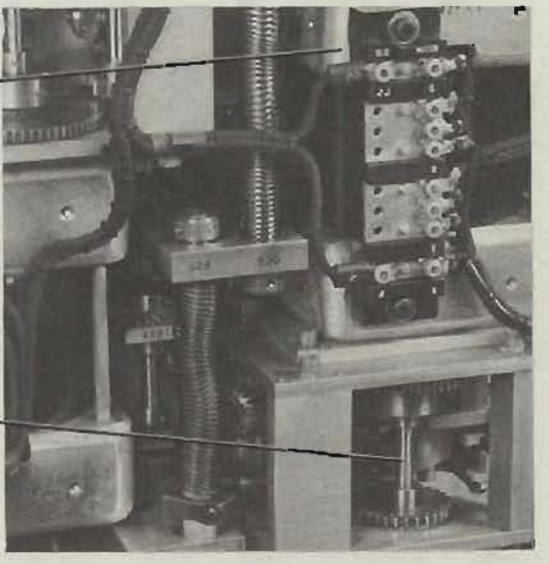
Check that E2 is at 78.947°. (On Mods 8 and 12, check that *E2* is at 80.496°.) Check that the gear end of the lead screw is toward the right.

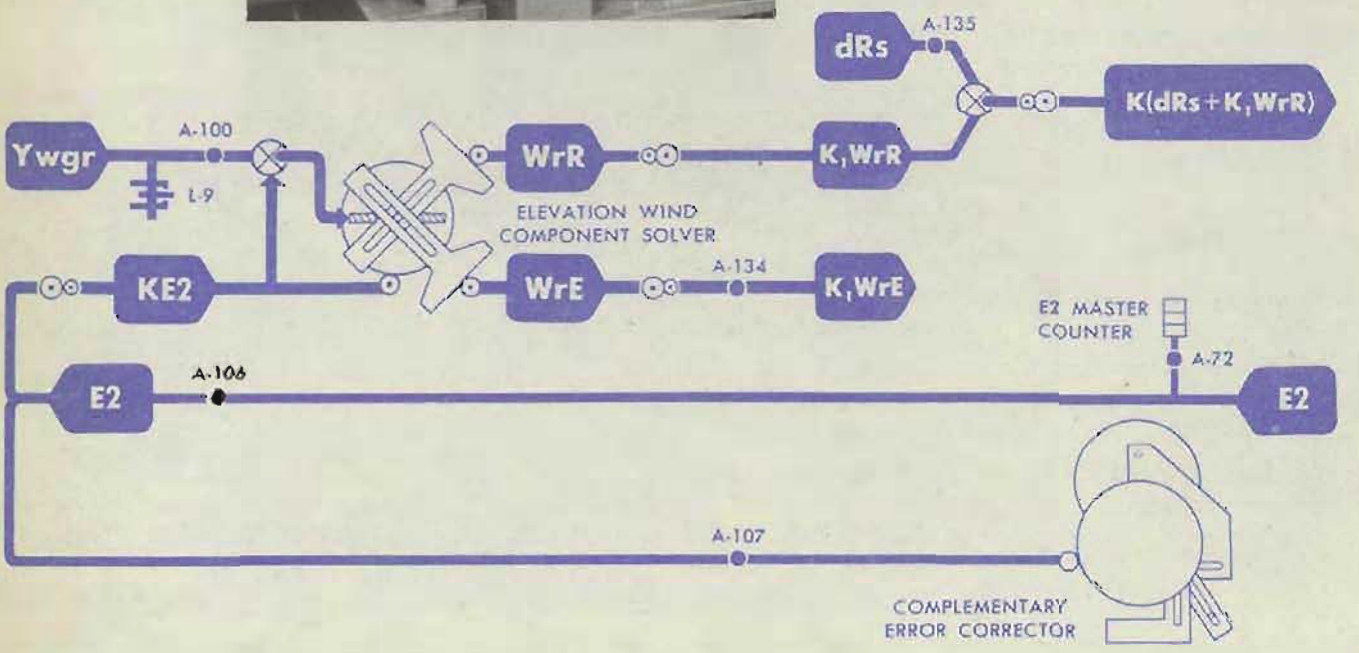
Turn the power OFF.

Remove the wedge from the *Tf* gearing.

Reconnect the leads on the *Ywgr* and *Tf* follow-ups.

Check A-134 and A-135.





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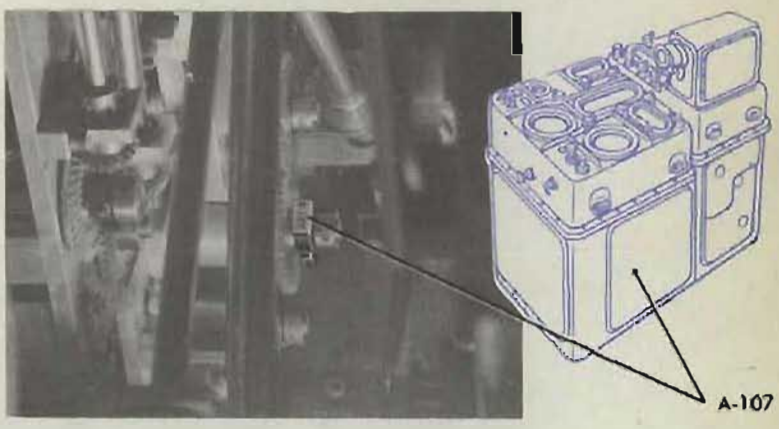
A-107 COMPLEMENTARY ERROR CORRECTOR to E2 COUNTER

Location

A-107 is under cover 5, 20 inches in from the side, and 2 inches above the deck plate.



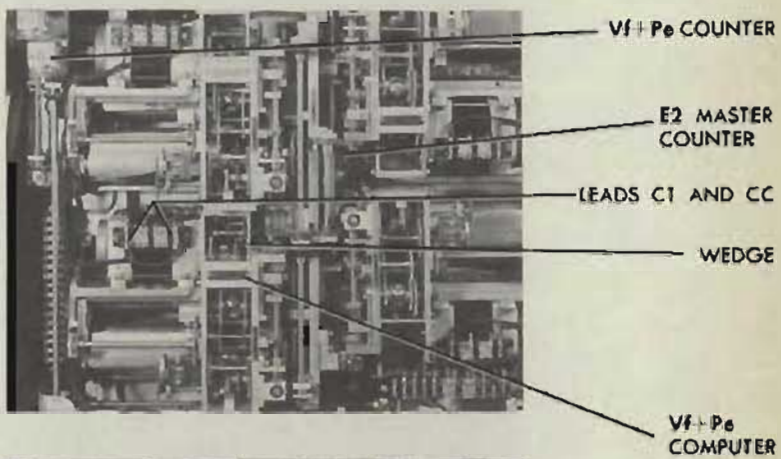
Check

Turn the power ON.

Set *I.V.* at 2550.
Set *So*, *Sh*, *Sw*, and *dH* at 0 knots
Set *Vj* at 0.
Set *Ds* at 500 mils.

Remove leads C1 and CC from the *Vf* + *Pe* follow-up. Set the *Vf* + *Pe* counter at 0 and wedge the line.

Set the *E2* master counter at 80°, with the sync *E* handcrank at CENTER.
Pull the *Vs* handcrank OUT. The *Vs* counter should read 2000'. (If it does not, check A-103.)
Set *Ds* at 100 mils or 900 mils.
The *E2* master counter should read 67.25° (±0.05°).

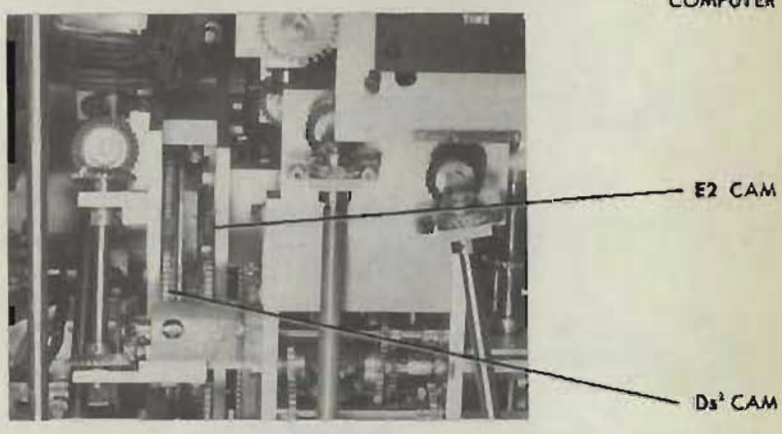


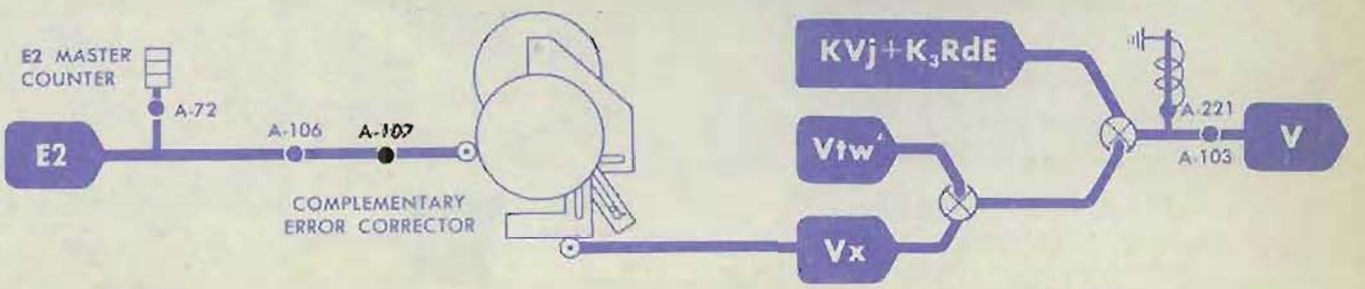
Adjustment

If the *E2* counter does not read 67.25° (±0.05°), slip-tighten A-107. Turn the *E2* cam until the counter reading is correct. Tighten A-107 and recheck.

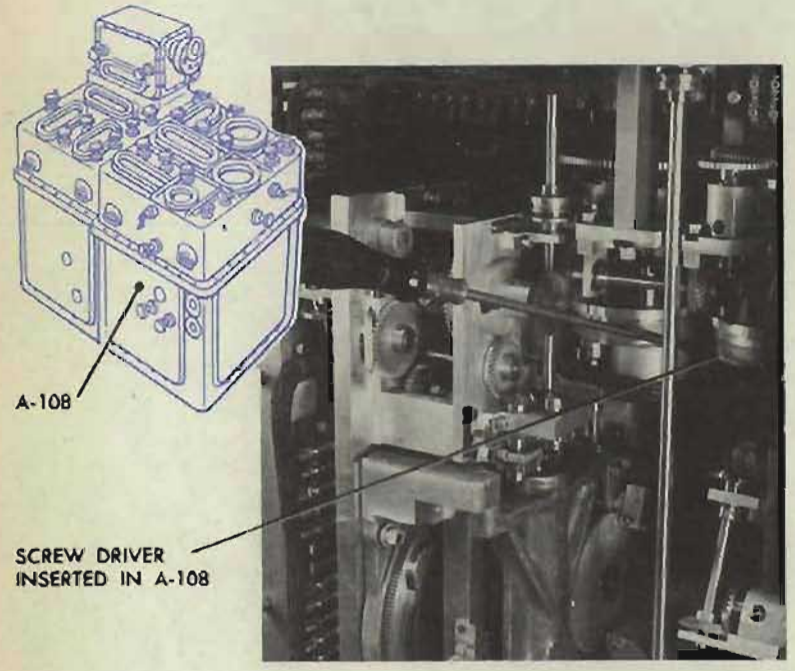
Remove the wedge.
Replace the *Vf* + *Pe* power leads.

Check A-103.





A-108 and A-109 RANGE RATE CORRECTOR to RdE LINE and RANGE RATE CORRECTOR to RdBs LINE



Location

A-108 is under cover 3 at the left center of the front pedestal section. It is above the coupling on a diagonal shaft, and can be reached by a long screw driver.

A-109 is under cover 5. It is above the coupling on a vertical shaft.

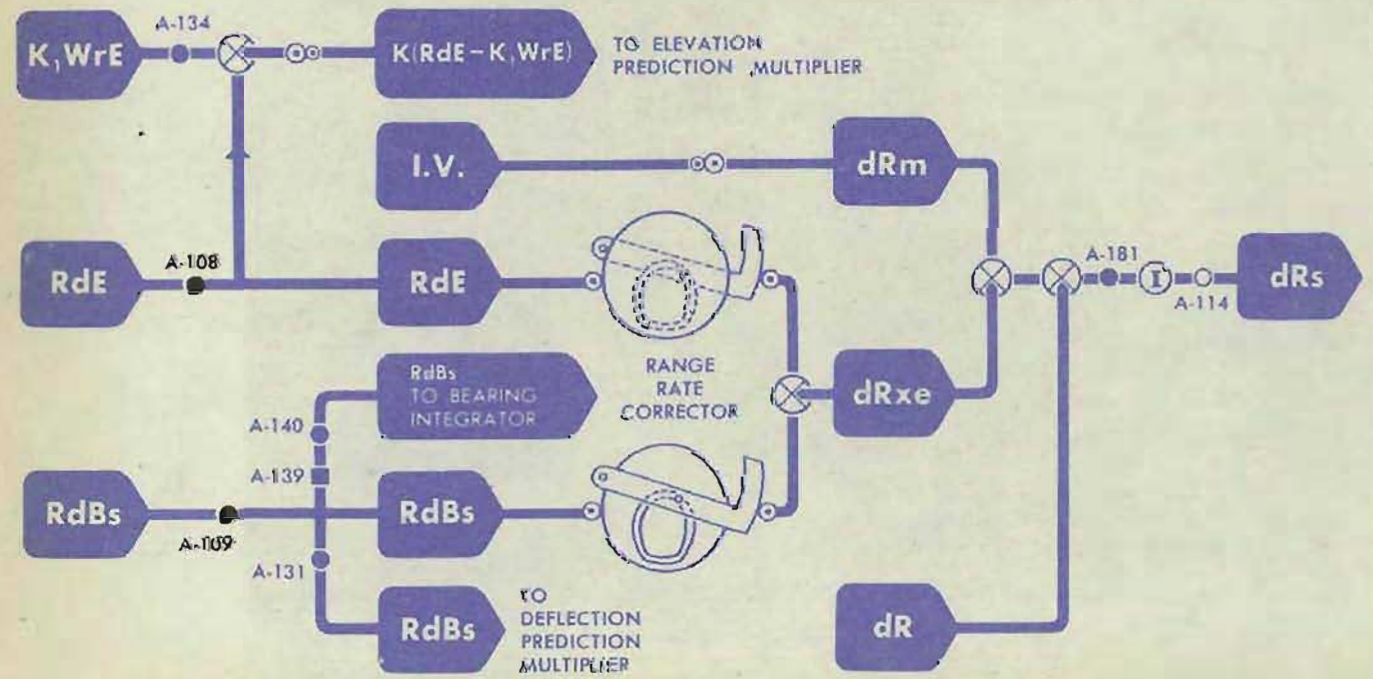
The range rate corrector is under cover 5, behind the mounting plate of the *R2* follow-up. The range rate corrector can be reached by hand.

Check

Turn the power ON.

Set *So* and *Sh* at 0 knots.
Set *dH* at 0 knots.

Both the *RdE* and *RdBs* lines are now at their zero positions and MUST REMAIN SO POSITIONED during this check and adjustment.



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The *RdBs*² cam and the *RdE*² cam of the range rate corrector should now be at their zero positions, where a 1/16-inch setting rod can be inserted through the hole in both followers and cams and the mounting plate between them.

Adjustment

If the rod goes through the *RdE*² cam follower, but cannot continue through the *RdE*² cam, loosen A-108. Move the *RdE*² cam until the rod can be inserted. Tighten A-108. The hole in the *RdE*² cam is in the section of the cam groove closest to the center of the cam.

With the rod through the *RdE*² cam, try to insert it through the *RdBs*² cam. If it cannot be inserted, loosen A-109. Turn the input to the *RdBs*² cam until the rod can be inserted through the holes in the *RdBs*² follower and cam. Tighten A-109. The rod will go in approximately 2 inches when inserted through both cams and both followers.

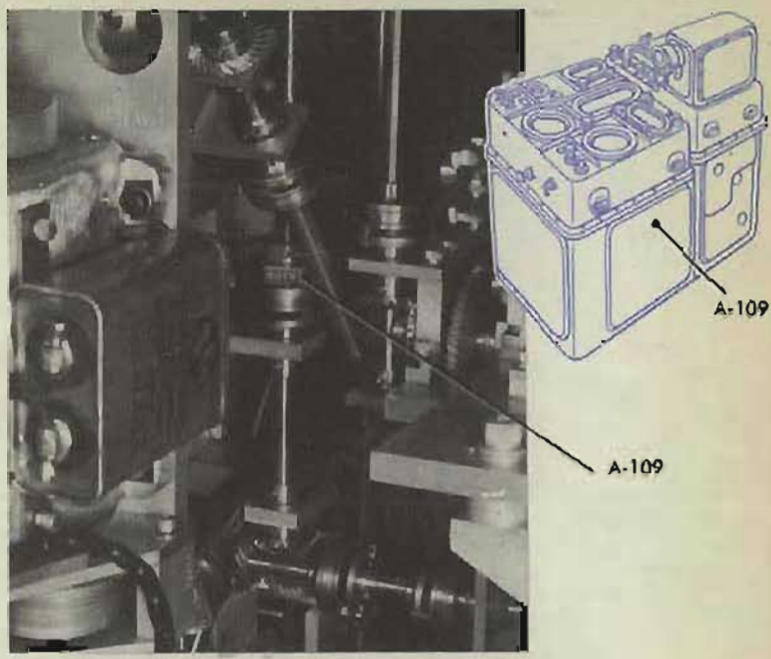
REMINDER: Remove the setting rod.

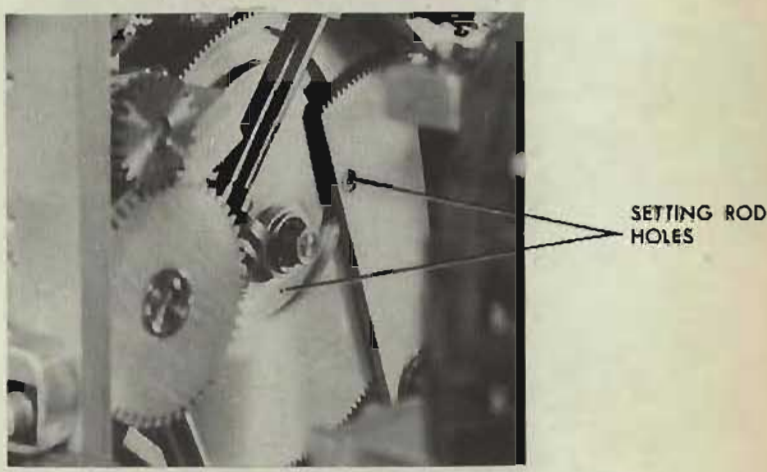
Check the *RdBs* and *RdE* lines for restrictions or interference by turning the power OFF and turning the output gearing of the *RdBs* and *RdE* follow-up by hand from one limit to the other. This must be done because the adjustments of A-109 and A-108 control the *RdBs* and *RdE* inputs to other units.

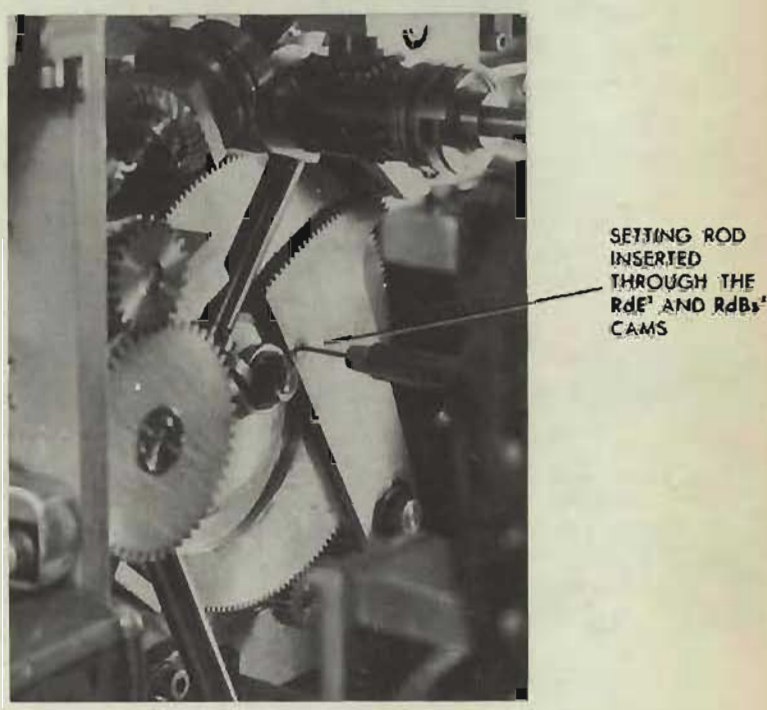
CAUTION

Do not turn any handcranks while the setting rod is in the cams. Remove the rod immediately on completion of the adjustment or serious damage will result.

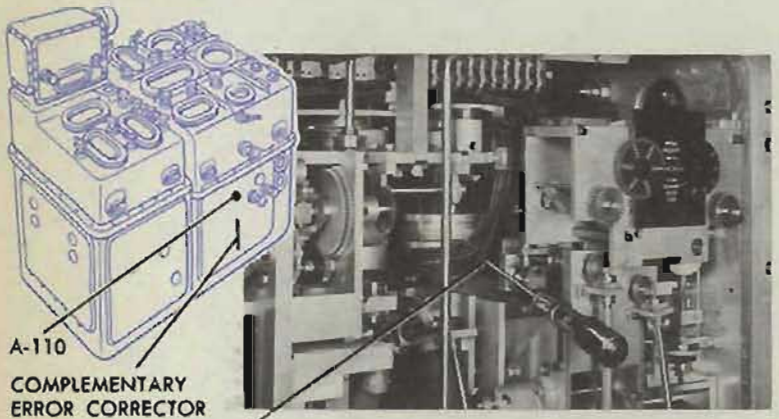
If A-108 is readjusted, check A-134 and A-181. If A-109 is readjusted, check A-131, A-139, A-140, and A-181.

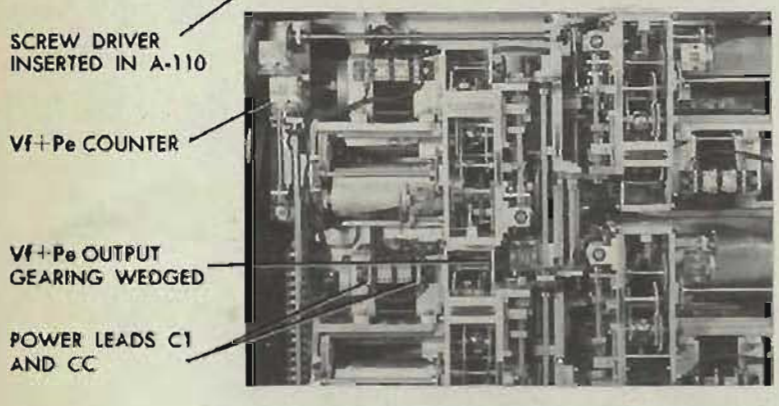


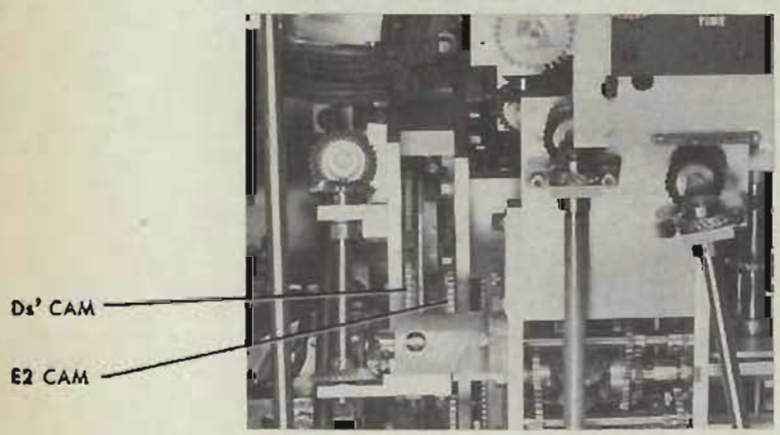




A-110 COMPLEMENTARY ERROR CORRECTOR to Ds COUNTER







Location

A-110 is under cover 3, 10 inches from the top, 14 inches in from an access behind the *I.V.* dial.

Check

Remove leads C1 and CC from the *Vf + Pe* follow-up. Set the *Vf + Pe* counter at 0 and wedge the line.
Turn the power ON.
Set *I.V.* at 2550.
Set *So*, *Sh*, *Sw*, and *dH* at 0 knots. Set *Vj* at 0.

Set *Ds* at 500 mils.
Set *E2* at 80°, with the sync *E* handcrank at CENTER.
Pull the *Vs* handcrank OUT. The *Vs* indicating counter should read 2000'. (If it does not, check A-103.)

Set *Ds* at 100 mils and read the *Vs* counter.
Set *Ds* at 900 mils and read the *Vs* counter.
Vs should have *increased*, and then *decreased* to the same reading that was shown when *Ds* was at 100 mils.

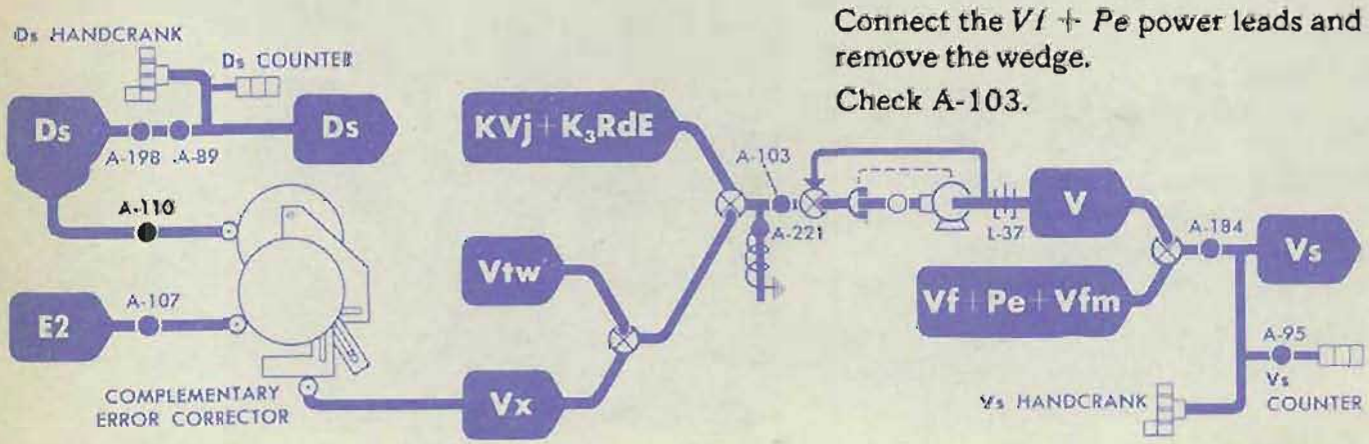
Adjustment

If the *Vs* counter does not read the same with *Ds* at 100 and 900 mils, slip-tighten A-110. Turn the *Ds'* cam until an equal value of *Vs* is obtained for *Ds* settings of 100 and 900 mils. *Vs* should *decrease* when *Ds* is either increased or decreased from 500 mils.

Tighten A-110 and recheck.

Connect the *Vf + Pe* power leads and remove the wedge.

Check A-103.



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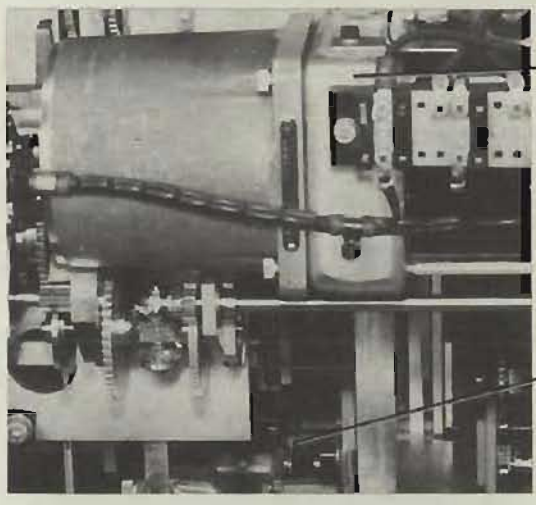
A-111 Zd (L - L cos 2B'r) MULTIPLIER to Zd DIALS

Location

A-111 is under cover 7, below the *Vz* motor.

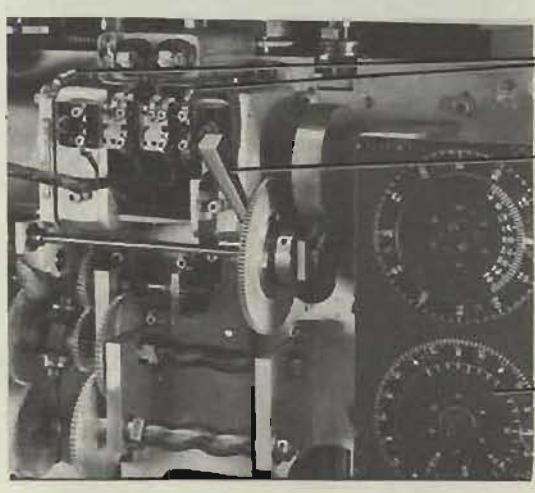


Rough check

Set *Dd* at 0.
Remove leads 1B and 1BB from the *Dd* follow-up. Wedge the output gearing.
Turn the power ON.
Turn the control switch to SEMI-AUTO.
At the switchboard, turn off the *B'r* receiver switch.
Set *Zd* at 2000' and wedge the line.
Set *B'gr* at 90°.

The *Zd* input to the multiplier should be at its zero position. Full travel of *L* should cause no motion of the output slide of the multiplier.

Motion of the output slide can be seen on the spider of D-3, in front of the *jB'r* contact assembly.



Refined check

Remove leads 1B and 1BB from the *Dd* follow-up. Set the *Dd* dials at 0° and wedge the output gearing.
Turn the power ON.
At the switchboard, turn off the *B'r* receiver switch.
Turn the control switch to SEMI-AUTO.
Set *Zd* at 2000'.
Set *B'gr* at 90°.
Set *L* at 2000'.
Loosen A-62 and wedge the gear on which the clamp is located.

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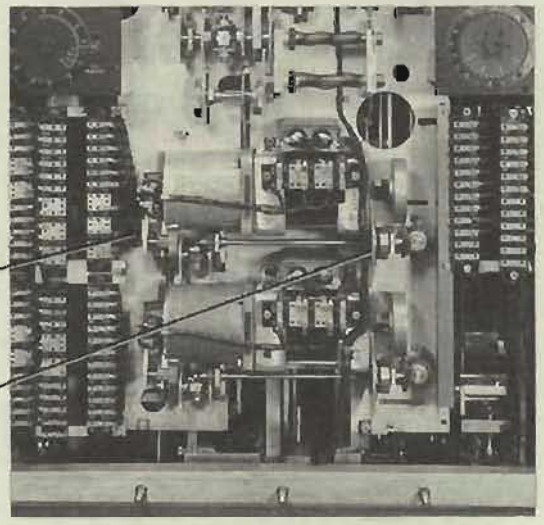


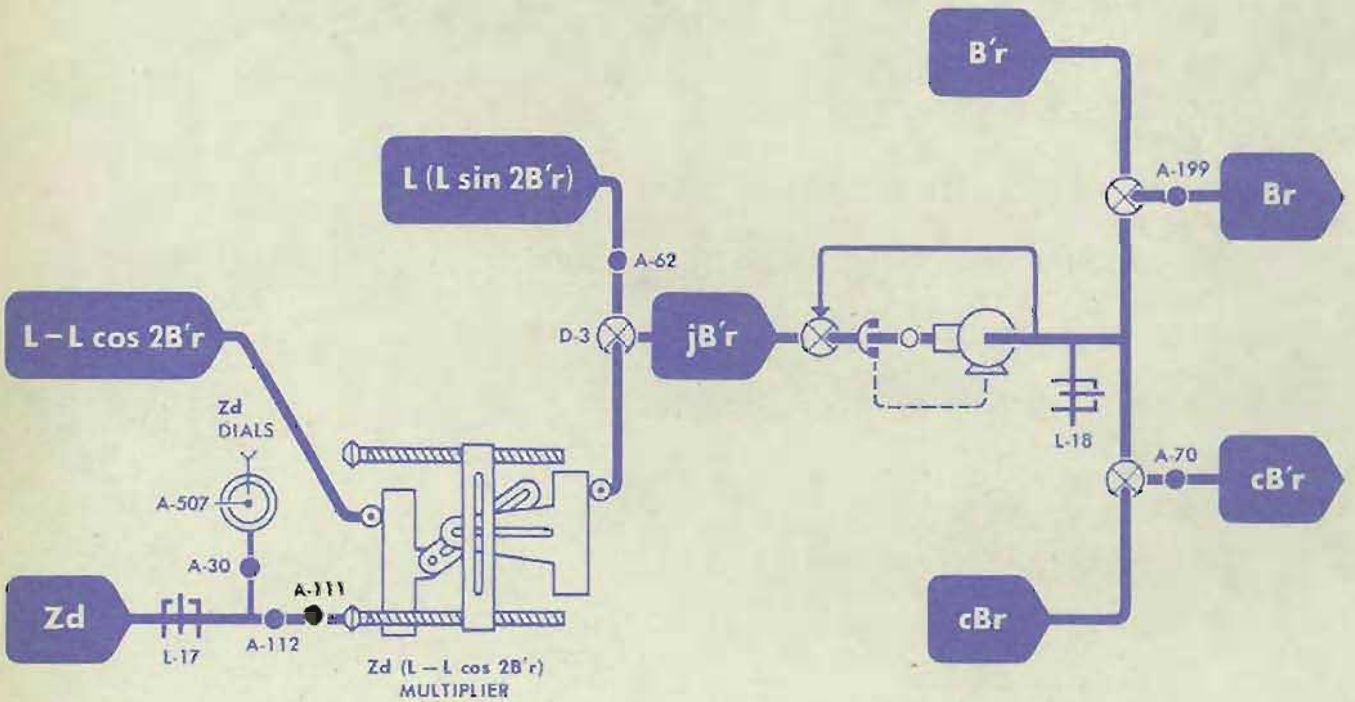
Mark the *jB'r* follow-up output gear as an indicator.
Turn *L* to 3500'.
The indicating mark should not move more than one tooth.

Adjustment

If the indicating mark moves more than one tooth, loosen A-111. Hold *Zd* at 2000', and move the bevel gear next to A-111 with a gear pusher until the marks match. Tighten A-111, and recheck with *L* at 500'.

Remove the wedges and reconnect the leads to the *Dd* follow-up.

Readjust A-62.



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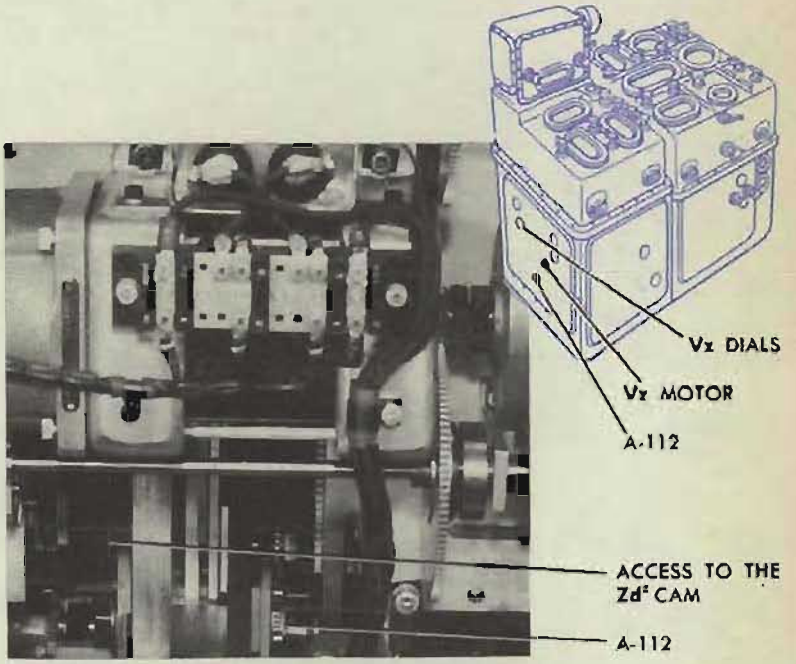
A-112 Zd^2 tan (Eb+Vs) MULTIPLIER to Zd DIALS

Location

A-112 is under cover 7, and can be reached through the opening below the *Vz* servo motor.



Check

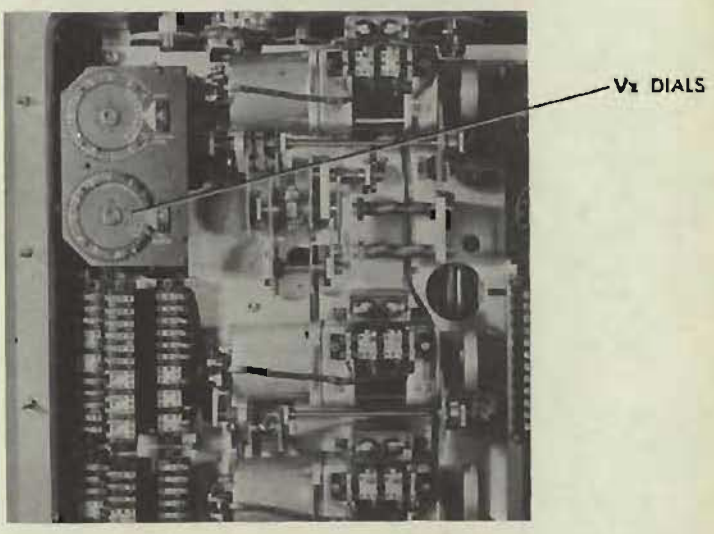
Turn the power ON.

Set *Vs* at 2000′.
Set *Ds* at 500 mils.
Set *E* at 60° with the sync *E* handcrank at CENTER.
Match the sync *E* dials at the fixed index with the handcrank OUT.

Increase *Zd* to 3200′, and read *Vz*.
The reading on the *Vz* dials should be positive.

Decrease *Zd* to 800′. The reading on the *Vz* dials should be the same positive value as before.

If *Vz* has different values, or if it is negative, A-112 is in error and should be readjusted.



Adjustment

The Zd^2 cam should be adjusted to obtain the same positive output for equal plus and minus inputs of *Zd*.
The Zd^2 cam can be reached through the opening 3 inches to the right of A-112.
Slip-tighten A-112.
Adjust the position of the Zd^2 cam, by slipping through A-112, until equal positive readings are obtained on the *Vz* dials when *Zd* is at 800′ or 3200′.

Tighten A-112, and recheck.
Check A-111, A-113, A-63, and A-32.

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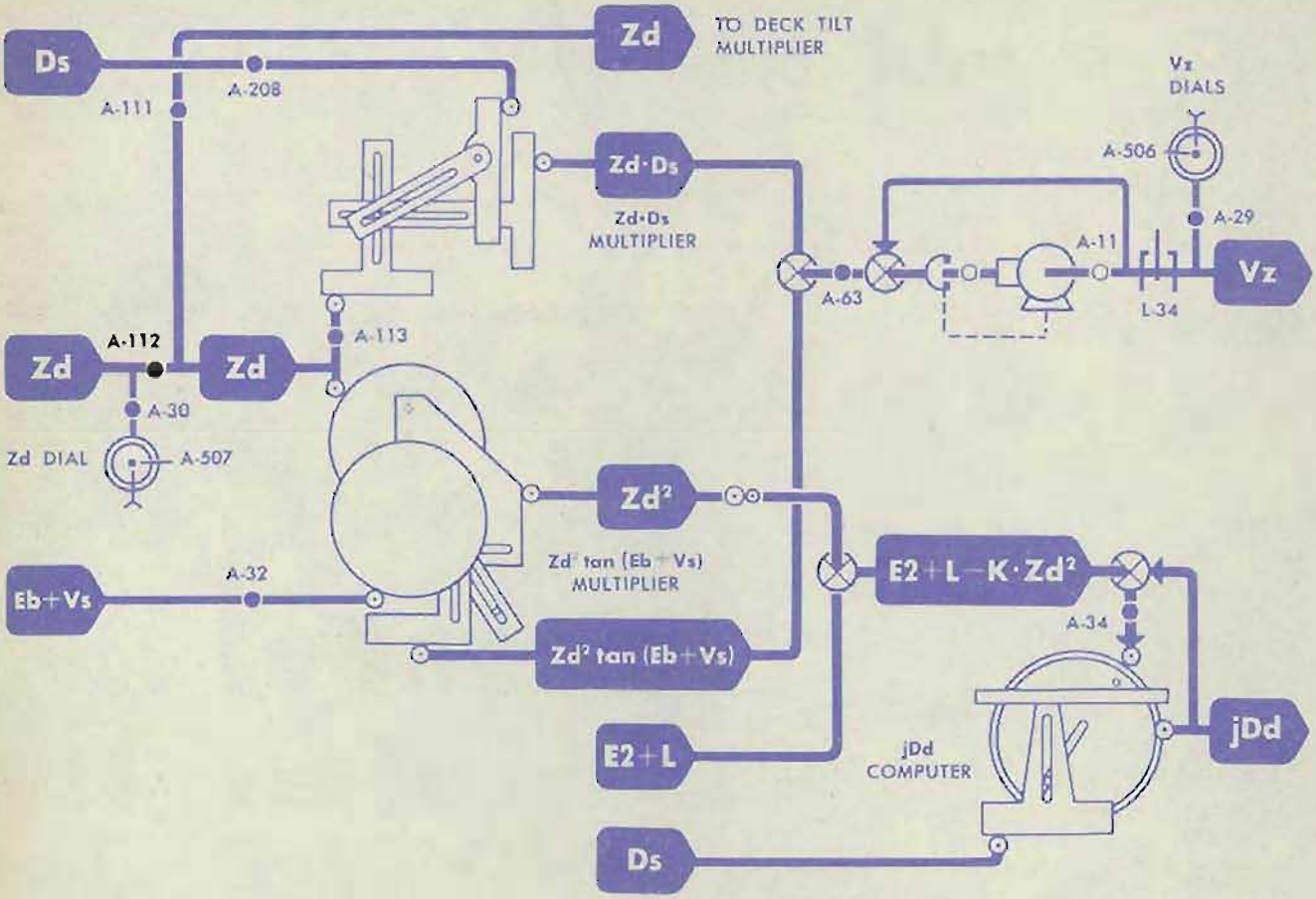
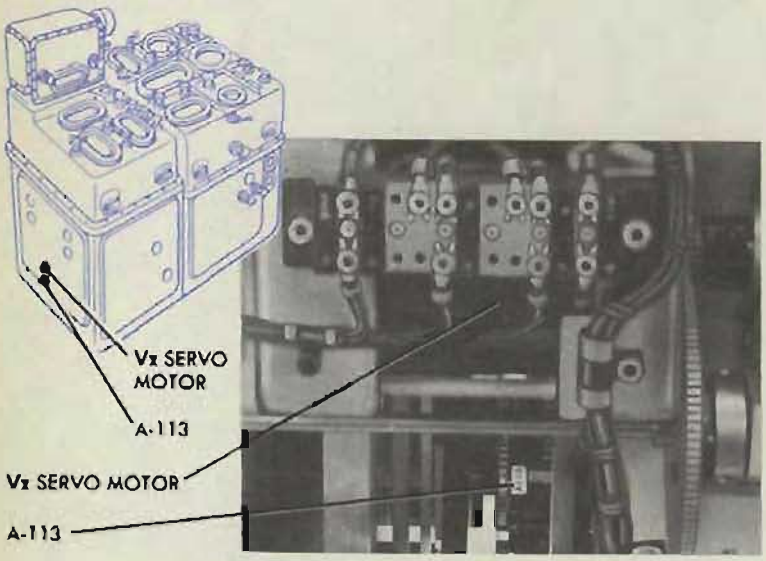


A-113 Zd·Ds MULTIPLIER to Zd DIALS



Location

A-113 is under cover 7. It can be reached through the opening below the *Vz* servo motor.

Check

Turn the power ON.

Set *Zd* at 2000′.

Full travel of *Ds* should produce no motion of the output rack of the *Zd* · *Ds* multiplier.

Motion of the *Zd* · *Ds* output rack may be observed on the *Vz* dials.

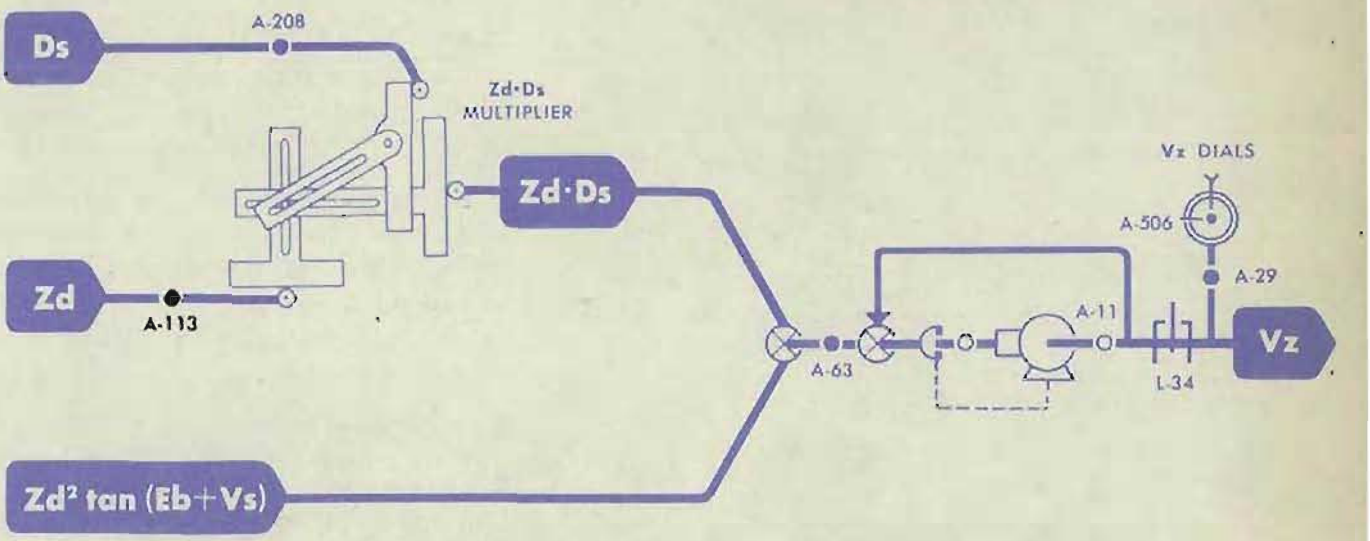
Adjustment

Make A-113 slip-tight.

Adjust the *Zd* input slide by turning the *Zd* input shaft until the 0 position is obtained. At the 0 position, the *Vz* dials show no motion for full travel of the *Ds* input.

Tighten A-113, and recheck.

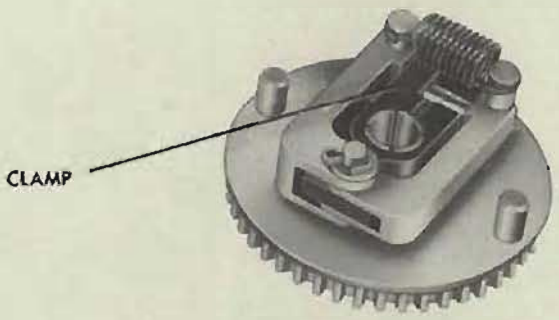
Check A-63.



A-114 ASSEMBLY CLAMPS

A-114 is an assembly clamp in a shock absorber assembly on intermittent drive output shafts. It is used on the *dRs*, *cR*, *Eb* + *Vs*, *E2*, *Ds*, and *Vs* intermittent drives.

On the *E* intermittent drive, this assembly clamp is numbered A-251.
On the *R2* intermittent drive, this assembly clamp is numbered A-255.
The *Ds* and *Vs* intermittent drives are omitted on Mods 1, 3, 4, 8, and 12.
The *R2* intermittent drive is omitted on Mods 0, 1, 2, 3, 4, 6, 7, 9, 10, and 13.
The *E* intermittent drive is omitted on all mods with Ser. Nos. 389 and lower.
The *cR* intermittent drive is omitted on Mods 0, 1, 2 and 9.



SHOCK ABSORBER ASSEMBLY

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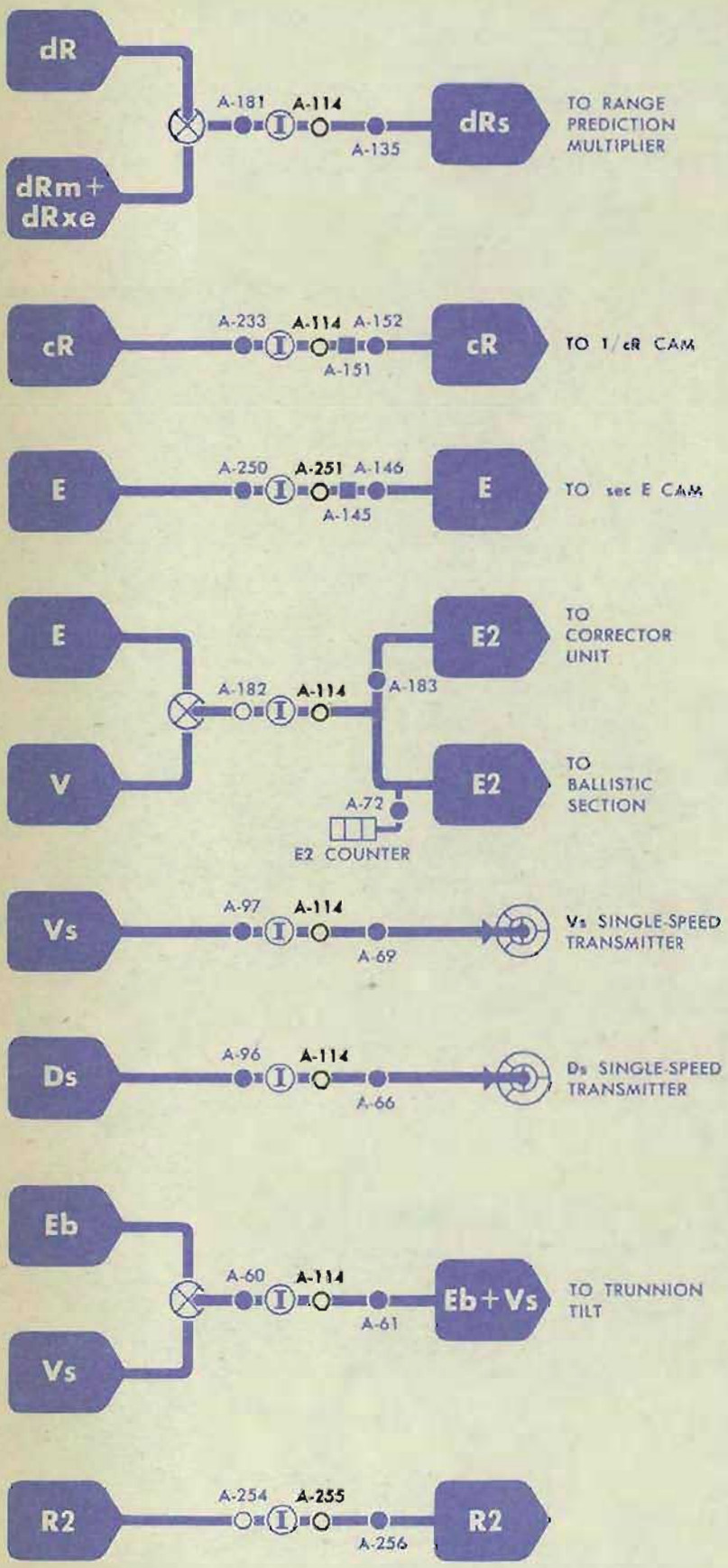


Location

dRs	—see A-181
cR	—see A-233
E	—see A-250
E2	—see A-182
Ds	—see A-96
Vs	—see A-97
Eb + Vs	—see A-60
R2	—see A-256

Check

If an intermittent drive output is incorrect, the shock absorber clamp may have slipped. (See *Locating Casualties—Intermittent Drives*, page 552.)

If the output gearing of the intermittent drive can be turned beyond the spring action of the shock absorber when the intermittent drive is in a cut-out position, the shock absorber clamp is slipping.

Adjustment

A-114 on the *dRs* intermittent drive: Tighten A-114 and readjust A-135.

A-114 on the *cR* intermittent drive: Tighten A-114 and readjust A-151.

A-251 on the *E* intermittent drive: Tighten A-251 and readjust A-145.

A-114 on the *E2* intermittent drive: Tighten A-114 and readjust A-72 and A-183.

A-114 on the *Ds* intermittent drive: Tighten A-114 and readjust A-66, or adjust A-114 in accordance with the procedure for A-66.

A-114 on the *Vs* intermittent drive: Tighten A-114 and readjust A-69, or adjust A-114 in accordance with the procedure for A-69.

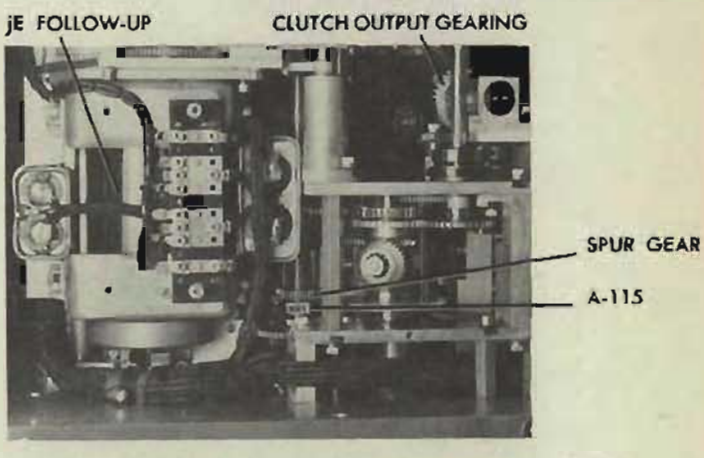
A-114 on the *Eb + Vs* intermittent drive: Tighten A-114 and readjust A-61.

A-255 on the *R2* intermittent drive: Tighten A-255 and readjust A-256.

A-115 ELEVATION COMPONENT INTEGRATORS to E DIALS

Location

A-115 is under cover 1, at the left side.



Check

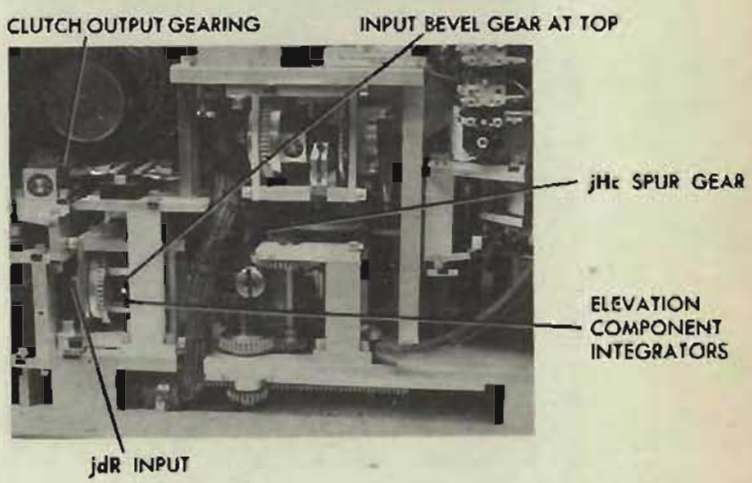
Turn the power OFF.

Set *E* at 0°.

Turn the *jdR* input line at the output gearing of the clutch, 1 inch to the rear and above the elevation component integrator.

The *jdR* input bevel gear of the elevation component integrator should be at the top of the driving roller.

There should be no motion of the *jHc* output when the *jdR* line is turned. Any motion of *jHc* can be checked on the small spur gear in front of the component integrator about 2 inches in and on the right side of the *dH* input gear hanger.



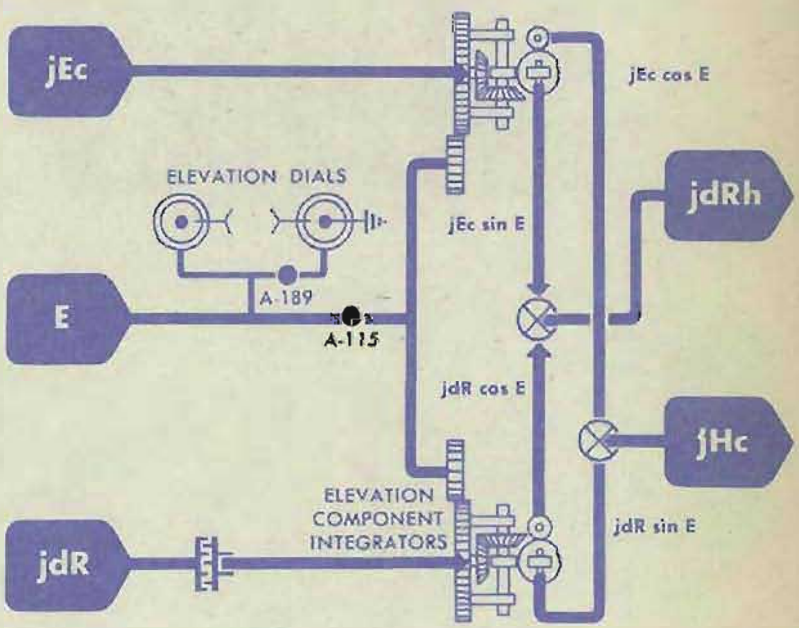
Adjustment

If the bevel gear is not at the top of the driving roller, and if there is any motion of *jHc*, make A-115 slip-tight.

With *E* at 0°, adjust the small spur gear above the clamp until the input roller of the component integrator is positioned so that there is no motion of *jHc* when the *jdR* input line is turned.

The bevel gear must be at the *top* of the driving roller.

Tighten A-115, and recheck.



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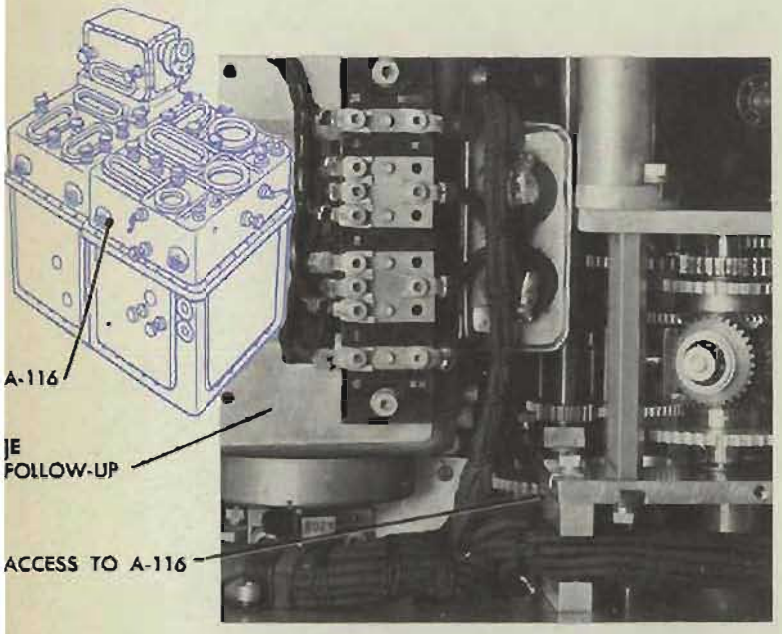
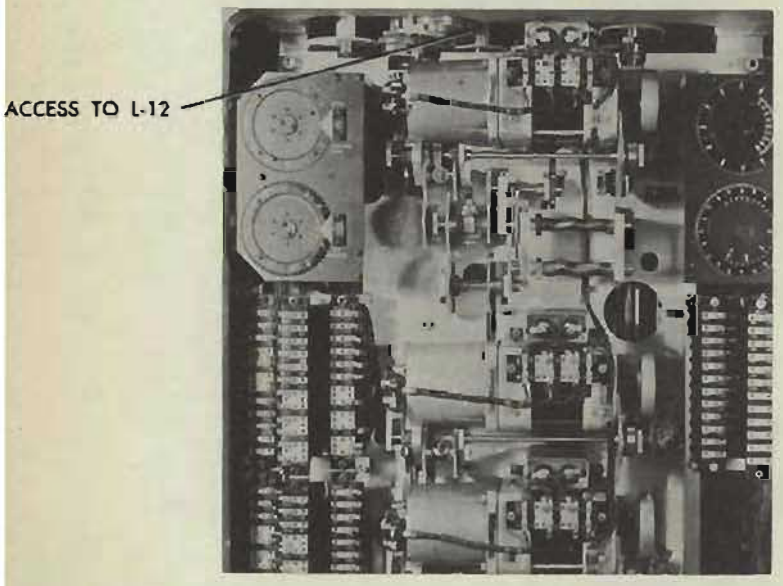
A-116 ELEVATION DIALS to L-12





Location

A-116 is under cover 1, at the left side, 3 inches in front of the damper on the *jE* follow-up. L-12 is under cover 7. The shaft is vertical, and only the upper limit is visible.

Check

Turn *E* from limit to limit.

The limit stop should function at −5° and +85° on instruments with Ser. Nos. 389 and lower, and at −25° and +85° on instruments with Ser. Nos. 390 and higher.

NOTE: If either limit cannot be reached, it is possible that A-123, A-124, A-128, A-180, or A-145 is causing a restriction; the restricting clamp should be loosened and readjusted later.

Adjustment

If the *E* dials do not read 85° when L-12 is at its upper limit, make A-116 slip-tight. Bring the *E* dials to 85° by turning the vertical shaft extending from A-116. Tighten A-116 and recheck at the lower limit.
Readjust any clamps loosened.
Check A-250, A-145, A-259, A-260, and A-180.

Note

A-250 is omitted on instruments with Ser. Nos. 389 and lower. A-260 and A-259 are omitted on instruments with Ser. Nos. 434 and lower.

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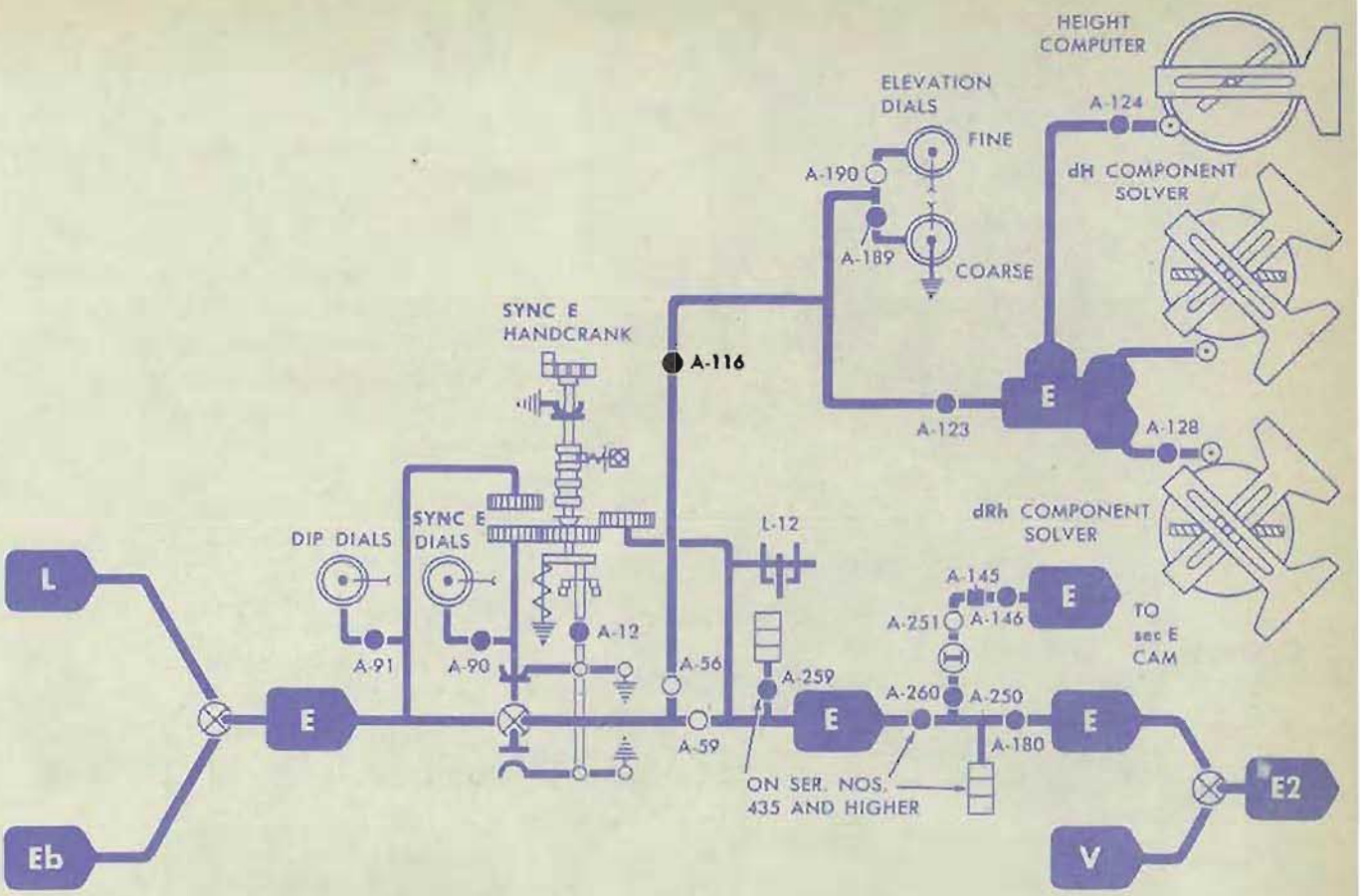
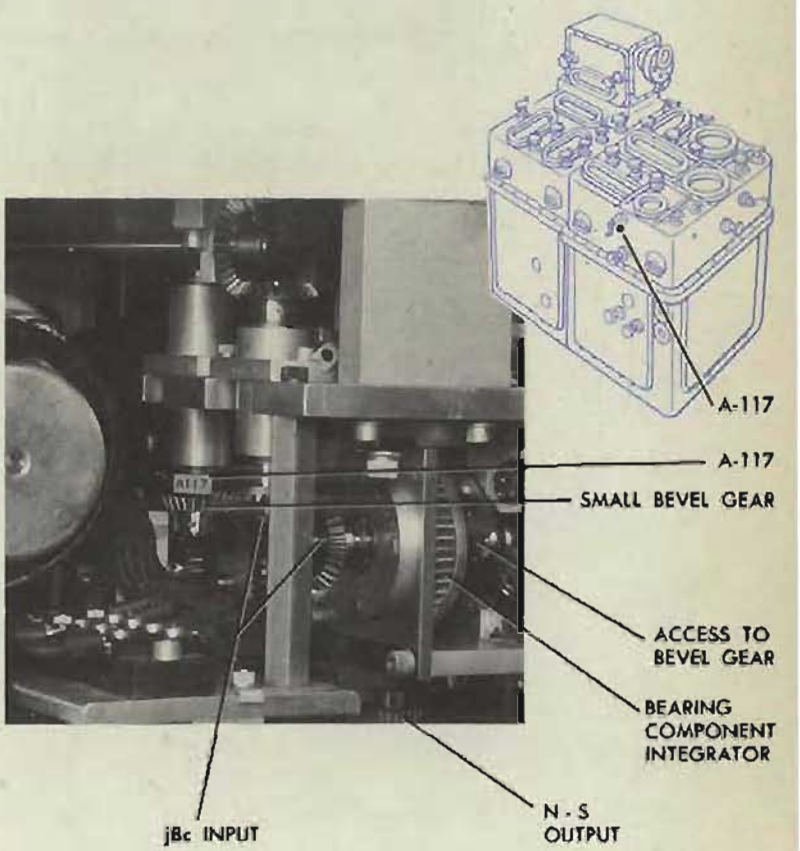


A-117 BEARING COMPONENT INTEGRATORS to B DIAL

Location

A-117 is under cover 1, at the center of the left side, to the rear of the bearing component integrator.



Check

Turn the power OFF.

Set the zero index of the compass ring dial against the fixed index. The *jBc* input bevel gear of the bearing component integrator should be at the right of the driving roller (viewed from the front of the instrument).

Turn the *jBc* input. Watch the spur gear directly below the bearing component integrator to see that there is no N-S output.

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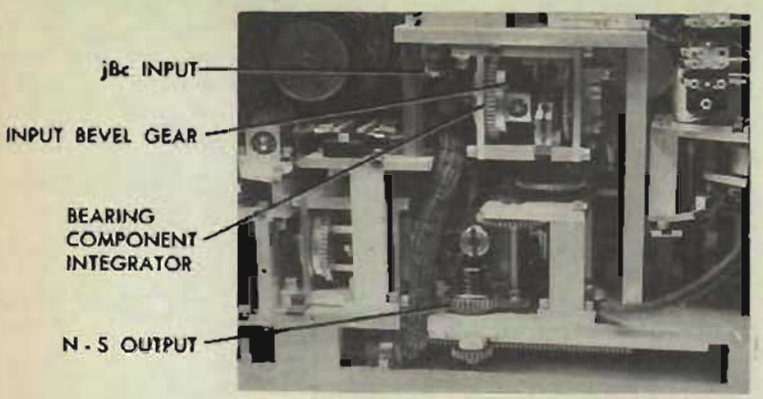
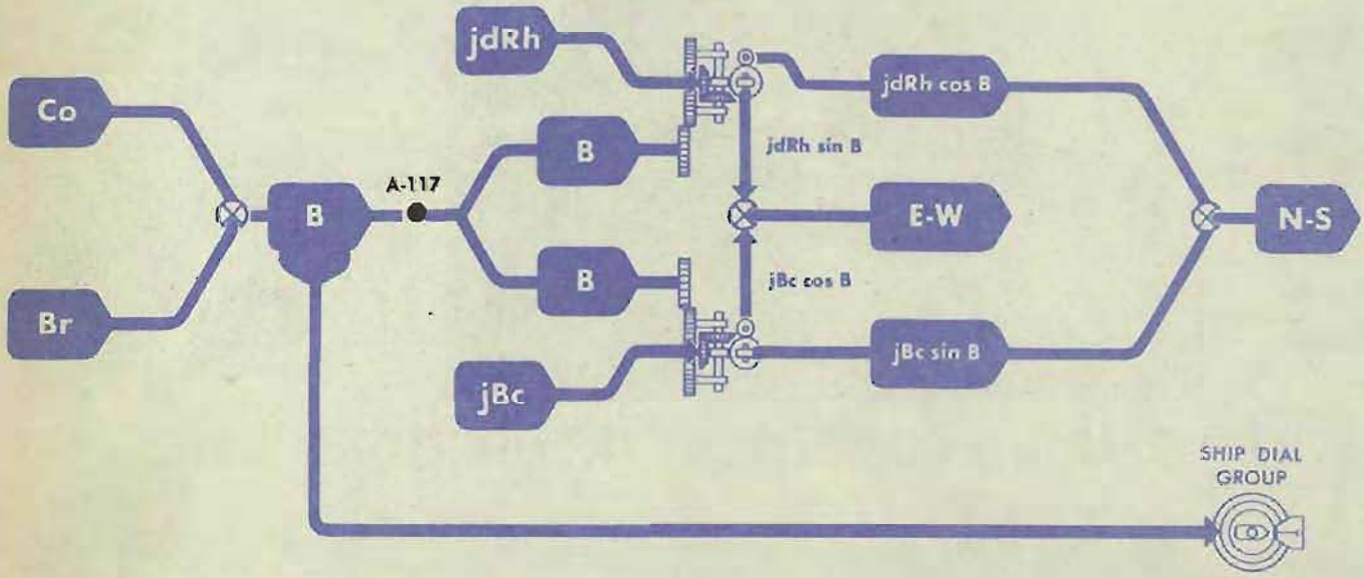


Adjustment

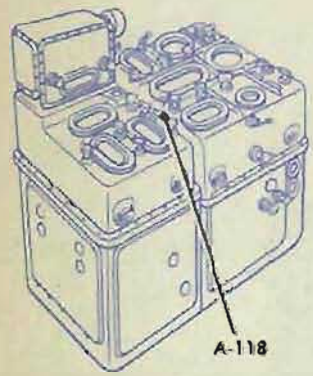
If the bevel gear is not at the right of the driving roller, or if there is any motion of the N-S output, make A-117 slip-tight.

Adjust the small bevel gear below A-117 until the angle gear is positioned so that there is no motion of the N-S output for any input of *jBc*. The bevel gear must be to the right of the driving roller.

Tighten A-117 and recheck.



A-118 SYNCHRONIZING THE RdE FOLLOW-UP



Location

A-118 is under cover 1, on the input gearing to the *RdE* follow-up.

L-7 is on the underside of the front top section. It can be seen from the cover 3 opening. The shaft is horizontal,with the upper limit to the rear.

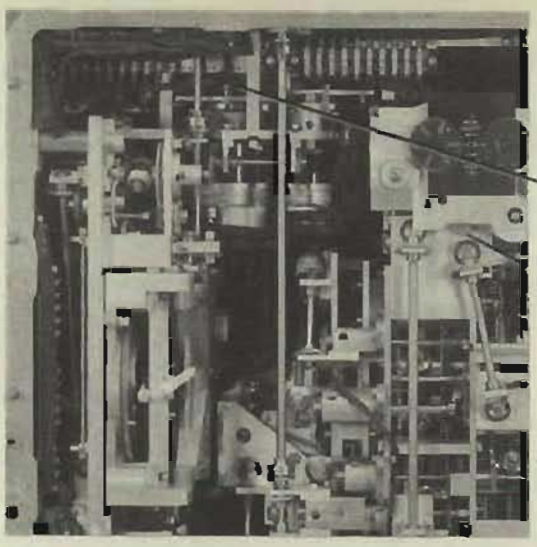
CAUTION

With the power OFF, turn the *RdE* follow-up manually between limits. If there is any restriction before the limits are reached, A-108, A-134, or A-154 is upset. Determine which adjustment is causing the restriction and loosen the clamp.

Check

Turn the power ON.

Set *Br* at 90°.
Set *E* at 60°.
Set *So* at 0 knots and *Sh* at 400 knots.
Set *A* at 180°.
Turn *dH* in a decreasing direction until *RdE* reaches the lower limit of L-7. *dH* should read between −107 and −110 knots, and the *RdE* follow-up should be synchronized.

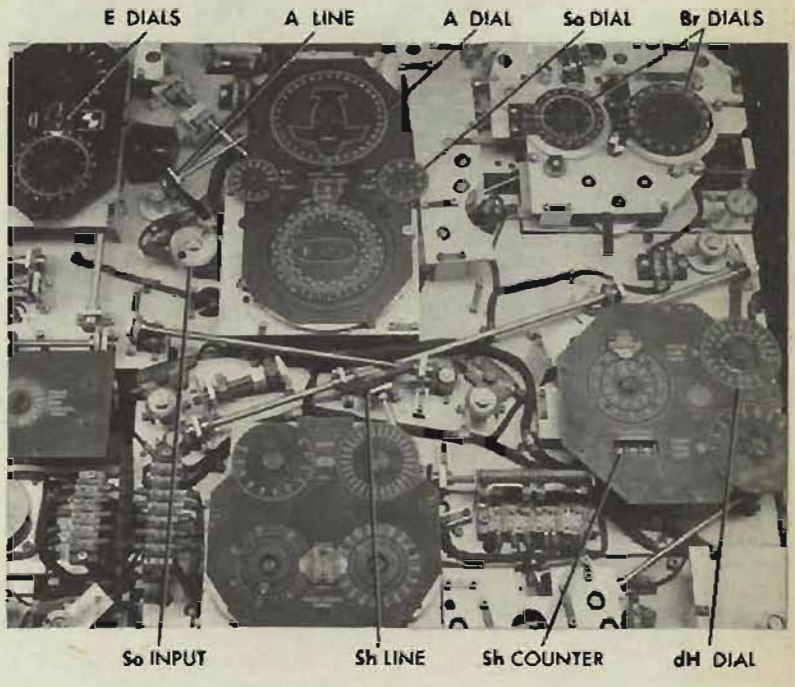


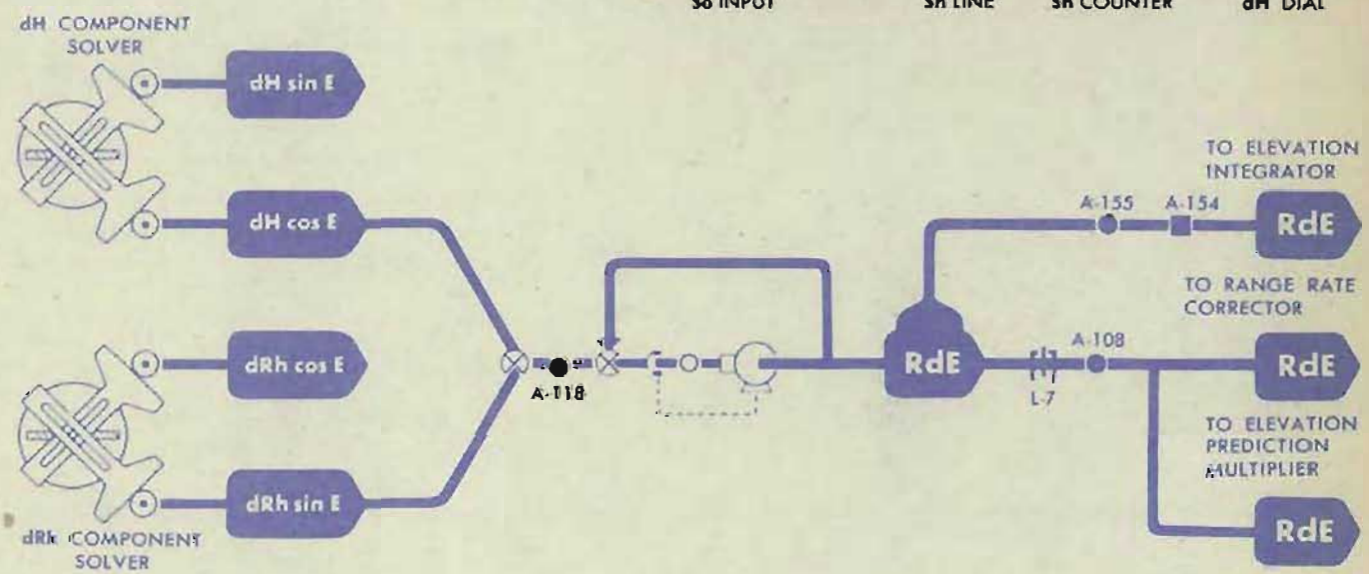
Adjustment

If *dH* does not read correctly when *RdE* is at the lower limit, slip-tighten A-118. Hold *dH* at −108 knots and turn the spur gear above A-118 until the follow-up synchronizes at the lower limit of L-7.

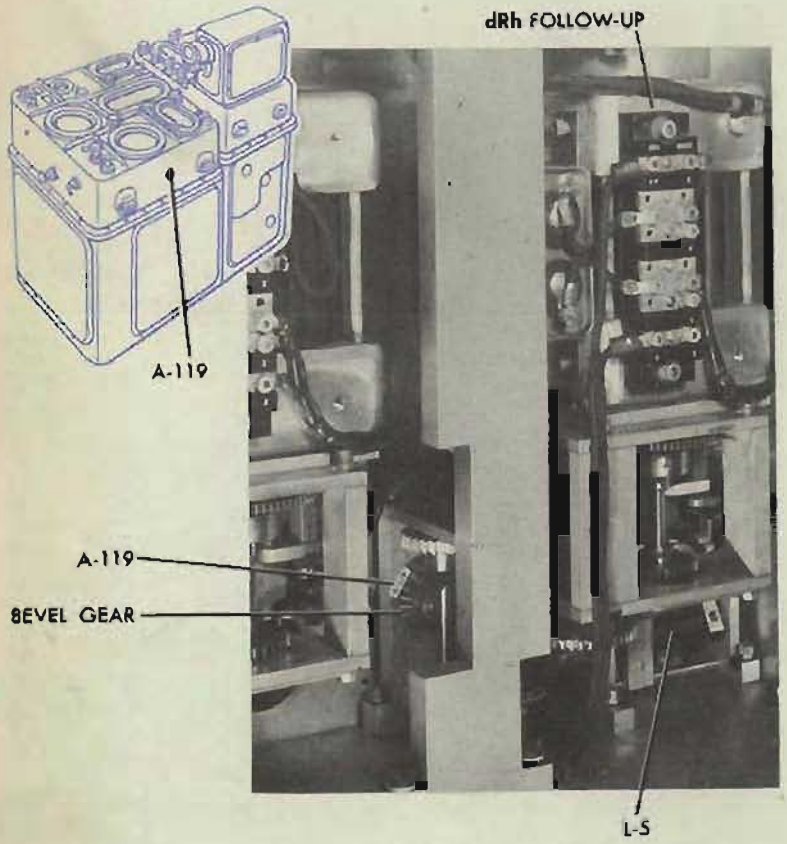
Tighten A-118 and recheck at the upper limit. To check the upper limit, set *A* at 0° and increase *dH* until the upper limit of L-7 is reached. *dH* should read between +107 and +110 knots.

Remove all wedges.
Readjust any clamps loosened, and check A-108, A-154, and A-134.
Recheck by running elevation B tests.





A-119 SYNCHRONIZING THE dRh FOLLOW-UP



Location

A-119 is under cover 1, on the *dRh* follow-up input gearing.

L-5 is below the *dRh* follow-up. Its lower limit is toward the rear.

CAUTION

Turn the *dRh* output from limit to limit manually before turning on the power, to make sure both limits can be reached. If they cannot be reached, loosen A-125.

Check

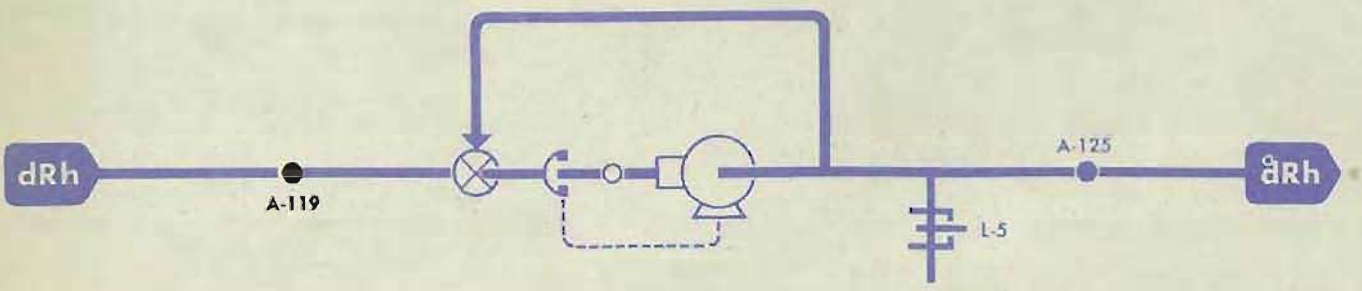
Remove the KRR lead on the target angle push-button switch.

Turn the power ON.

Set *Br* and *A* at 0° and wedge the lines.
Set *Sh* at 400 knots and wedge the line.
Set *So* at 0 knots.

Increase *So* to 40 knots. The *dRh* follow-up should be synchronized at the lower limit of the stop just as *So* reaches 40 knots.

Turn *Br* and *A* to 180° and wedge the lines.
Increase *So* to 40 knots. The *dRh* follow-up should be synchronized at the upper limit of the stop just as *So* reaches 40 knots.



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Adjustment

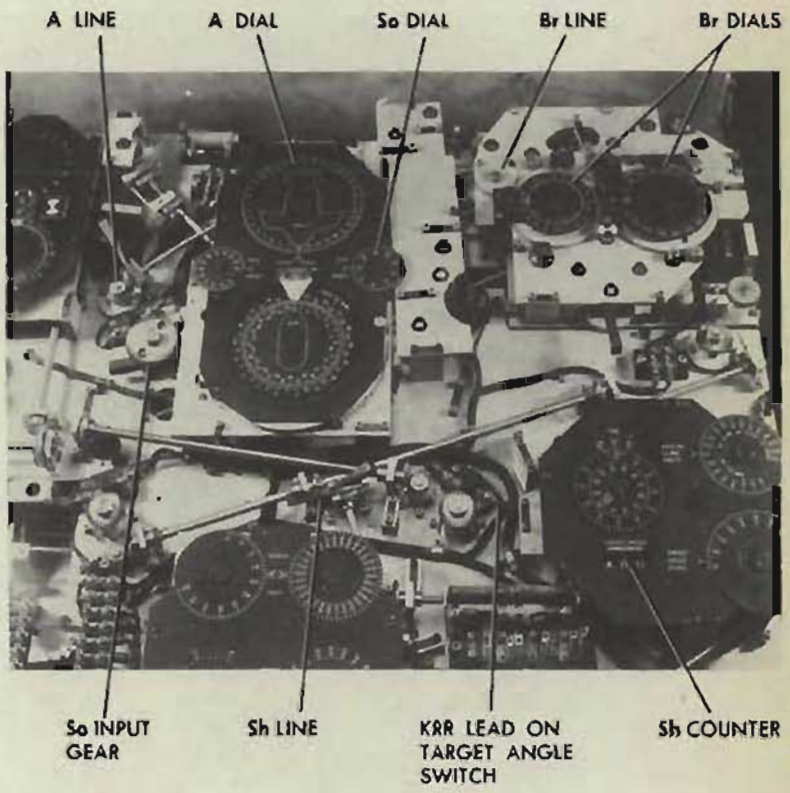
If the follow-up is not synchronized at the proper positions, slip-tighten A-119.
Check that *A* and *Br* are at 180°, and *So* is at 40 knots.
Turn the bevel gear on which A-119 is located until the follow-up synchronizes at the upper limit of the stop.

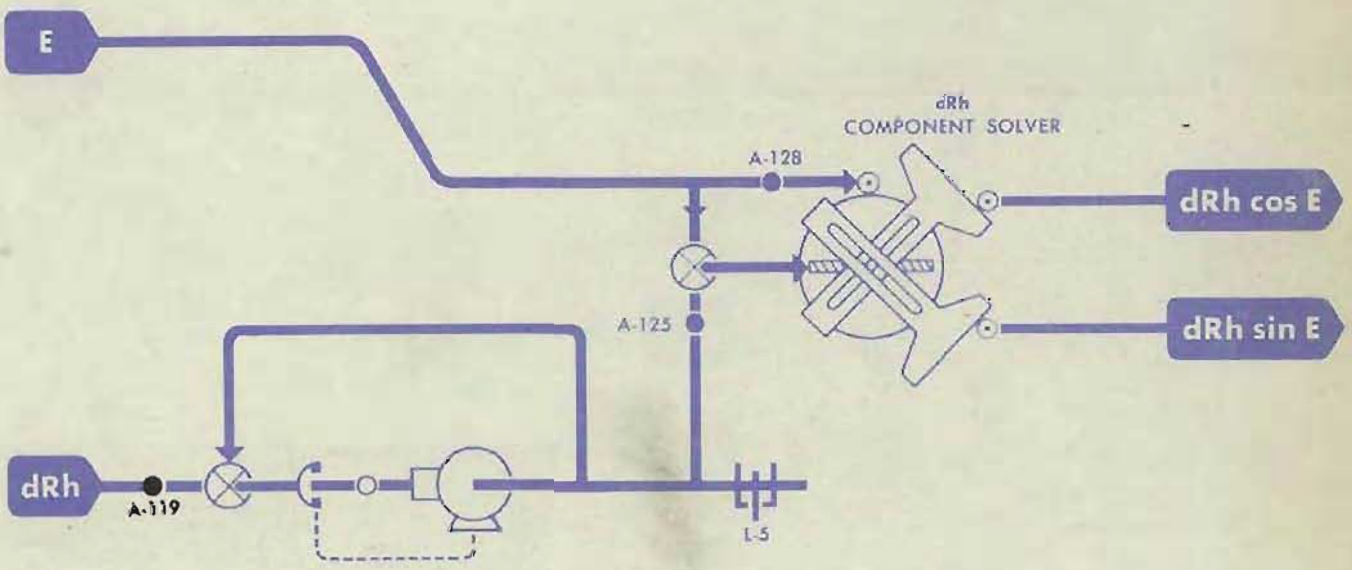
Tighten A-119. Set *Br* and *A* at 0°. Increase *So* to 40 knots and check to see that the follow-up is synchronized at the lower limit.

Split any overtravel.

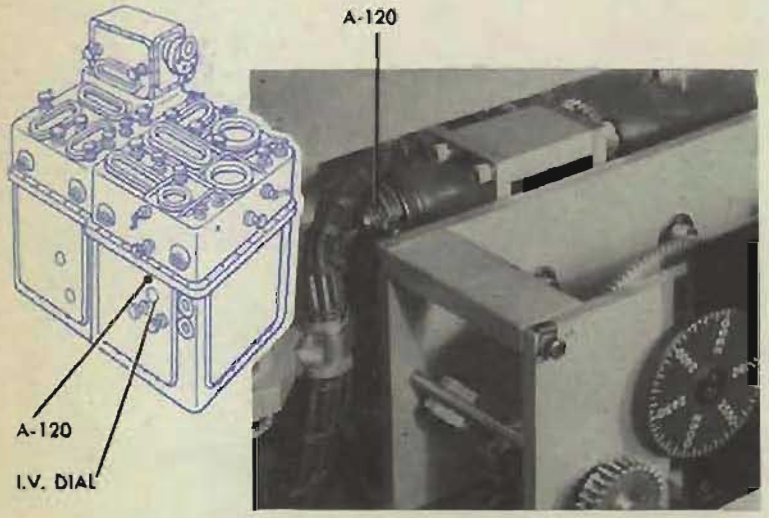
Check A-125.

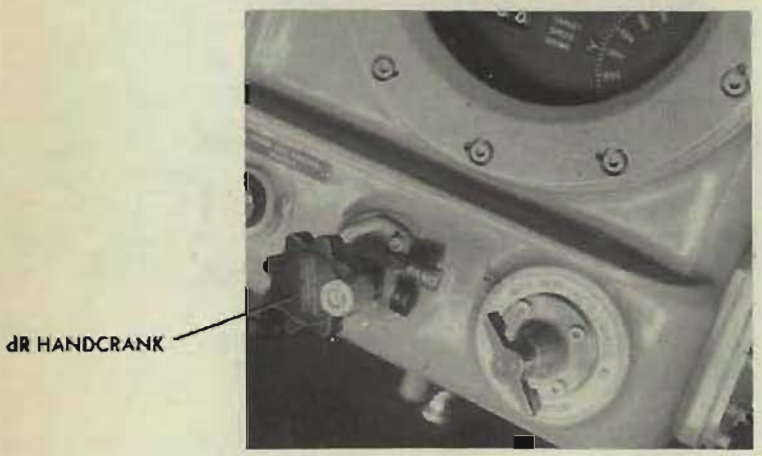
Remove all wedges and replace the KRR lead.





A-120 I. V. HOLDING FRICTION





Location

A-120 is under cover 3, behind the *I.V.* dial.

Check

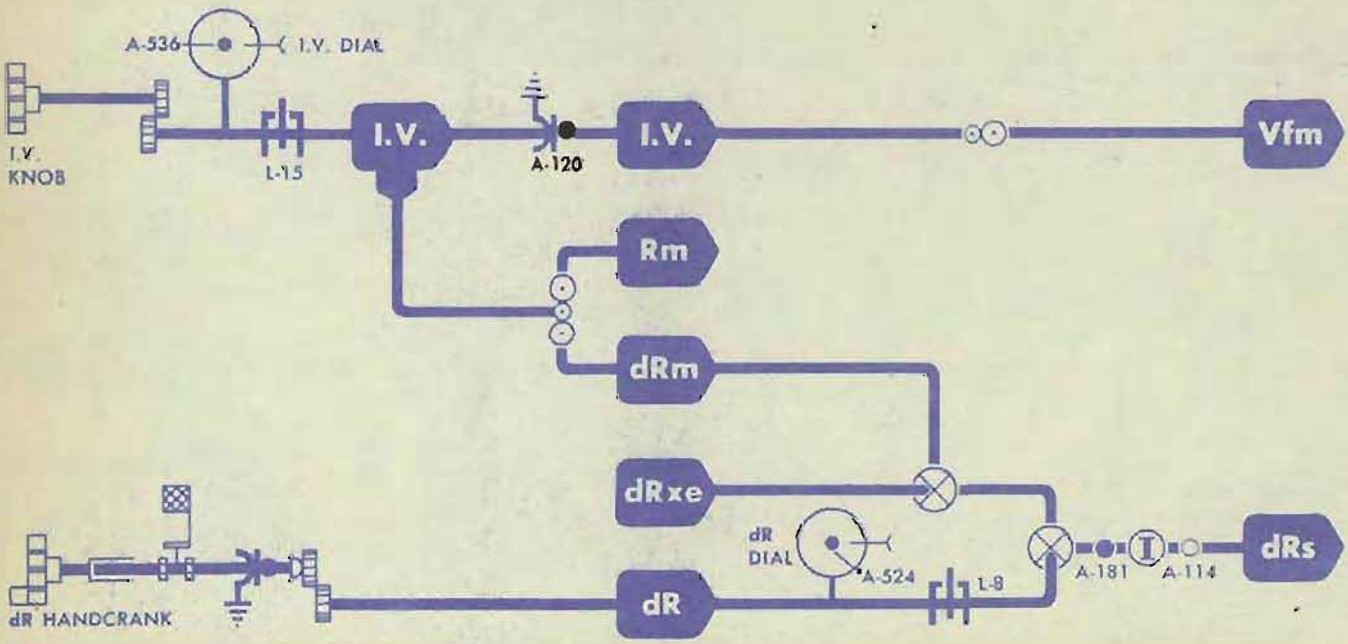
This friction should hold the *I.V.* setting without too much drag on the line.

Check the friction setting by turning *dR*.

Adjustment

If any motion backs through the *I.V.* input gear, loosen A-120 and turn it until there is sufficient friction to hold the *I.V.* setting.

Tighten A-120 and recheck.

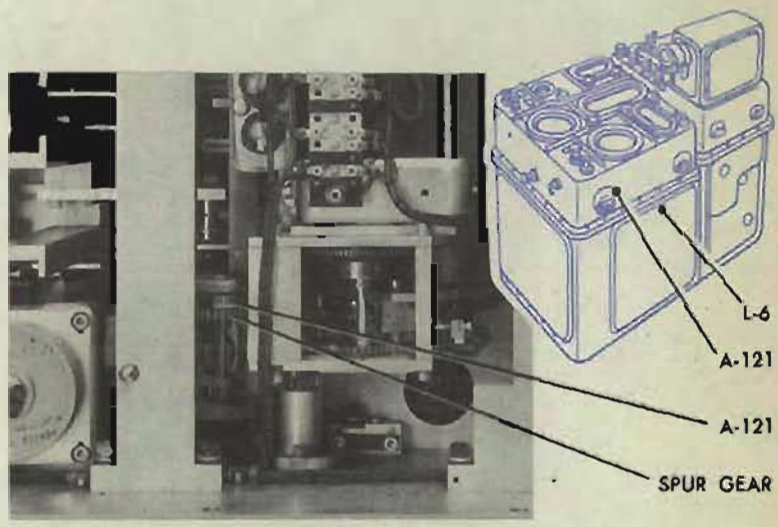


A-121 SYNCHRONIZING THE RdBs FOLLOW-UP

Location

A-121 is under cover 1, in front of the *RdBs* follow-up.

L-6 is under cover 5, above the *Dtwj* follow-up. Its upper limit is toward the center of the instrument.



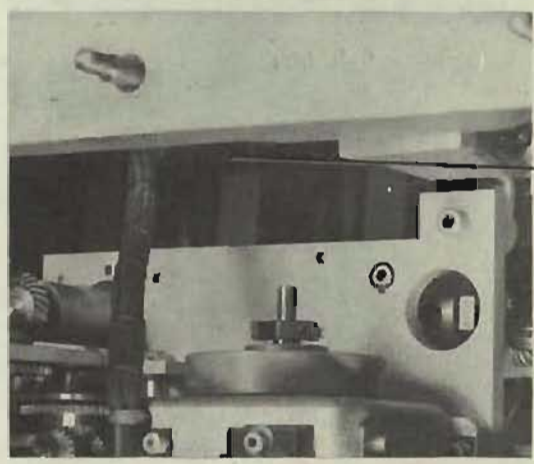
Check

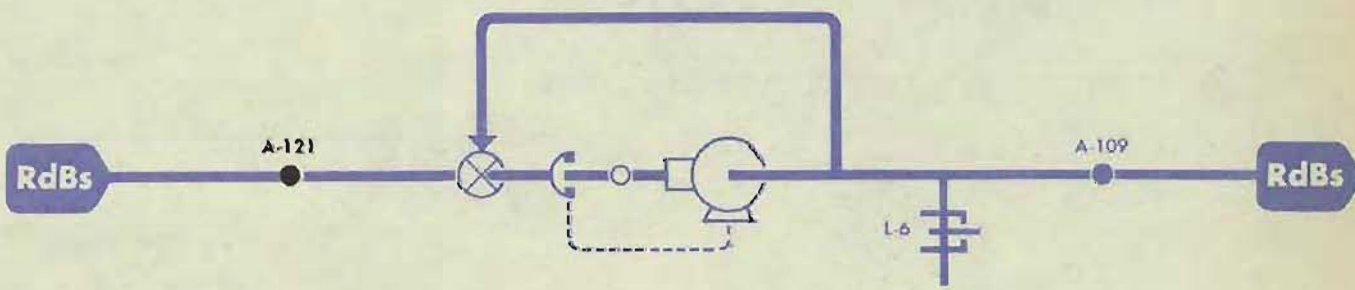
CAUTION: Turn the power OFF. Turn the *RdBs* follow-up output between limits manually to make sure there is no restriction within the limits of the stop. If either limit cannot be reached, loosen A-109.

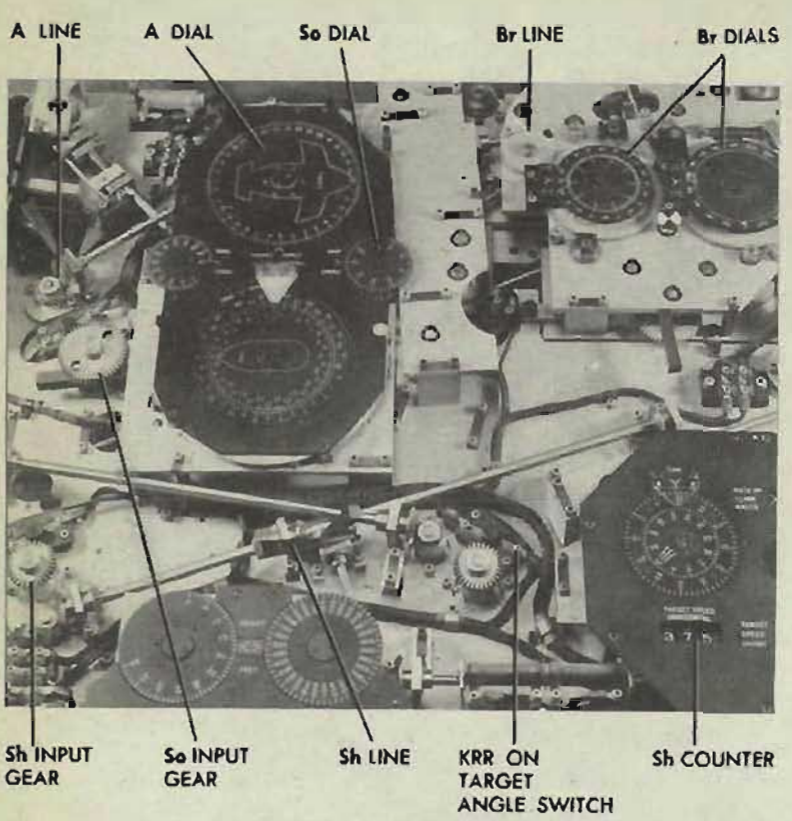
Turn the power ON.

Remove the KRR lead on the target angle push-button switch. Set *Br* at 90° and wedge the line.
Set *A* at 90°, and *Sh* at 375 knots and wedge the lines.

Increase *So* to 25 knots. The *RdBs* follow-up should be synchronized at the upper end of the limit stop just as *So* reaches 25 knots on the dial.







Set *A* and *Br* at 270°. Increase *So* to 25 knots. The *RdBs* follow-up should be synchronized at the lower end of the limit stop as *So* reaches 25 knots. Any overtravel should be split.

Adjustment

If the follow-up does not synchronize at the proper *So* value, slip-tighten A-121.

Set *A* and *Br* at 90°, and *So* at 25 knots.

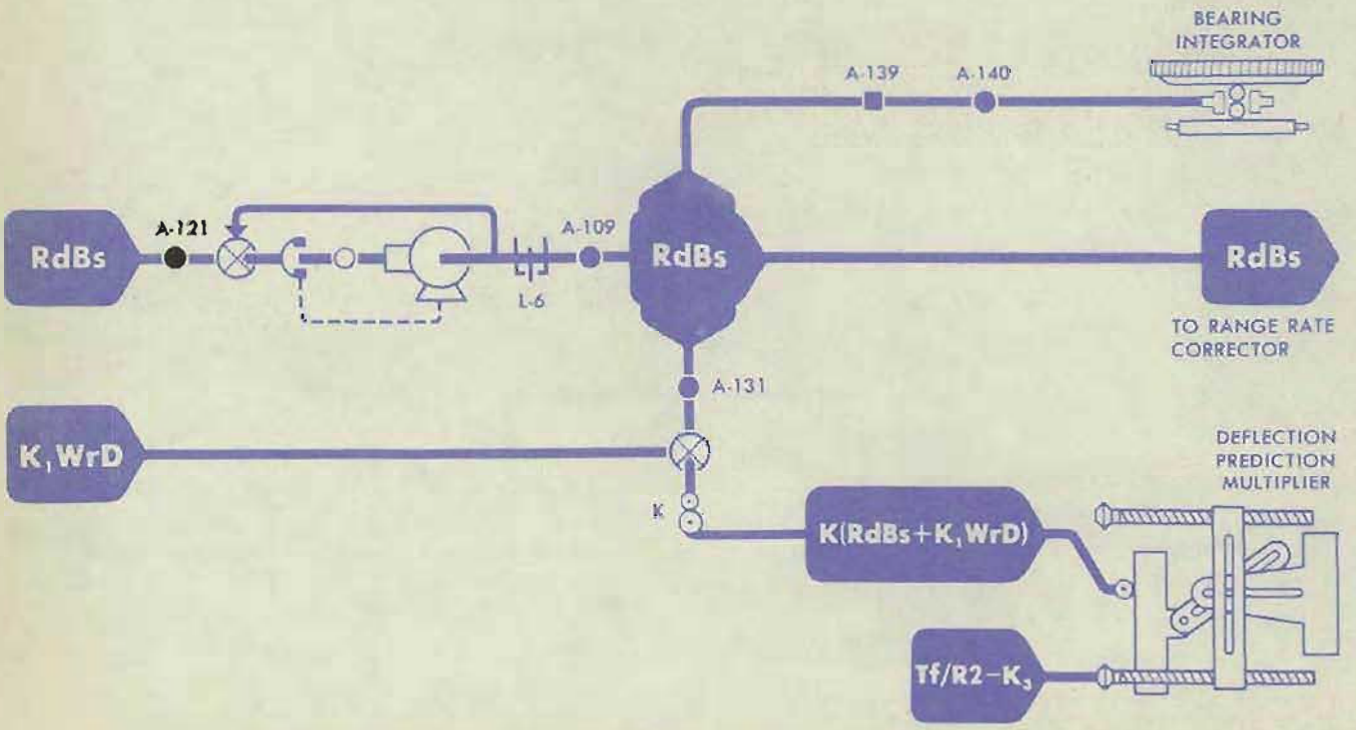
Turn the spur gear below A-121 until the follow-up is synchronized at the upper limit.

Tighten A-121. Set *Br* and *A* at 270° and recheck to see that the follow-up is synchronized at the lower limit.

Split any overtravel.

Remove all wedges and replace the KRR lead.

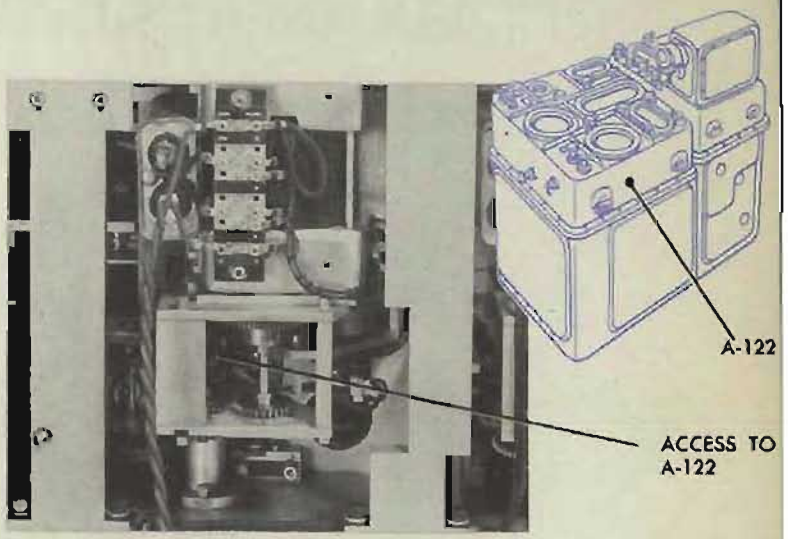
Check A-109, and run the bearing B tests.



A-122 So HOLDING FRICTION

Location

A-122 is located under cover 1, behind the *RdBs* follow-up.



Check

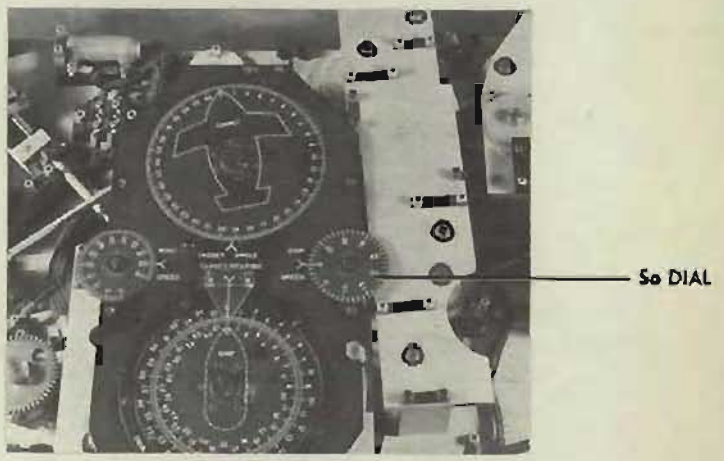
This friction should hold the *So* setting without too much drag on the line.

Set *So* at 40 knots.

Turn the power ON.

Turn *Br* through 90°.

No motion of *Br* should back through the *So* line to turn the *So* dial.

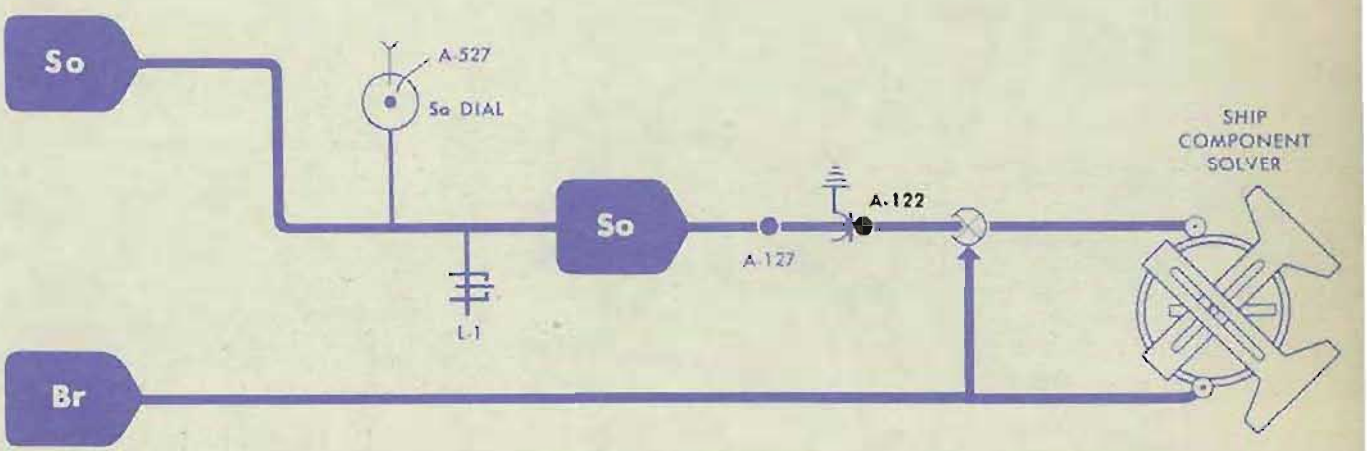


Adjustment

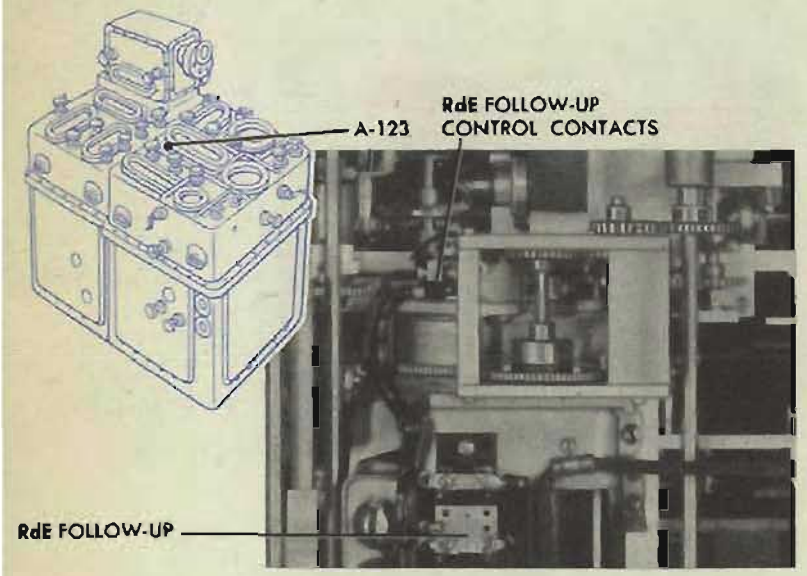
Turn the power OFF.
If any motion backs through *So*, loosen A-122.
Turn the clamp clockwise to increase the friction.

Tighten A-122, and recheck.

NOTE: If the *So* holding friction is adjusted excessively tight, the *So* receiver motor will not function. To check for this condition, make the synchronizing test of the *So* receiver. See page 62.



A-123 dH COMPONENT SOLVER to E DIALS



Location

A-123 is under cover 1, to the right of the *RdE* follow-up contacts. It is the upper clamp on a short vertical shaft.

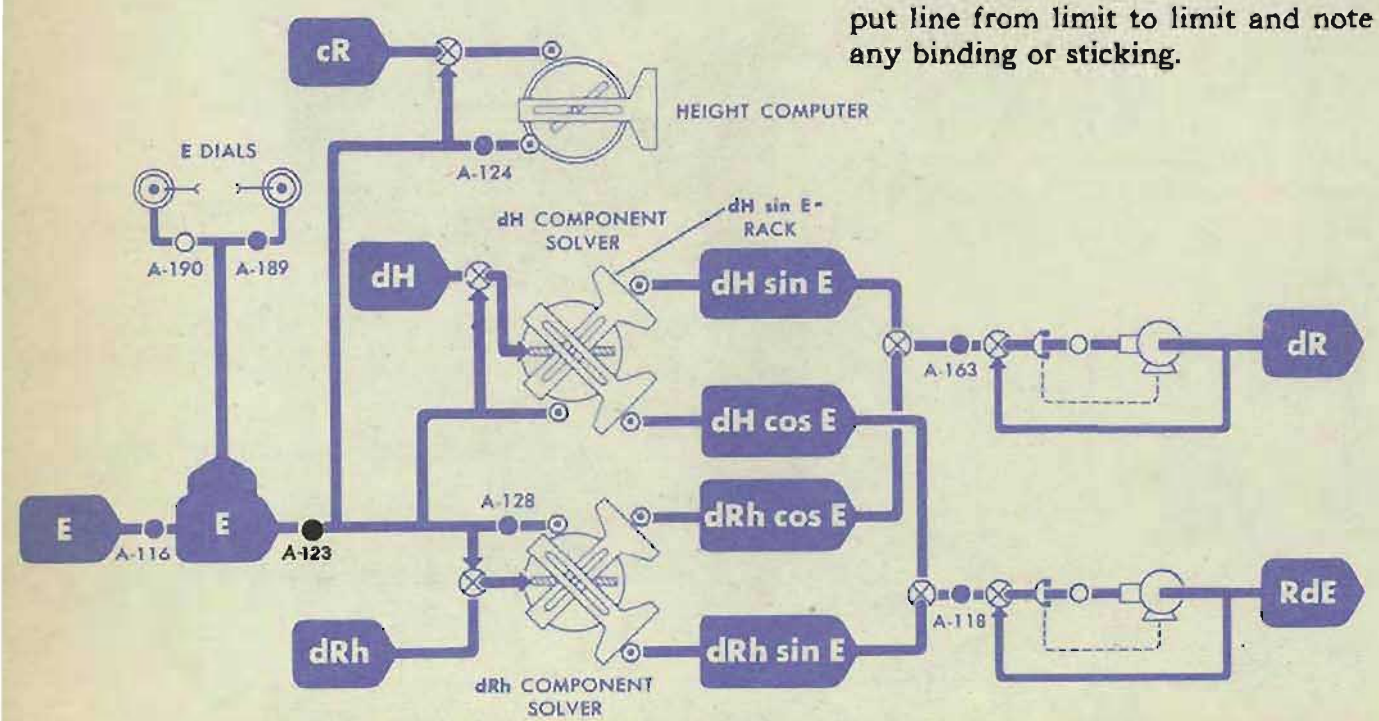
Note

A-123 can be reached with a long screw driver through the back top section.

Possible damage

If A-123 is upset, the *dH* component solver vector gear may have been run beyond its limit with such force that the hangers, gears, and shafts of the lead screw input line may have been damaged.

To check for damage, turn the *dH* input line from limit to limit and note any binding or sticking.



Check

Set *E* at 0°.
The spur gear on the lead screw of the *dH* component solver vector gear should be toward the front. The *dH* component solver is the fourth solver from the top, and can be seen through the access at the front of the *RdBs* follow-up.

Set *dH* at 0 knots.
Set up a dial indicator on the *dH* sin *E* rack.
Run *dH* from 0 knots to DIVE 250.

The output rack movement should not exceed 0.002 inch on the indicator. Make sure that *E* is at 0°.

Adjustment

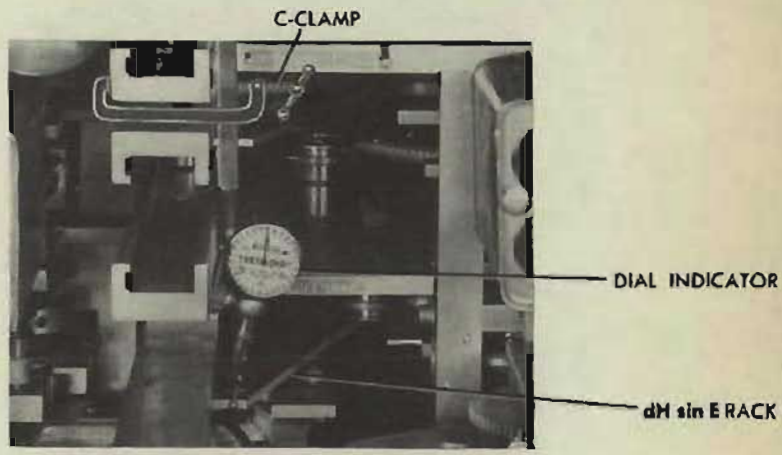
If the indicator shows more than 0.002-inch motion, slip-tighten A-123.

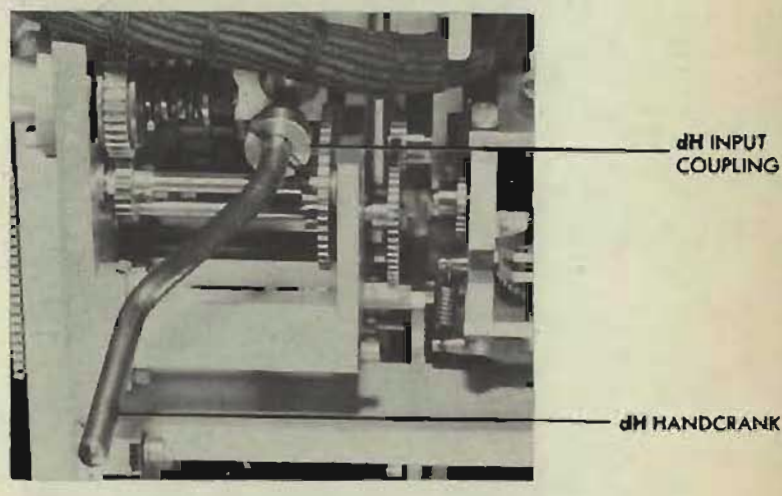
Correct all the way by turning the *dH* vector gear with a gear pusher.

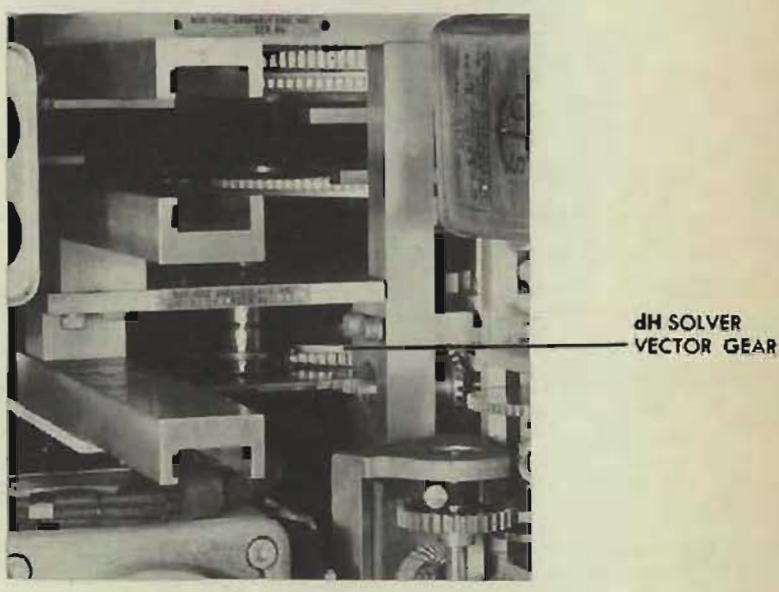
Tighten A-123 and recheck, by running *dH* from DIVE 250 to CLIMB 150.

Remove the indicator.

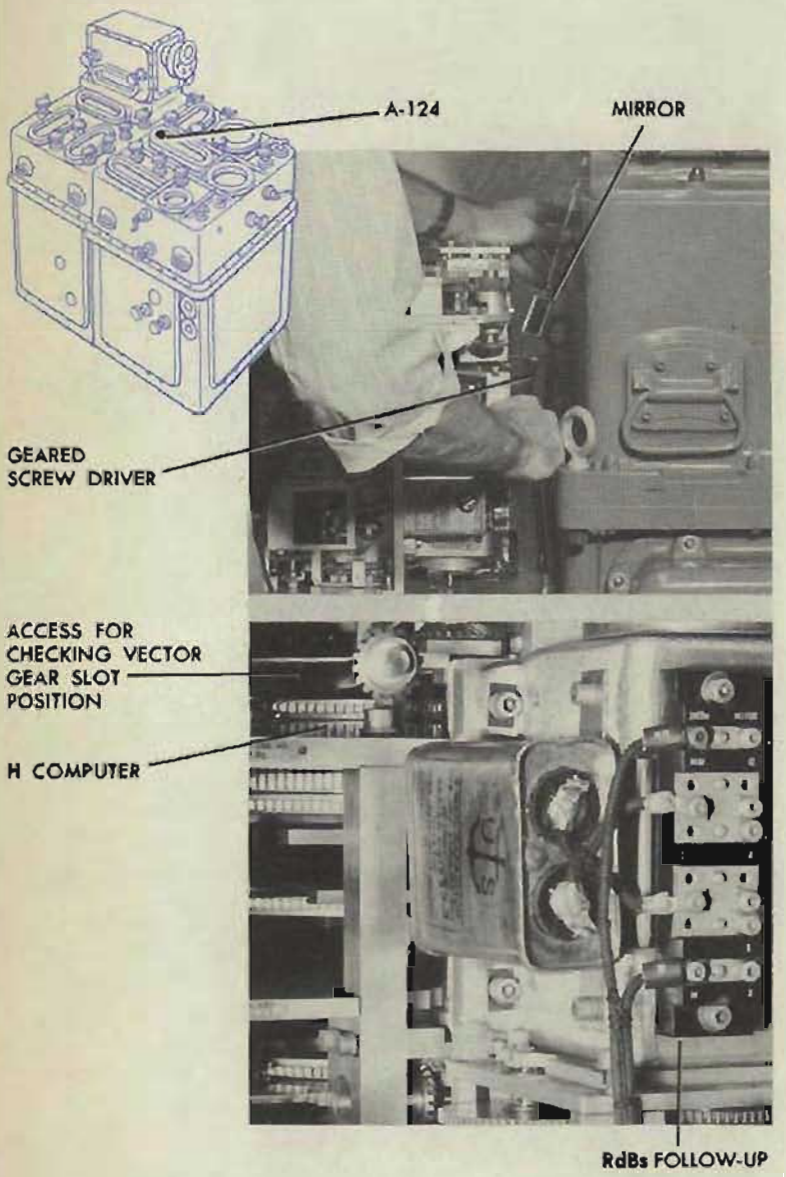
Check A-124, A-128, A-118, A-163.







A-124 HEIGHT COMPUTER to E DIALS



Location

A-124 is under cover 1, to the right of the *RdE* follow-up contacts.

Note

A-124 can be reached with a geared screw driver.

Check

Set *E* at 0°.

The *H* computer vector gear slot should be at the front. The slot can be seen through the access at the right of the front top section. The *H* computer is the top unit of the solver group.

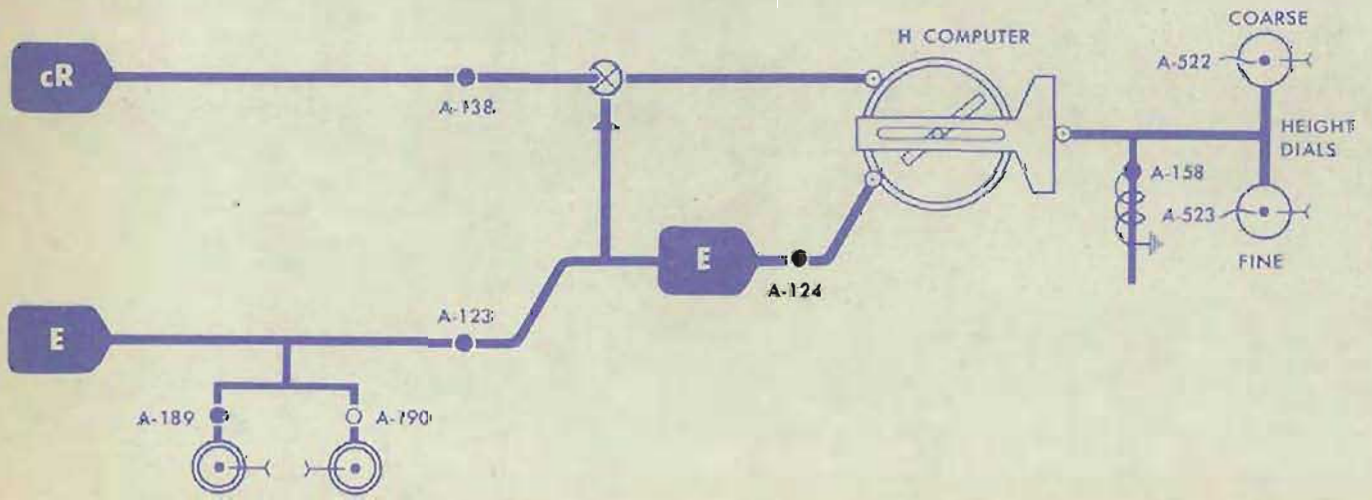
Use the *H* dial as an indicator. Turn *cR* from 0 to its upper limit. The *H* dials should not move.

Adjustment

If the dials move, slip-tighten A-124. Use a gear pusher to move the vector gear to a position at which full travel of *cR* causes no motion on the *H* dials. Tighten A-124, and recheck.

Check A-522 and A-523.

Readjust A-138.



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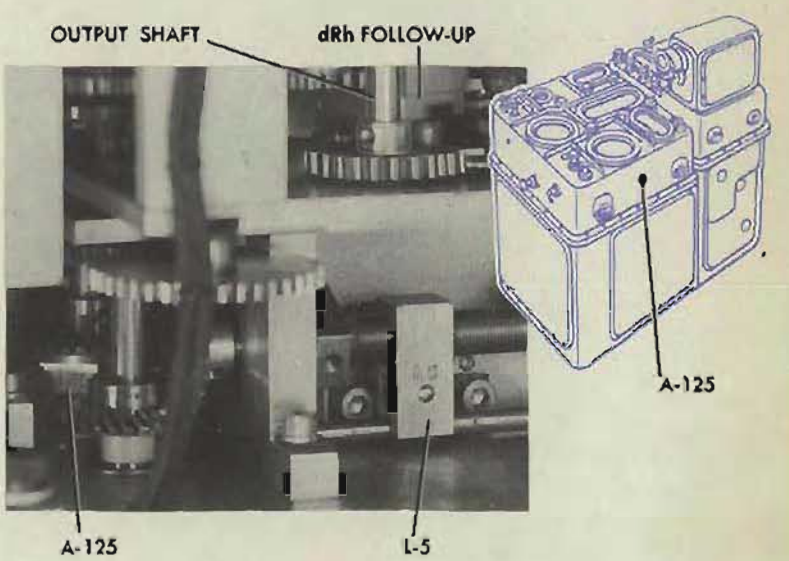
A-125 dRh COMPONENT SOLVER to dRh LINE

Location

A-125 is under cover 1, below the *dRh* follow-up, to the front of limit stop L-5.



Possible damage

If A-125 is upset, the traveling nut of the *dRh* component solver may have jammed at one end of the lead screw in the vector gear. Turn the output shaft of the *dRh* follow-up to move the lead screw. Note any binding or sticking.

Check

Remove the KRR lead from the target angle switch.

Turn the power ON.

Set *A* at 90°, *Br* at 90°, *So* and *Sh* at 0 knots, and wedge the lines.
Set *E* at 85°.

The *dRh* component solver is the third solver from the top. It can be seen through the access hole on the right side of the front top section in front of the *RdBs* follow-up. Set up a dial indicator against the *dRh* cos *E* output rack.

Turn *E* from 85° to 0°.
The *dRh* cos *E* rack should not move more than 0.002 inch, as read on the indicator dial.

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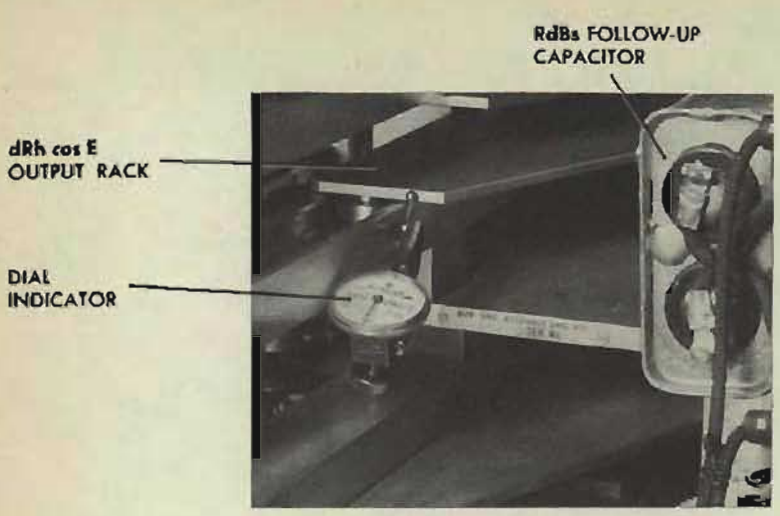
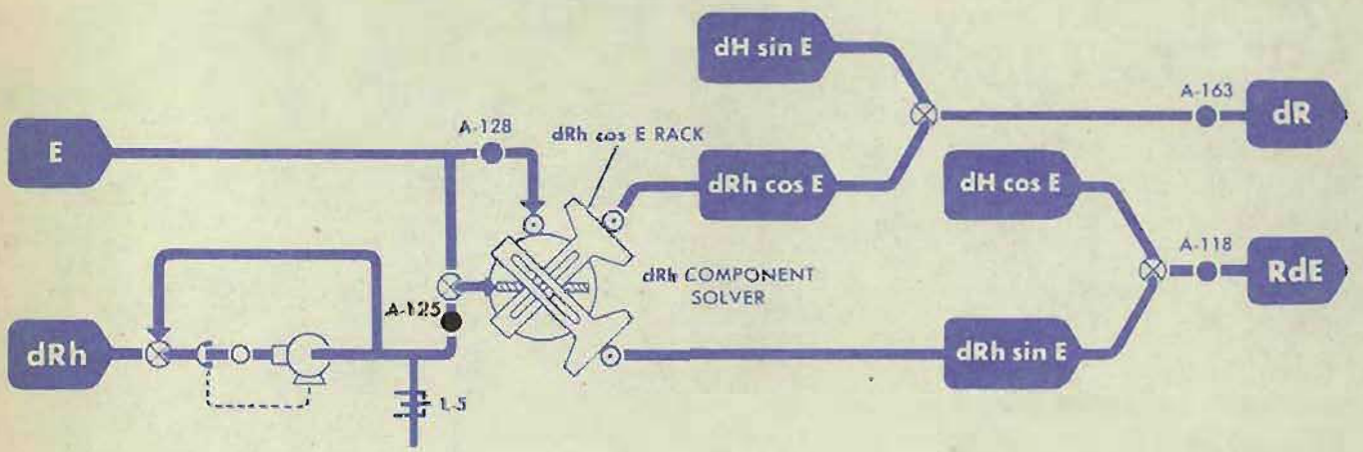
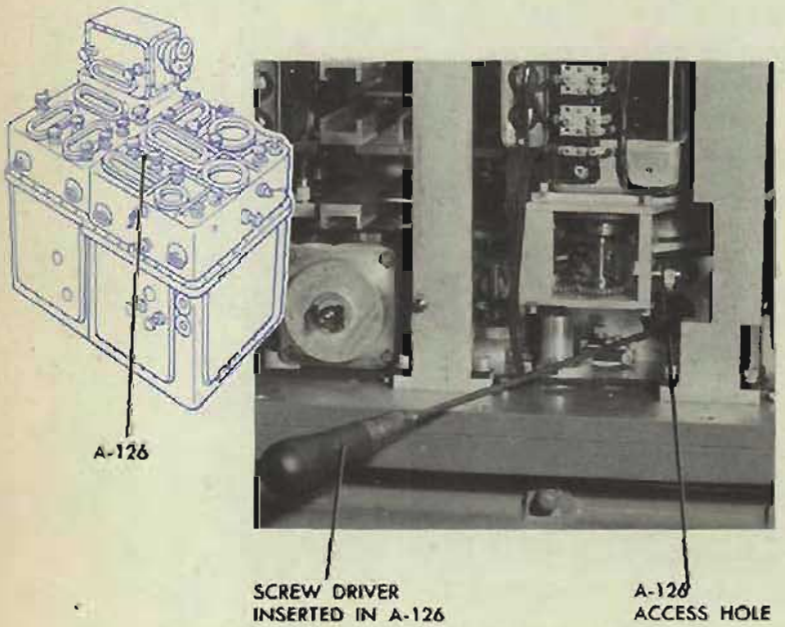


Adjustment

If the indicator moves more than 0.002 inch, slip-tighten A-125.
Correct all the way by turning the bevel gear on which A-125 is located. Tighten A-125 and recheck.
Readjust until the indicator movement is less than 0.002 inch. Remove all wedges.
Replace the KRR lead. Check A-118 and A-163.



A-126 dH COMPONENT SOLVER to dH DIAL



Location

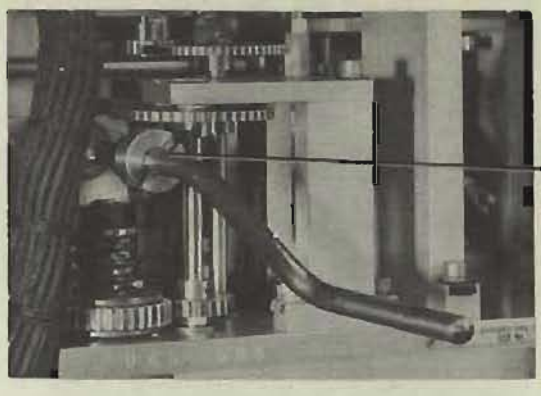
A-126 is under cover 1.
It can be seen near the base plate of the control unit at the center rear just above a spur gear. It is accessible through a hole below the *RdBs* follow-up.

Possible damage

If A-126 is loose or upset, the lead screw of the *dH* component solver may be jammed at the end of its travel. Turn the *dH* line through its full travel. Note any sticking or binding.

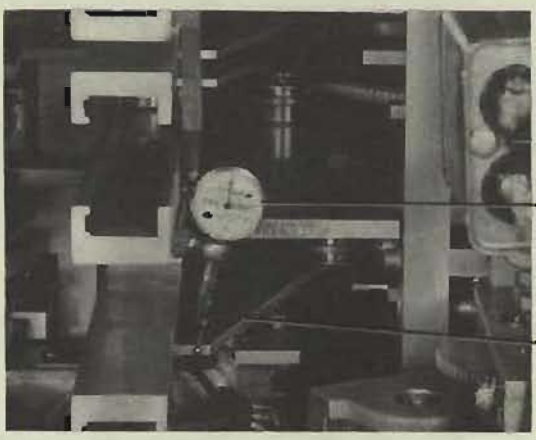
Check

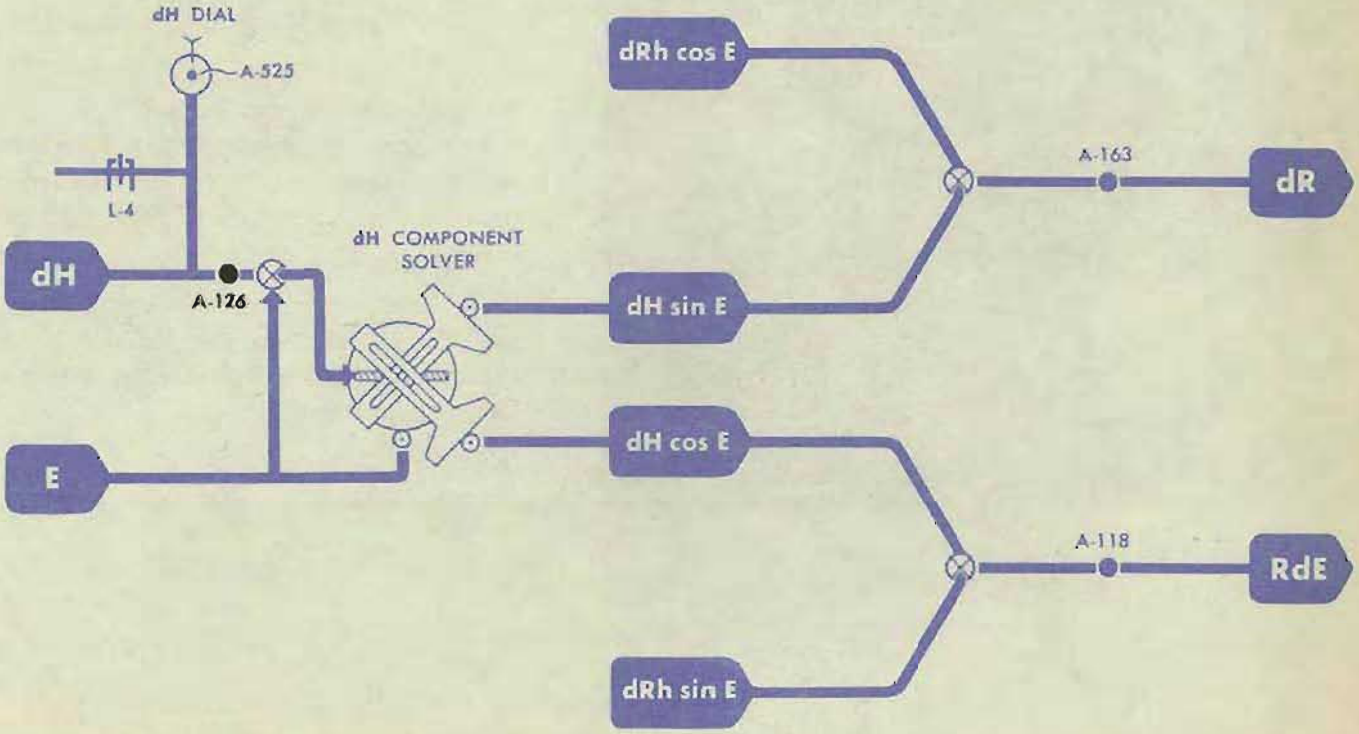
Set *dH* at 0 knots.
Set *E* at 0°.
Set up a dial indicator against the *dH* sin *E* output rack.
The *dH* component solver is the fourth component solver from the top in the solver group. It can be seen by looking through the access in front of the *RdBs* follow-up.
Turn *E* from 0° to 85°.
The indicator should register no more than 0.002-inch movement of the rack.



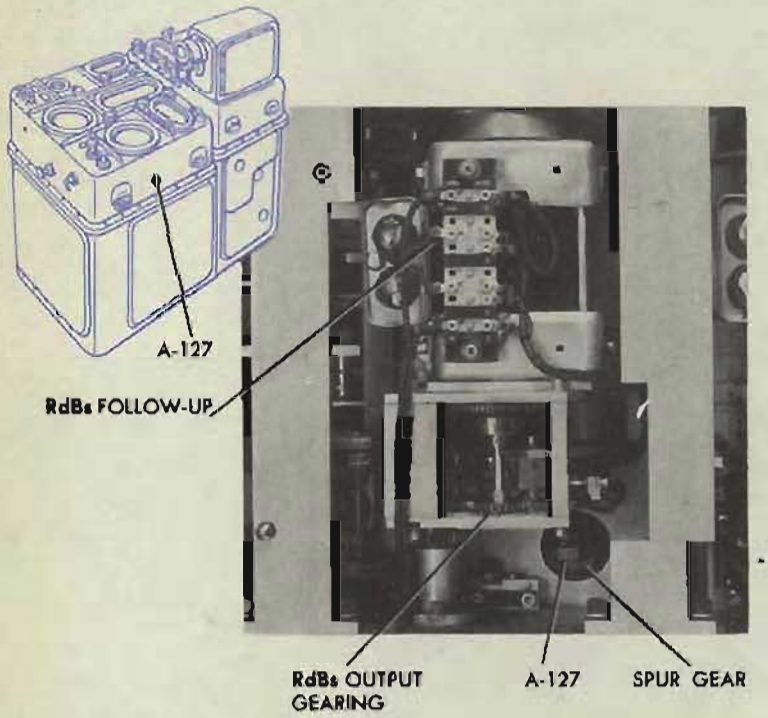
Adjustment

If the indicator shows more than 0.002-inch motion, slip-tighten A-126. Use a gear pusher and correct all the way by turning the spur gear immediately below A-126. The *dH* dial must not move off the zero position.
Tighten A-126, and recheck.
Remove the dial indicator.
Check A-118 and A-163.





A-127 SHIP COMPONENT SOLVER to So DIAL

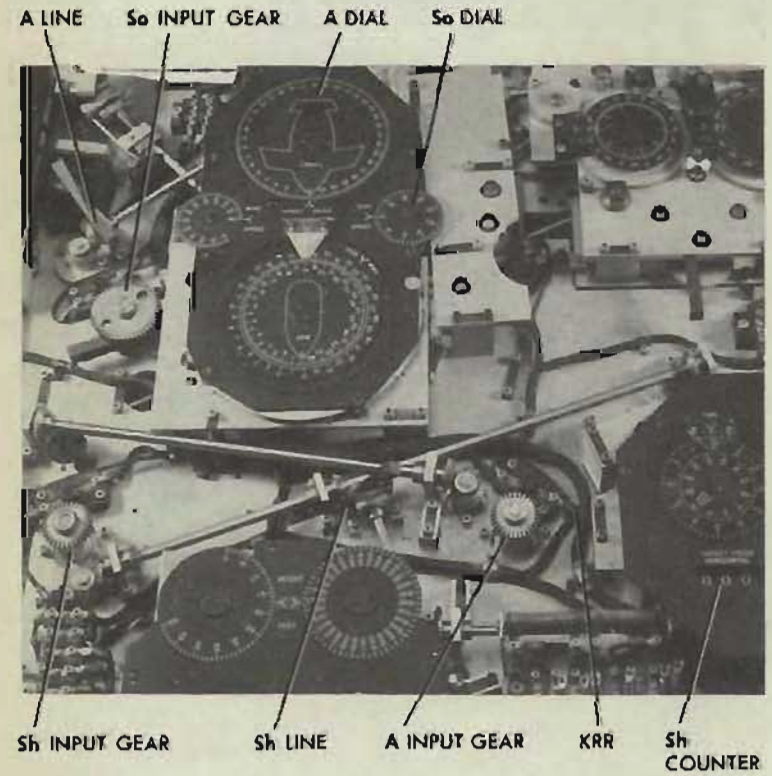


Location

A-127 is under cover 1, below the *RdBs* follow-up.

Possible damage

If A-127 is upset, the cam-follower pin or the cam groove of the ship component solver may be damaged. Check for obstructions by running *So* between its limits.



Check

Turn the power ON.

Set the *So* dial at 0 knots and wedge the *So* input gear.
Set *A* and *Sh* at 0 and wedge the lines.
Set *Br* at 90°.

NOTE: Disconnect lead KRR from the target angle push-button switch to prevent the *A* and *Sh* follow-ups from driving these quantities off their zero settings.

The target component solver outputs are now at zero, and the *RdBs* follow-up will indicate only the output of the ship component solver.

Mark the *RdBs* follow-up output gear for use as an indicator. Turn *Br* from 90° to 270°. The follow-up indicator marks should remain matched.

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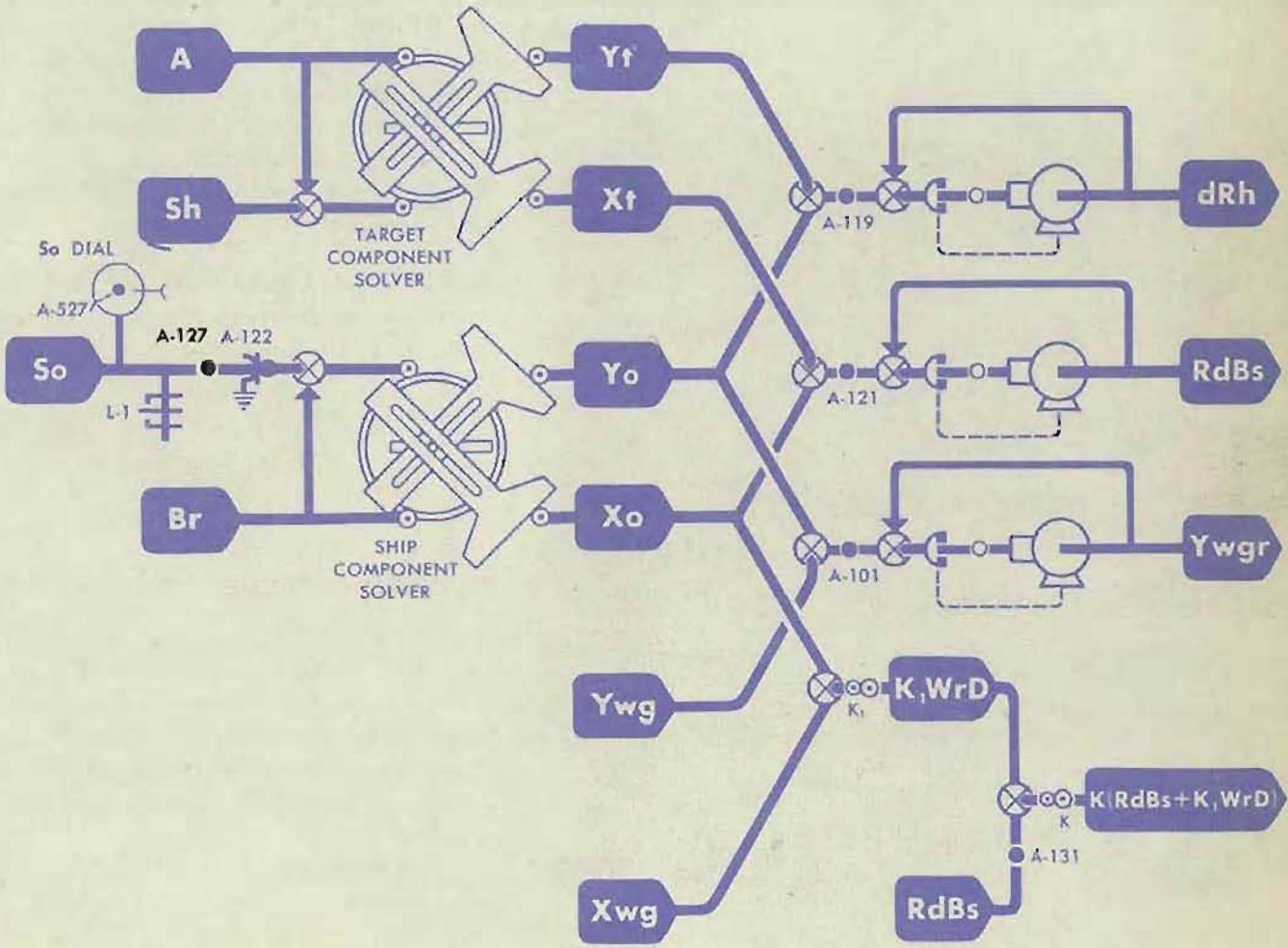
Adjustment

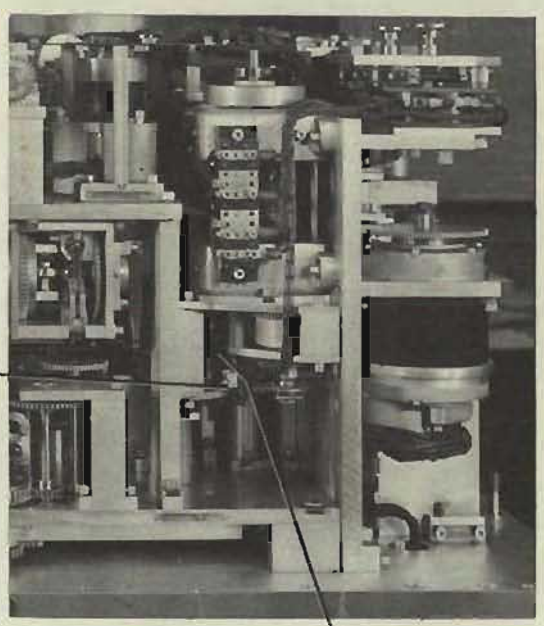
If the marks do not remain matched, slip-tighten A-127. Turn the spur gear below the clamp until the marked output gear is halfway back to its original position.
Tighten A-127.

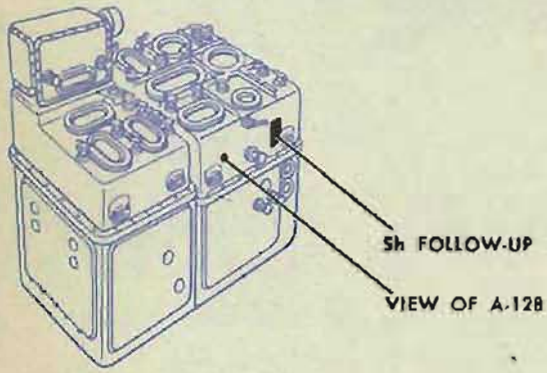
Recheck

Remove the old indicator marks and make new marks with *Br* at 90°. Turn *Br* to 270°. Check the movement of the marks. The error, if any, should be less than half-a-tooth movement of the follow-up output gear. Check that *So* can be increased to 45 knots.
Remove all wedges.
Replace the KRR lead.
Check A-121, A-119, A-101, and A-131.



A-128 dRh COMPONENT SOLVER to E DIALS





IMPORTANT

Before this readjustment is made, check and readjust A-123. When A-123 is correct, the *E* line, up to A-128, will be correct.

Location

A-128 is located under cover 1, at the right rear.

Note

A-128 can be seen from the left side of the computer. Set *dH* on 0 knots. Turn the power OFF. Insert a pencil light through the hole to the right of the *RdE* follow-up. Look into the mechanism near D-25 in front of the *jE* follow-up.

A-128 can be reached with a long screw driver from the left side of the computer. Be sure that the power is OFF. Insert the screw driver at an angle over the *Sh* contacts to reach A-128.

Possible damage

If A-128 is upset, the vector gear in the *dRh* component solver may have been run beyond its limit with such force that the hangers, gears, and shafts connected to the lead screw are damaged. To check for this, turn the power OFF. Turn the lead screw by running the *dRh* follow-up output line from limit to limit. Note any binding or sticking.

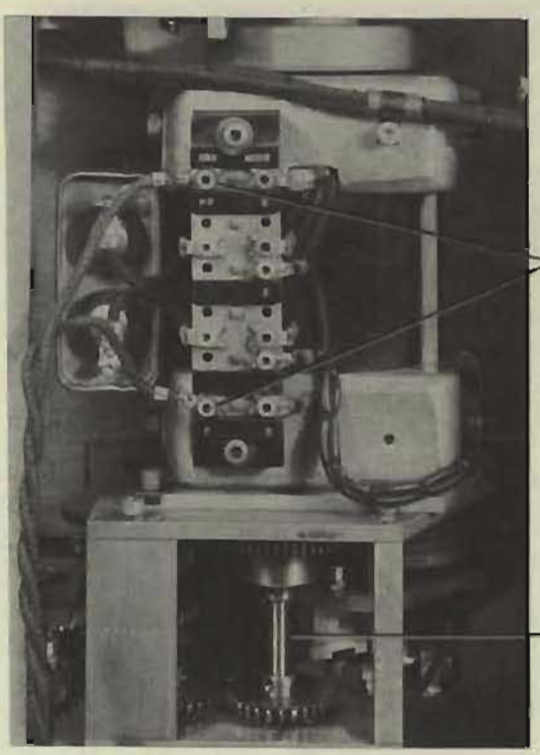
Check

Turn the power ON.

Set *E* at 0°.

The spur gear on the lead screw of the *dRh* vector gear should be toward the left.
The *dRh* component solver can be seen through the access on the right side of the front top section, just forward of the *RdBs* follow-up. It is the third component solver from the top.

Remove leads P and PP from the *dRh* follow-up.
Turn the *dRh* output gearing to one limit of L-5.
Mark the *RdE* follow-up for use as an indicator.
Turn the *dRh* output gearing to the other limit of L-5.
The indicating marks on the *RdE* follow-up should remain matched.

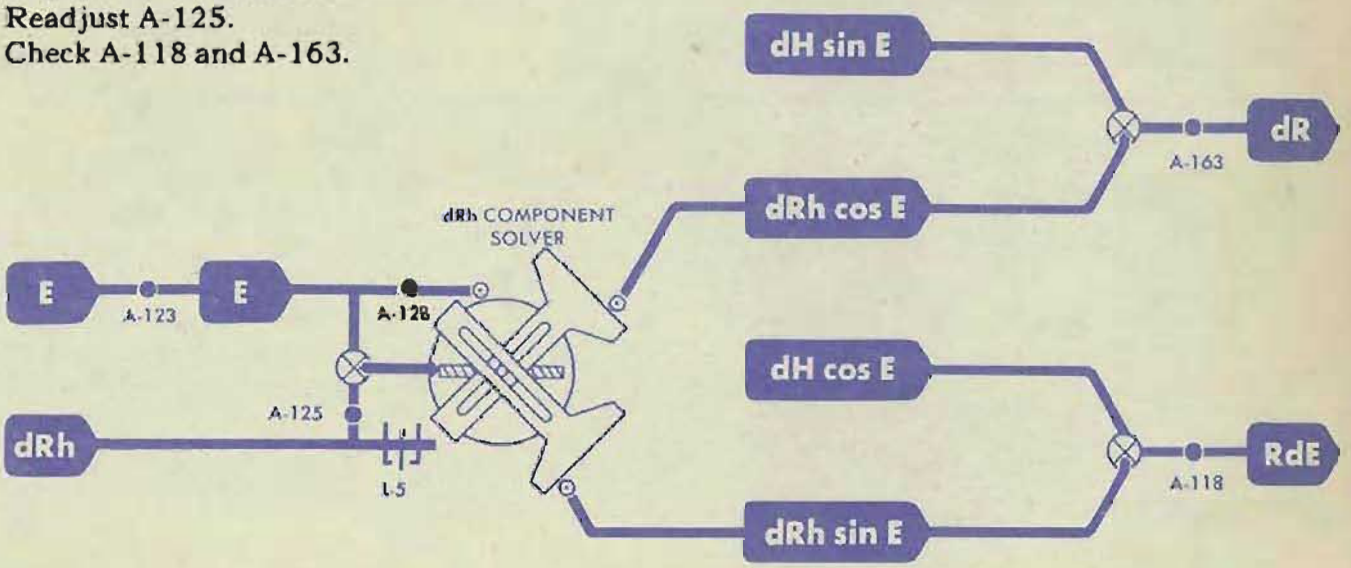


Adjustment

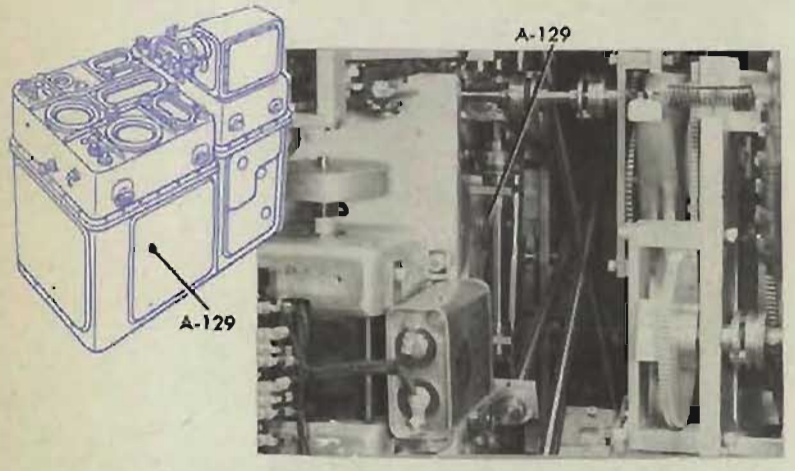
If the indicating marks do not remain matched within one half tooth, loosen A-128. Correct halfway by turning the *dRh* vector gear with a gear pusher. Tighten A-128, and recheck.

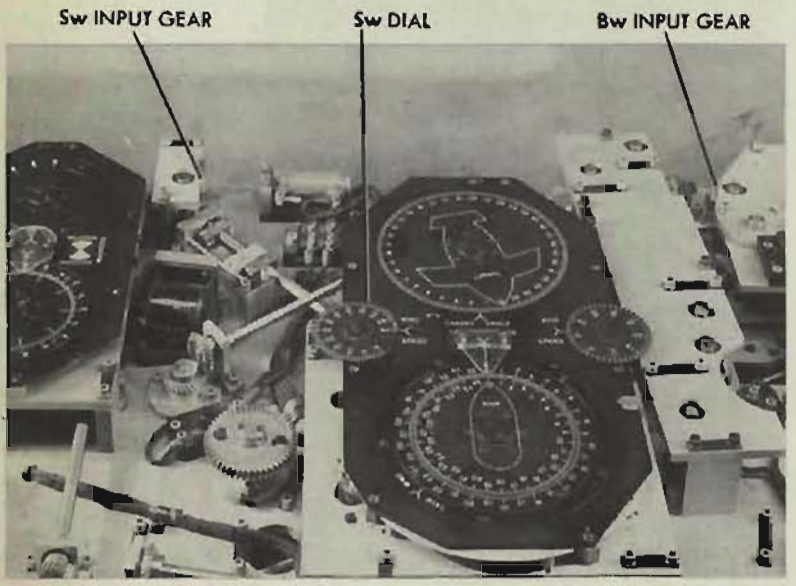
REMINDER

Replace leads P and PP.
Readjust A-125.
Check A-118 and A-163.



A-129 Sw HOLDING FRICTION





Location

A-129 is under cover 5, behind the follow-up mounting plate and in the center of the computer pedestal.

Check

The friction should be tight enough to hold the *Sw* input setting without too much drag on the line.

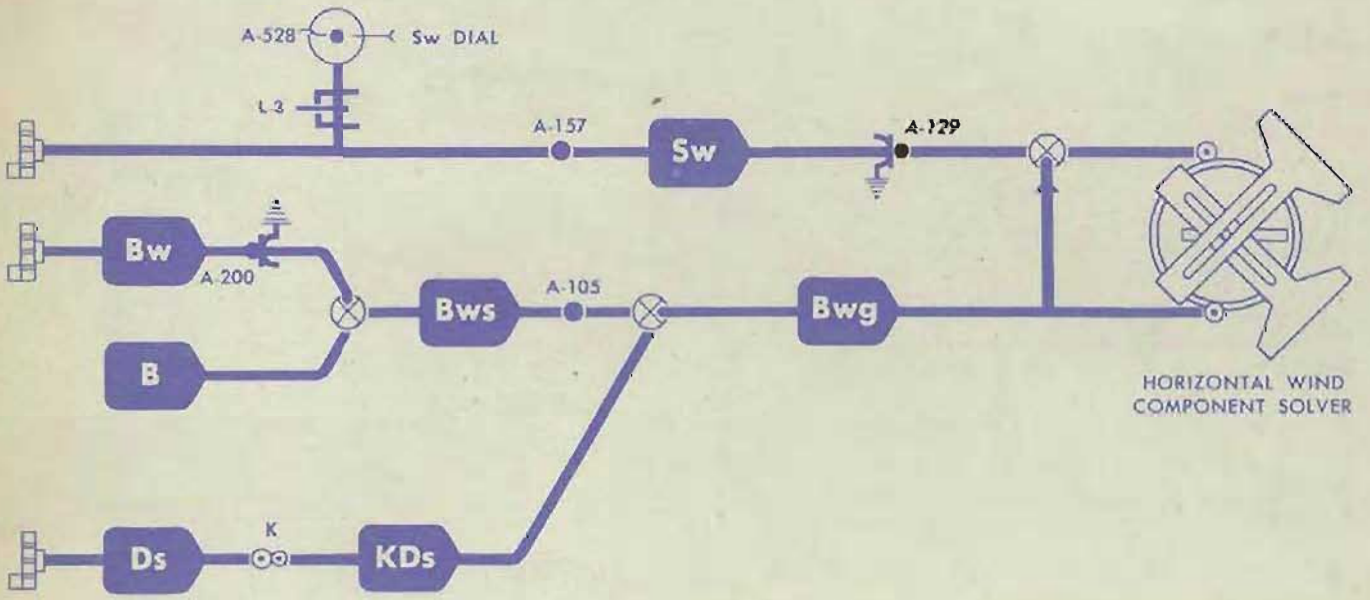
Set *Sw* at 45 knots.

Turn the *Bw* input gear. There should be no motion of the *Sw* input gear.

Adjustment

If any motion backs out on the *Sw* input gear, loosen A-129 and turn it clockwise to increase the friction.

Tighten A-129, and recheck.



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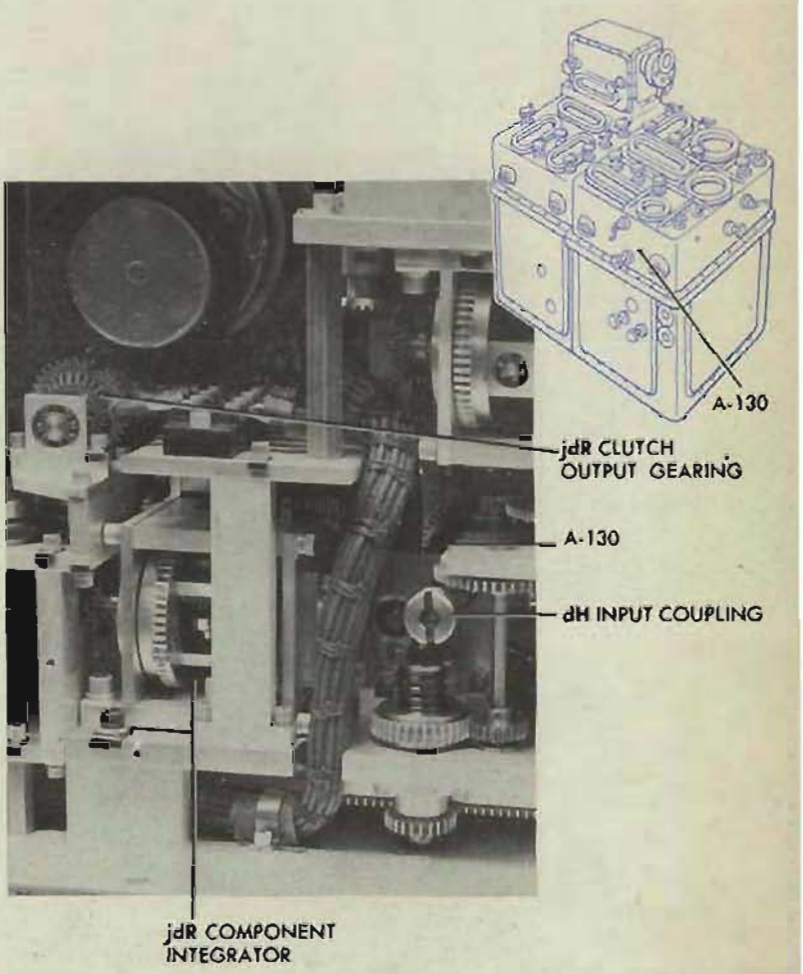
A-130 jHc FRICTION DRIVE

Location

A-130 is under cover 1. It is the driving friction on the *jHc* line.



Check

This friction should *slip* when *dH* is introduced manually. It should *drive* the *dH* line when there is *jHc* output from the component integrators.

Set *E* at a high value.

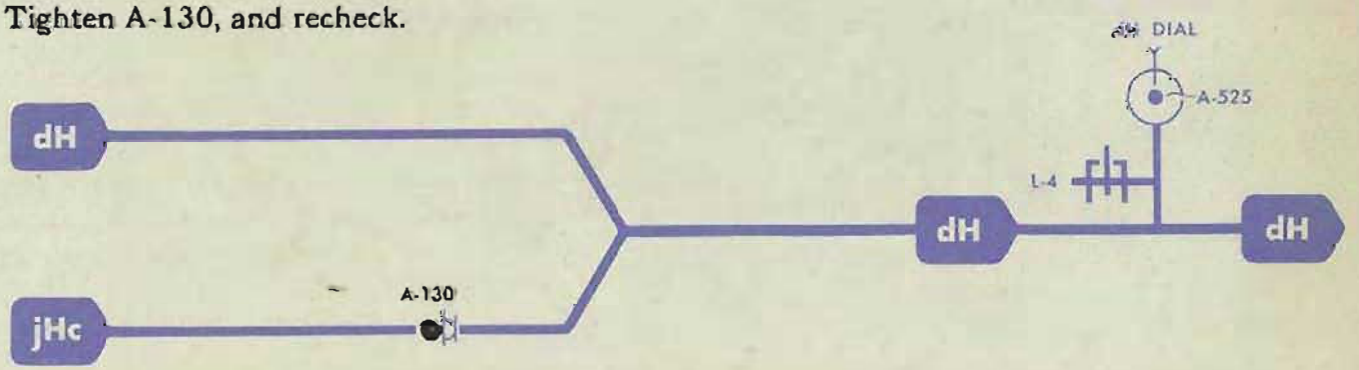
Turn the *dH* input line. The *dH* dial should move, but *dH* should not back through the *jHc* line.

Turn the output gearing of the *jdR* clutch to turn *jHc*. The *dH* line should turn and change the reading of the *dH* dial.

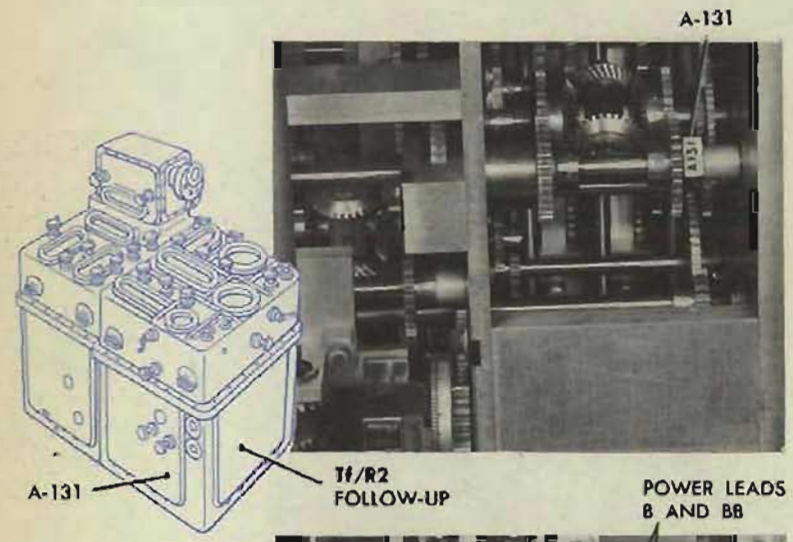
Adjustment

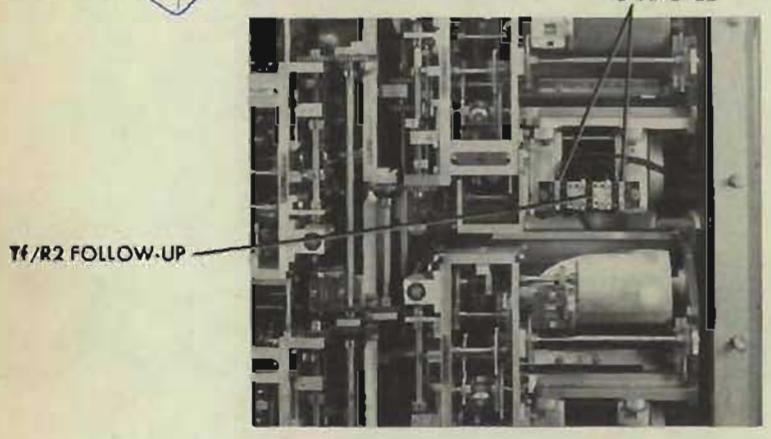
If there is no motion of the *dH* line when *jHc* is turned, loosen A-130 and turn it clockwise to increase the friction.

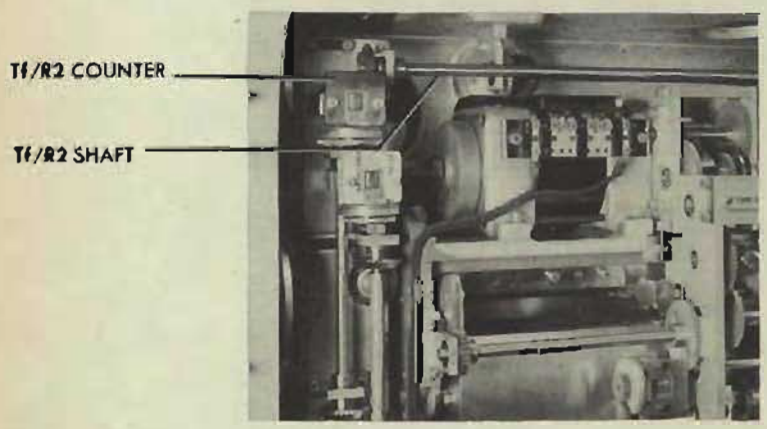
Tighten A-130, and recheck.



A-131 DEFLECTION MULTIPLIER to RdBs LINE







Location

A-131 is under cover 3.

Check

Remove leads B and BB from the *Tf/R2* ballistic computer.

Turn the power ON.

Set *So*, *Sh*, and *Sw* at 0 knots.
Set *Bws* at 0°.
Set *A* and *Br* at 0°.

The *K(RdBs + K,WrD)* input rack of the deflection prediction multiplier should now be at its zero position. At the zero position, turning the *Tf/R2* lead screw input (under cover 4) from limit to limit causes no motion of the *Dtw'* output rack.

Set the *Tf/R2* line at its lower limit by turning the shaft leading to the counter under cover 4.

Mark the *Dtwj* follow-up output gear for use as an indicator.

Turn *Tf/R2* to its upper limit. If the output gear on the *Dtwj* follow-up moves more than one tooth, A-131 is in error and should be adjusted.

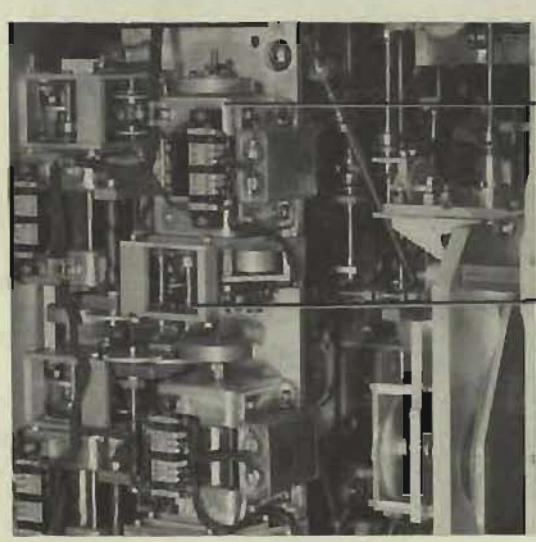
Adjustment

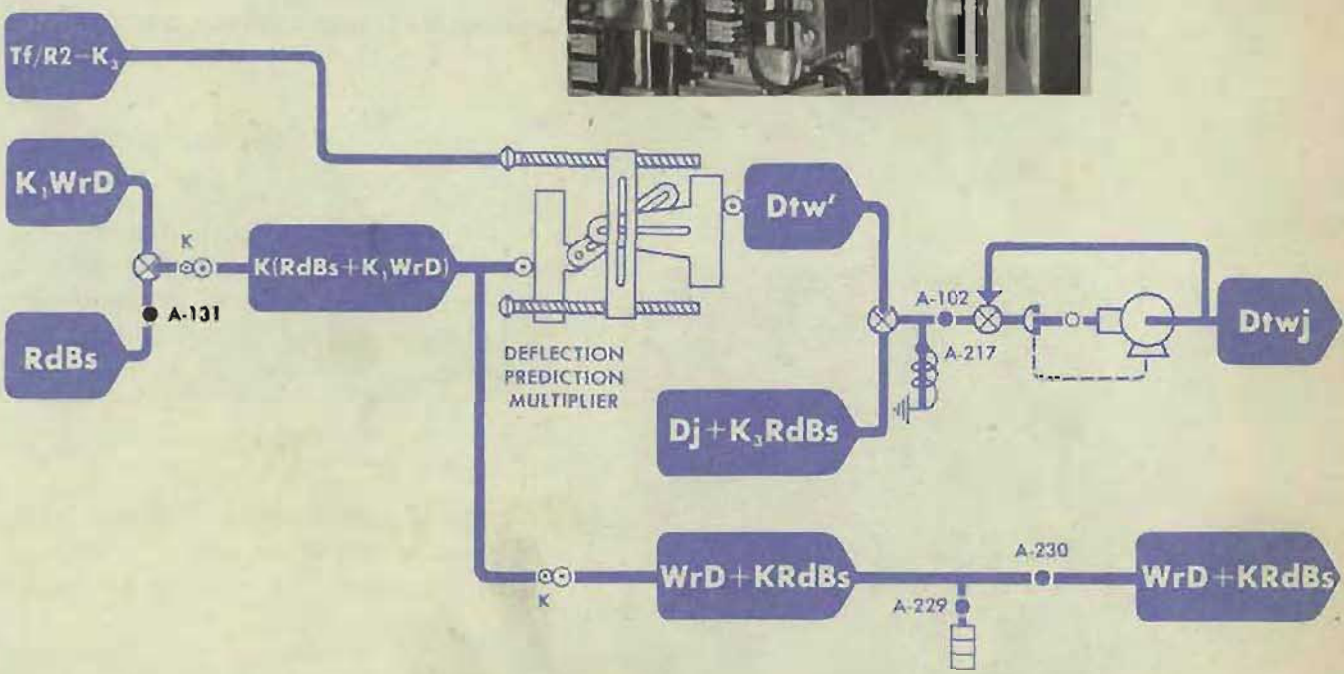
The input rack can be set approximately. Hold the spur gear behind A-131, and loosen the clamp. Turn the gear until the two teeth at the top of the input rack (the third rack from the front) are hidden by the plate. Make A-131 slip-tight.

Refining the adjustment

Repeat the check. If there is still any output on the *Dtwj* follow-up, hold *Tf/R2* at its upper limit and turn the spur gear behind A-131 to correct the full amount of motion.

Tighten A-131 and recheck.
Replace the *Tf/R2* power leads.
Check A-102 and A-229.

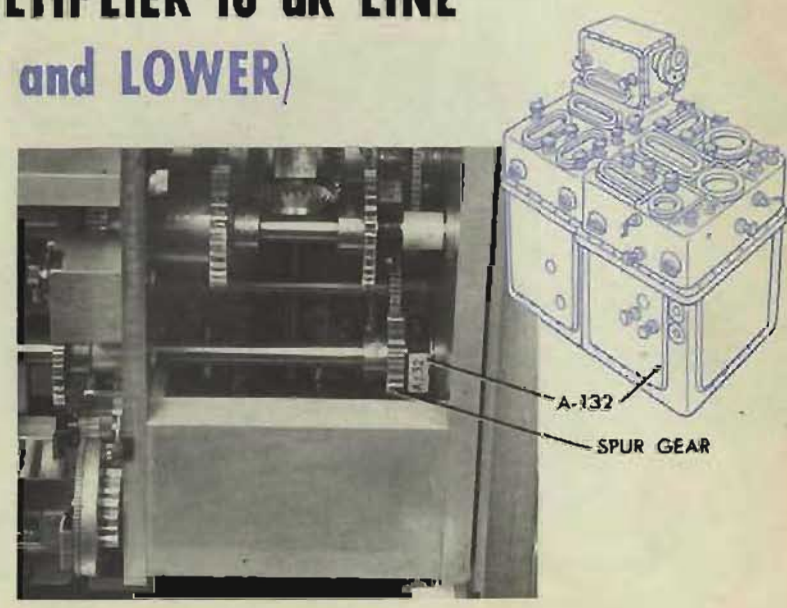




A-132 DEAD TIME MULTIPLIER to dR LINE (SER. NOS. 780 and LOWER)

Location

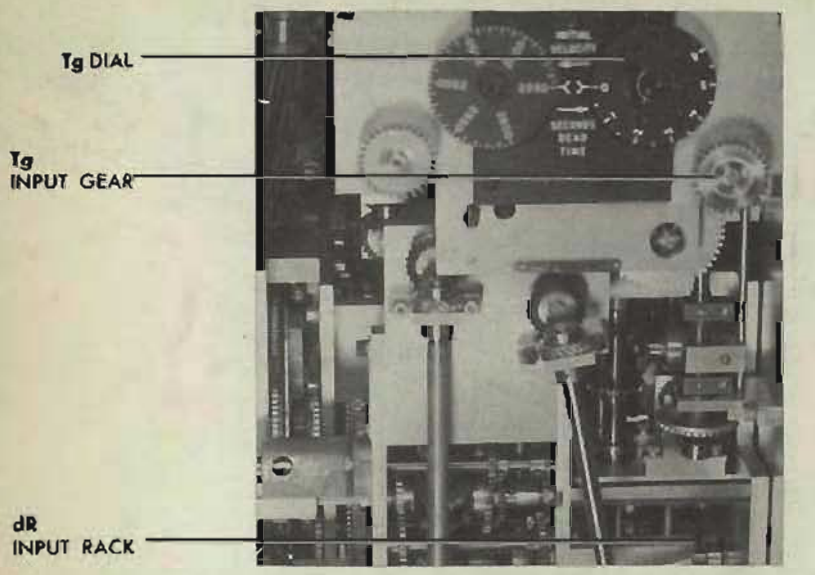
A-132 is under cover 3, at the lower front.



Check

Set *So*, *Sh*, and *dH* at 0 knots.
Put the *dR* handcrank at AUTO.

Turn the power ON.



The *dR* line is now at its zero position. In this position, the *RTg* output rack should not move when the *Tg* lead screw is turned.

Turn the *Tg* input from 0 to 6 seconds.

Observe the *R3* counter in the fuze ballistic computer under cover 4 for motion of the *RTg* output rack.

Adjustment

If the *R3* counter moves, first make an approximate readjustment of the input rack.

Hold the small spur gear to the rear of A-132 and loosen the clamp.

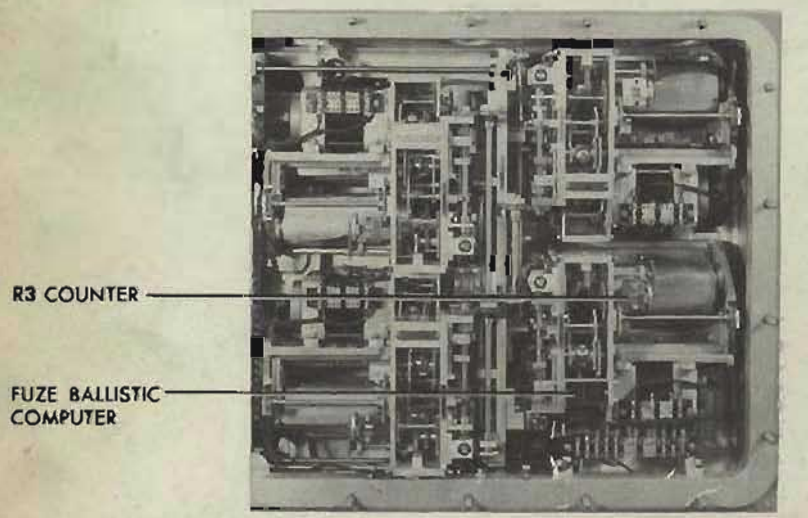
Turn the spur gear until the top two teeth of the *dR* input rack of the *Tg* prediction multiplier are hidden by the plate. The *dR* input rack is the front rack of the multiplier group.

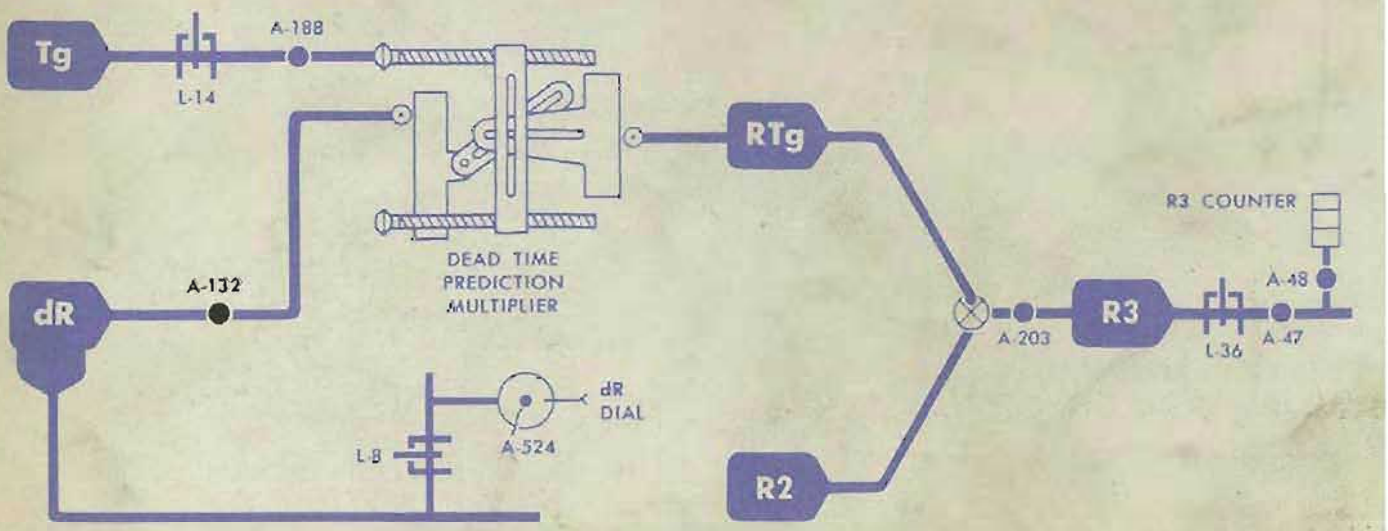
Make A-132 slip-tight.
Repeat the check.

If the *R3* counter still moves, keep *Tg* at 6 seconds and refine the adjustment by turning the spur gear to correct the full amount of motion.

Tighten A-132, and recheck.

Check A-203.

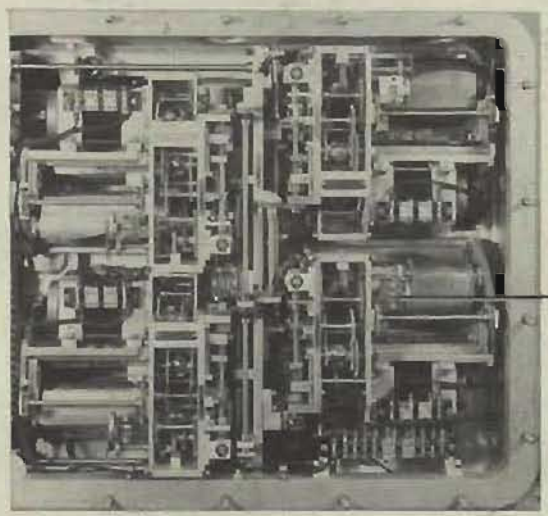




A-132 DEAD TIME MULTIPLIER to dRs – dRm LINE (SER. NOS. 781 and HIGHER)

Location

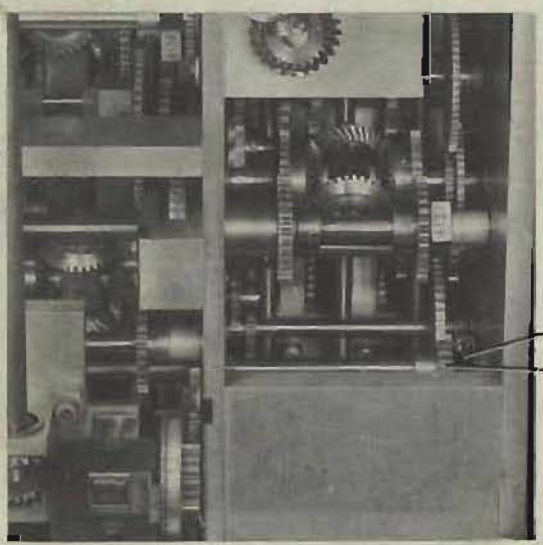
A-132 is under cover 3, at the lower front.



Check

Turn the power ON.

Set *So*, *Sh*, and *dH* at 0 knots.
Set *I.V.* at 25[illegible].
Put the *dR* handcrank in AUTO.
Put the fuze handcrank in the IN position. Turn the lead screw input from 0 to 6 seconds by turning the *Tg* input gear at the right of the *Tg* dial.
Observe the *R3* counter in the fuze ballistic computer under cover 4 for motion of the *RTg* output rack.



Adjustment

If the *R3* counter moves when *Tg* is turned, first make an approximate readjustment of the input rack. Hold the small spur gear to the rear of A-132 and loosen the clamp.

Turn the spur gear until the top two teeth of the input rack of the *Tg* prediction multiplier are hidden by the plate. The input rack is the front rack of the multiplier group.

Make A-132 slip-tight.

Repeat the check.

If the *R3* counter still moves, keep *Tg* at 6 seconds and refine the adjustment by turning the spur gear to correct the full amount of motion.

Tighten A-132, and recheck.

Check A-203.

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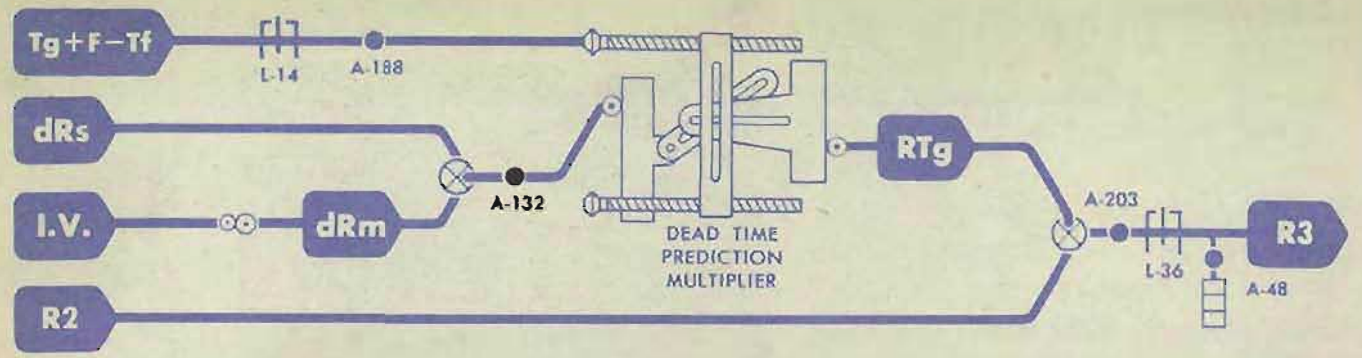
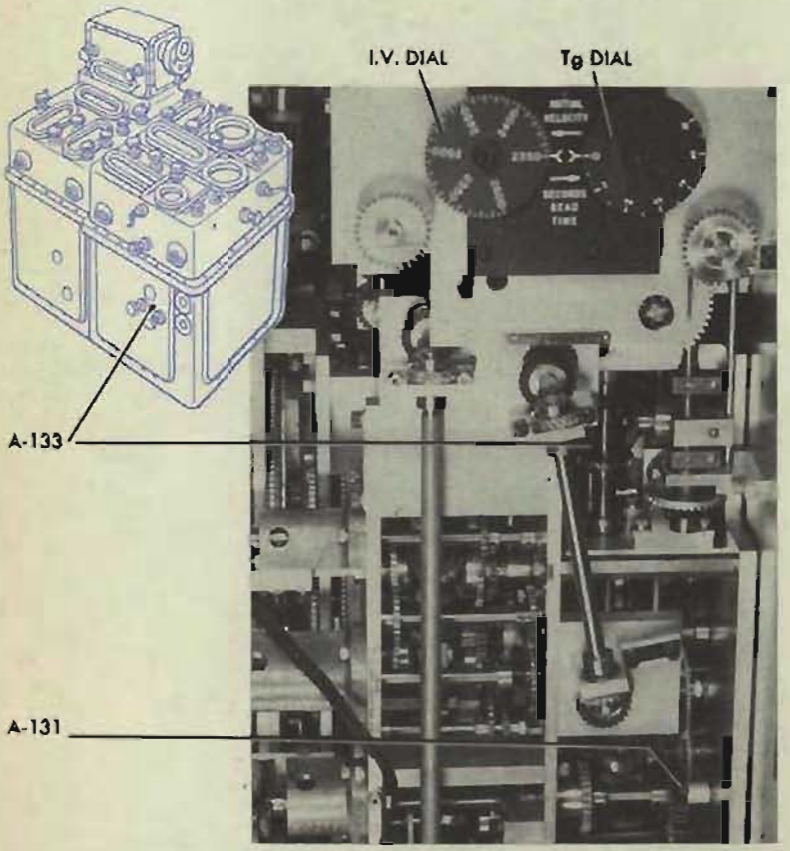
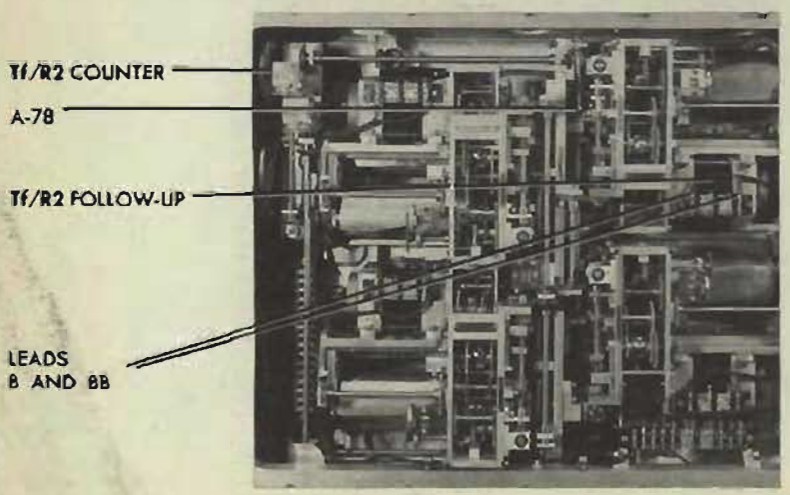


A-133 DEFLECTION MULTIPLIER to Tf/R2 COUNTER





Location

A-133 is under cover 3.

Check

Remove leads B and BB from the *Tf/R2* ballistic computer. Set the *Tf/R2* counter at 0.00125 (0.001184 for Mods 8 and 12) by turning the gearing leading to the counter and wedge the line.

Turn the power ON.

The lead screw input of the deflection prediction multiplier should now be positioned so that motion of the $K(RdBs+K,WrD)$ input rack causes no motion of the *Dtw'* output rack.

Motion of the *Dtw'* rack can be observed on the *Dtwj* follow-up output gearing.

To move the $K(RdBs+K,WrD)$ input rack independently, loosen A-131. Turn the spur gear to the rear of the clamp until the input rack is at one limit.

Mark the *Dtwj* follow-up for use as an indicator. Turn the gear next to A-131 to the other limit of the rack. Note any motion of the indicating gear. If there is motion of more than one tooth, A-133 is in error and should be readjusted.

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Adjustment

Loosen A-133 and turn the small gear above it in a decreasing direction until the lead-screw input reaches its lower limit.

Check the decreasing direction by decreasing *Tf/R2* and observing the motion of the small gear.

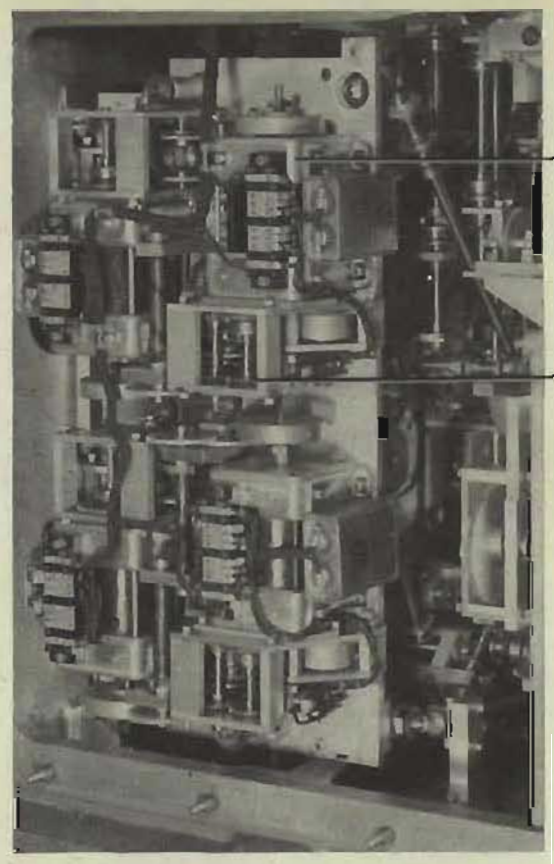
Hold the gear against the limit and set the *Tf/R2* counter at 0.001198 (0.001146 for Mods 8 and 12).

NOTE: Before this value can be reached, A-78 must be loosened.

Make A-133 slip-tight.

Turn the *Tf/R2* shaft and lead screw until the counter reads 0.00125 (0.001184 for Mods 8 and 12).

Wedge the *Tf/R2* gearing.



Refining the adjustment

Repeat the check. If the adjustment is still off, correct by turning the spur gear directly above the clamp until moving the multiplier input rack from limit to limit causes no motion of the *Dtwj* follow-up output gearing.

Hold the spur gear above A-133 and slip the *Tf/R2* shaft until the counter reads 0.00125 (0.001184 for Mods 8 and 12).

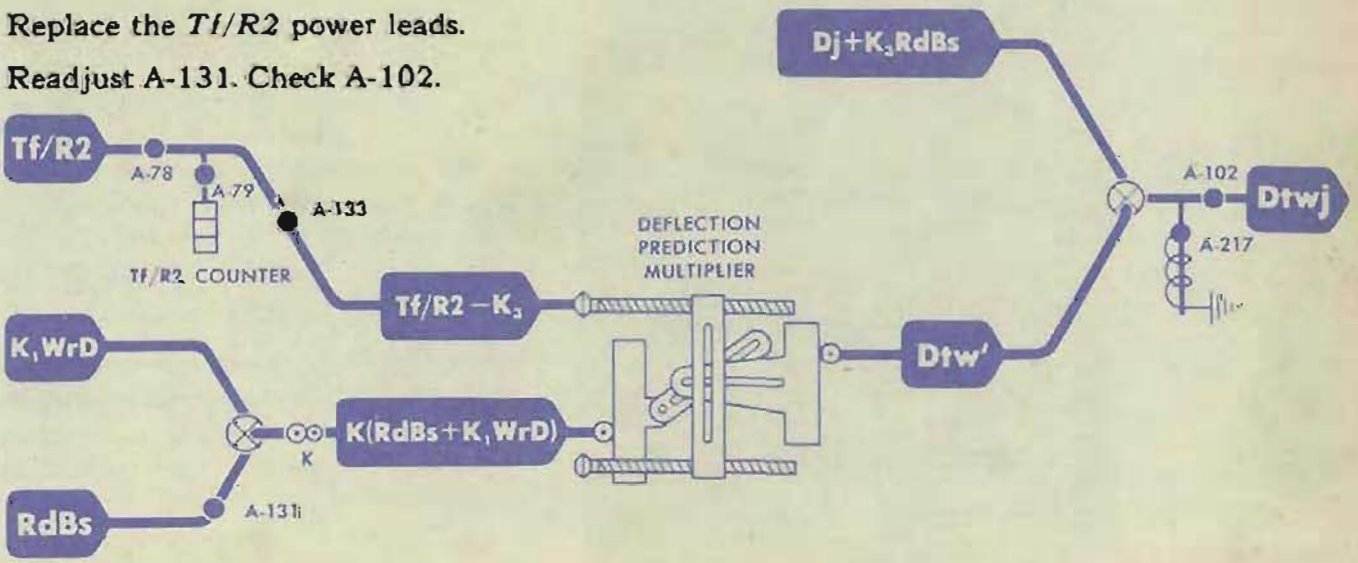
Tighten A-133, and recheck.

Readjust A-78.

Remove all wedges.

Replace the *Tf/R2* power leads.

Readjust A-131. Check A-102.



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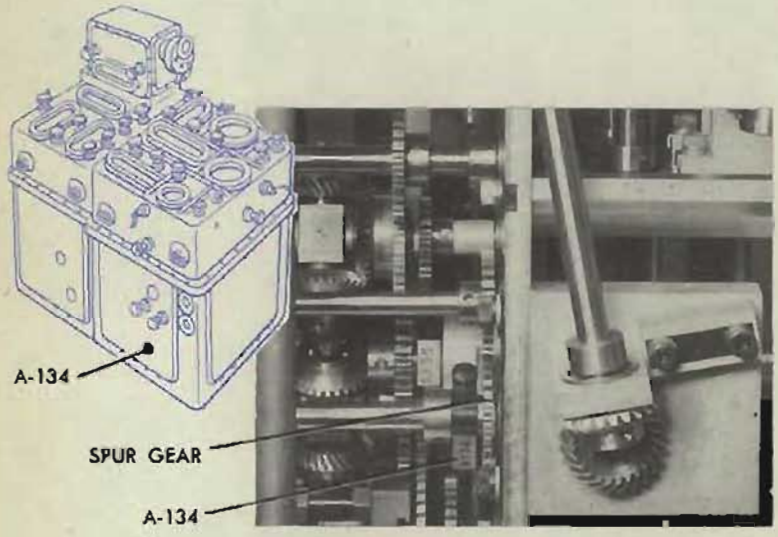
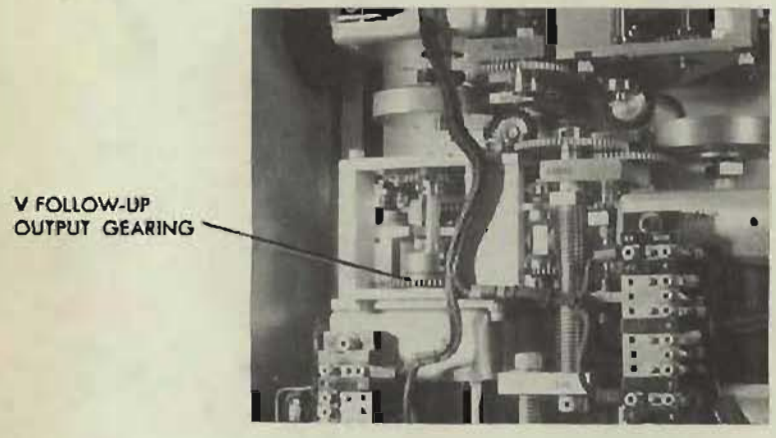
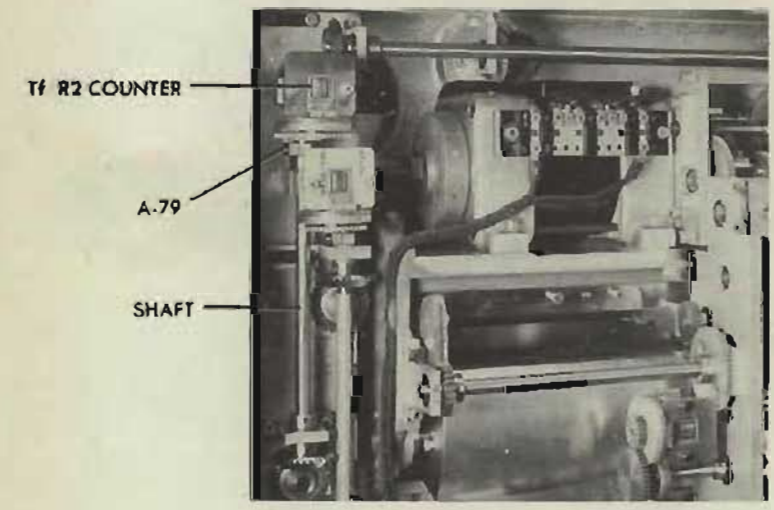
A-134 ELEVATION MULTIPLIER to WrE LINE







Location

A-134 is under cover 3, on a horizontal shaft about 14 inches below the center of the *I.V.* dial mask.

Check

Turn the power ON.

Set *So*, *Sh*, *Sw*, and *dH* at 0 knots.
Set *E2* at 0°.

The $K(RdE - K,WrE)$ input rack of the elevation prediction multiplier should now be at its zero position, where movement of the *Tf/R2* lead-screw input causes no motion of the *Vtw'* output rack.

The *V* follow-up output gearing is used to indicate motion of the *Vtw'* output rack.

Remove the power leads from the *Tf/R2* ballistic computer.

Set *Tf/R2* at its lower limit.
Mark the *V* follow-up output gearing.

Turn the *Tf/R2* shaft below A-79 under cover 4, until the *Tf/R2* lead-screw input is at its upper limit. If the motion is more than one tooth on the *V* follow-up, A-134 is in error and should be readjusted.

Adjustment

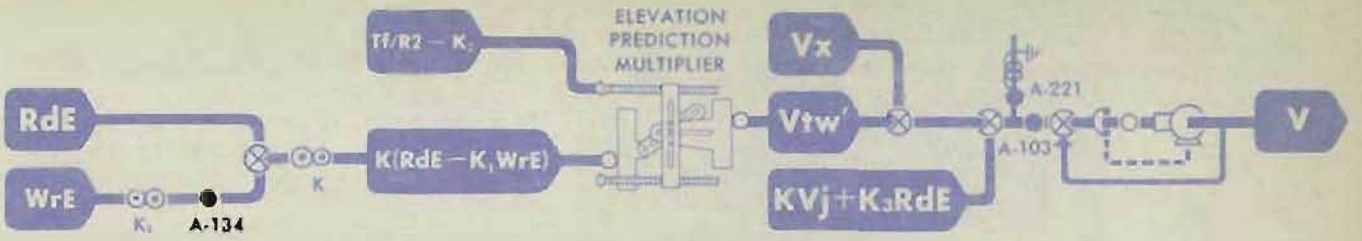
If the *V* follow-up output gearing moves more than one tooth, hold the spur gear next to A-134 and loosen the clamp.

Turn the spur gear until the top two teeth of the $K(RdE - K,WrE)$ input rack are hidden by the plate. This rack is the second from the front.

Make A-134 slip-tight.
Repeat the check. If there is any motion of the *V* follow-up, correct by turning the spur gear until there is no output for full travel of the multiplier lead-screw input.

Tighten A-134, and recheck.

Check A-103.



A-135 RANGE MULTIPLIER to dRs LINE

Location

A-135 is under cover 3, below the *I.V.* dial.

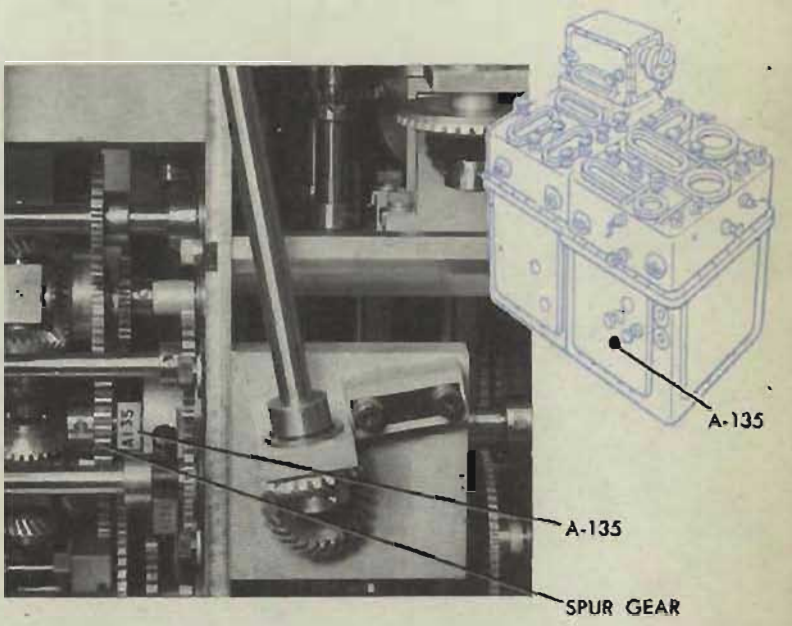
Check

Disconnect leads A and AA from the *Tf* ballistic follow-up.
Set I.V. at 2550 f.s.
Turn the power ON.
Set *So*, *Sh*, *Sw* and *dH* at 0 knots.
Set *A* and *Br* at 90°.
Set *E2* at 78.95°. (On Mods 8 and 12, set *E2* at 80.496°.)

The *K(dRs + K,WrR)* input rack of the range prediction multiplier should now be at its zero position, where movement of the *Tf* lead-screw input causes no motion of the *Rtw'* output rack.

The *R2* follow-up output gearing is used as an indicator of motion of the *Rtw'* output rack.

Turn *Tf* from its lower limit to its upper limit by turning the horizontal shaft below the *Vf + Pe* ballistic computer.

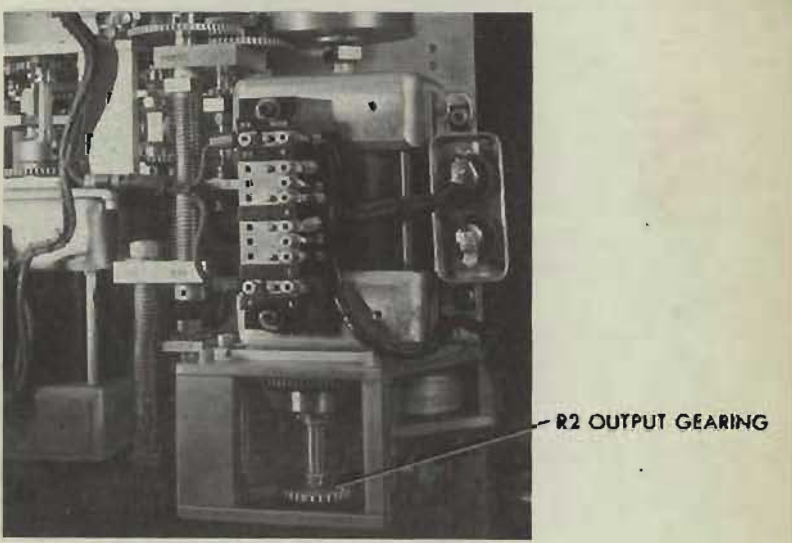


Adjustment

If there is any motion of the *R2* follow-up output gearing, hold the small spur gear at the rear of A-135 and loosen the clamp.

Turn the gear until the top of the *K(dRs + K,WrR)* input rack can be seen. This rack is the rear rack of the group. Continue turning the gear until the top two teeth are hidden by the mounting plate.

Make A-135 slip-tight.



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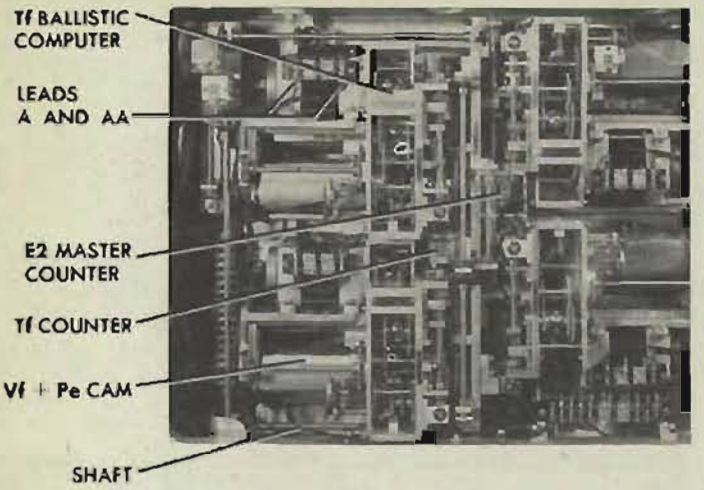


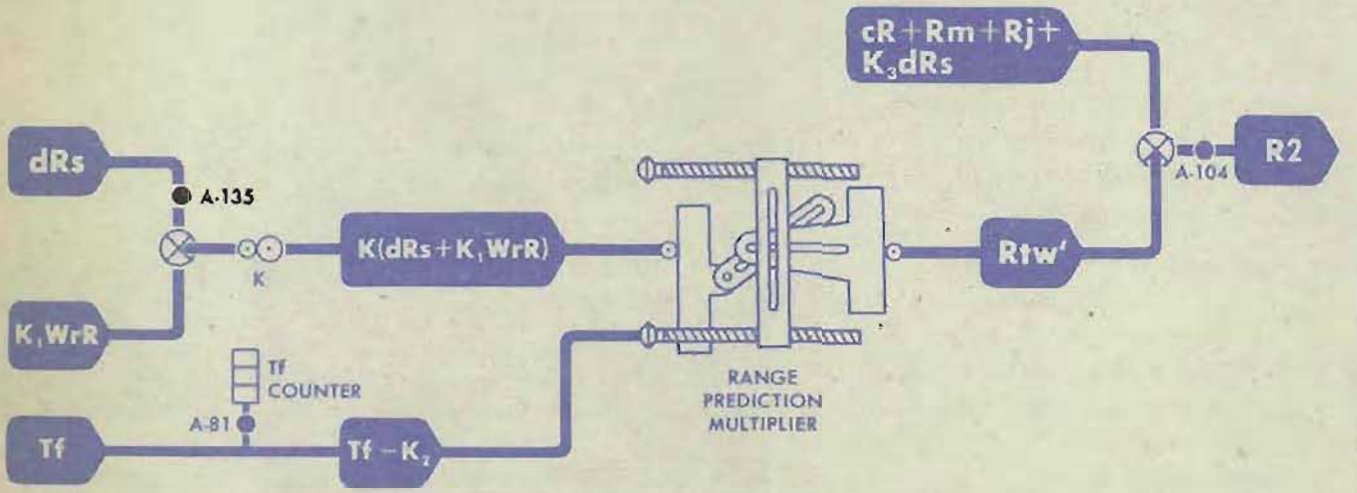
Refining the adjustment

Set *Tf* at 5.00 seconds (or 8.00 seconds on Mods 8 and 12) and make a new indicating mark on the *R2* follow-up output gearing.

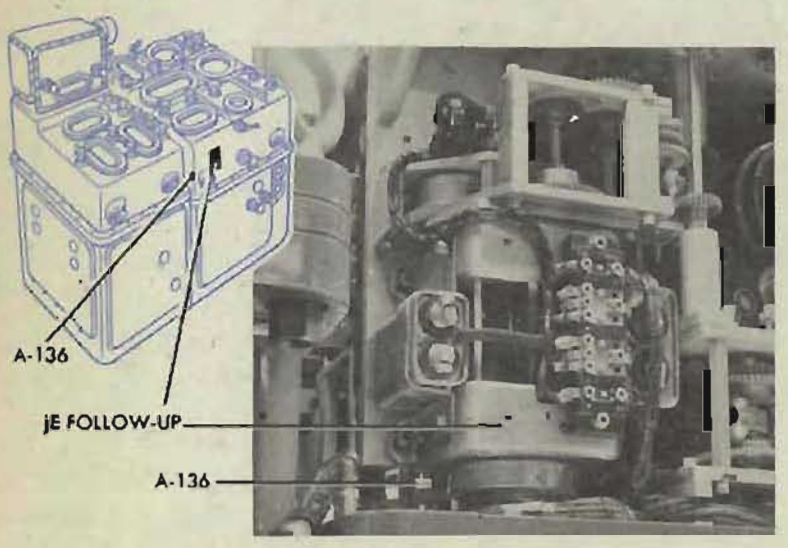
Turn *Tf* to its upper limit and observe the *R2* follow-up.

Correct all the way by turning the gear behind A-135 until the indicating marks match again. Repeat until there is no output when the *Tf* lead screw is turned.

Tighten A-135, and recheck.
Reconnect the *Tf* power leads.
Check A-104.



A-136 VECTOR SOLVER to A DIAL



Location

A-136 is under cover 1, at the rear.

Check

Turn the power OFF.

NOTE:

Check A-137 and A-532 before checking this adjustment.

Set *B* at 0° by setting *Co* and *Br* at 0°.
Set *A* at 0°.
Increase *Sh* from 0 knots to 400 knots. The N-S rack of the vector solver should move toward the front of the computer.

Turn *A* to 270° and wedge the line. Make a mark on one tooth of the N-S rack of the vector solver and a matching mark on the rail above it.

With *B* at 0° and *A* at 270°, decrease *Sh* from 400 to 0 knots.

The pencil marks should remain matched.

Adjustment

If there is any motion of the N-S rack, set *Sh* at 0 knots. Make new indicating marks on the N-S rack and rail.

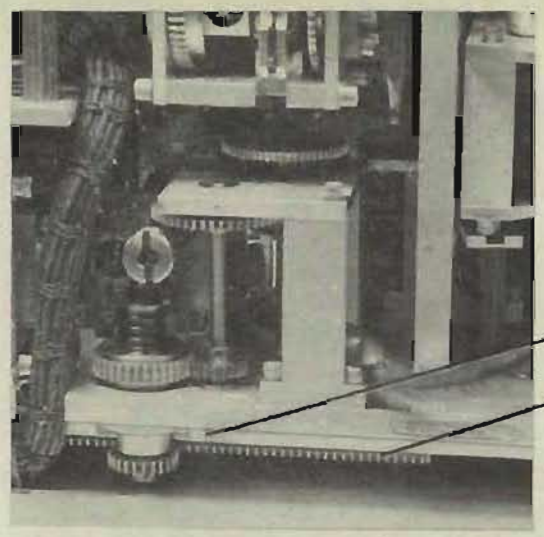
Increase *Sh* to 400 knots. Loosen A-136. Remove the wedges in the *A* line.

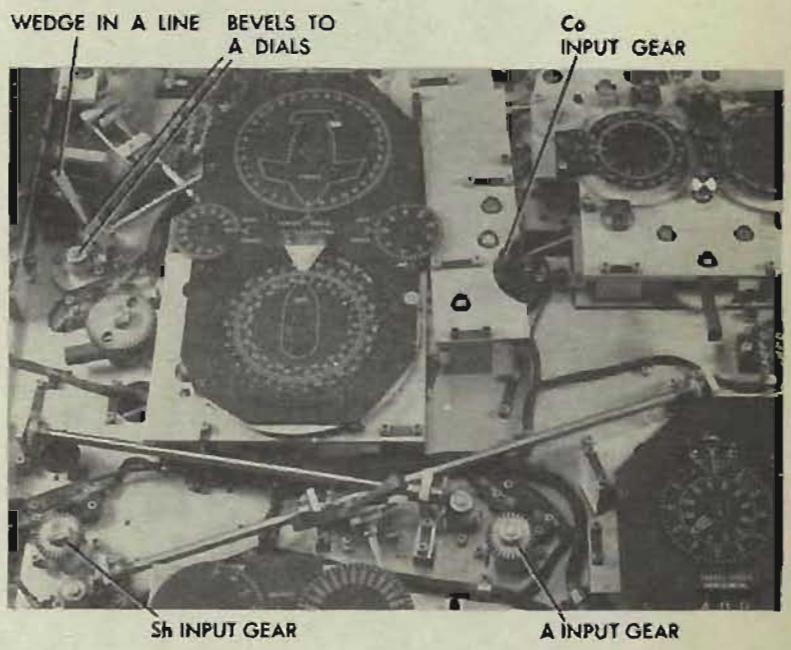
Turn the *A* input gear until the new indicating marks match. Hold the *A* input gear and bring the *A* dials back to 270° by turning the bevel gears on the shaft to the *A* dial.

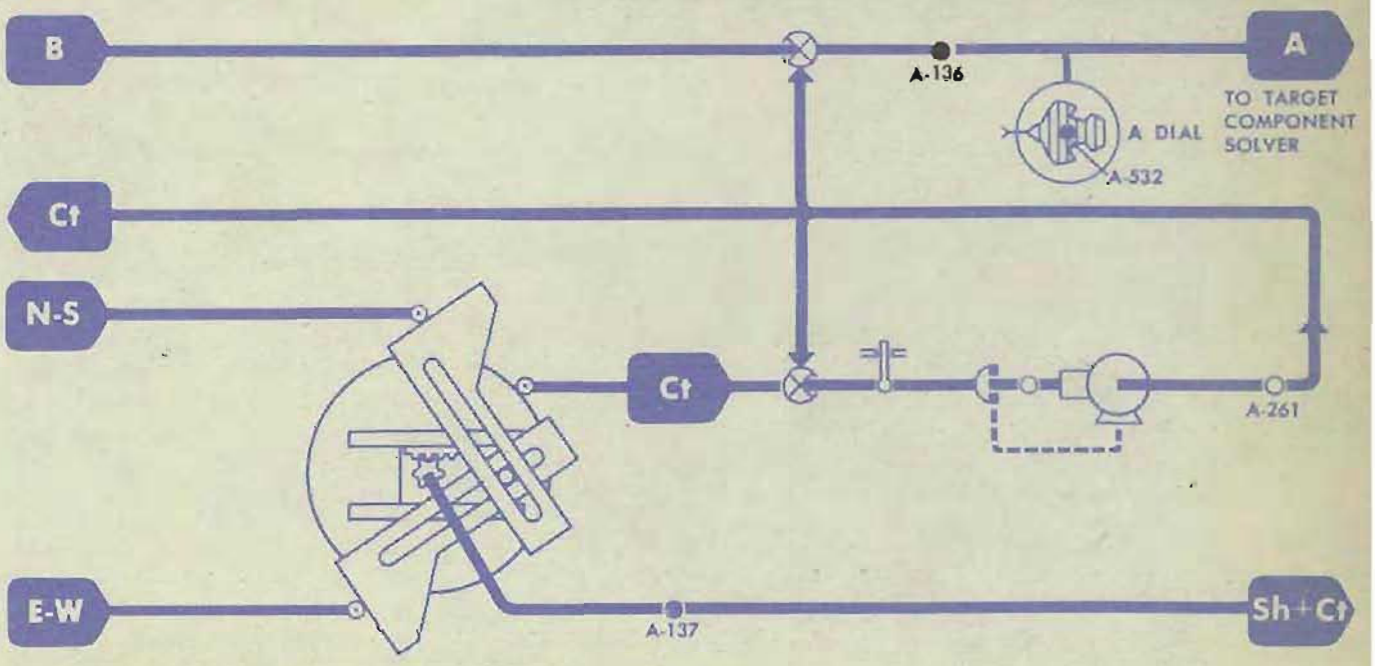
Tighten A-136, and recheck.

CAUTION

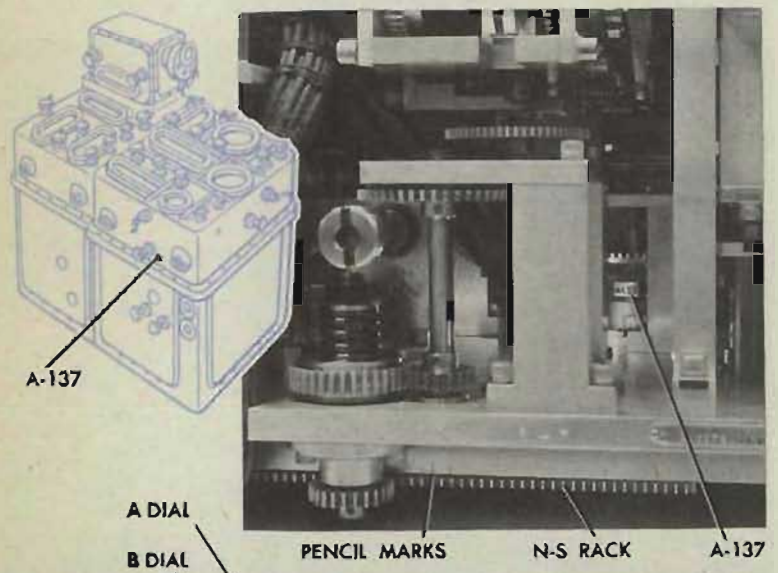
When tightening A-136, make sure that the gear near the clamp is all the way down so that it does not interfere with the small spring on the *Ct* follow-up contact arm.

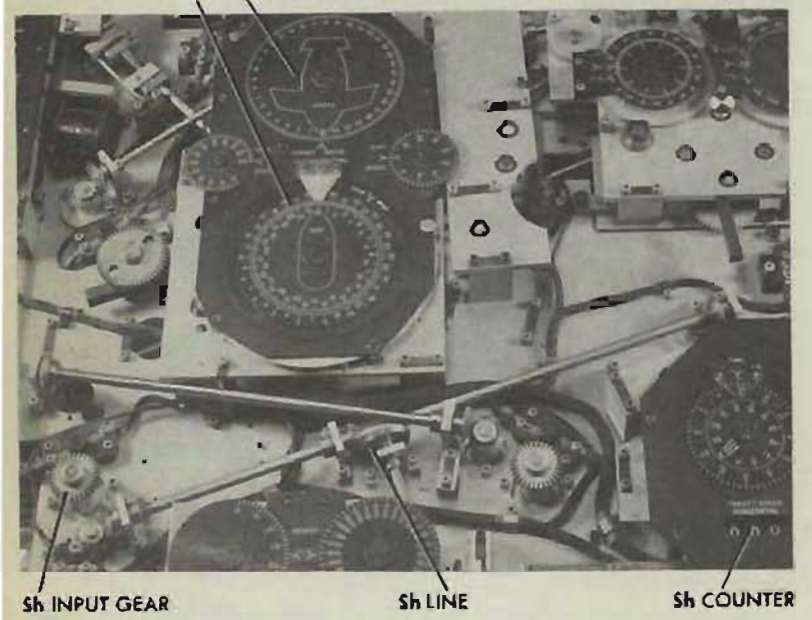






A-137 VECTOR SOLVER to Sh COUNTER





Location

A-137 is under cover 1, to the rear of the *Sh* motor.

Note

Before adjusting A-137, loosen frictions A-205 and A-206.

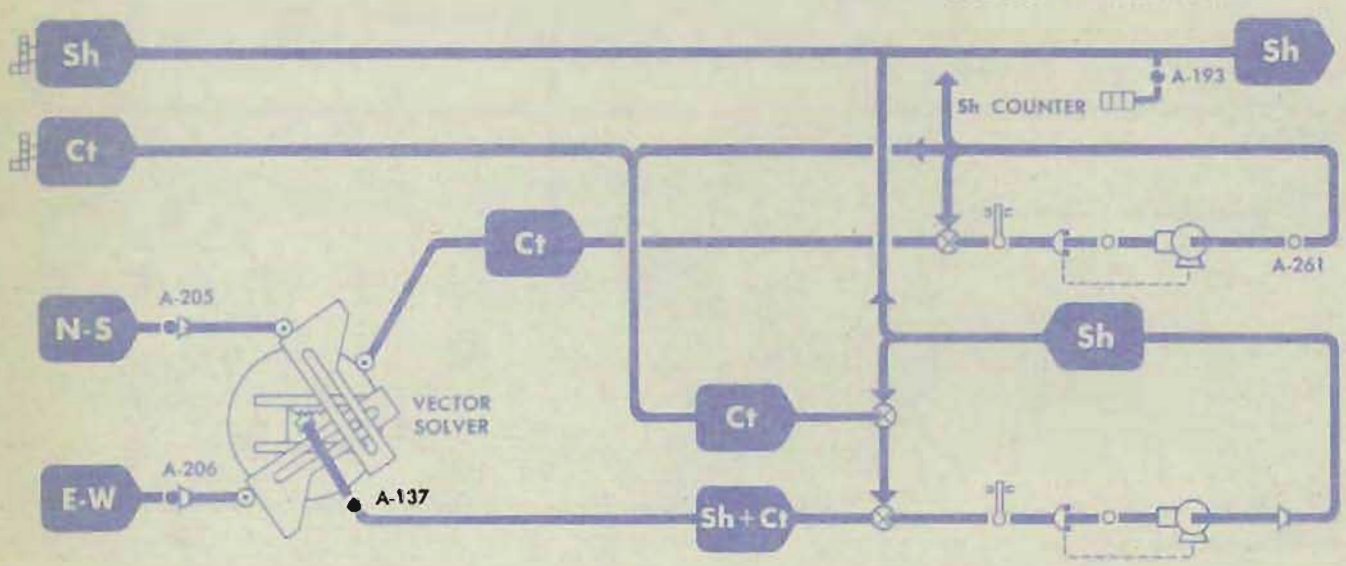
Do not increase *Sh* until A-137 is adjusted. If A-137 is out of adjustment, the *Sh* speed pin rack may drive out of mesh with its pinion.

Check

Set *Sh* at 0 knots and wedge the line. The speed pin of the vector solver should be at its zero position, so that an input of *Ct* causes no motion of either rack.
Turn *A* through 360°.
The N-S rack can be checked for motion by eye.

Adjustment

If there is any motion of the N-S rack:
Set *B* at 0° by setting *Co* and *Br* at 0, and wedge the lines.
Set *Sh* at 0 knots and wedge the line.
Set *A* at 270°.
Make matching marks on the N-S rack of the vector solver and the rail above it. Turn *A* to 0°.
Loosen A-137 and turn the spur gear above it to rematch the marks.
Tighten A-137 and recheck by watching the N-S rack for motion when *A* is turned through 360°.
Remove the wedges.
Readjust A-205 and A-206.

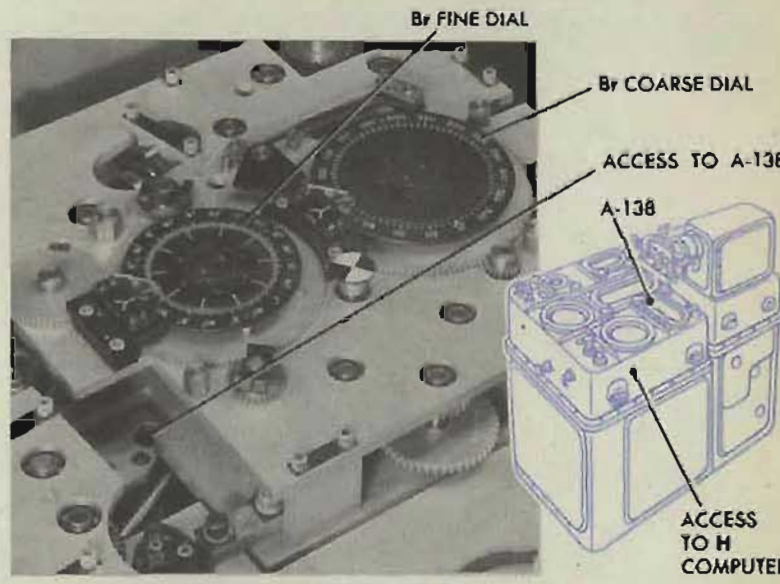


A-138 HEIGHT COMPUTER to cR DIALS

Location

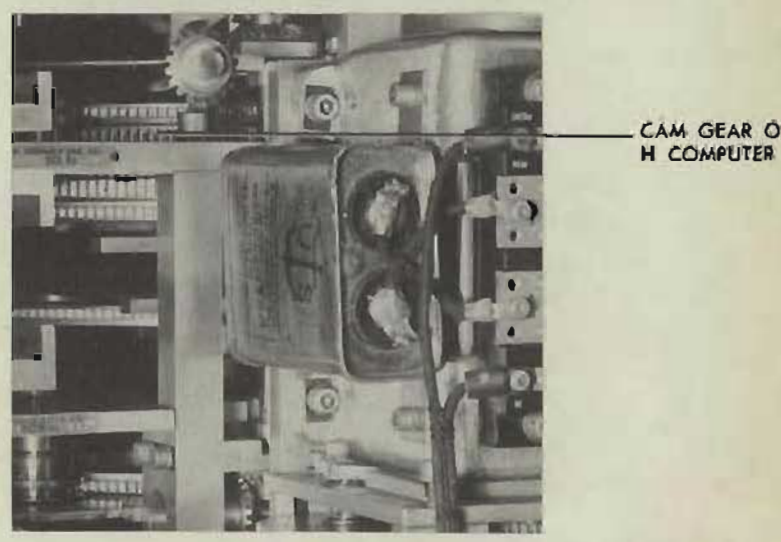
A-138 is under cover 1, at the left front edge of the fine *Br* dial.

To reach A-138, remove the *Br* dial mask. A-138 can be seen and reached through a small access hole near the front of the index on the fine *Br* dial.



Check

Set *E* at 30°.
Set *cR* at 8000 yards.
The *H* dials should read 12,000 feet.



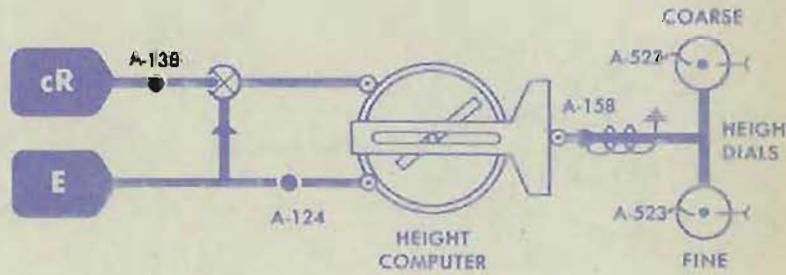
Adjustment

If the *H* dials do not read 12,000 feet, make A-138 slip-tight. Use a gear pusher to turn the height computer cam until the *H* dials read 12,000. The height computer is the top component solver in the relative motion component solver group.

Tighten A-138 and recheck at the values of *cR* given in the table. Set *cR* on these values from both an increasing and a decreasing direction to check for spread of error due to lost motion.

H CHECK VALUES

cR	*E*	*H*
2,000 yards	30°	3,000 feet
10,000 yards	30°	15,000 feet
30,000 yards	30°	45,000 feet



Check A-522 and A-523.

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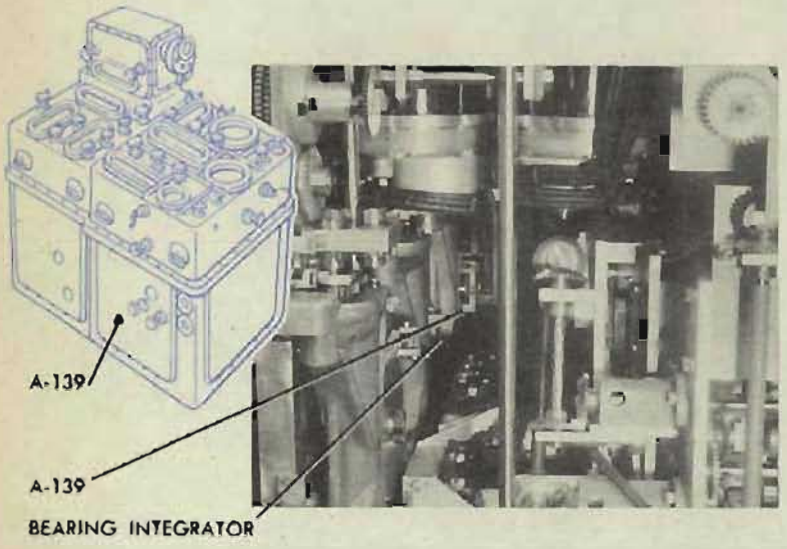
A-139 and A-140 BEARING INTEGRATOR to RdBs LINE



Location

A-139 is under cover 3, on the spur gear of the carriage input to the bearing integrator. A-140 is to the rear of A-139, under cover 5.

A-139 is the vernier adjustment screw. A-140 is the coarse adjustment clamp.

Check

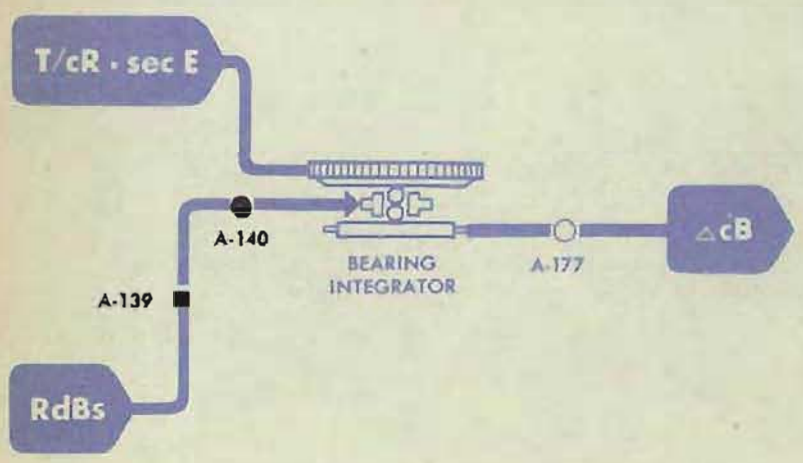
Turn the power ON.

Set *So* and *Sh* at 0 knots.
Set *A* at 0°.
Set *cR* at 5000 yards.
Set *Br* at 0°.
The *RdBs* line is now at its zero position.
The carriage of the bearing integrator should be at the center of the disk.
Start the time motor to rotate the disk.
There should be no motion of the bearing integrator roller while the disk is turning.

Adjustment

If there is any motion of the integrator roller, check A-140. If it is loose, push the integrator carriage to the approximate center and tighten A-140. Loosen the locking screw of A-139 and turn the vernier adjustment screw until there is no movement of the output roller.

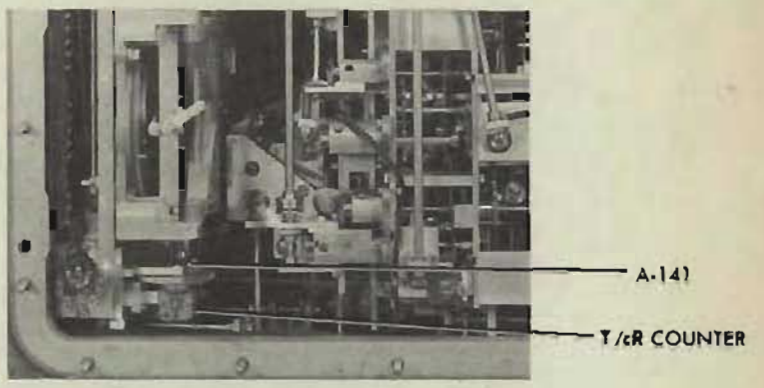
Tighten the locking screw and recheck.
Recheck the bearing B tests.



A-141 ASSEMBLY CLAMP

Location

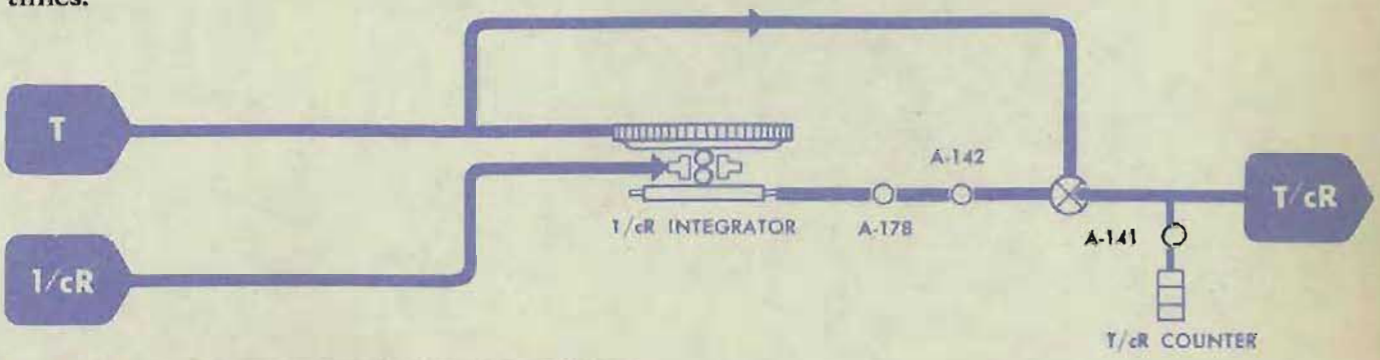
A-141 is under cover 3, on the gear meshing with the T/cR counter gear. On later instruments the gear on which A-141 is mounted slides out of mesh with the counter gear.



Check

If a sliding gear is provided, A-141 should be tightened with the gear out of mesh except while the integrators are being timed.

On the earlier instruments, A-141 should be tightened in mesh at all times.



A-142 ASSEMBLY CLAMP

Location

A-142 is under cover 5, and is one of two clamps on the roller output coupling of the $1/cR$ integrator.

Check

See the readjustment procedure of A-178.

A-143 ASSEMBLY CLAMP

Location

A-143 is under cover 3, and is one of the two clamps on the roller output coupling of the sec E integrator.

Check

See the readjustment procedure of A-176.

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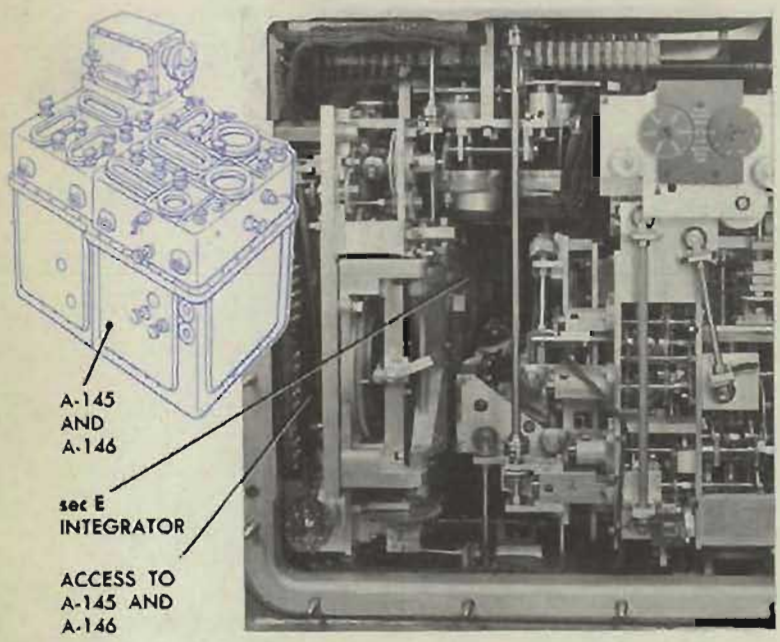
A-145 and A-146 SECANT E CAM to E DIALS



Location

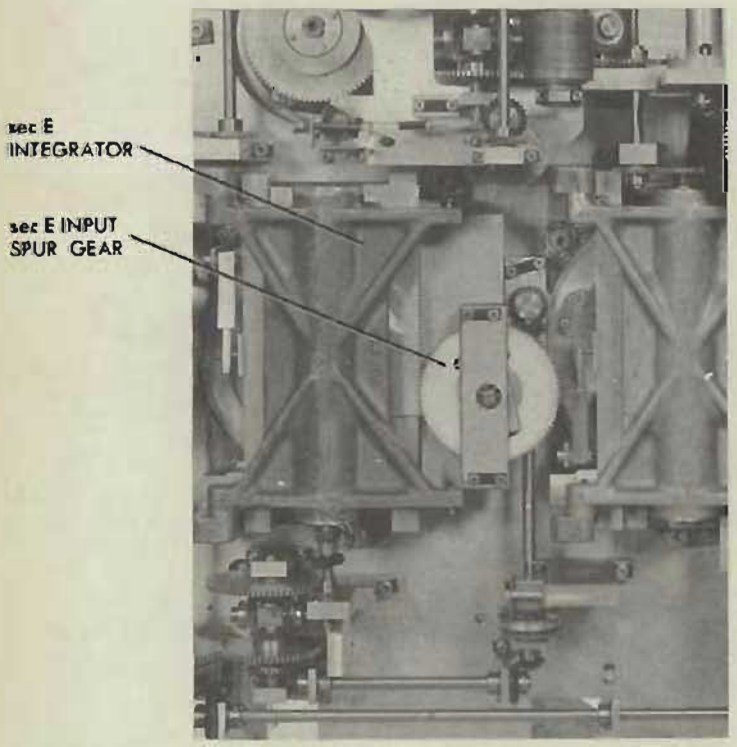
A-145 and A-146 are under cover 3, at the lower rear, behind the sec *E* cam.

A-145 is the vernier adjustment screw. A-146 is the coarse adjustment clamp. (A-210 is used in place of A-146 in earlier instruments.)

Note

In instruments with Ser. Nos. 389 and lower, A-146 is an assembly clamp. Check that it is tight. See A-210.

In instruments with Ser. Nos. 390 and higher, A-146 is an adjustment clamp.



INTEGRATOR ASSEMBLY REMOVED FROM THE COMPUTER

Check

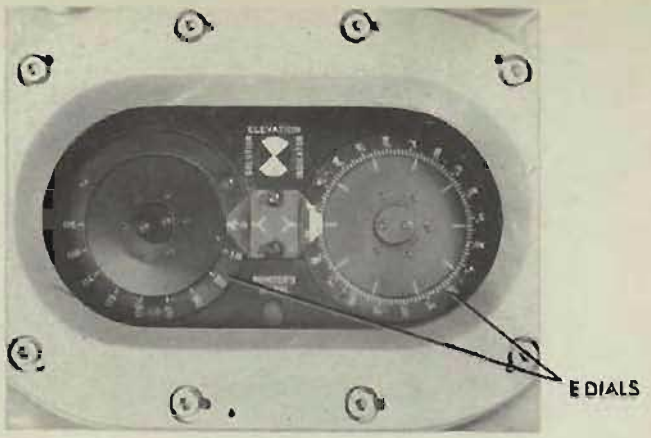
Increase *E* until the sec *E* cam follower just ceases to move. This is the start of the outer constant radius of the cam.

Motion of the follower can be observed on the spur gear of the carriage input to the sec *E* integrator.

The sec *E* cam is then at a position where further movement of the cam does not move the cam follower.
Note the reading of the *E* dials.

Increase *E* above 80°.
Decrease *E* steadily until the follower just starts to move.
Note the reading of the *E* dials.

The average of the two readings should be 71° 12′.



Adjustment

If the average reading of *E* is not 71° 12′, first check A-146 (A-210 in earlier instruments). If it is loose, set *E* at 71° 12′ and turn the cam until the follower just starts to move. Tighten A-146.

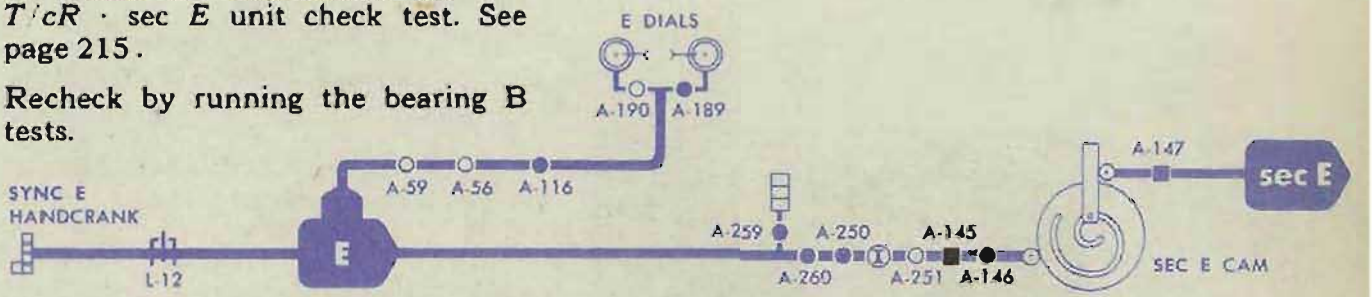
If A-146 is tight but the average reading of *E* is not 71° 12′, loosen the A-145 locking screw and turn the A-145 vernier adjustment screw until the average reading is correct.

Tighten the locking screw and recheck.

Note

This is a preliminary adjustment. To refine the adjustment run the *T cR* · sec *E* unit check test. See page 215.

Recheck by running the bearing B tests.



A-147 SECANT E INTEGRATOR to SECANT E CAM

Location

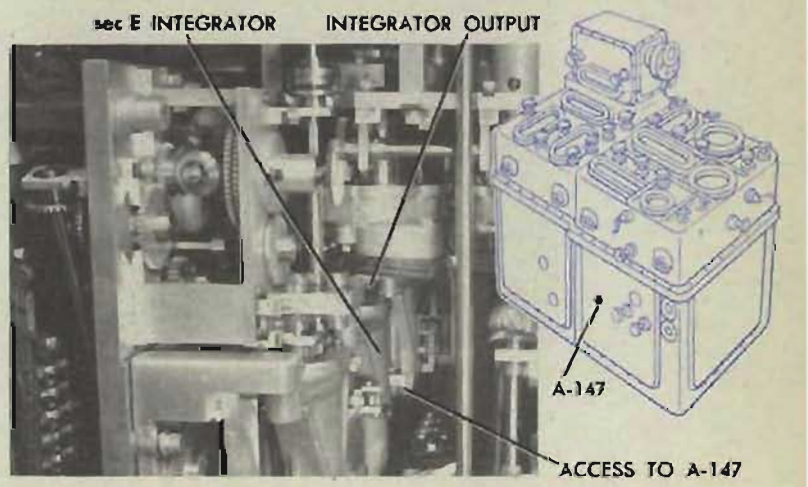
A-147 is under cover 3, 16 inches in, on the sec *E* integrator carriage.

A-147 is a vernier adjustment screw.

Check

Set *E* at 60° 49′. The sec *E* integrator carriage should be at the center of the disk.

Turn the power ON.
Turn the time motor ON.

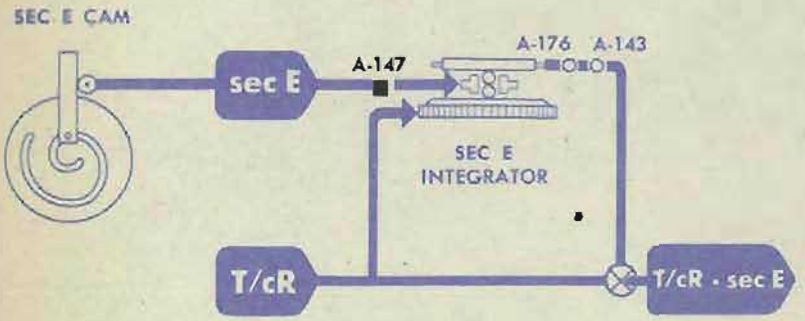


There should be no integrator roller output while the disk is turning.

Adjustment

If there is any integrator roller output, loosen the locking screw and turn the A-147 vernier adjustment screw until there is no output.

Tighten the locking screw and recheck.

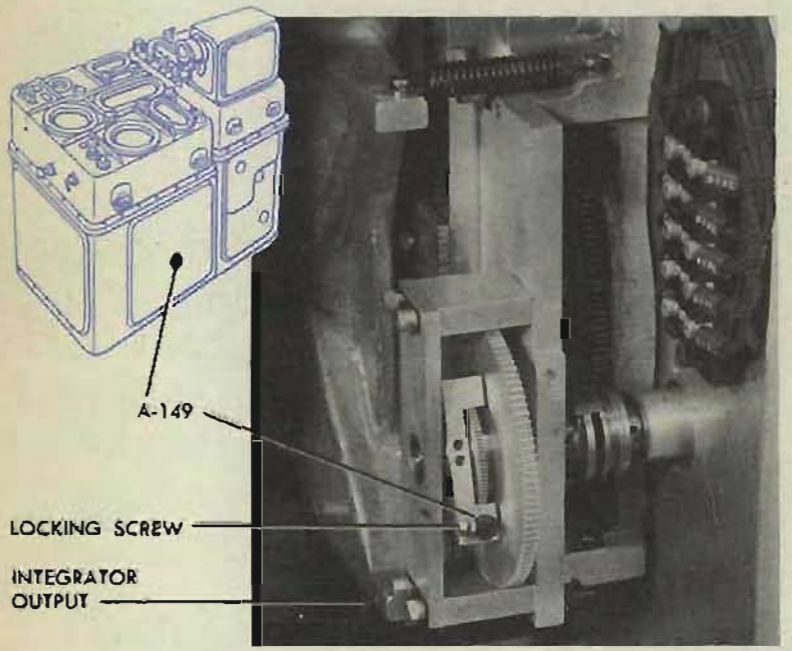


Note

This is a preliminary adjustment. To refine the adjustment, run the $T/cR \cdot \sec E$ unit check test. See page 215.

Recheck by running the bearing B tests.

A-149 and A-150 1/cR INTEGRATOR to 1/cR CAM



Location

A-149 and A-150 are under cover 5, on the carriage input to the $1/cR$ integrator.

A-149 is the vernier adjustment screw. A-150 is the coarse adjustment clamp.

Note

A-150 is omitted on instruments with Ser. Nos. 221 and higher.

Check

Set cR at 2790 yards by turning the jR handcrank. The $1/cR$ integrator carriage should be at the center of the disk.
Turn the power ON.

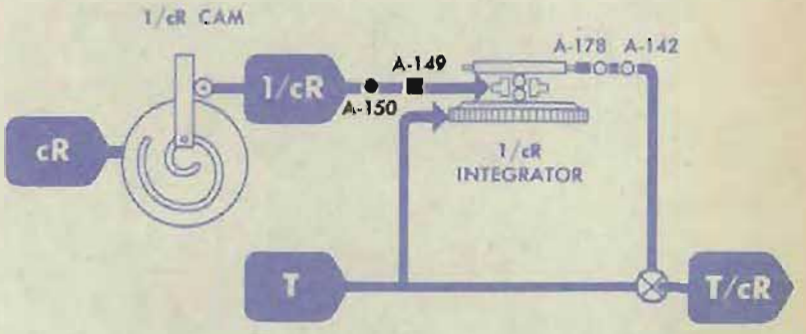
Set dR at 0 with the handcrank IN.
Turn the time motor ON.
There should be no integrator roller output while the disk is turning.

Adjustment

If there is any integrator roller output, loosen the locking screw and turn the A-149 vernier adjustment screw until there is no output. The integrator carriage is now at the center of the disk.

Tighten the locking screw and recheck.

In the older instruments which have A-150, check whether A-150 is loose. If A-150 is loose, push the integrator to the center of the disk, and tighten the clamp. Then adjust A-149.



Note

This is a preliminary adjustment. To refine the adjustment, run the *T/cR* unit check test. See page 212.

Recheck by running the elevation and bearing B tests.

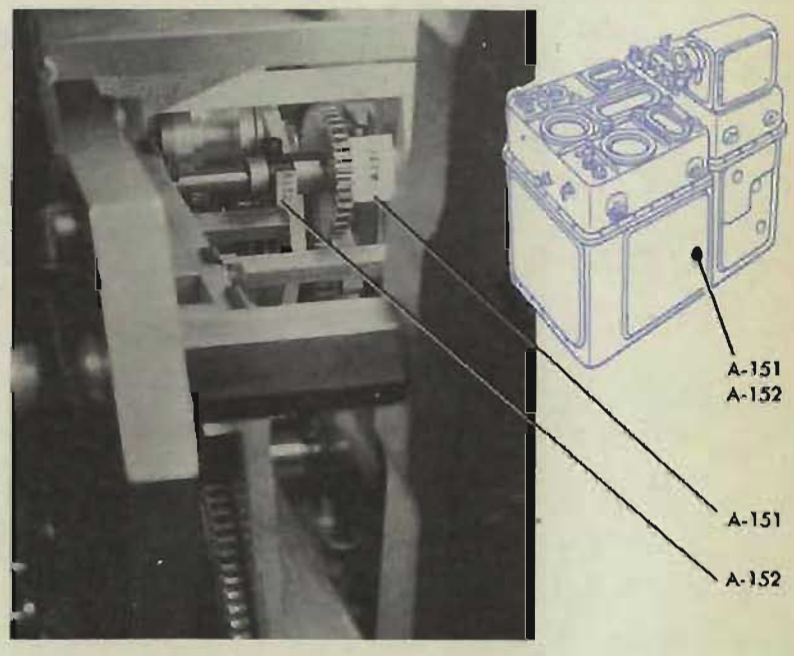
A-151 and A-152 — 1/cR CAM to cR DIALS

Location

A-151 and A-152 are under cover 5, to the right of the *cR* intermittent drive.

A-151 is the vernier adjustment screw.

A-152 is the coarse adjustment clamp.



Check

Set *cR* above 1500 yards.

Decrease it steadily until the *1/cR* cam follower just *ceases* to move.

This is the start of the outer constant radius of the cam.

Motion of the follower can be observed on the three-inch spur gear toward the front of the *1/cR* cam.

The cam should be positioned so that further movement does not move the cam follower.

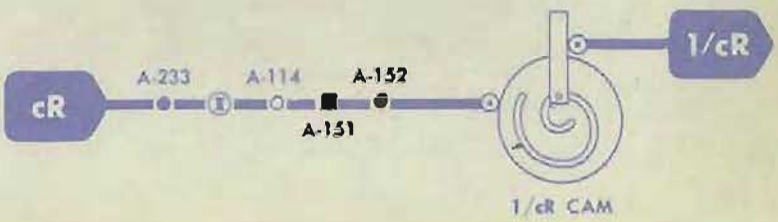
Note the reading of the *cR* dials.

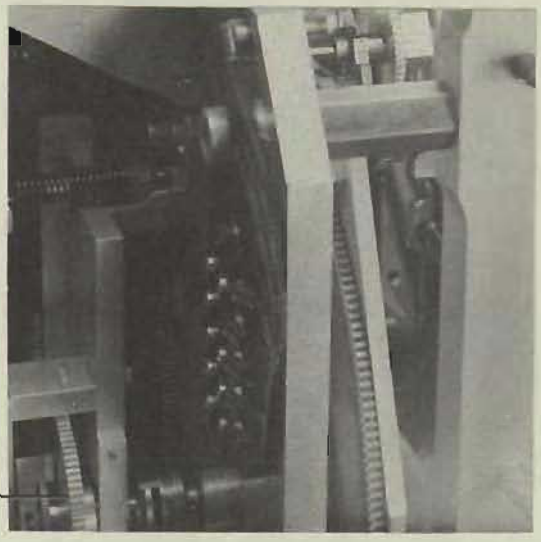
Decrease *cR* to 0.

Increase *cR* steadily until the follower just starts to move.

Note the reading of the *cR* dials.

The average reading should be 1500 yards.





Adjustment

If the average reading of *cR* is not 1500 yards, check A-152. If it is loose, set *cR* at exactly 1500 yards and move the cam by hand until the follower just starts to move. Tighten A-152.

If A-152 is tight and the average reading is not 1500 yards, loosen the A-151 locking screw and turn the A-151 vernier adjustment screw until the average reading is correct. Then tighten the locking screw and recheck.

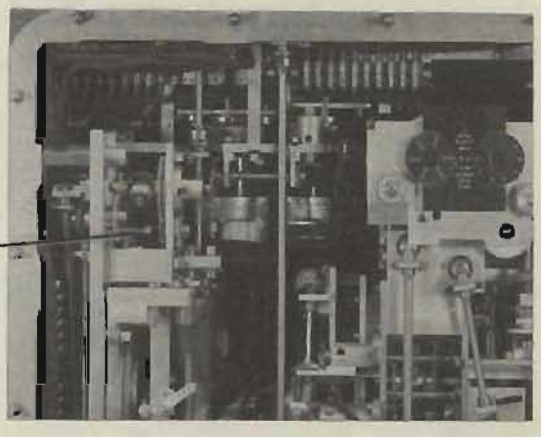
Check A-149.

Note

This is a preliminary adjustment. To refine the adjustment, run the *T/cR* unit check test. See page 212.

Recheck by running the bearing and elevation B tests.

A-153 ASSEMBLY CLAMP

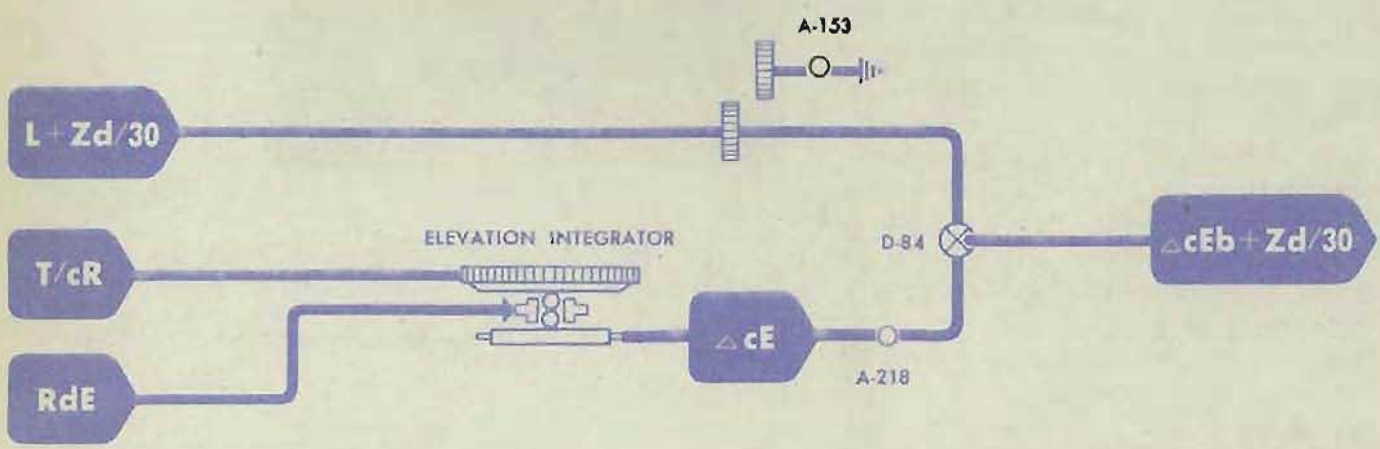


Location

A-153 is under cover 3, at the upper left.

Check

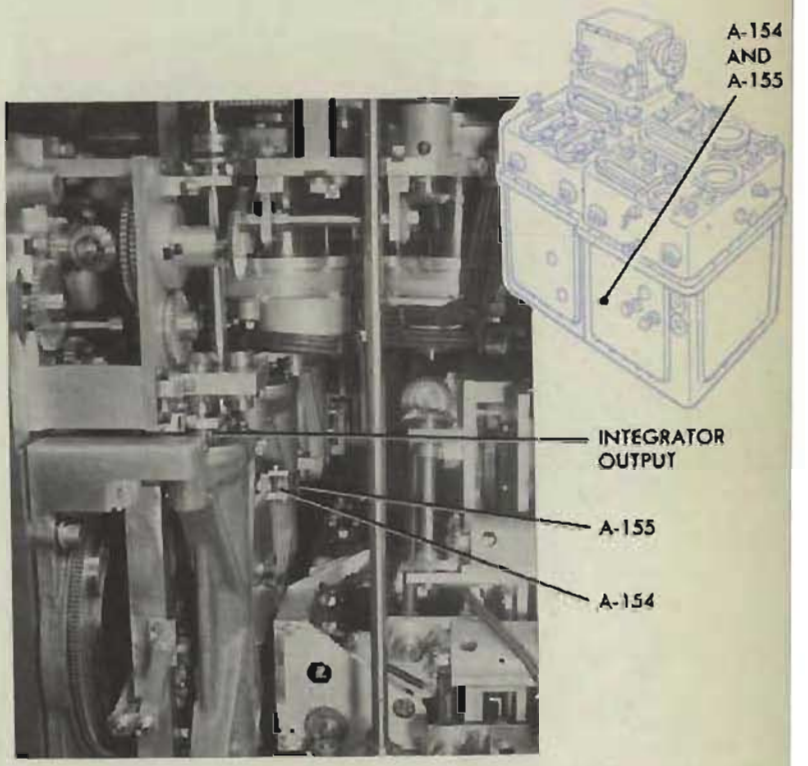
On all computers other than Mod 0, A-153 should be tightened *out of mesh*. On Mod 0 it should be tightened when the gear on which it is mounted is *in mesh* with D-84.



A-154 and A-155 ELEVATION INTEGRATOR to RdE LINE

Location

A-154 and A-155 are under cover 3.
A-154 is the vernier adjustment screw.
A-155 is the coarse adjustment clamp.



Check

Turn the power ON.

Set *dH*, *Sh*, and *So* at 0 knots.
The *RdE* line is now at its zero position.

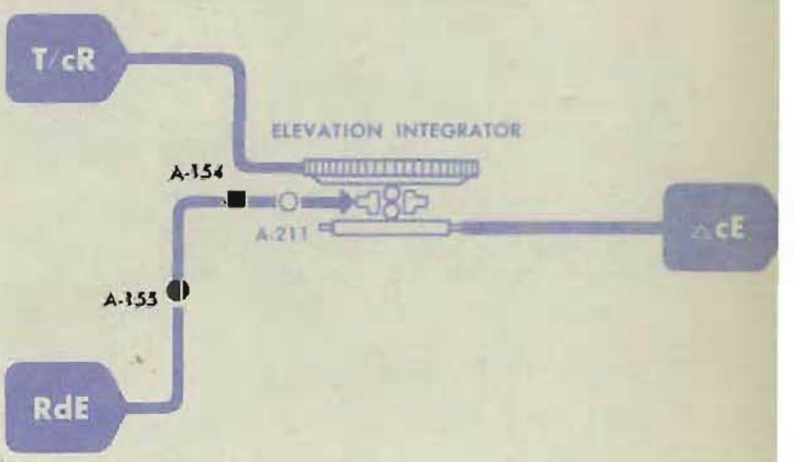
The elevation integrator carriage should be at the center of the disk.
Set *cR* at 5000 yards.
Turn the time motor ON.
There should be no integrator roller output while the disk is turning.

Adjustment

If there is any movement of the integrator output roller, loosen A-155, and push the carriage of the integrator to the approximate center of the disk. Tighten A-155. Then loosen the locking screw of A-154 and turn the vernier adjustment screw until there is no roller output.

Tighten the locking screw, and recheck by bringing *dH* on zero from both directions and splitting any error.

Recheck by running the elevation B tests.



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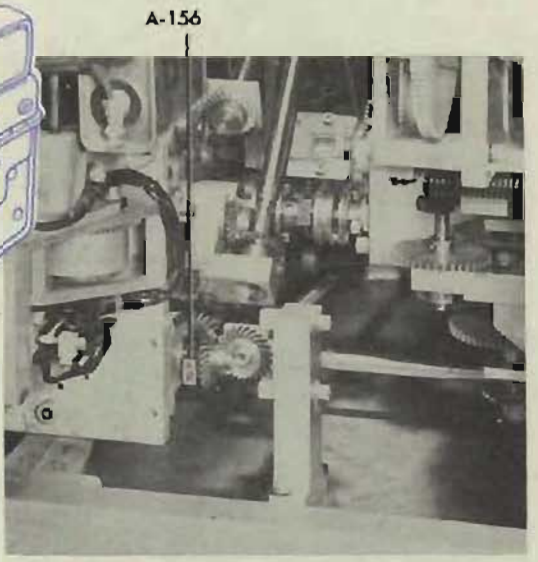
A-156 PARALLAX COMPONENT SOLVER to R2 COUNTER



Location

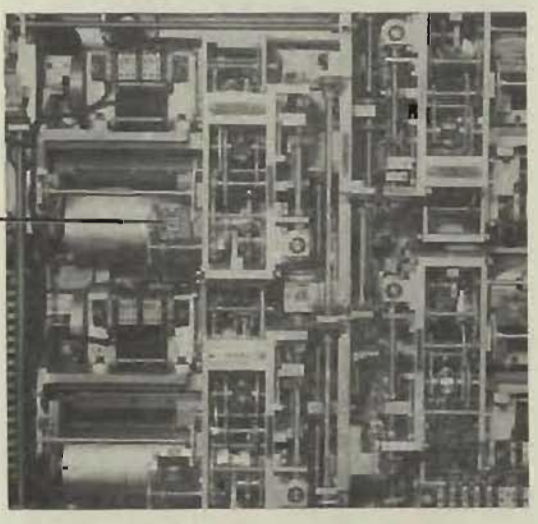
A-156 is under cover 5, at the lower right of the *R2* follow-up.

Check

Set *B'gr* and *B'r* at 90°.
Set *E2* at 0°. Use the sync *E* hand-crank in the CENTER position.

Set *L* at 2000′ on the computer dials. Set the *R2* counter of the *Tf* ballistic computer at 1560 yards and wedge the line.

The *Ph* dial should read 3°40′ RIGHT.

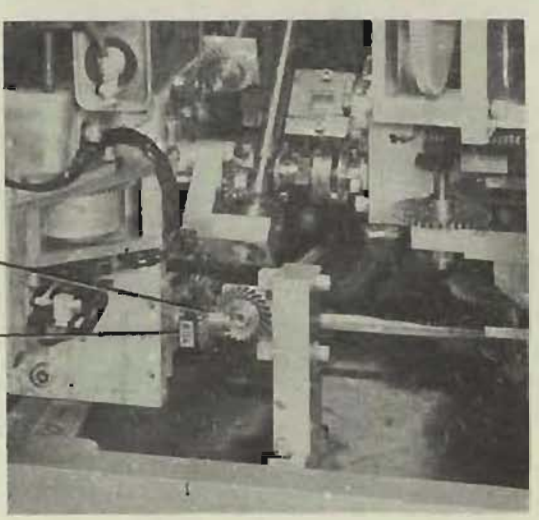


Adjustment

If the *Ph* dial does not read 3°40′ RIGHT, make A-156 slip-tight. Slipping through A-156, turn the bevel gear at the right of the clamp until the dial reading is correct. Split any lost motion.

Tighten A-156, and recheck.
With *B'gr* and *B'r* at 270°, the *Ph* dial should read 3°40′ LEFT.

Readjust A-3.
Remove wedges.
Readjust A-92.



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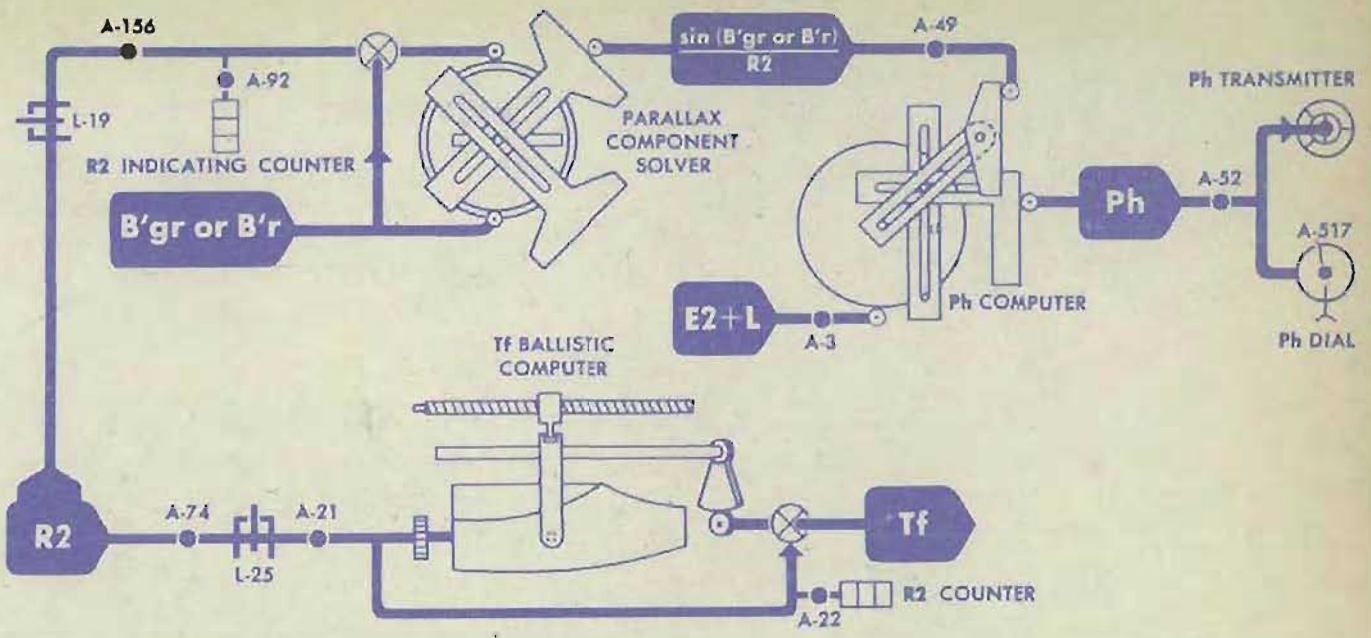
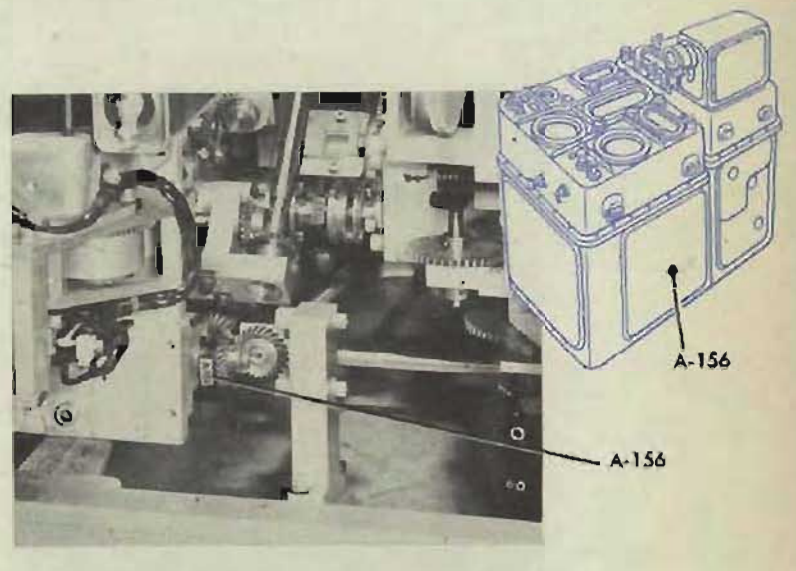


A-156 R2 INTERMITTENT DRIVE to R2 COUNTER (Mods 8 and 12)

Location

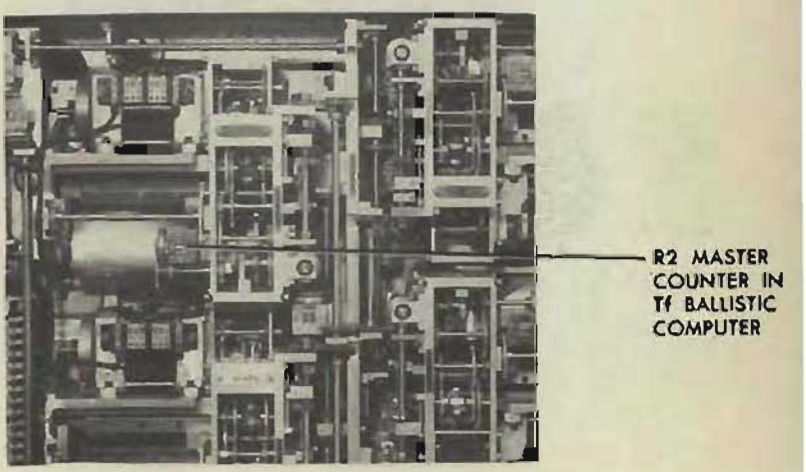
A-156 is under cover 5, at the lower right of the *R2* follow-up.

The *R2* intermittent drive is under cover 7, behind the left side of the lower right terminal block.



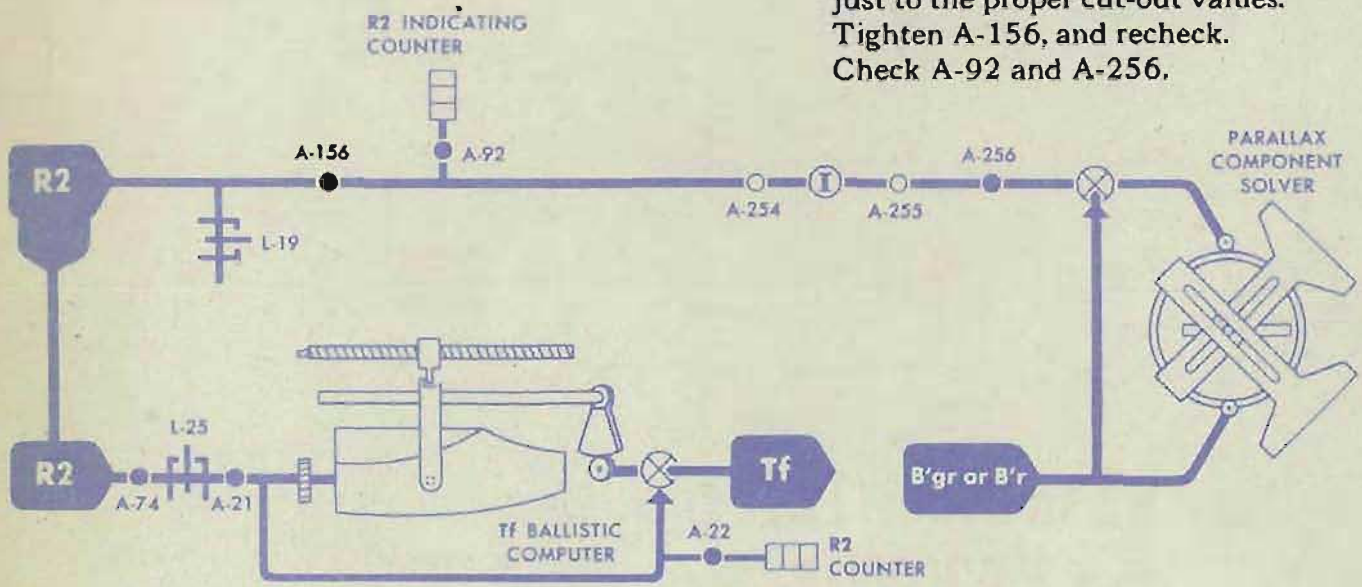
Check

The *R2* intermittent drive should have its cut-out points at 1500 and 18,900 yards.

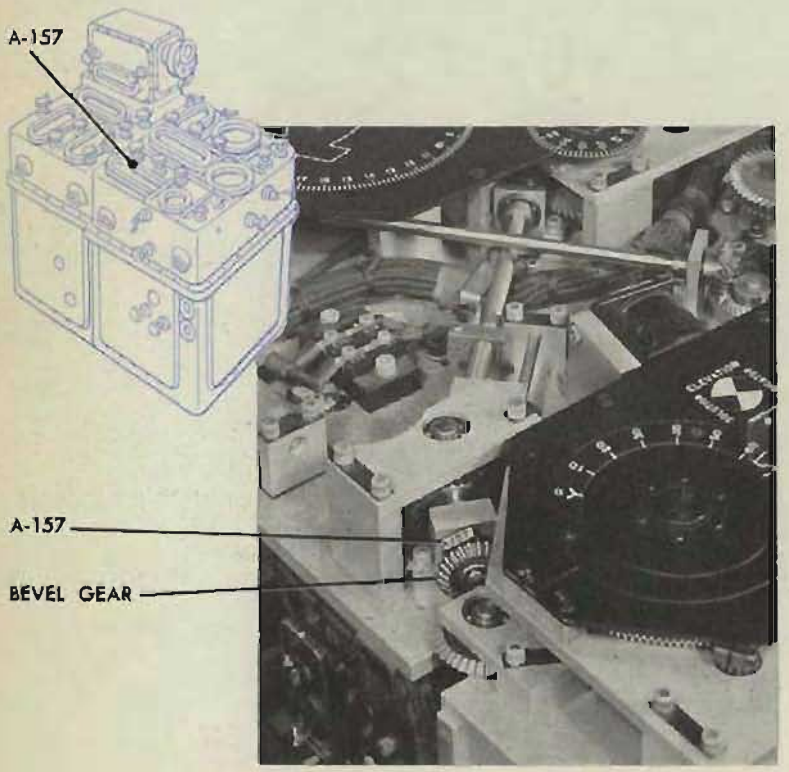


Adjustment

If the cut-out points are not 1500 and 18,900 yards, loosen A-156 and adjust to the proper cut-out values.
Tighten A-156, and recheck.
Check A-92 and A-256.



A-157 HORIZONTAL WIND COMPONENT SOLVER to Sw DIAL



Location

A-157 is under cover 1, to the left of the *Sw* input gear.

Check

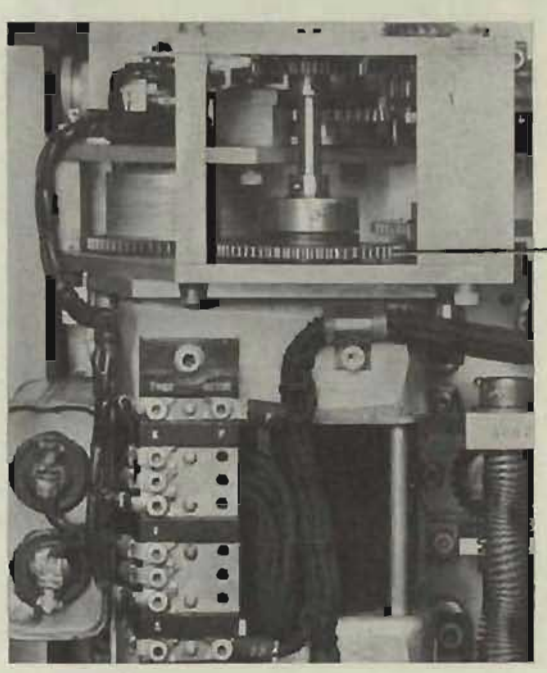
Turn the power ON.

Set *B* at 0°.
Set *Ds* at 500 mils.
Set *Sw* at 0 knots.
Set *Bw* at 90°.

Mark the *Ywgr* follow-up output gearing for use as an indicator.

Turn the *Bw* input gear until *Bw* reads 0°.
The output racks of the horizontal wind component solver should not move.

Movement of the *Ywg* output rack can be checked by observing the marks on the *Ywgr* follow-up output gear.



Adjustment

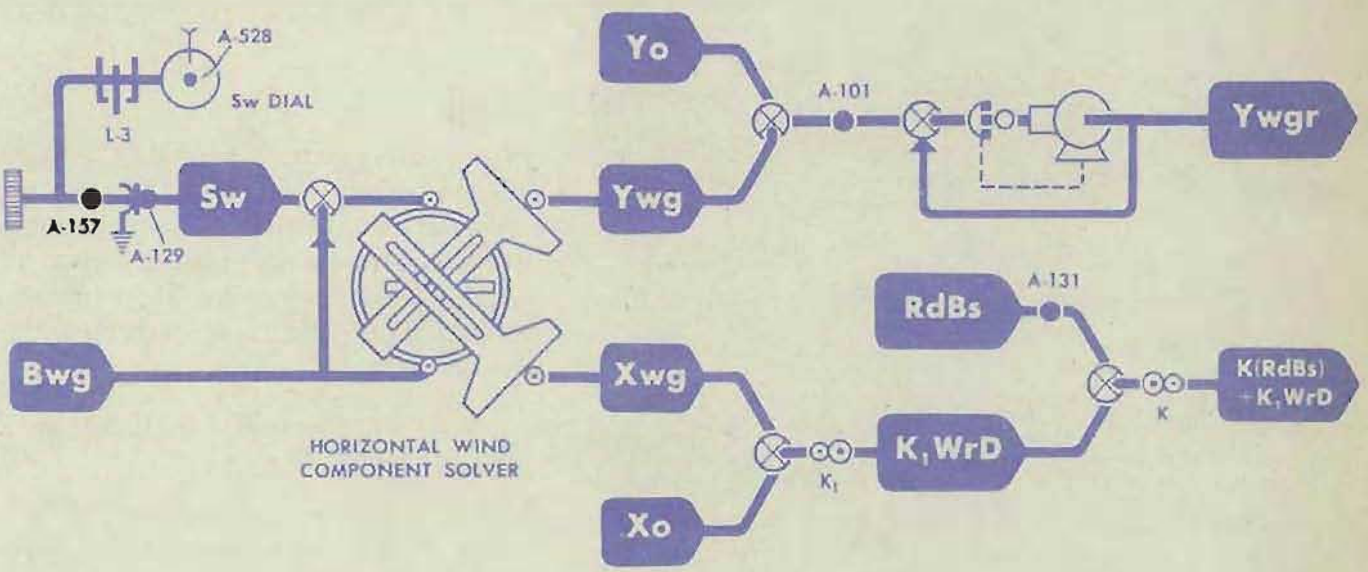
If there is any output, make A-157 slip-tight.
Set *Sw* at 0 knots, and *Bw* at 0 °.
Turn the bevel gear at the rear of the clamp until the *Ywgr* indicating marks match.

Tighten A-157.

Recheck

Set *Sw* at 0 knots.
Turn *Bw* through 360 °.
The output gearing of the *Ywgr* follow-up should not move more than one tooth.

Check A-101, A-131 and A-229.



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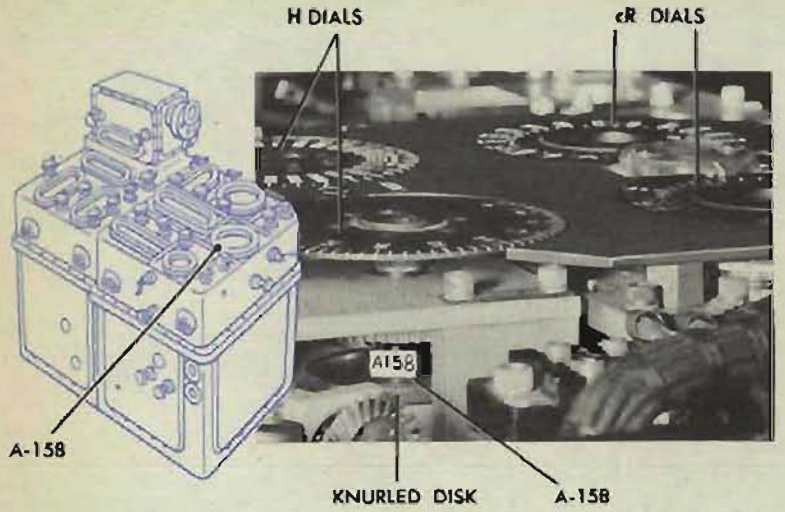
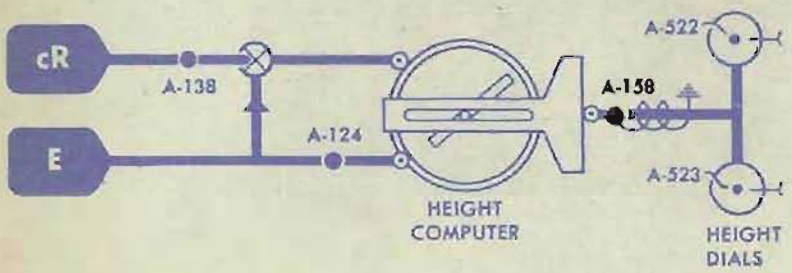
A-158 TAKE-UP SPRING ON HEIGHT LINE





Location

A-158 is under cover 1, below the coarse *H* dial.

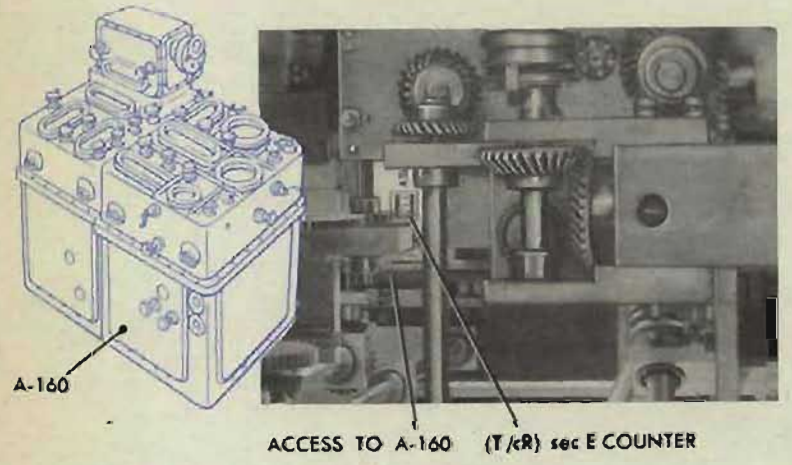
The spring should always have sufficient tension to remove the lost motion from the mechanisms driving the *H* dials.

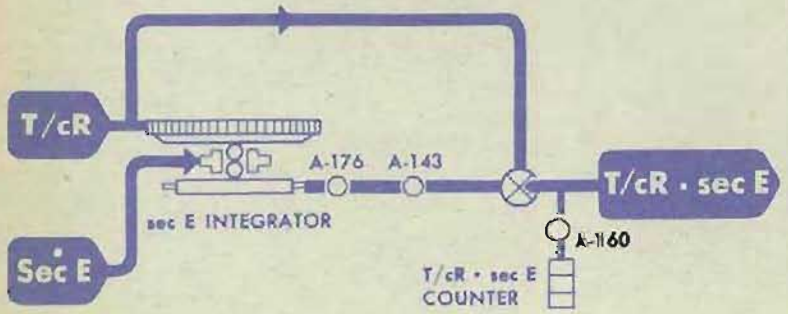
Adjustment

Set *E* at its lower limit.
Set *cR* at its upper limit.
Slip-tighten A-158. Turn the knurled disk below the clamp clockwise until the spring is fully wound.
Tighten A-158.

Check A-522, A-523, and A-124.

A-160 ASSEMBLY CLAMP





Location

A-160 is under cover 3, on the gear meshing with the $(T/cR)\sec E$ counter. On later instruments, the gear on which A-160 is mounted may be slid out of mesh with the counter gear.

Check

If a sliding gear is provided, A-160 should be tightened with the gear out of mesh except while timing the integrators. Then it must be tightened in mesh. On the earlier instruments, A-160 should be tightened with the gears meshed.

Adjustment

Readjust A-160 according to the check. No further adjustment is necessary.

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A-161 FRICTION DRIVE ON TIME MOTOR REGULATOR

Location

A-161 is under cover 1, at the right front, on the input gear of the time motor regulator.

Check

Turn the power OFF.

Disconnect leads TM2 and TMR from the regulator, loosen the three screws holding the unit, and remove it from the computer.

Check the friction by turning the input gear. The friction should be tight enough to drive the regulator when the gear is turned counterclockwise as viewed from the bottom. It should be loose enough, however, to slip easily when the gear is turned in the opposite direction.

Adjustment

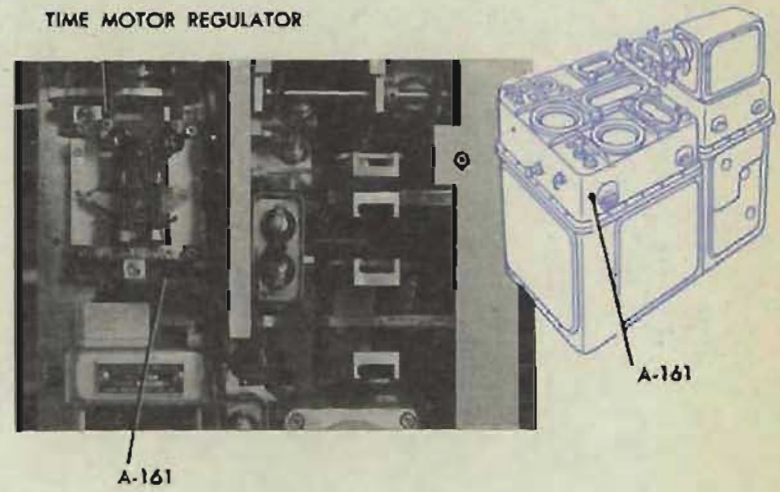
If the friction is not adjusted properly, loosen A-161 and turn the clamp to vary the friction as required.

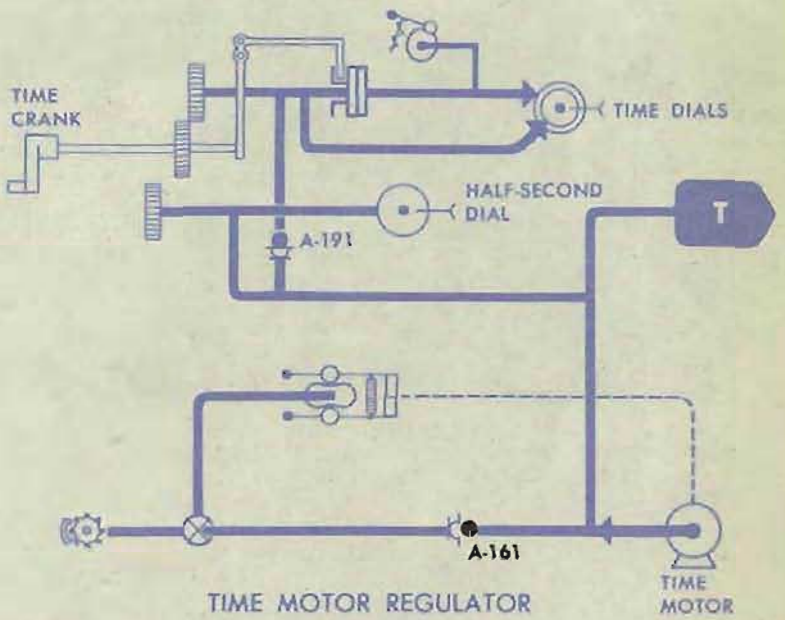
Tighten the screw and recheck.

Replace the regulator in the computer, and check that the gears mesh properly and that the regulator input gear has sufficient side clearance.

CAUTION

If this friction is too tight, turning the time crank counterclockwise in the OUT position will damage the regulator mechanism.





A-162 TIME FRICTION DRIVE

Note

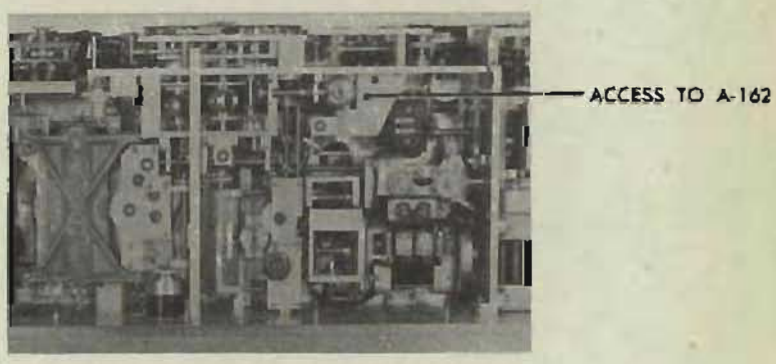
A-162 does not exist on instruments with Ser. Nos. 101 and higher. A-162 was made inoperative on Ser. Nos. 100 and lower by OD 4185.

Location

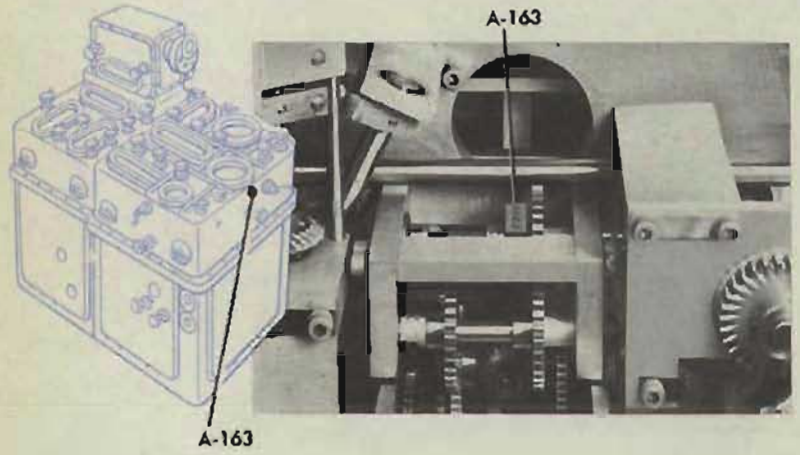
A-162 is under cover 1, at the front.

Adjustment

Tighten the screw on A-162, leaving the friction loose.



A-163 SYNCHRONIZING THE dR FOLLOW-UP



Location

A-163 is under cover 1, on the input gearing of the *dR* follow-up.

CAUTION

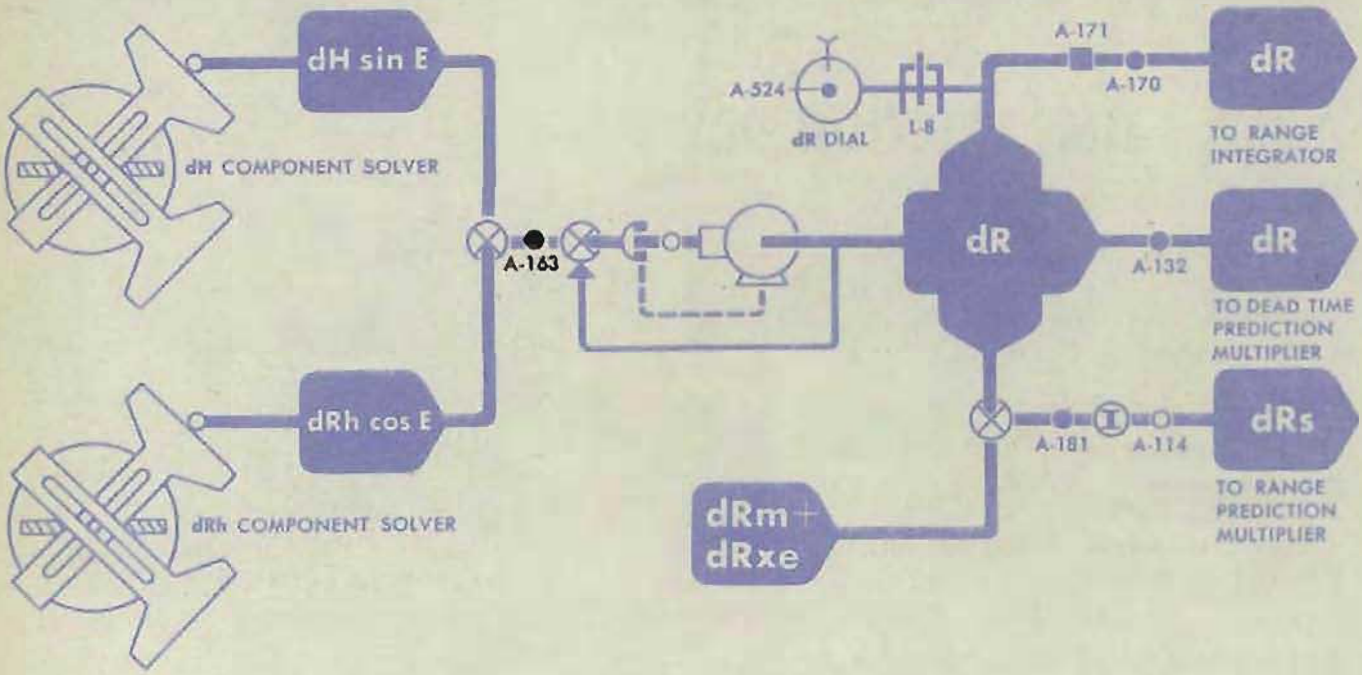
With the power OFF, turn the *dR* follow-up output manually from limit to limit. If any restriction is felt, A-170, A-132, or A-135 may be upset. Determine the cause of the restriction, and loosen the clamp causing it.

Check

Remove the KRR lead on the target angle switch.
Turn the power ON.
Set *So*, *Sh*, and *dH* at 0 knots.
Set *Br* at 270°.
Set *A* at 90°.
Wedge all lines.
The *dR* dial should read 0 knots.

Adjustment

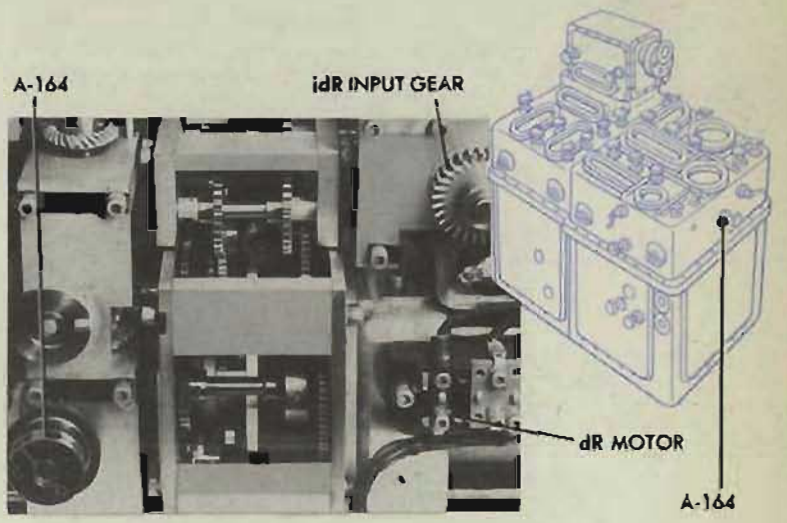
If the *dR* dial does not read 0 knots, slip-tighten A-163. Turn the spur gear to the right of A-163 until the follow-up motor synchronizes with the *dR* dial at 0 knots.
Tighten A-163, and recheck.
Remove all wedges. Replace the KRR lead.
Readjust any loosened clamps.
Check A-171, A-132, and A-181.



A-164 jdR HOLDING FRICTION

Location

A-164 is located under cover 1, at the front center.



Check

This friction should be tight enough to prevent *jR* from backing out *jdR*, but not so tight as to overload the *jdR* motor during automatic range transmission.

Put the range correction integrator carriage in its uppermost position and wedge the range rate ratio line.

Turn *jR* to decrease *cR* to 0 yards.

The *jdR* friction should hold the *jdR* line motionless.

Run the synchronizing test of the range receiver, page 62.

Check that the *jdR* motor drives fast enough to synchronize within the prescribed time limit.

Adjustment

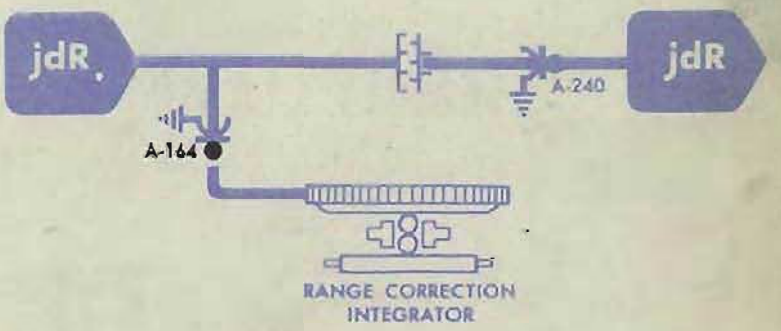
If both conditions under the check are not obtained, loosen A-164.

If the *jdR* line backs out, turn the clamp clockwise to increase the friction.

If the *jdR* motor drives too slowly, turn the clamp counterclockwise to decrease the friction.

Tighten A-164 and recheck.

Check A-240.



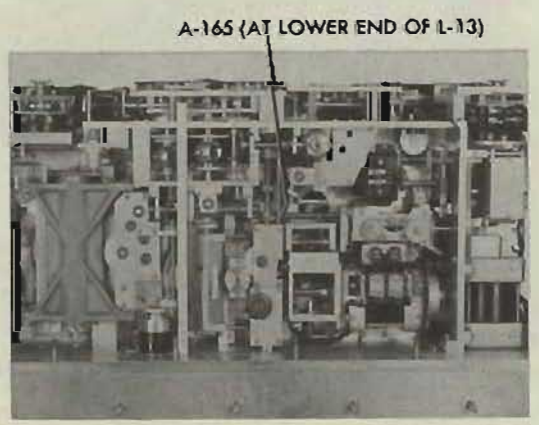
A-165 SPRING ON L-13

Note

A-165 does not exist on instruments with Ser. Nos. 101 and higher.

Location

A-165 is under cover 1, at the front.



Check

A-165 should be tight enough to hold L-13 at the lower limit.

Adjustment

If A-165 does not hold L-13 at the lower limit, loosen the screw. Turn the clamp clockwise to tighten the spring. Tighten the screw and recheck.

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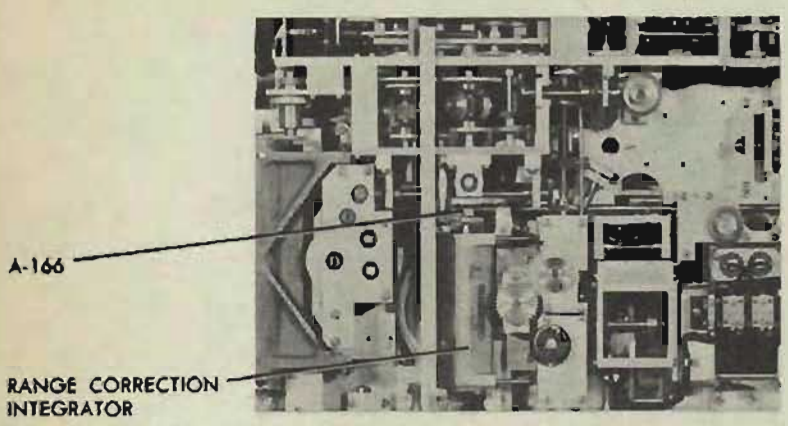
A-166 ASSEMBLY CLAMP



Location

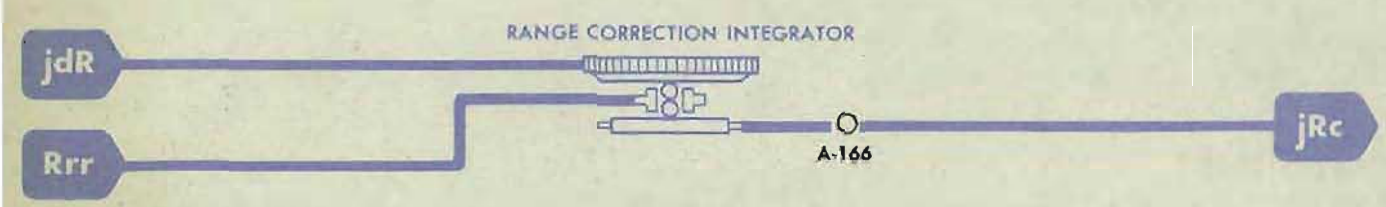
A-166 is under cover 1, at the front, on the output gear of the range correction integrator.

Check

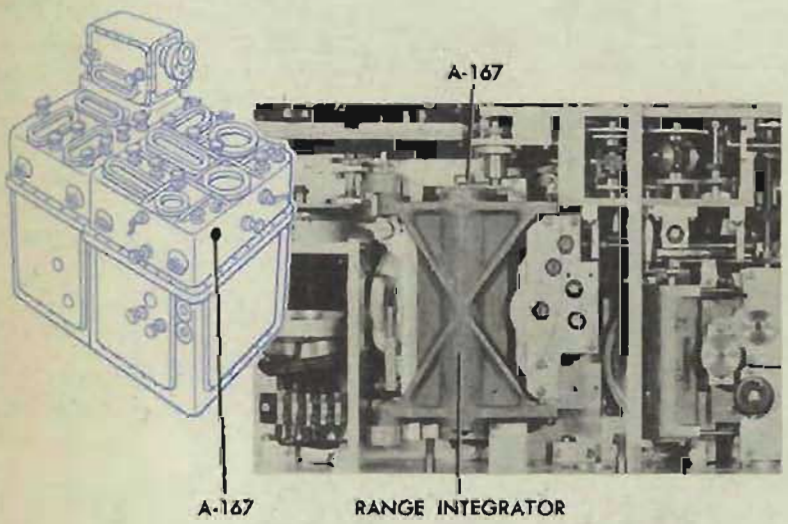
A-166 should be tight.

Adjustment

Tighten A-166. No further adjustment is necessary.



A-167 ASSEMBLY CLAMP



Location

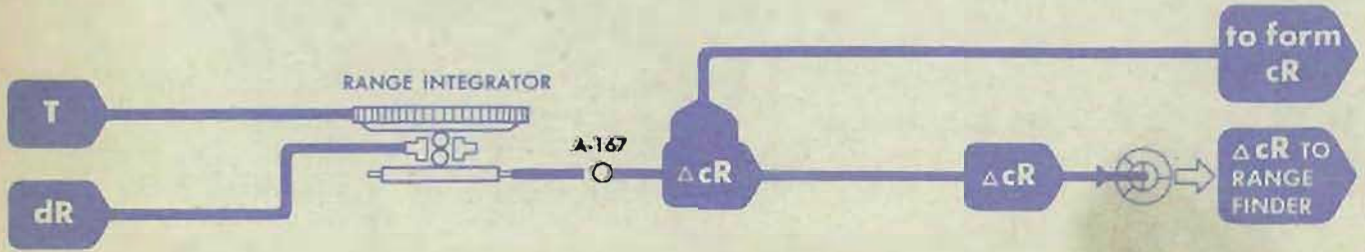
A-167 is under cover 1, at the front, on the output gear of the range integrator.

Check

A-167 should be tight.

Adjustment

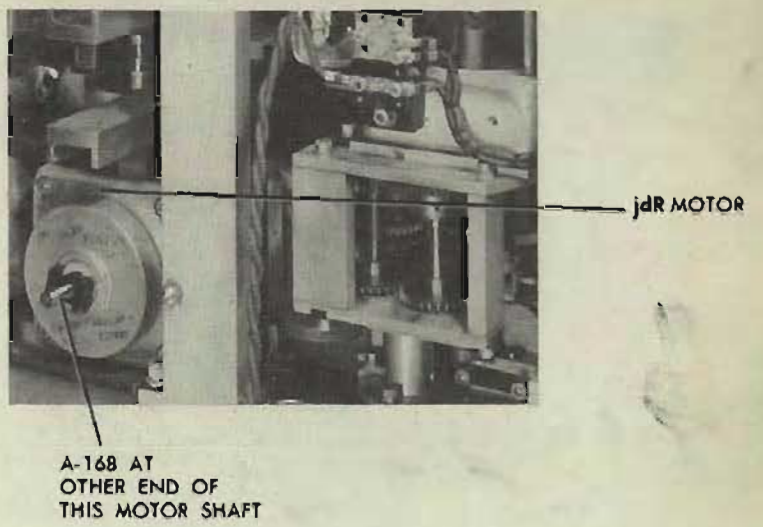
Tighten A-167. No further adjustment is necessary.



A-168 ASSEMBLY CLAMP

Location

A-168 is under cover 1, at the right front, on the pinion of the *jdR* motor. It can be reached only by removing the motor.



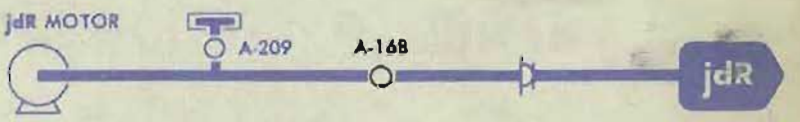
Check

If A-168 is loose, the energized servo may drive indefinitely, without turning the range line.

Adjustment

To remove the *jdR* servo motor, consult the section in this OP on removal of units.

Tighten A-168, and reinstall the *jdR* servo motor. No further adjustment is necessary.

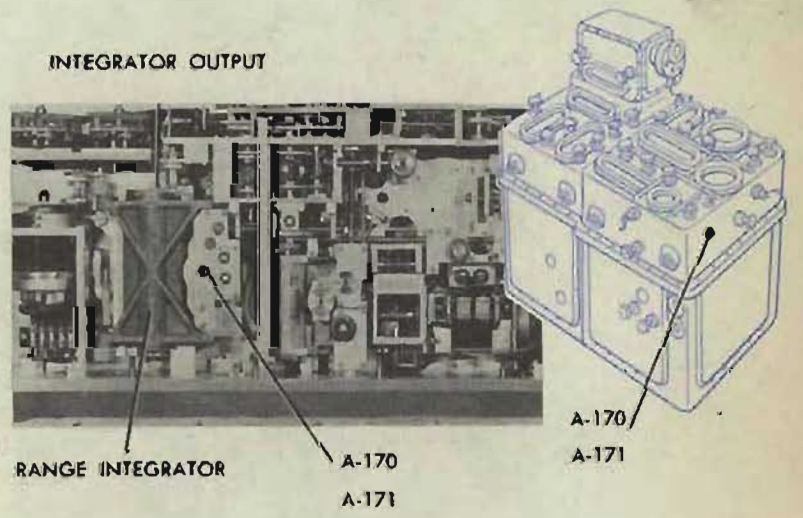


A-170 and A-171 RANGE INTEGRATOR to dR LINE

Location

A-170 and A-171 are under cover 1, behind the mounting plate to the right of the *dR* integrator.

A-170 is the coarse adjustment clamp. A-171 is the vernier adjustment.

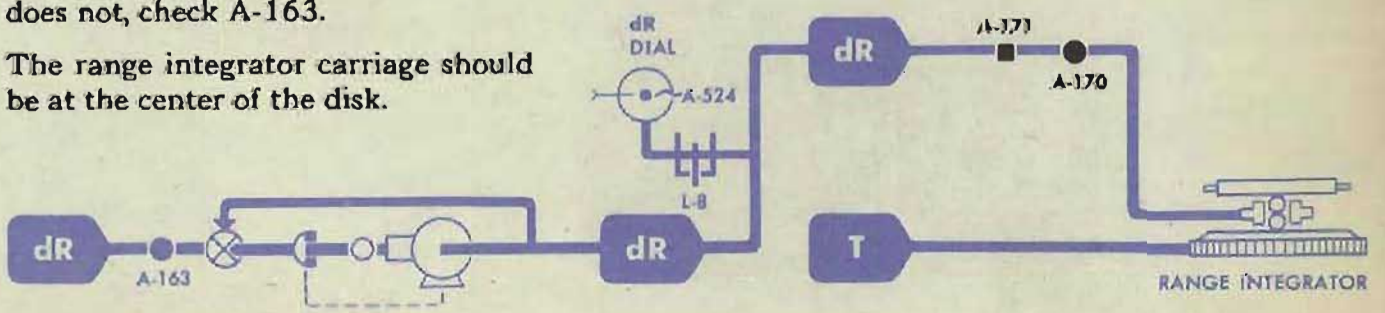


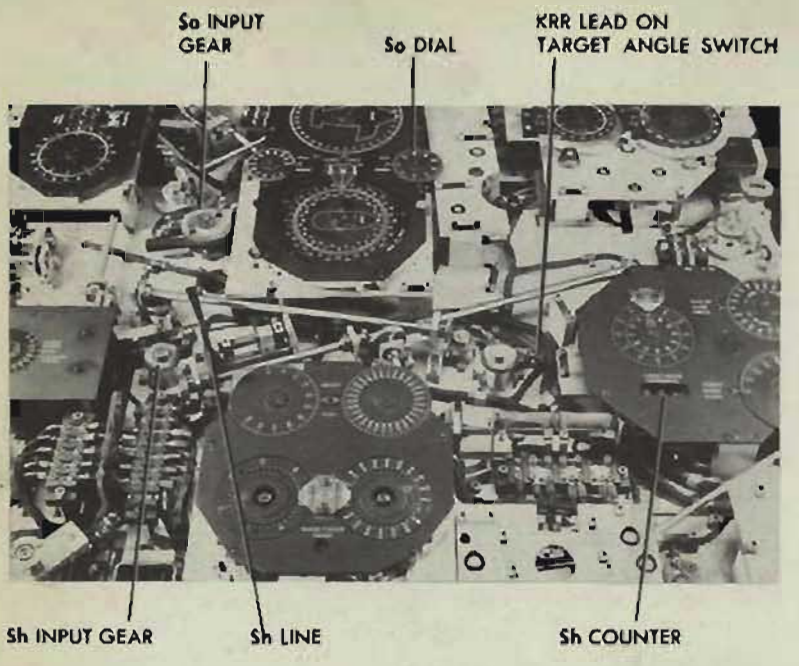
Check

Set *So*, *Sh*, and *dH* at 0 knots and wedge the lines.
Remove the KRR lead on the target angle switch.
Turn the power ON.

The *dR* line is now at its zero position, and the *dR* dial should read 0. If it does not, check A-163.

The range integrator carriage should be at the center of the disk.





Turn the time motor ON. There should be no output on the range integrator roller while the disk is turning.

Adjustment

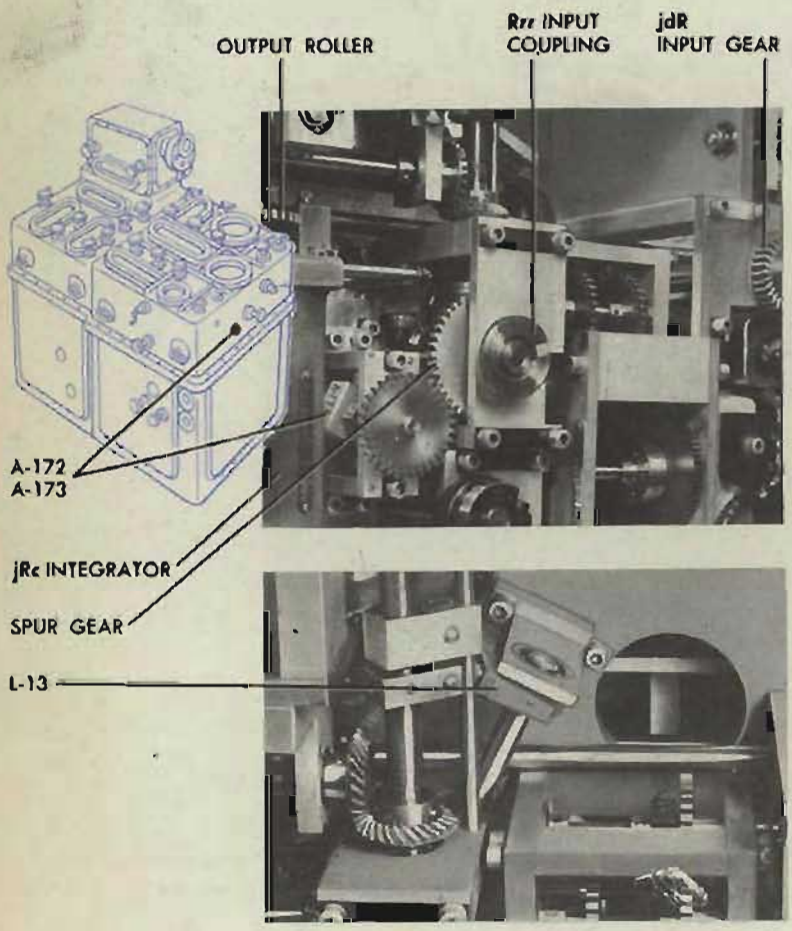
If there is any movement of the integrator roller, first check A-170. If it is loose, push the integrator carriage to the approximate center of the disk, and tighten A-170. Then loosen the locking screw on A-171 and turn the vernier adjustment screw until there is no output from the range integrator.

Tighten the locking screw and recheck.

Turn the time motor OFF. Remove the wedges. Replace the KRR lead.

Recheck by running the range B tests.

A-172 and A-173 RANGE CORRECTION INTEGRATOR to Rrr LINE



Location

A-172 and A-173 are under cover 1, at the front, on the carriage of the range correction integrator.

A-172 is the coarse adjustment clamp. A-173 is the vernier adjustment.

Limit stop L-13 is under cover 1, at the front. It consists of a metal block screwed to an arm. The arm is pinned to the upper end of a diagonal shaft on the range rate ratio input line. The shaft is to the left of the *dR* follow-up.

Check

This adjustment can be checked only with the range correction integrator carriage at its zero position. The block on the arm of the limit stop must be removed because it offsets the carriage from the zero position. Remove the block.

Turn the large spur gear behind the *Rrr* knob coupling to bring the arm to its lower limit. The lower limit of the arm is to the left.

The integrator carriage should be at the center of the disk. Rapid turning of the *jdR* input gear should produce no motion of the output roller.

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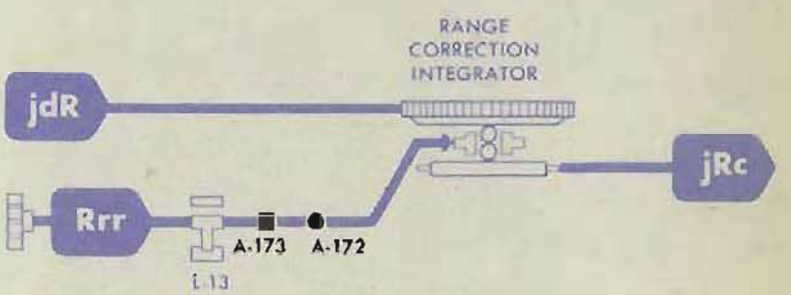
Adjustment

If there is any output from the integrator roller, the carriage is not at the center of the disk. Check whether A-172 is loose. If it is loose, push the integrator carriage to the center.

Tighten A-172.

Loosen the locking screw on A-173. Turn the vernier adjustment screw until there is no movement of the output roller when *jdR* is turned.



REMINDER

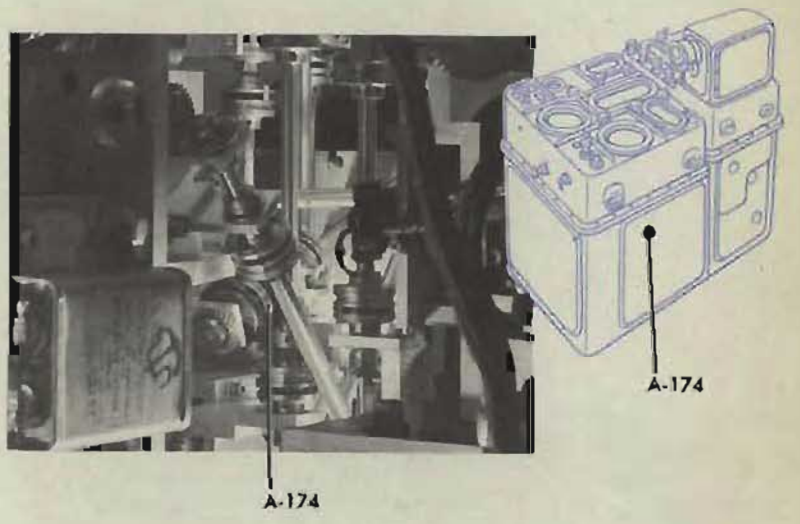
Tighten the vernier locking screw.

Replace the block on the stop arm, so that the integrator carriage cannot go to the zero position.

A-174 Rj HOLDING FRICTION

Location

A-174 is under cover 5, on a diagonal shaft.



Check

This friction should be tight enough to hold the *Rj* setting, but not so tight as to overload the *Rj* receiver motor.

Turn the generated range crank in the OUT position. *cR* should not back through the *Rj* line.

Run the *Rj* receiver synchronizing test, page 62. Check that the synchronizing time is within the allowable limits.

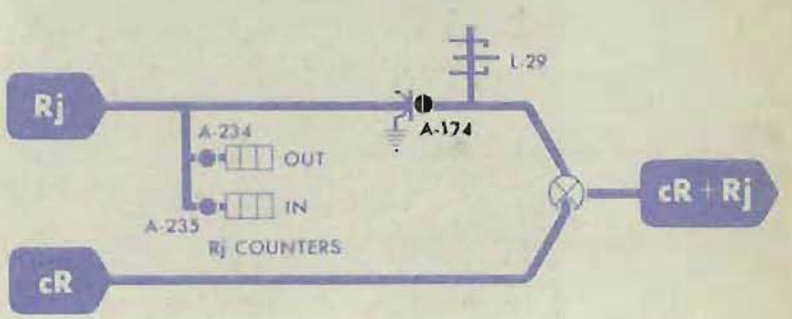
Adjustment

If both conditions under the check are not obtained, loosen A-174.

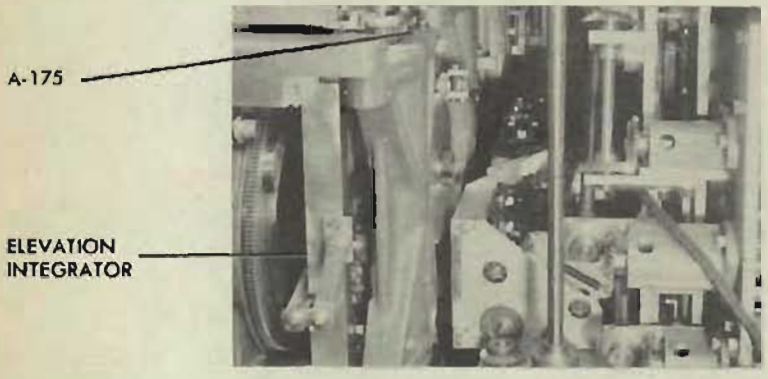
If the *Rj* line backs out, turn the clamp clockwise to increase the friction.

If the *Rj* receiver synchronizes too slowly, turn the clamp counterclockwise to decrease the friction.

Tighten A-174 and recheck.



A-175 ASSEMBLY CLAMP



Location

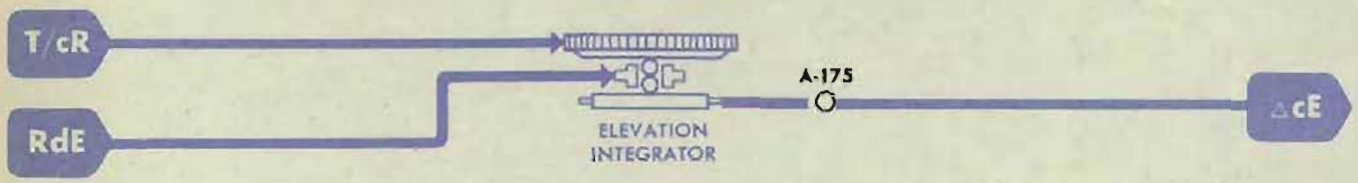
A-175 is under cover 3, on the output gear of the elevation integrator.

Check

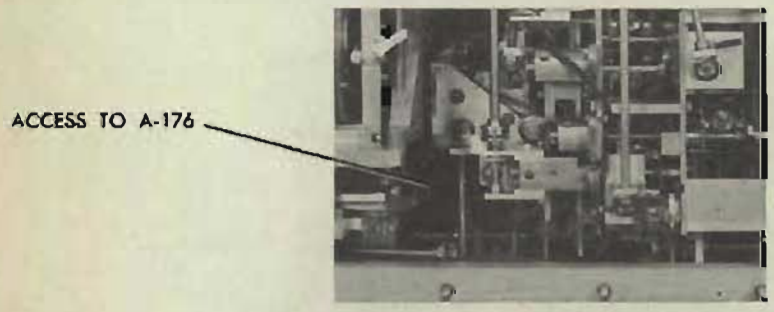
A-175 should be tight.

Adjustment

Tighten A-175. No further adjustment is necessary.



A-176 ASSEMBLY CLAMP



Location

A-176 is under cover 3, on the output coupling of the sec *E* integrator.

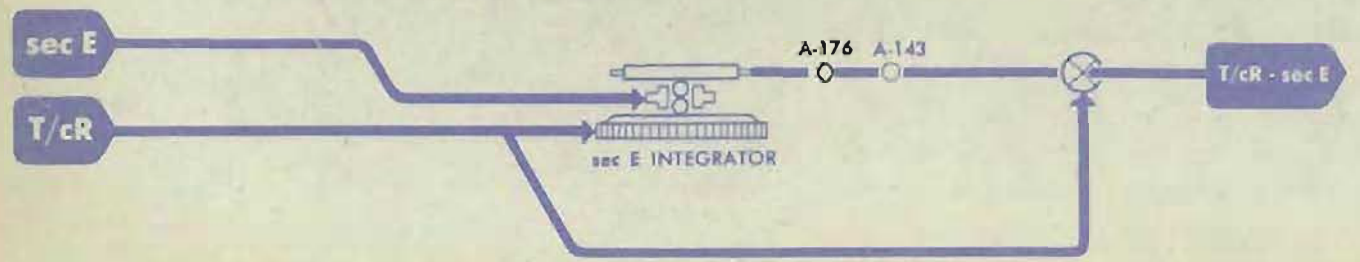
Check

A-176 should be tight, and the coupling should be properly engaged.

(INTEGRATOR ASSEMBLY REMOVED FROM INSTRUMENT)

Adjustment

Tighten A-176. No further adjustment is necessary.



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A-177 ASSEMBLY CLAMP

Location

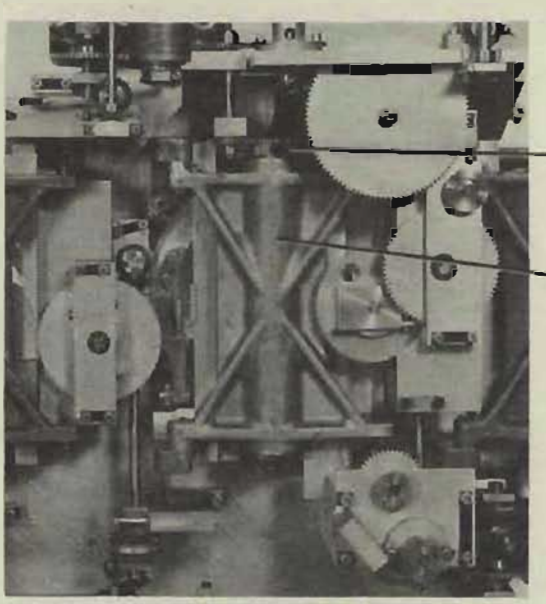
A-177 is under cover 3, on the output gear of the bearing integrator.

Check

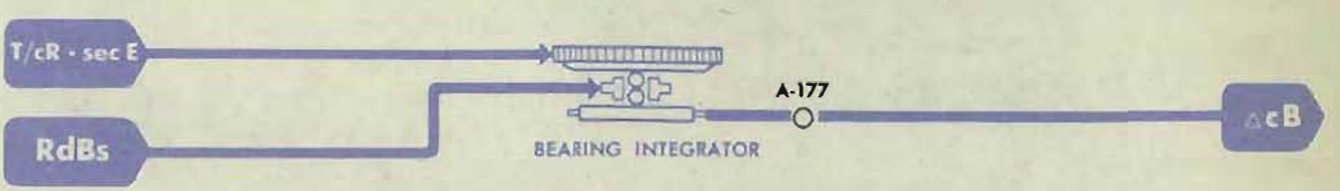
A-177 should be tight.

Adjustment

Tighten A-177. No further adjustment is necessary.



(INTEGRATOR ASSEMBLY REMOVED FROM INSTRUMENT)



A-178 ASSEMBLY CLAMP

Location

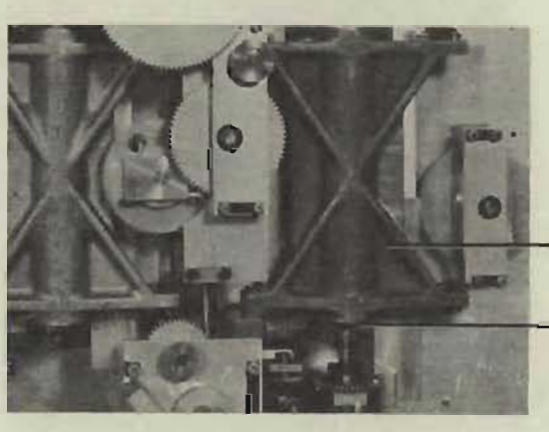
A-178 is under cover 5, on the output coupling of the 1/*cR* integrator.

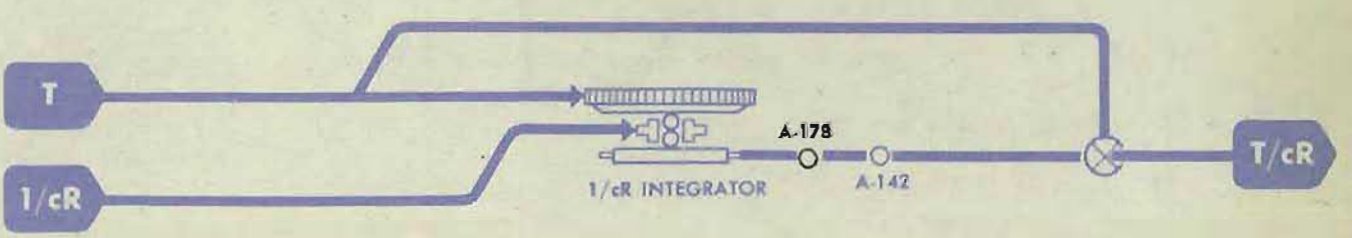
Check

A-178 should be tight and the coupling should be properly engaged.

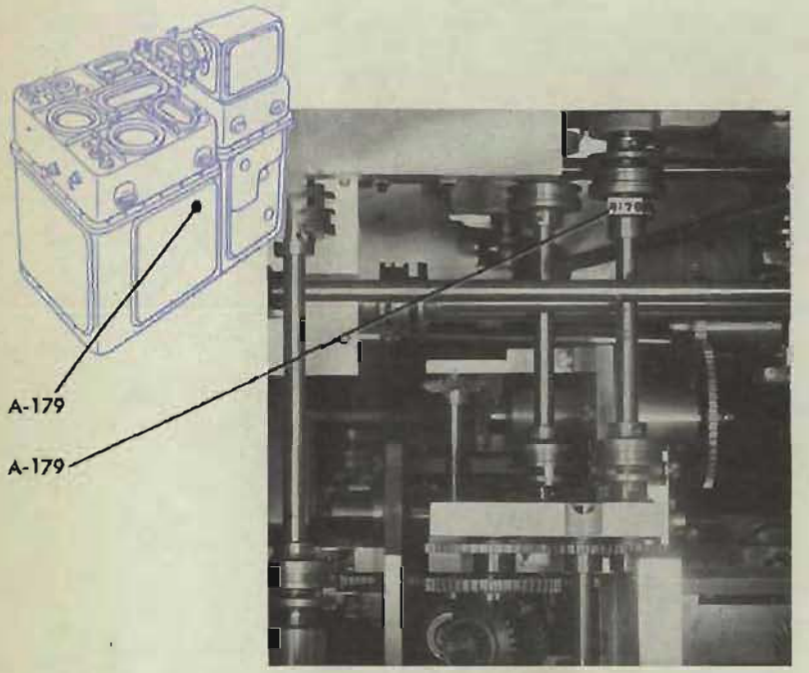
Adjustment

Tighten A-178. No further adjustment is necessary.





A-179 SHIP DIAL to Co RECEIVER



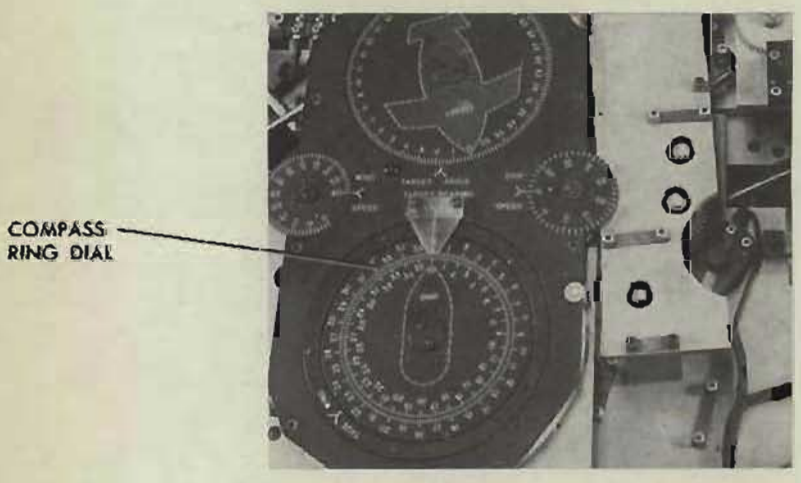
Location

A-179 is under cover 5, in the upper rear of the front section, below the coupling on a vertical shaft to the control unit.

Check

Turn the power ON.

Put the *Co* handcrank in its OUT position.
Transmit *Co* from the gyro compass to the computer.
The reading of the ship dial against the compass ring dial should agree with the gyro compass reading.

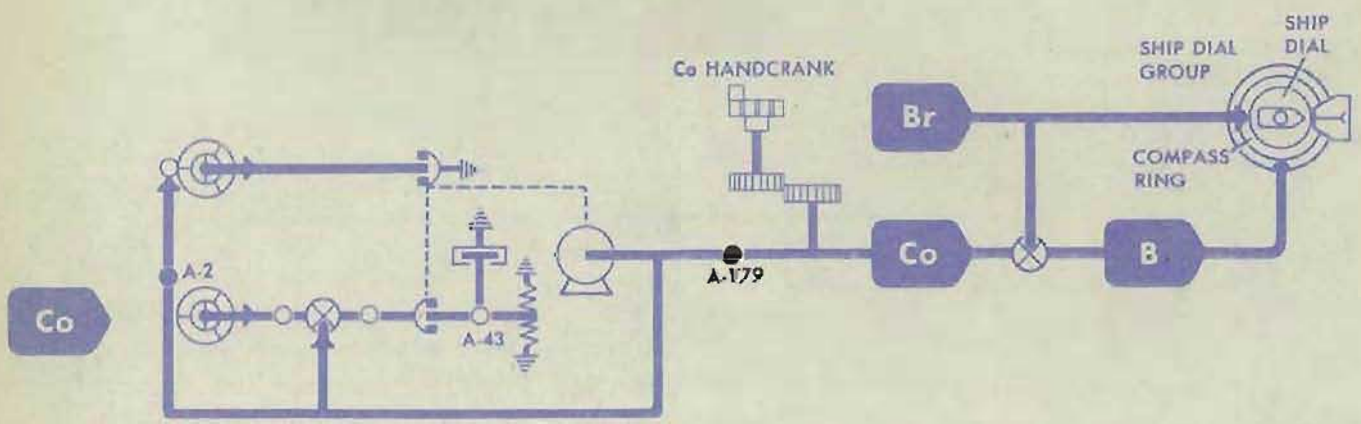


Adjustment

If the computer dial reading does not agree with the gyro compass reading, loosen A-179. Put the *Co* handcrank in its IN position and bring the compass ring dial to its correct value.

Return the *Co* handcrank to its OUT position.

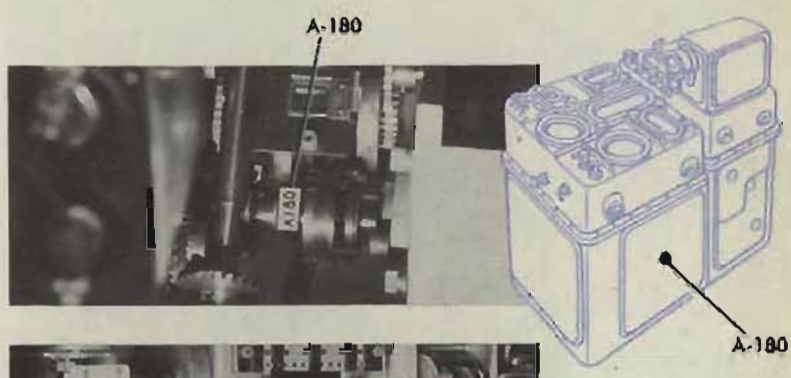
Tighten A-179 and recheck.



A-180 E2 MASTER COUNTER to E DIALS

Location

A-180 is under cover 5, at the lower center, between two couplings.



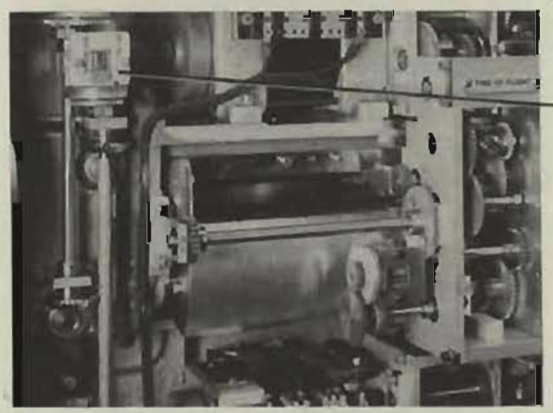
Check

Turn the power OFF.

Set *Vf + Pe* at 0′ by turning the gearing to the *Vf + Pe* counter at the upper left under cover 4, and wedge the line.

Set *I.V.* at 2550 f.s., and *Vs* at 2000′.

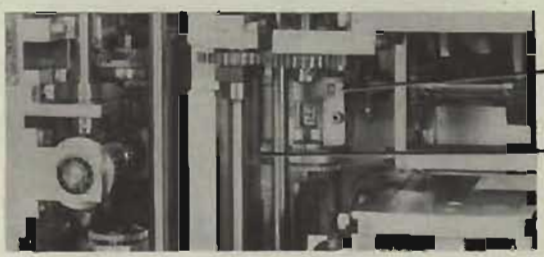
Set the *E* dials at 1°.
The *E2* master counter under cover 4 should read 1°, the same as the *E* dials.

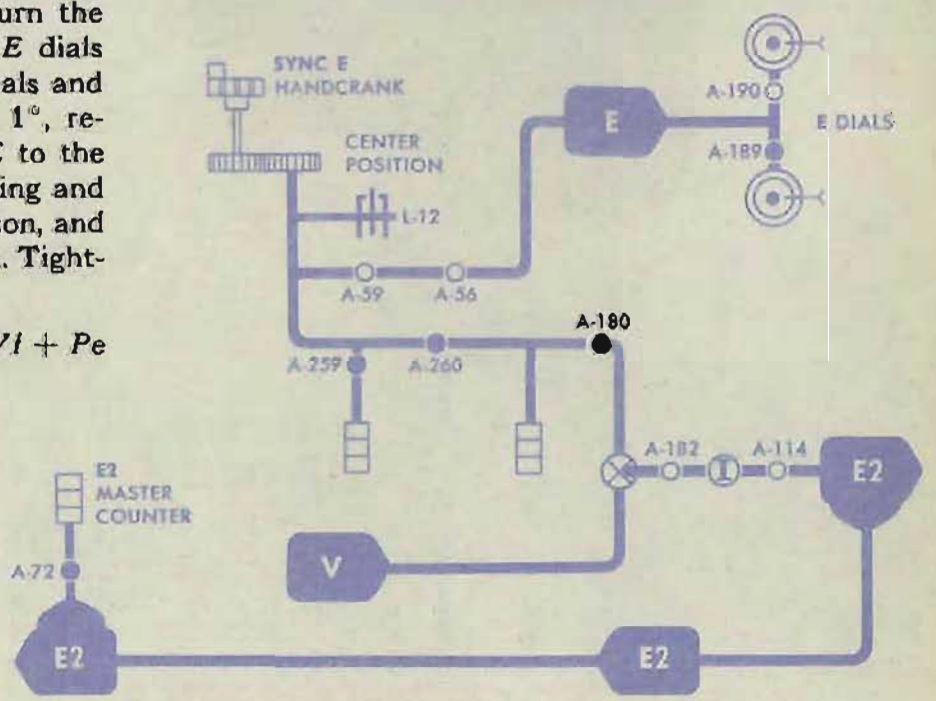


Adjustment

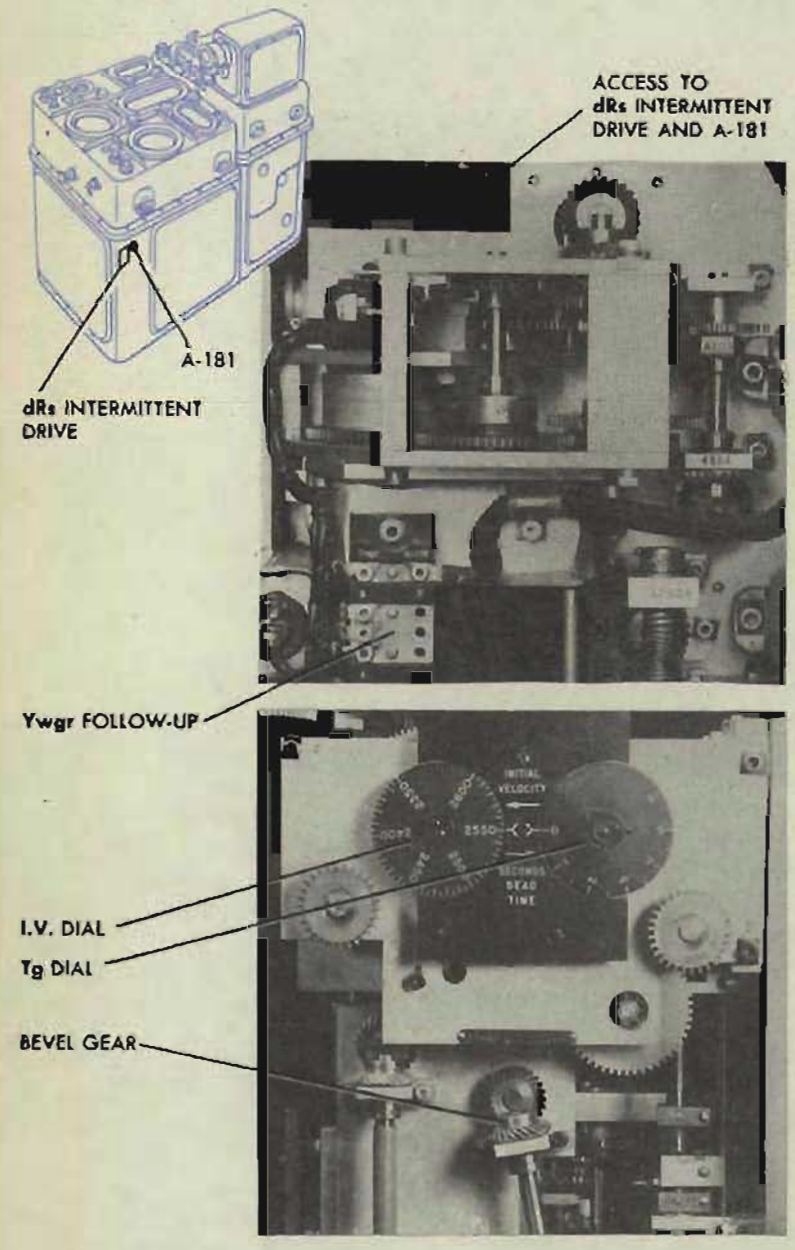
If the *E2* counter does not read the same as the *E* dials, make A-180 slip-tight. Turn the sync *E* handcrank in its CENTER position until *E2* reads 1°. Wedge the *E2* line at the gearing to the *E2* master counter. Turn the sync *E* handcrank until the *E* dials read 1°. When both the *E* dials and the *E2* master counter read 1°, remove the *E2* wedge, bring *E* to the correct value from an increasing and then from a decreasing direction, and read *E2*. Split any lost motion. Tighten A-180, and recheck.

Remove the wedge from the *Vf + Pe* line.





A-181 dRs INTERMITTENT DRIVE to dRs LINE



Location

A-181 is under cover 5, on the input to the *dRs* intermittent drive.

Check

Turn the power ON.

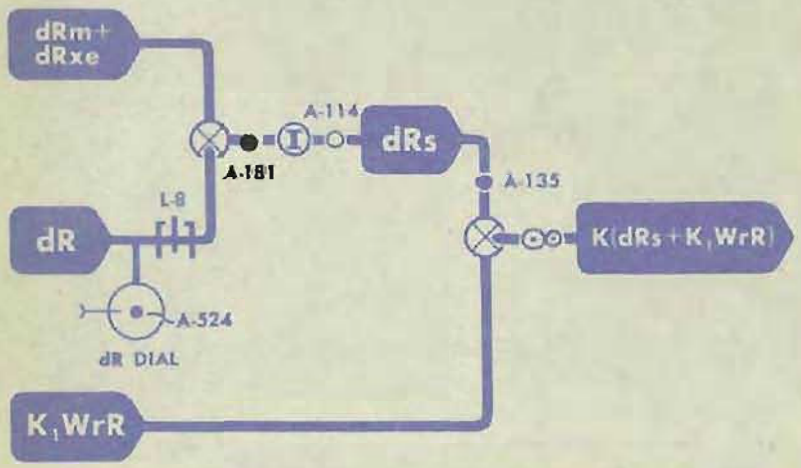
Set *So*, *Sh*, and *dH* at 0 knots.
Set *I.V.* at 2550 f.s.

Decrease *dR*. Use the *dR* handcrank in the HAND position.
Observe the output gear of the *dRs* intermittent drive or the bevel gear at the top of the six-inch shaft below the *Tg* dial. These gears should turn until the *dR* dial reads −450 knots.

The intermittent drive should then be at its low cut-out point. Since the limit stop of the *dR* line also acts at −450 knots, the adjustment of A-181 cannot be accurately checked by changing *dR* alone.

Set *dR* at −450 knots.
Increase *I.V.* from 2350 until the intermittent drive cuts out. Note the reading on the *I.V.* dial.
Decrease *I.V.* from 2600 until the intermittent drive cuts in. Read the *I.V.* dial.

The average of the two readings should be 2550 f.s.
Check that A-114 is tight.



Adjustment

If it is necessary to readjust A-181, slip-tighten A-135 before attempting any adjustment.

If the average of the two *I.V.* readings is not 2550 f.s., make A-181 slip-tight.

CAUTION

Do not loosen A-181 all the way because the clamp gear may slip off the shaft of the intermittent drive.

Use the *I.V.* input to find the cut-out point of the intermittent drive.

Hold the large gear in the intermittent drive, with a gear pusher inserted through the access in the plate above the *Ywgr* follow-up, and turn *I.V.* to 2550 f.s.
Tighten A-181 and recheck.

If the intermittent drive is too far out of adjustment to refine with *I.V.*, decrease *dR* from 0 until the approximate cut-out point is found. Hold the large gear in the intermittent drive and bring *dR* back to −450. Then refine with *I.V.* as described above.

Check the upper cut-out point as follows: Run the *dR* line to the upper limit. The intermittent drive output should continue turning until *dR* reaches +450 knots. Decrease, then increase, *I.V.* through 2550 and read the *I.V.* dial at the cut-out and cut-in points, respectively. The average of the two readings should be 2550 f.s.

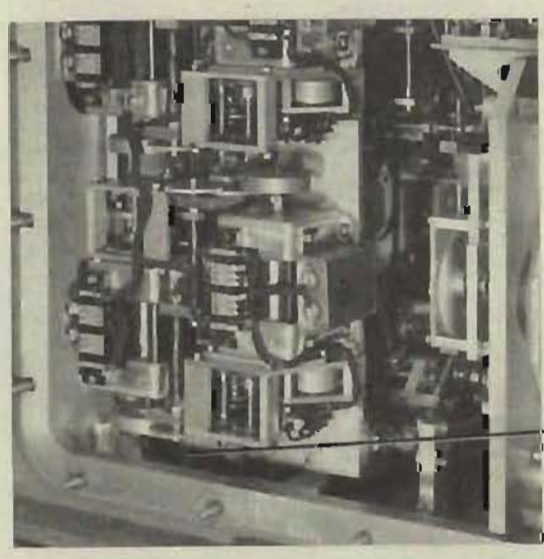
Readjust A-135.

Check A-104. On instruments with Ser. Nos. 781 and higher, also check A-132.

A-182 ASSEMBLY CLAMP

Location

A-182 is under cover 5, on the *E2* intermittent drive input gear, behind the follow-up mounting plate, at the lower front corner. It cannot be reached without removing the mounting plate.



Check

If A-182 has slipped, *E* will no longer match *E2*. Check A-180 for tightness. Bring the *E2* intermittent drive to its cut-in point. If the *E* line can be turned while the *E2* line is held, either A-182 or A-114 is slipping.

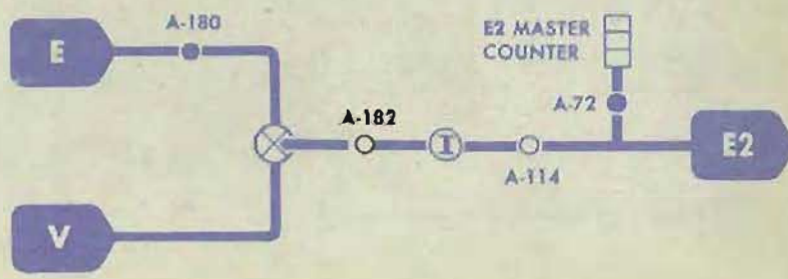
Adjustment

To remove the prediction follow-up mounting plate, refer to page 694.

Tighten A-182 and A-114.

Check A-72.

Reinstall the mounting plate. Refer to page 695.



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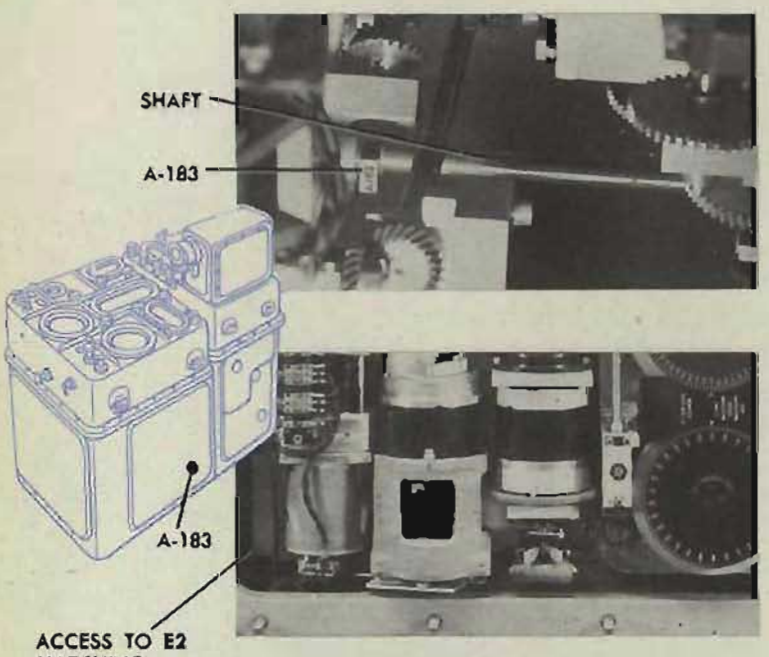
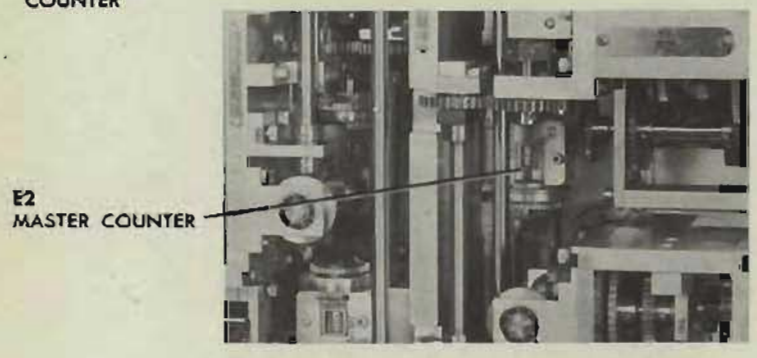
A-183 E2 MATCHING COUNTER to E2 MASTER COUNTER





Location

A-183 is under cover 5, near the lower rear corner of the follow-up mounting plate.

The *E2* matching counter is under cover 6.

The *E2* master counter is under cover 4, in the center of the ballistic section, directly above clamp A-72.

Check

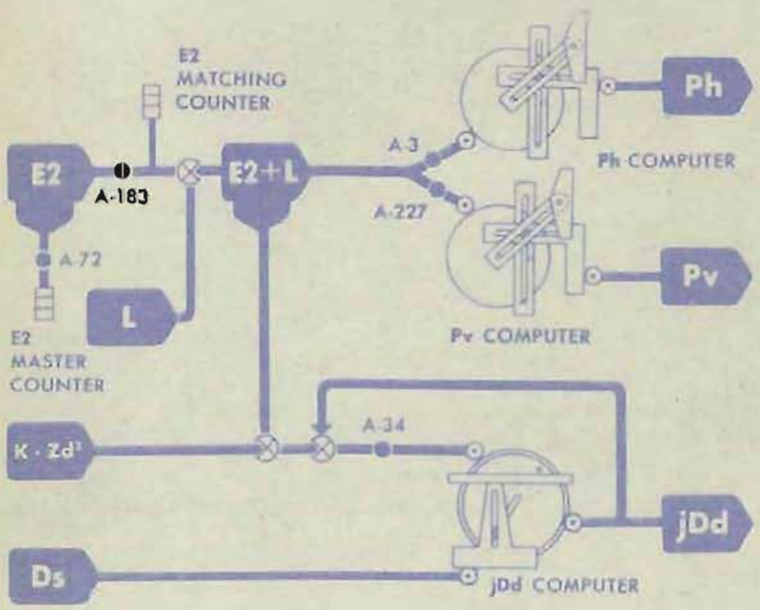
The *E2* counters should agree.

Adjustment

If the *E2* counters do not agree, loosen A-183.

Set an even reading on the *E2* master counter.

Turn the shaft to the rear of A-183 until the *E2* matching counter reads the same as the *E2* master counter. Tighten A-183, and recheck.



IMPORTANT

If the *E2* counters cannot be brought to the same value, A-34, A-3, or A-227 may be in error. Loosen and readjust the clamp causing the restriction.

Check A-34, A-3, and A-227.

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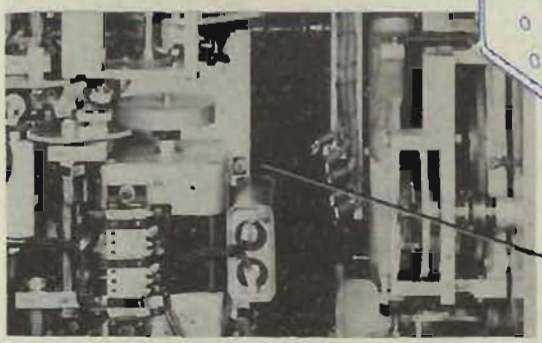
A-184 Vs COUNTER to L-37

Location

A-184 is under cover 3, about 10 inches in. The clamp is on the rear end of a red shaft, 5 inches below the top plate.

The lower end of L-37 can be seen under cover 5 through the access at the front of the integrator group.



Check

Turn the power OFF.

Set the *Vf + Pe* counters at 0′ by turning the follow-up output gearing. Wedge the line.

Set *I.V.* at 2550 f.s.

Decrease *Vs* until L-37 reaches its lower limit. The *Vs* counter should read 200′.

Adjustment

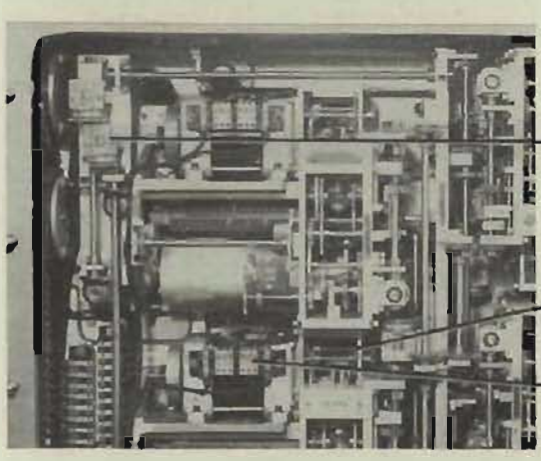
If the *Vs* counter does not read 200′ at the lower limit, make A-184 slip-tight.

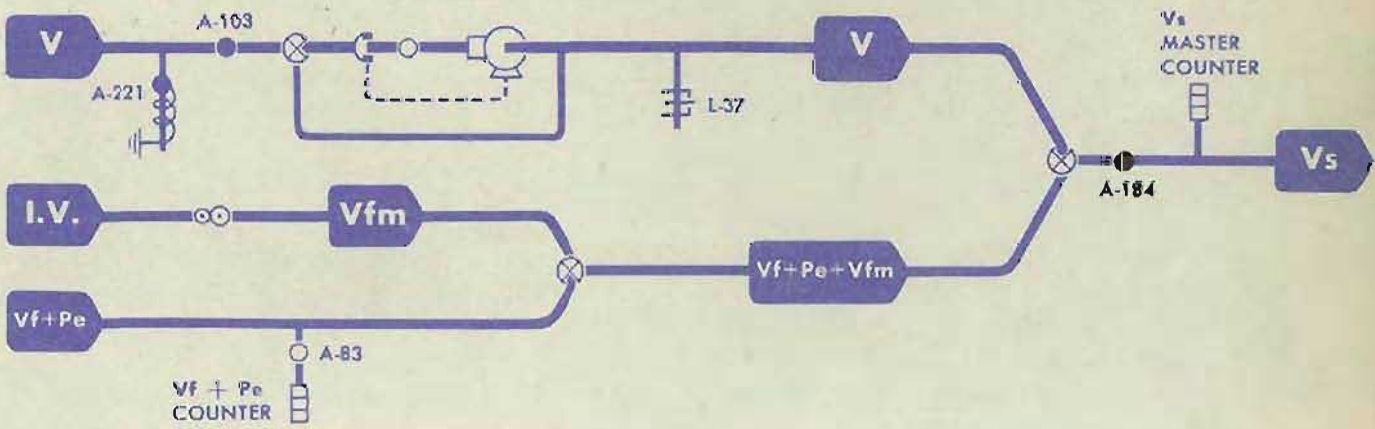
Wedge the *V* follow-up output gearing at the lower limit of L-37. Turn *Vs* to 200′.

Tighten A-184. Recheck at the upper limit of L-37.

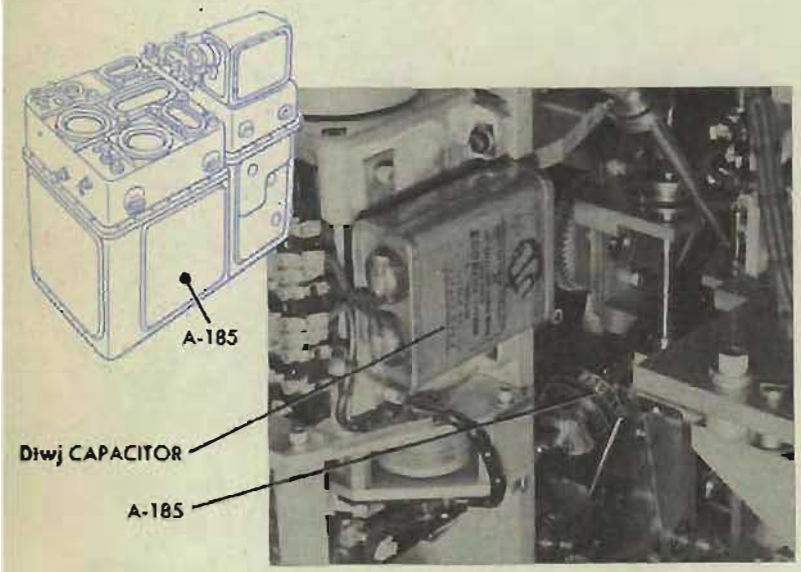
The *Vs* counter should read 3800′.

Check A-103.





A-185 Dj HOLDING FRICTION



Location

A-185 is under cover 5.

Check

The friction should be tight enough to hold the *Dj* setting but not so tight as to overload the *Dj* receiver motor.

Turn the power ON.

Set *Sh* at 400 knots.
Set *A* at 90°.
Turn the *cR* line rapidly.
No motion of *Dtw'* should back through the *Dj* line.

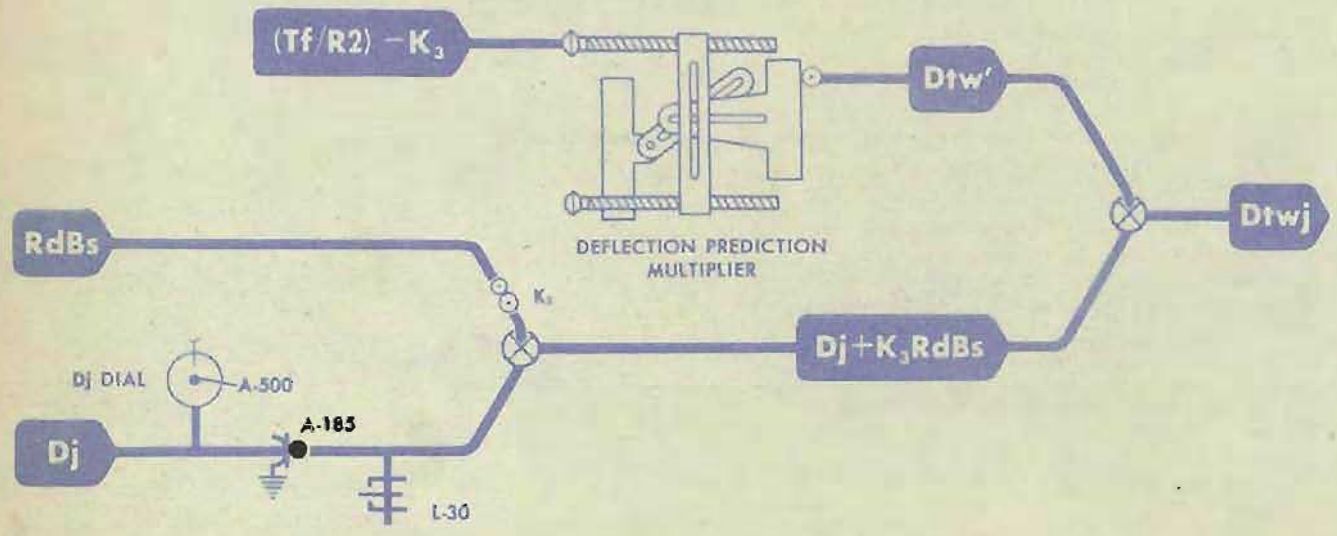
Run the synchronizing test of the *Dj* receiver, page 62. Check that the synchronizing time is within the allowable limits.

Adjustment

If *Dtw'* is backing through the *Dj* line, loosen A-185. Then turn the clamp clockwise to increase the friction.

If the *Dj* receiver motor runs too slowly, loosen A-185 and turn the clamp counterclockwise to decrease the friction.

Tighten A-185 and recheck.



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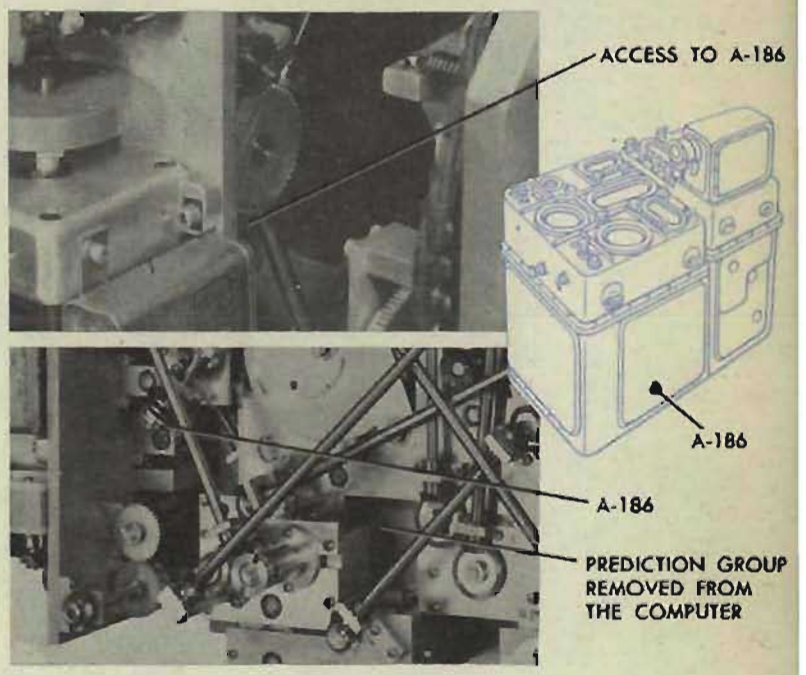
A-186 Vj HOLDING FRICTION

Location

A-186 is under cover 5, on a diagonal shaft, 2 inches in back of the follow-up mounting plate.



Check

The *Vj* holding friction should be tight enough to hold the *Vj* setting but not so tight as to overload the *Vj* receiver motor.

Turn the power ON.

Set *E* at 0°.
Set *dH* at DIVE 250.
Turn the *cR* line rapidly.
No motion of *Vtw'* should back through the *Vj* line.

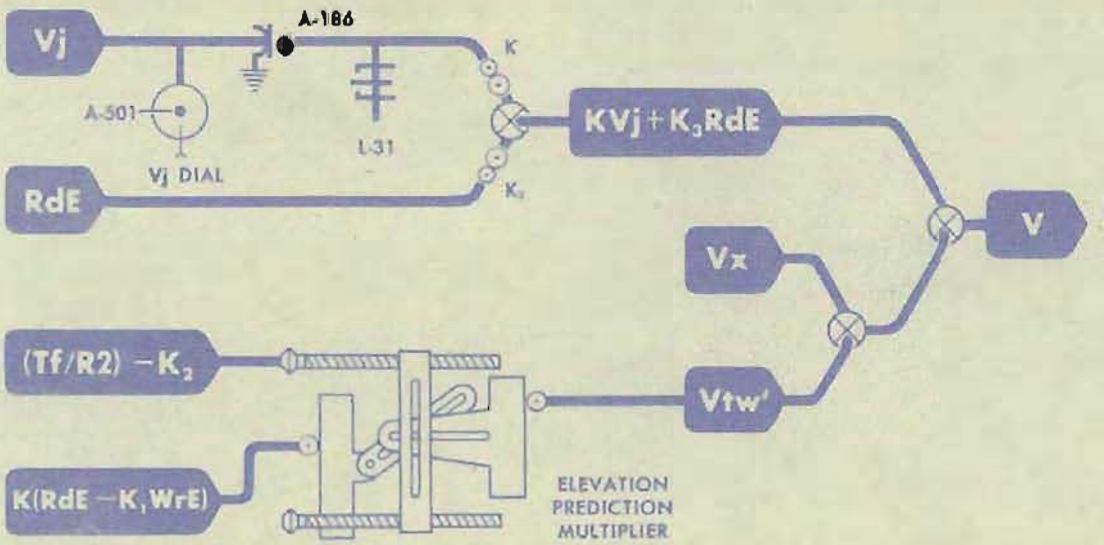
Run the synchronizing test of the *Vj* receiver, page 62.
Check that the synchronizing time is within the allowable limits.

Adjustment

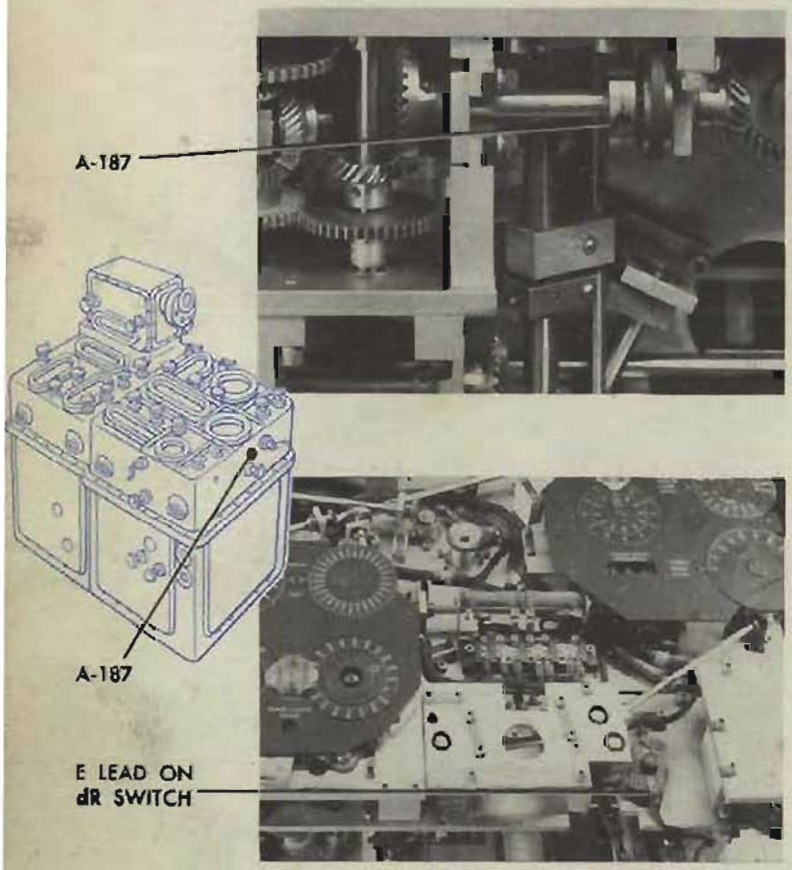
If *Vtw'* is backing through the *Vj* line, loosen A-186.
Turn the clamp clockwise to increase the friction.

If the *Vj* receiver motor runs too slowly, loosen A-186 and turn the clamp counterclockwise to decrease the friction.

Tighten A-186 and recheck.



A-187 jR HOLDING FRICTION



Location

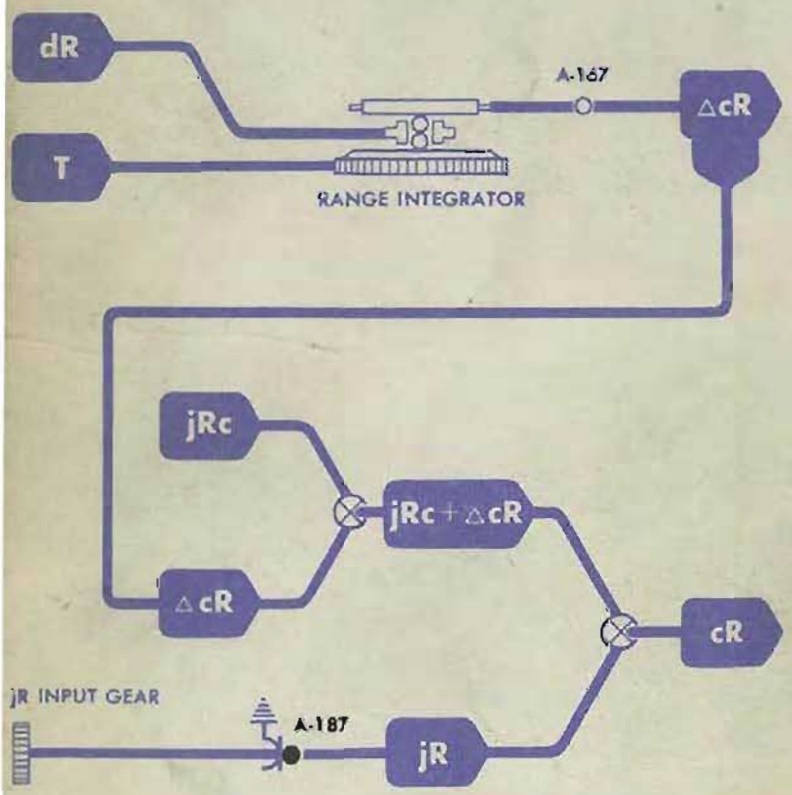
A-187 is under cover 1, at the front.

Check

This friction should hold the *jR* setting without too much drag on the line.

Remove the E lead from the *dR* switch.
Turn the power ON.
Turn the time motor ON.

Set *dR* at −450 knots to offset the carriage of the range integrator so that the output roller will turn. The integrator output should not back through A-187 to the *jR* input.



Adjustment

If the range integrator output backs out the *jR* input, loosen A-187. Turn the clamp clockwise to increase the friction.

Tighten A-187, and recheck.

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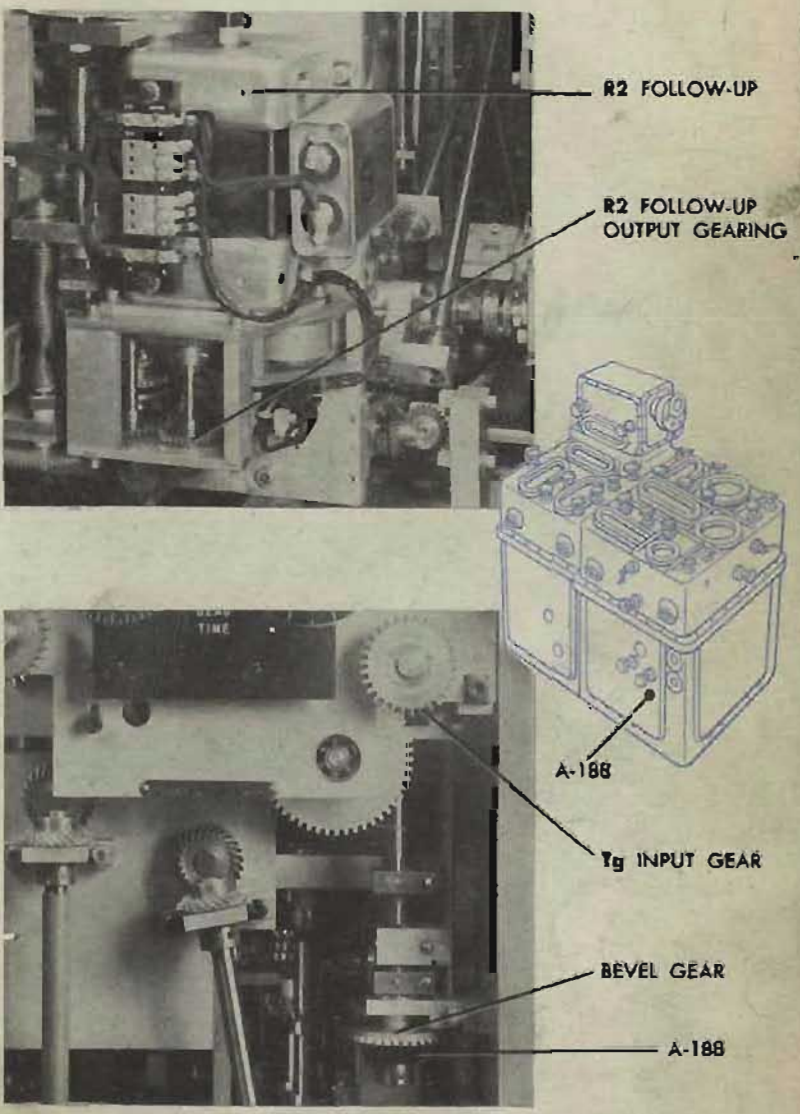
A-188 DEAD TIME MULTIPLIER to Tg DIAL

Location

A-188 is under cover 3, on the bevel gear at the lower end of L-14.



Check

Turn the power OFF.

Set *Tg* at 0 seconds. Use the *Tg* input gear.
On instruments with Ser. Nos. 781 and higher, set *F* and *Tf* at 10 seconds.
Wedge the *R2* follow-up output gearing.

Set *dR* at −450 knots. Note the value on the *R3* counter under cover 4.
Turn *dR* to +450 knots.

The *R3* counter reading should not change.

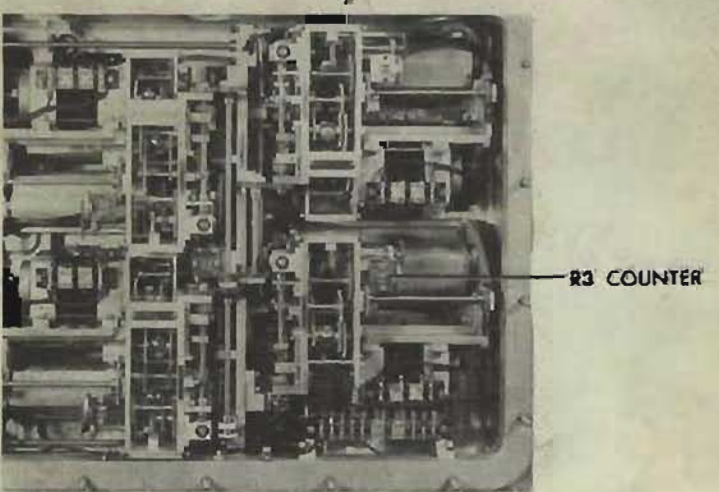
Adjustment

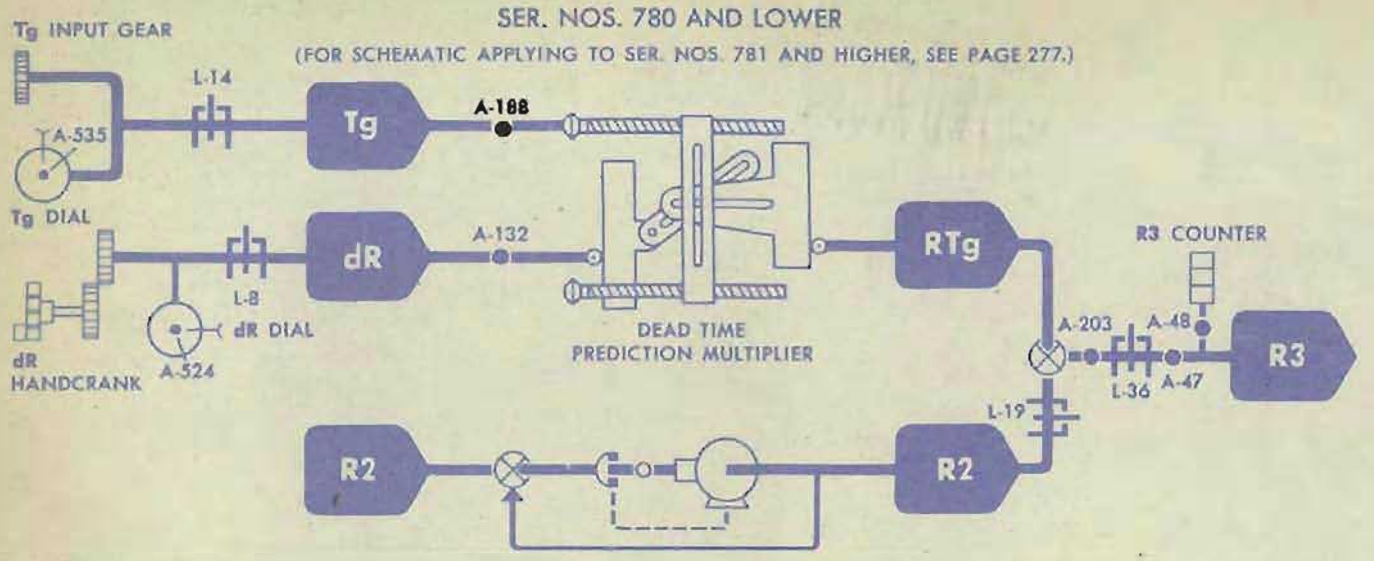
If the *R3* counter reading changes, make A-188 slip-tight. Hold *Tg* at 0 and turn the bevel gear next to the clamp, to correct halfway back to the original *R3* reading.

Tighten A-188 and recheck.

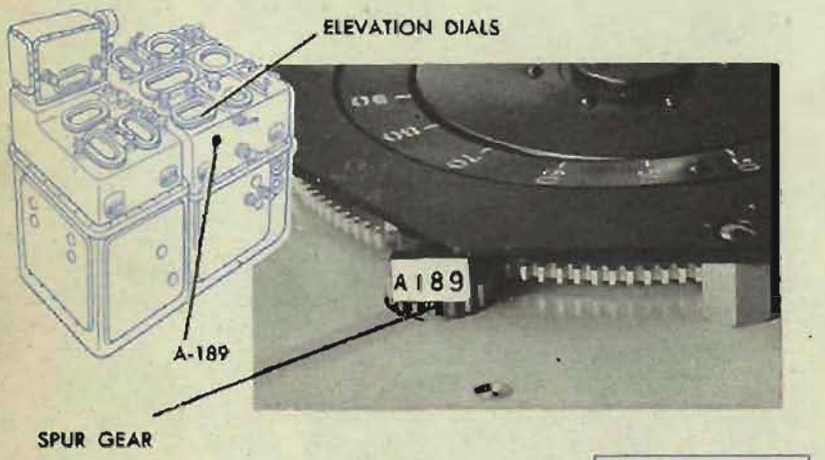
Remove the wedge from the *R2* follow-up.

Check A-203.





A-189 COARSE to FINE E DIALS



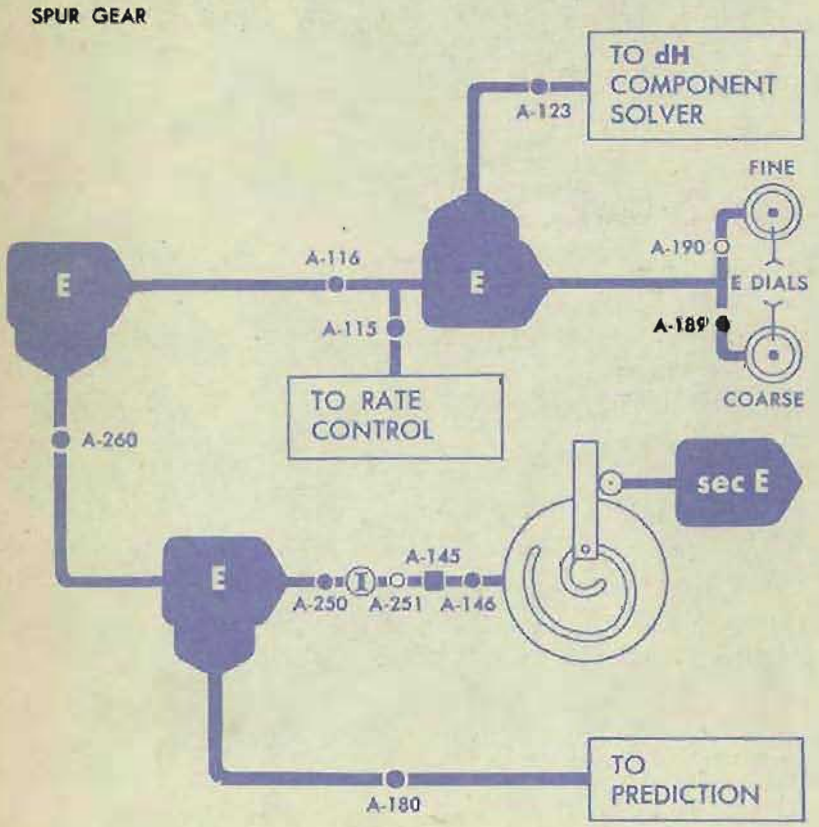
Location

A-189 is under cover 1, beneath the mask of the elevation dials, to the left of the coarse *E* dial.

Check

Set the fine *E* dial at 0°. One of the graduations of the coarse *E* dial should line up with the fixed index.

Before readjusting A-189, check A-190.



Adjustment

If the coarse dial does not read correctly, make A-189 slip-tight.

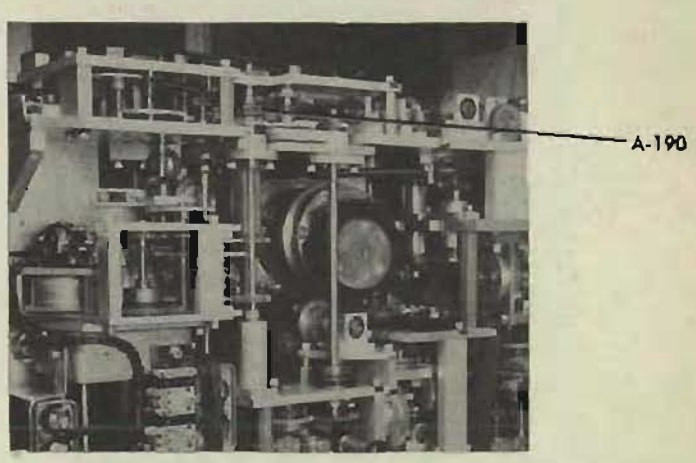
Set the fine dial at 0°. Bring the nearest graduation of the coarse dial to the fixed index by turning the spur gear directly below A-189. Tighten the clamp and recheck.

Check A-116, A-115, A-123, A-180, A-260, A-250, and A-145.

A-190 ASSEMBLY CLAMP

Location

A-190 is under cover 1, near the fine *E* dial.



Check

If A-190 is loose or has slipped, the fine and coarse *E* dials will no longer match.

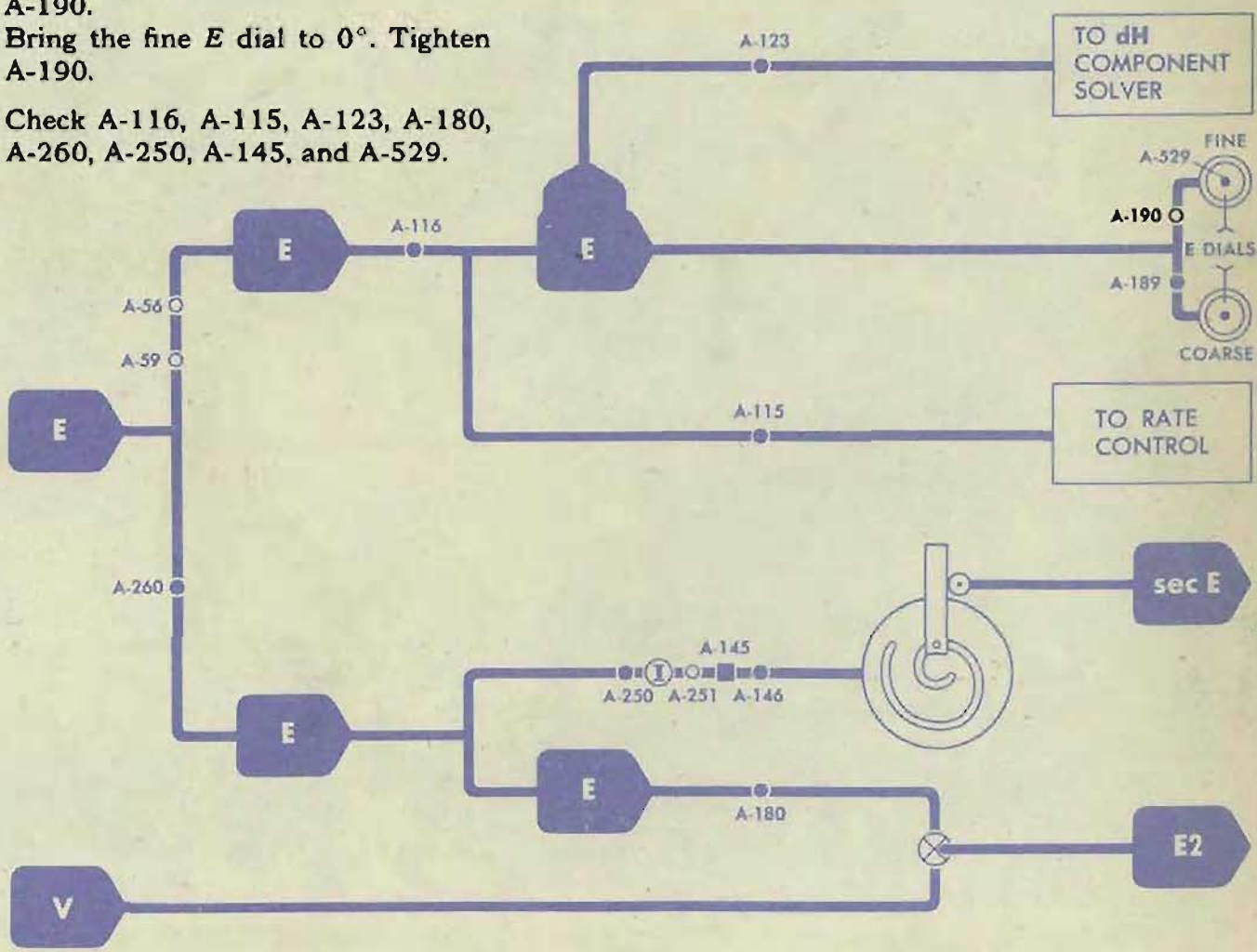
At the upper limit, the fine *E* dial will not read 5°0′, although the coarse dial reading will be halfway between the 80° and 90° graduations.

If both these conditions exist, A-190 should be readjusted.

Adjustment

Set the coarse *E* dial at 0°. Loosen A-190.
Bring the fine *E* dial to 0°. Tighten A-190.

Check A-116, A-115, A-123, A-180, A-260, A-250, A-145, and A-529.



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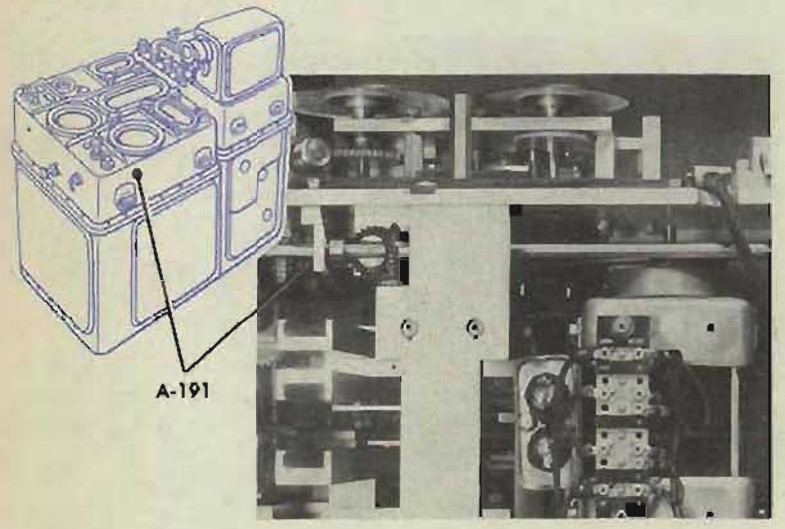
A-191 FRICTION DRIVE to TIME DIAL

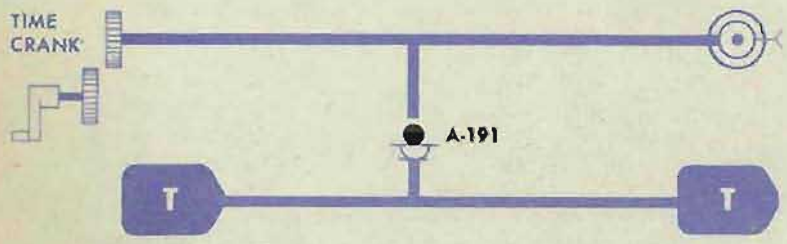


Location

A-191 is under cover 1, at the right side.

Check

This friction should slip when the time crank is pushed IN and turned. It should drive when the time crank is pulled OUT and turned, or when the time line is driven by the time motor.

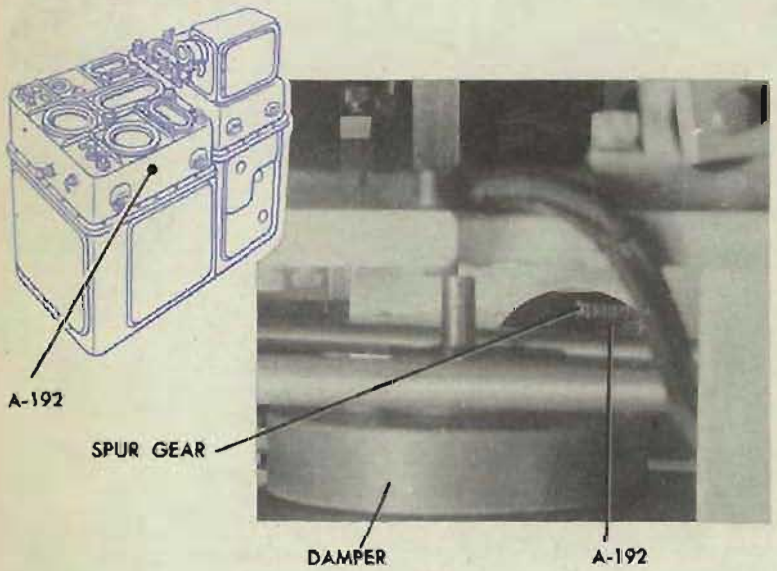


Adjustment

If the friction is not adjusted properly, loosen A-191. Turn the clamp clockwise to increase the friction, or counterclockwise to decrease it.

Tighten the screw, and recheck.

A-192 TARGET COMPONENT SOLVER to Sh COUNTER



Location

A-192 is under cover 1, behind the damper on the *RdBs* follow-up.

Possible damage

If A-192 is upset, the pin and cam groove in the target component solver may be damaged. Check for damage by running the *Sh* line through its full travel and noting any restriction.

Check

Remove the KRR lead on the target angle switch.
Turn the power ON.

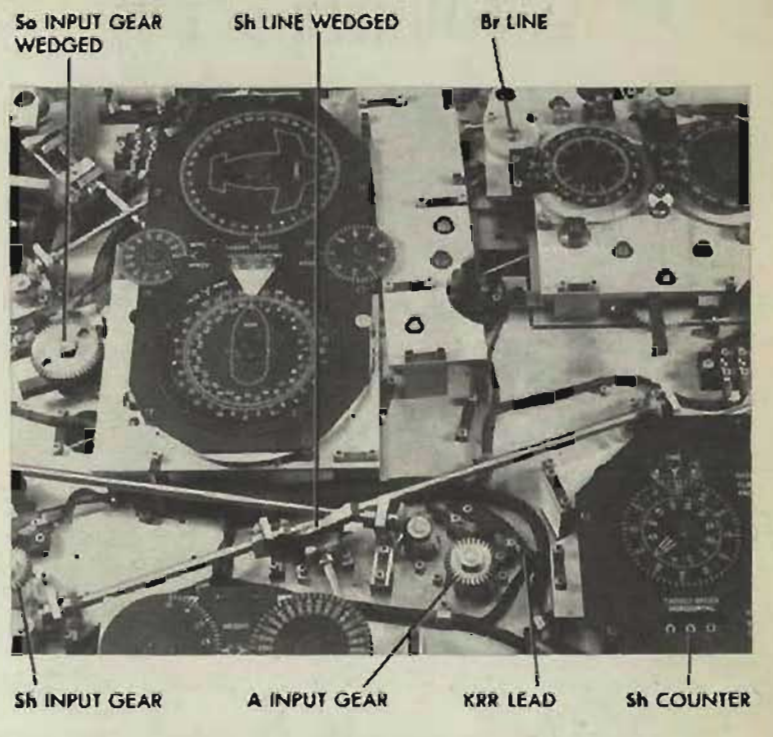
Set *Br* at 0°. Wedge the line.
Set *So* and *Sh* at 0 knots. Wedge the input gears.

Set *A* at 90°.

The ship component solver outputs are now at zero.
The *RdBs* follow-up will indicate motion only from the target component solver.

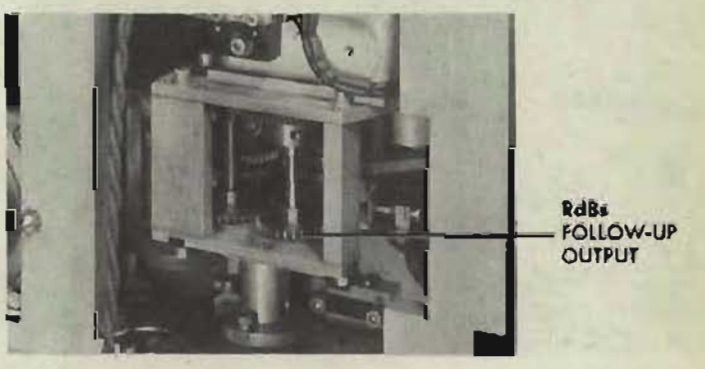
Mark the *RdBs* follow-up output gearing for use as an indicator.

Turn *A* from 90° to 270°.
The follow-up indicator marks should remain matched.



Adjustment

If the indicator marks do not stay matched, slip-tighten A-192. Use a gear pusher to turn the spur gear, on which A-192 is located, until the indicating mark on the *RdBs* follow-up gear is halfway back to its original position. Tighten A-192.

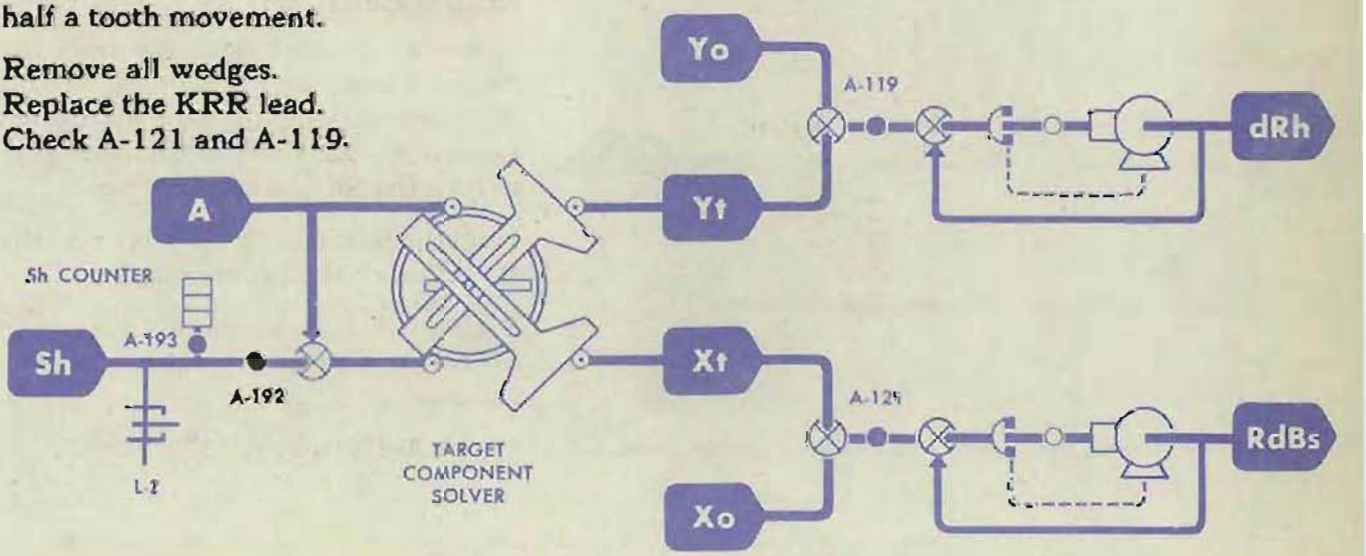


Recheck

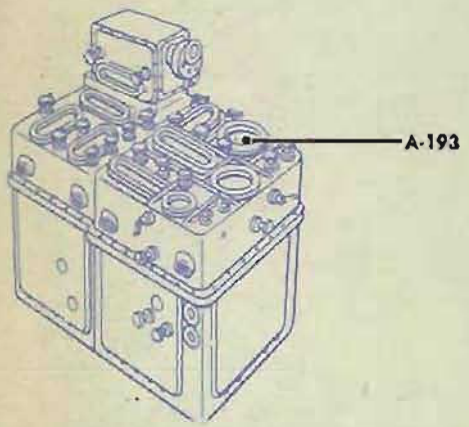
Set *A* at 90°.
Remove the old indicator marks and make new ones.
Turn *A* to 270°.

Check the movement of the marks. The error, if any, should be less than half a tooth movement.

Remove all wedges.
Replace the KRR lead.
Check A-121 and A-119.



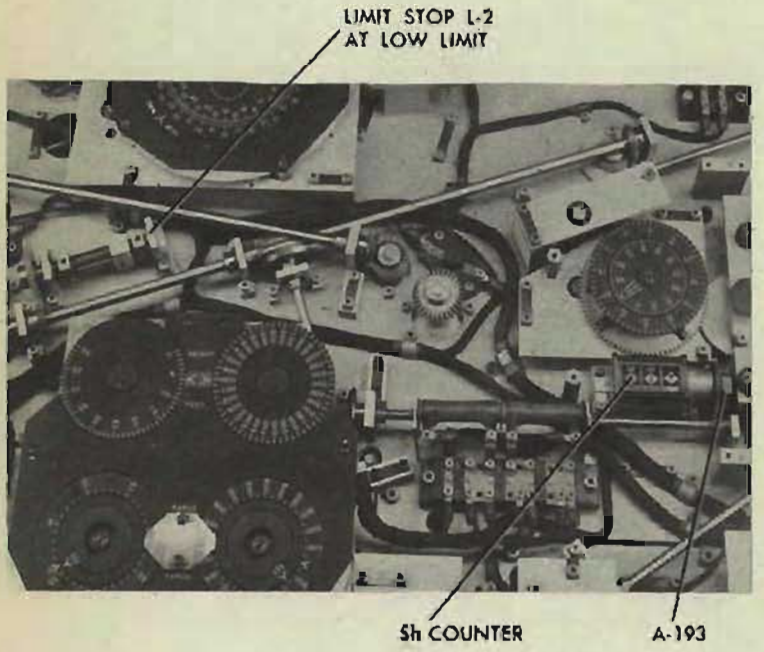
A-193 Sh COUNTER to L-2



Location

A-193 is under cover 1, on the *Sh* counter shaft under the mask.

L-2 is under cover 1, to the rear of the coarse *H* dial. The lower limit is toward the right.

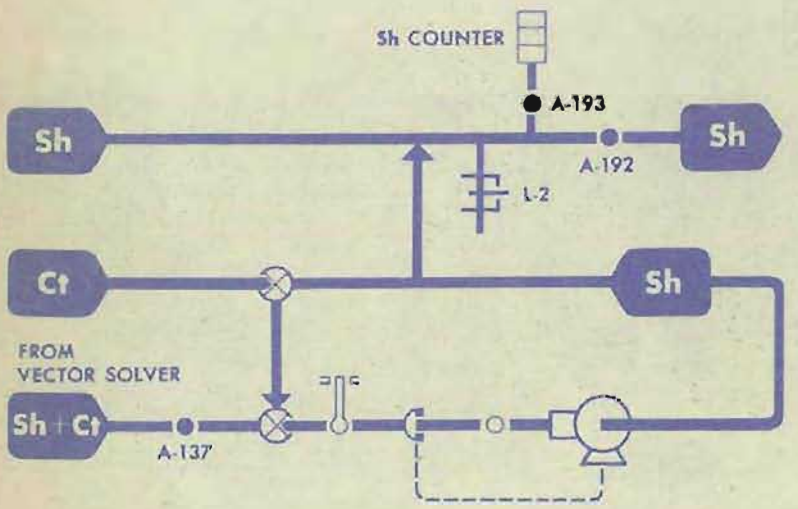


Check

Turn the power OFF.

Turn the *Sh* line to either limit.
At the upper limit, the *Sh* counter should read 400 knots; at the lower limit, 0 knots.

If either limit cannot be reached, A-192 or A-137 may be causing the restriction.
Determine which is in error and loosen it.



Adjustment

If the *Sh* counter does not read the proper values for each limit, remove the mask covering the time dial group. Loosen A-193. Use the *Sh* input gear to turn the *Sh* line to either limit.

Hold the line against the stop. Slip the *Sh* counter to its proper reading.

Tighten A-193. Recheck by turning *Sh* between its limits and reading the counter.

Check A-192 and A-137.

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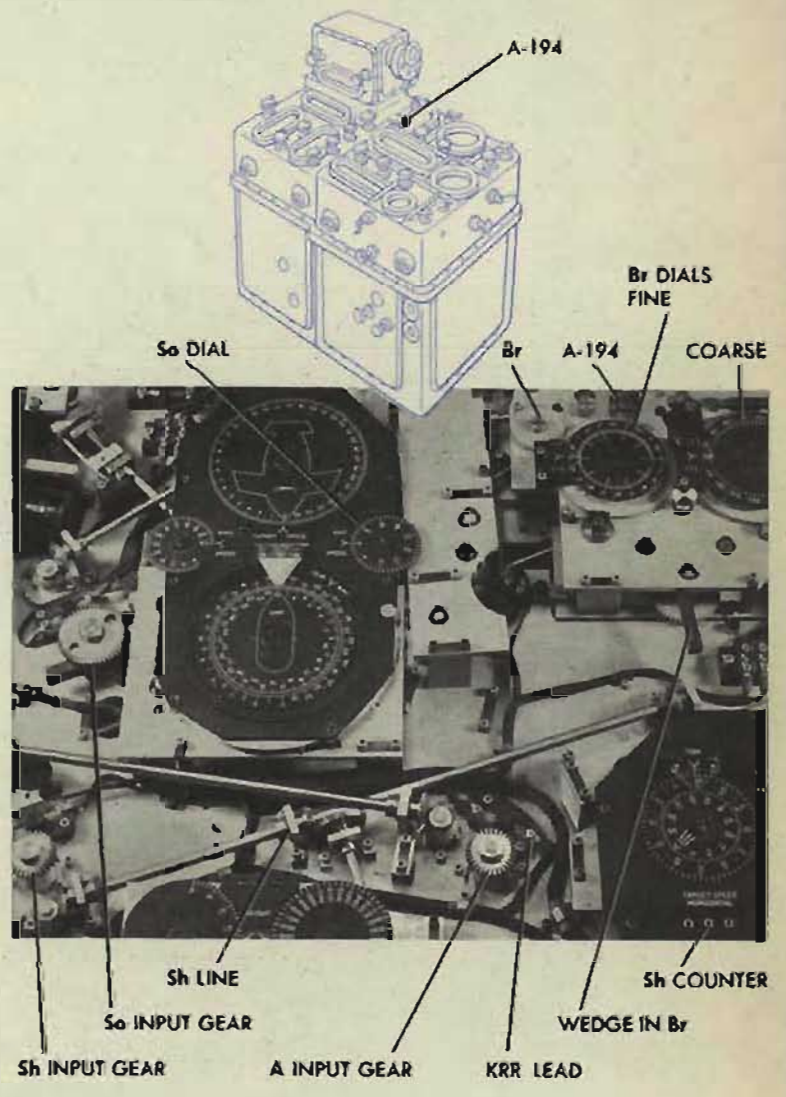
A-194 SHIP COMPONENT SOLVER to Br RING DIALS

Location

A-194 is under cover 1, below the bearing dial mask, to the rear of the fine *Br* dial.



Check

Disconnect lead KRR from the target angle push-button switch to prevent the *A* and *Sh* follow-ups from driving.

Turn the power ON.

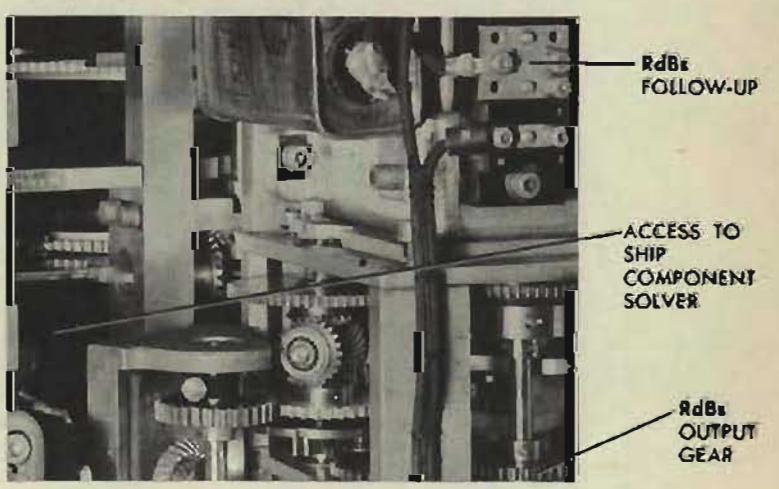
Set *Br* at 180°. Wedge the line at the dial unit.

Set *A* at 0°, and *Sh* at 0 knots. Wedge the lines.

Set *So* at 0 knots.

The ship component solver vector-gear slot should be forward. Check its position by looking through the access at the right front, just forward of the *RdBs* follow-up. The ship component solver is the bottom component solver.

Movement of the *RdBs* follow-up output gearing will indicate motion of the *Xo* rack of the ship component solver. Mark the *RdBs* follow-up output gear for use as an indicator.



Run *So* from 0 to 45 knots. There should be no motion of the *Xo* rack.

Observe the follow-up indicator marks. They should remain matched for full travel of *So*.

Adjustment

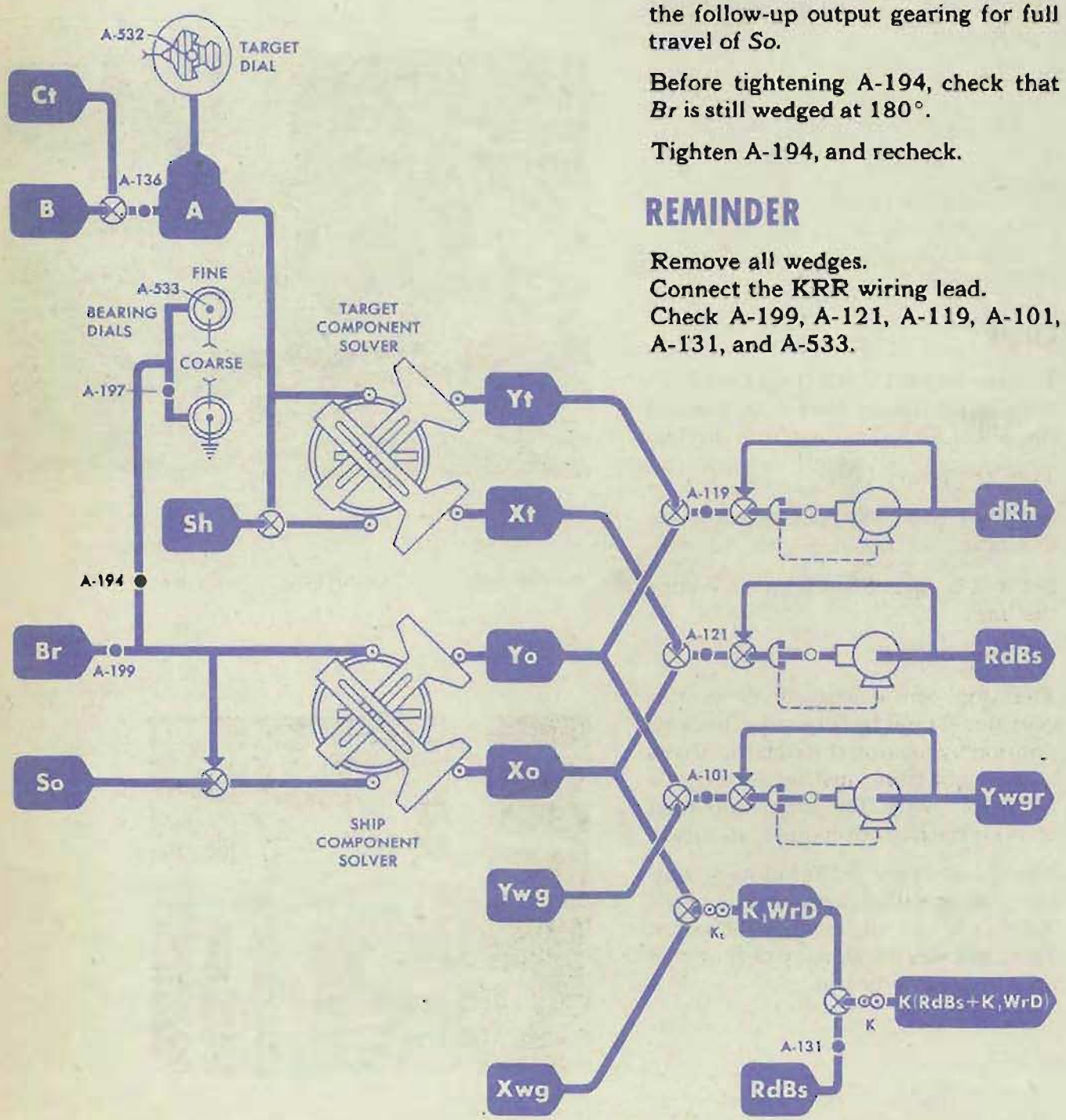
If the marks do not remain matched, slip-tighten A-194. With a gear pusher, turn the ship component solver vector gear until its slot is at a position where there is no movement of the follow-up output gearing for full travel of *So*.

Before tightening A-194, check that *Br* is still wedged at 180°.

Tighten A-194, and recheck.

REMINDER

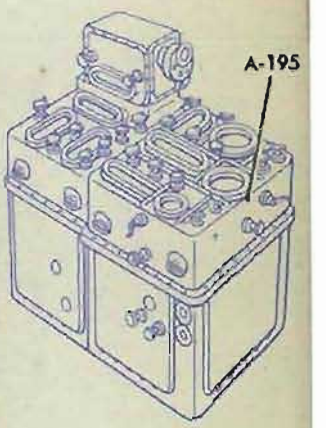
Remove all wedges.
Connect the KRR wiring lead.
Check A-199, A-121, A-119, A-101, A-131, and A-533.



A-195 COARSE to FINE cR DIAL

Location

A-195 is under cover 1, below the *cR* dial mounting plate.



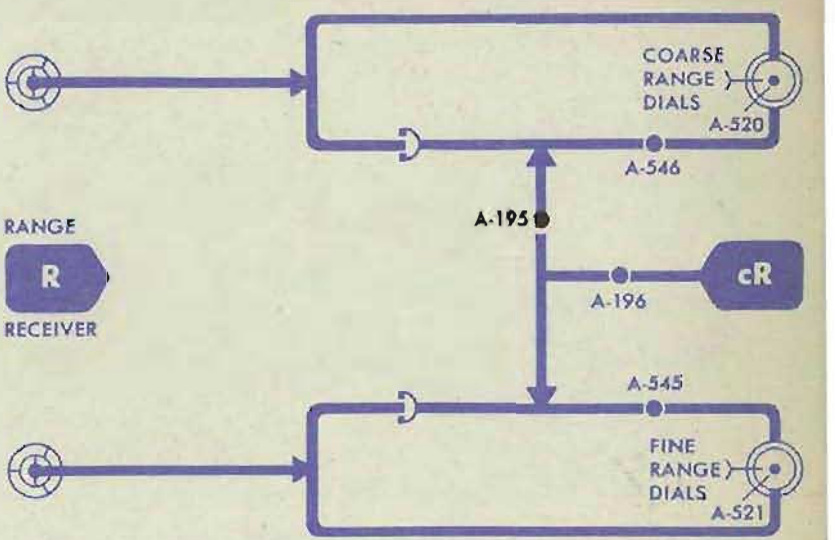
Check

Turn *cR* until the index on the fine ring dial matches the fixed index. An even thousand graduation of the coarse ring dial should also be at the fixed index.

Adjustment

If an even thousand graduation is not at the fixed index, slip-tighten A-195. Bring an even thousand graduation of the coarse dial to the fixed index by turning the spur gear below the left front of the *cR* dial mask.

Tighten A-195, and recheck.
Check A-196.



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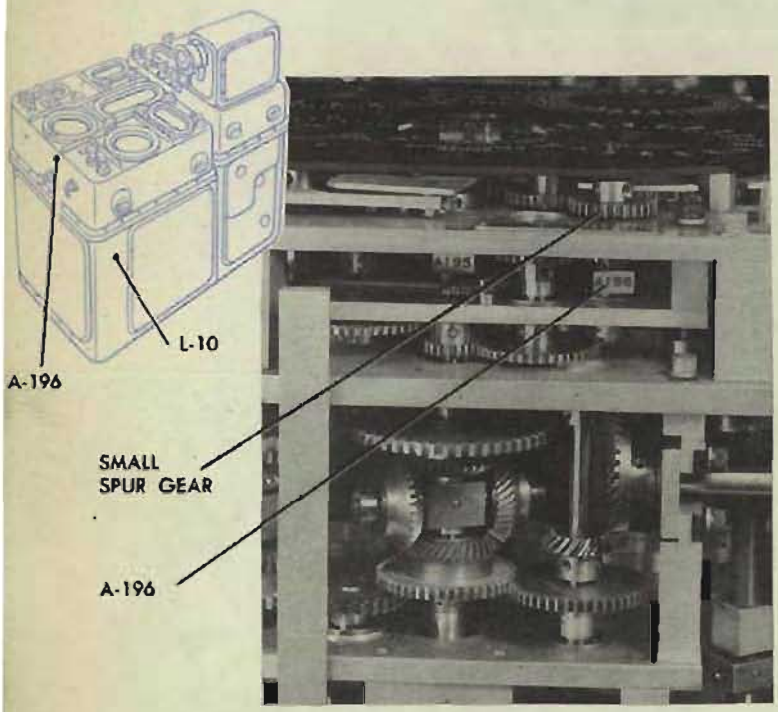
A-196 cR DIALS to L-10



Location

A-196 is under cover 1, below the *cR* dial mounting plate.

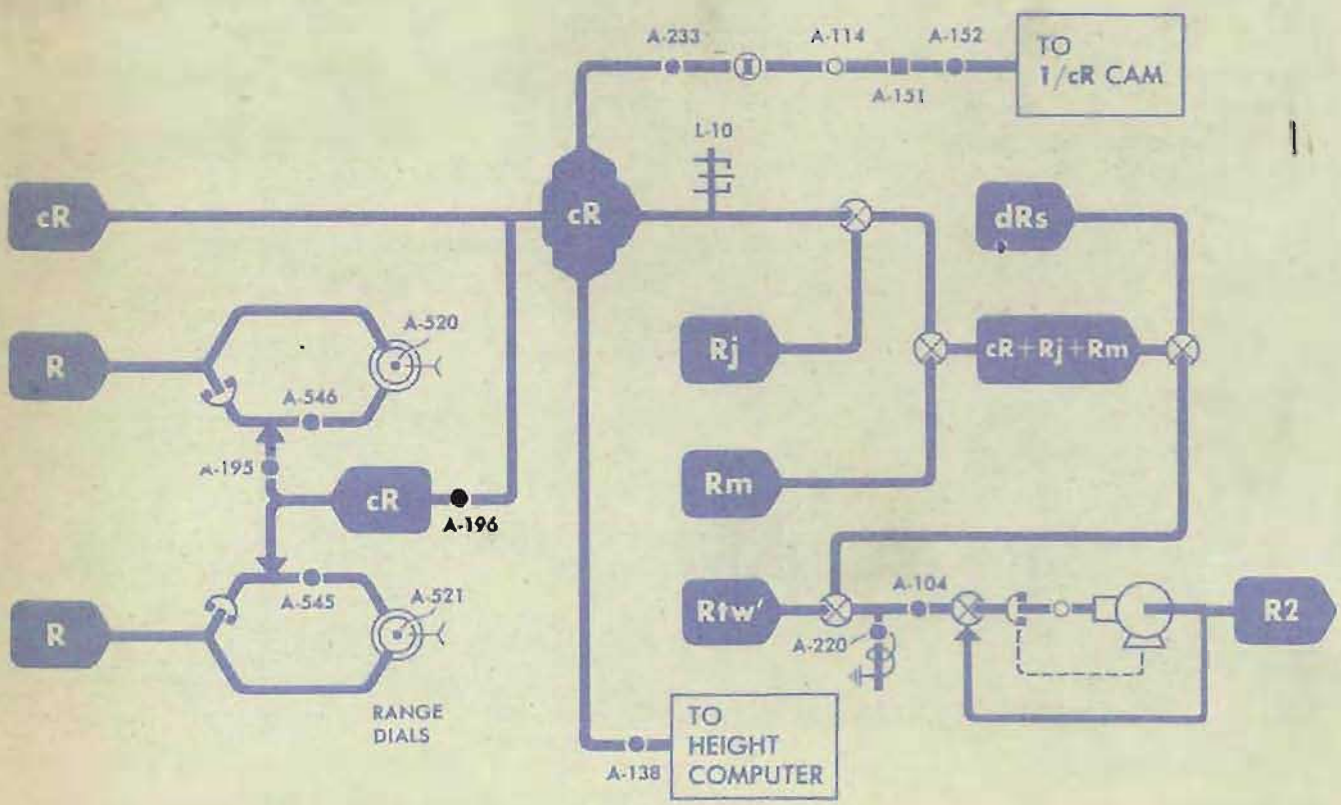
L-10 is under cover 5. It is in a horizontal position with its lower limit toward the rear.

Check

L-10 should operate at 0 and 35,000 yards on the *cR* dials, except in Mods 0, 1, 2, and 9. In these mods the limits are 0 and 22,500 yards.

IMPORTANT: If either limit cannot be reached, A-138 or A-233 may be causing an obstruction. Determine which clamp is upset, and loosen it.

Turn *cR* until the lower limit of the stop is reached. The *cR* dials should read 0 yards.



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Adjustment

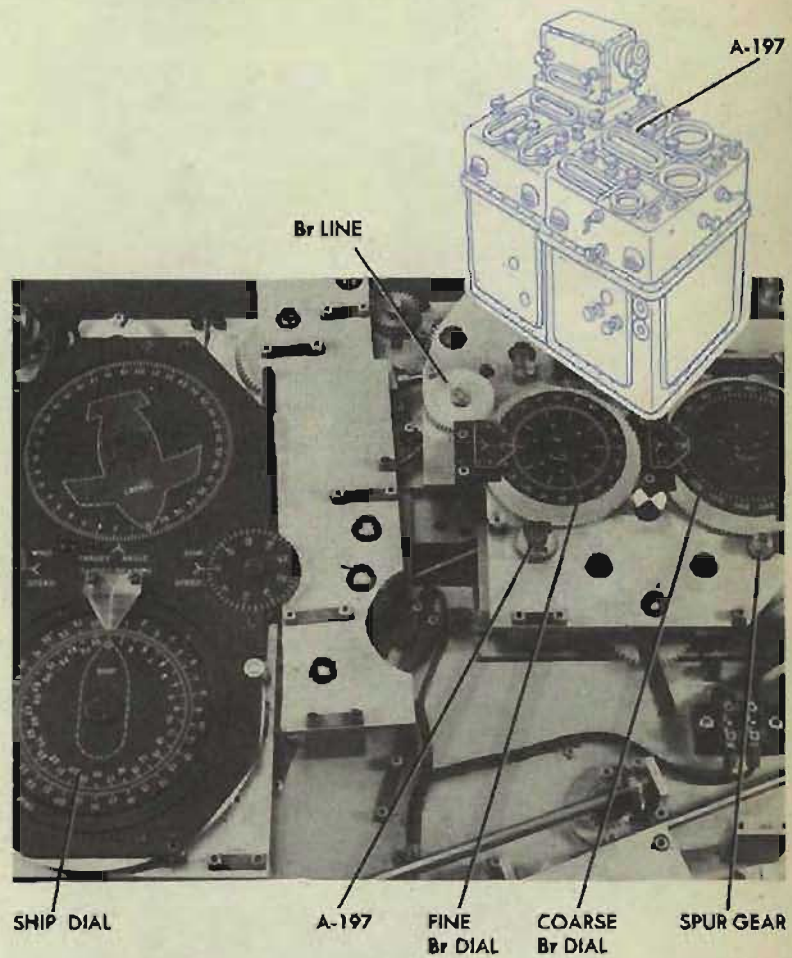
If the *cR* dials do not read 0 yards, hold the line against the stop. Loosen A-196.
Bring the *cR* dials to zero by using a gear pusher to turn the small spur gear under the right front of the dial mask.

Tighten A-196.
Recheck by running *cR* to the upper limit.
Check A-138, A-233, A-151, and A-104.

A-197 COARSE to FINE Br RING DIAL

Location

A-197 is under cover 1, below the front of the bearing dial mask, near the fine *Br* dial.



Check

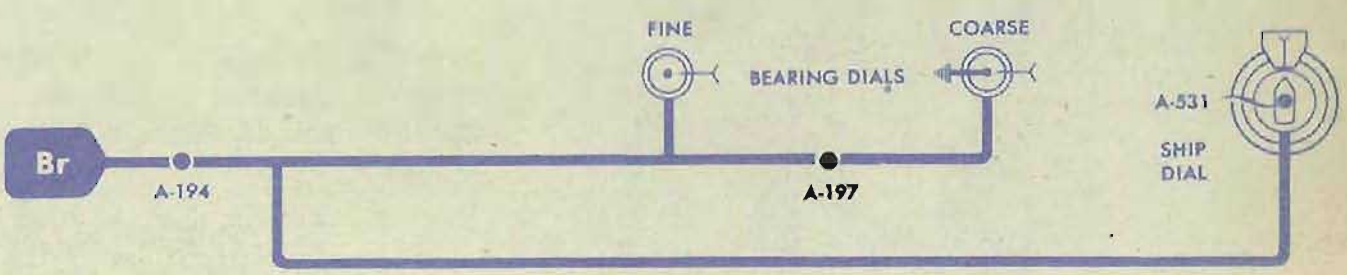
Set the ship dial and the fine *Br* dial at 0°.

The coarse *Br* dial should read 0°.

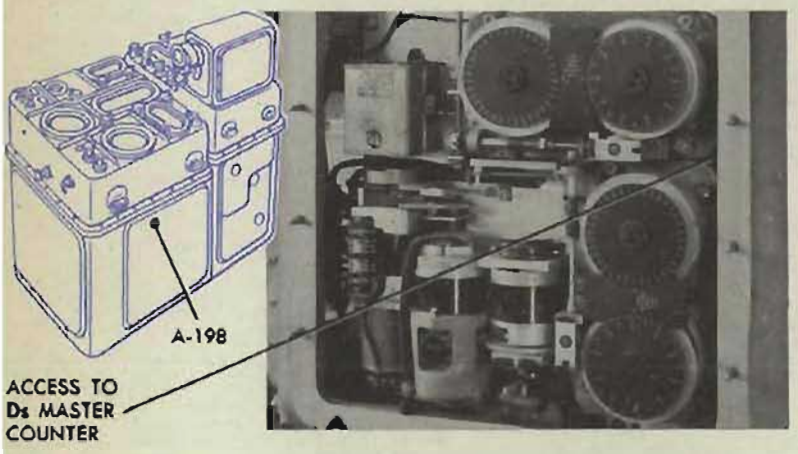
Adjustment

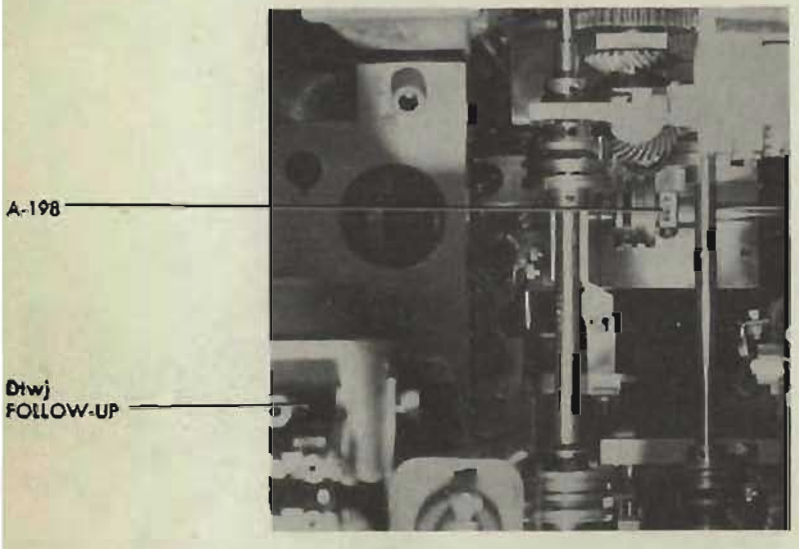
If the coarse *Br* dial does not read 0°, make A-197 slip-tight. Wedge the *Br* line. Slip the coarse dial to 0° by turning the meshing gear. Tighten A-197, and recheck.

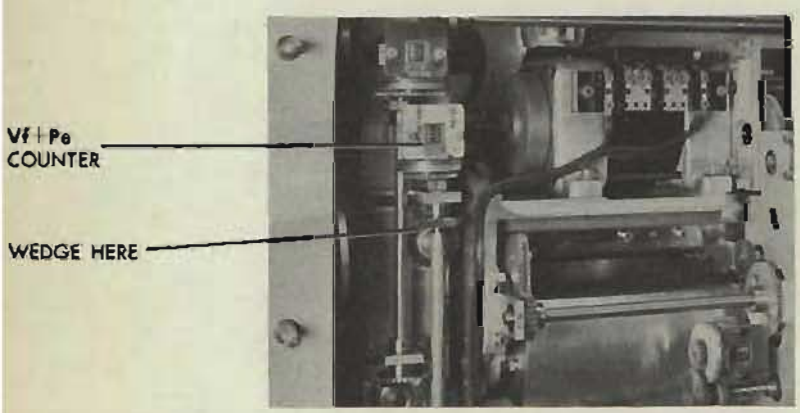
Check A-194 and A-531.



A-198 Ds MASTER COUNTER to L-28







Location

A-198 is under cover 5, to the rear of a coupling on a horizontal shaft.

The *Ds* master counter is under cover 8, behind the *B'gr* transmitter mounting plate.

L-28 is under cover 5, behind the *Dtwj* follow-up. It is in a vertical position with its upper limit at the top.

Check

The *Ds* master counter should read 9982 (−518 mils) at the lower limit, and 1018 (+ 518 mils) at the upper limit.

Turn the power OFF.

Set the *Vf+Pe* counter at 100 minutes (010) by turning the gearing to the counter under cover 4 at the top left, and wedge the line.

Set *I.V.* at 2550 f.s.

Increase *Ds* to the upper limit. The *Ds* counter should read 1018 mils.

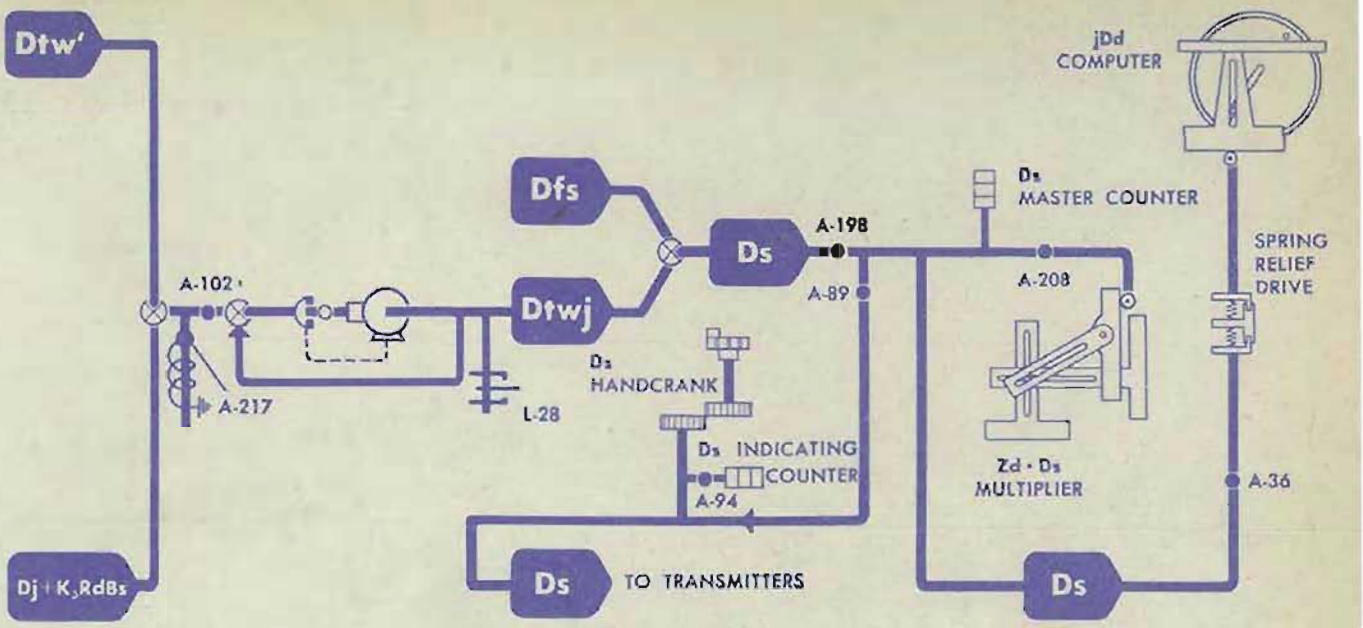
Adjustment

If the *Ds* master counter does not read 1018 mils at the upper limit, loosen A-198.
Wedge the *Dtwj* follow-up output gear against the limit. Turn the *Ds* handcrank until the *Ds* counter reads 1018 mils. Tighten A-198 and run *Ds* to its lower limit. The counter should read 9982.

IMPORTANT

If L-28 cannot be set at either limit, A-208 or A-36 may be causing a restriction. Loosen whichever clamp is interfering and readjust it later.

Remove the wedges from the *Dtwj* follow-up and the *Vf+Pe* line.
Check A-102, A-110 and A-105.

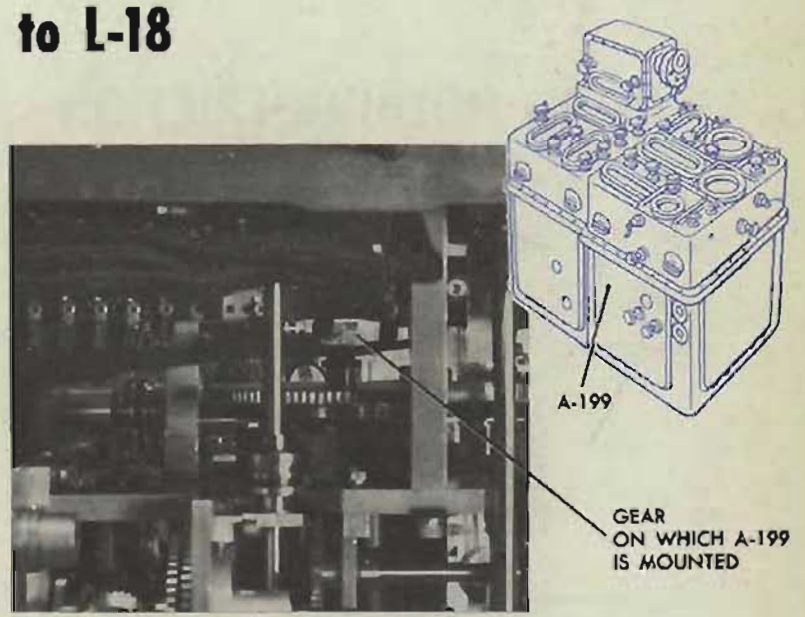


A-199 Br RING DIALS to L-18

Location

A-199 is under cover 3, on a horizontal shaft near the top plate, about 18 inches in toward the center.

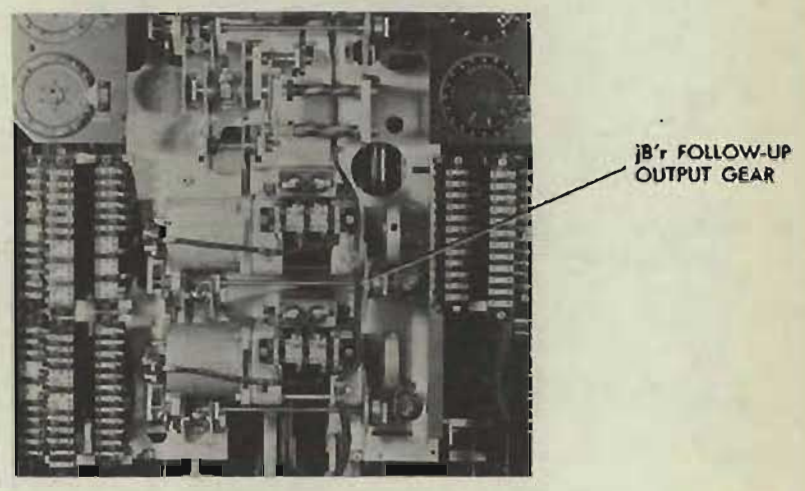
L-18 is under cover 7, on the reverse side of the plate behind the output gearing of the *jB'r* follow-up motor. The upper limit is at the top.



Check

Turn the power OFF.

Set *Dd* at 0° and wedge the line.
Set *B'gr* at 0° and wedge the line.
Turn the *jB'r* follow-up output gear until the upper limit of L-18 is reached.
The *Br* dials should read 11°40'.

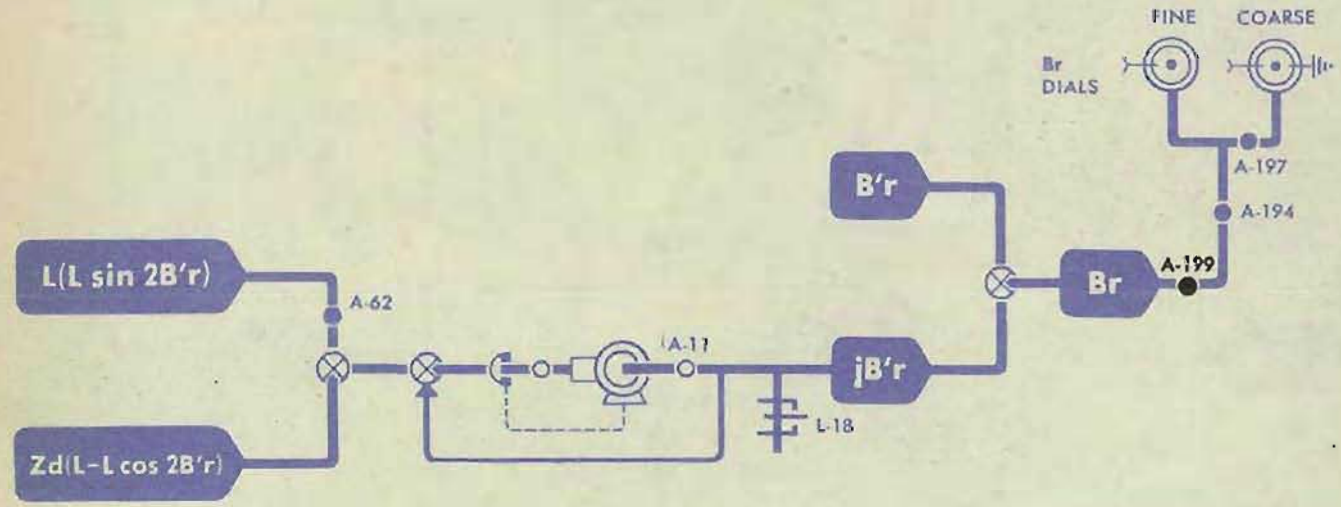


Adjustment

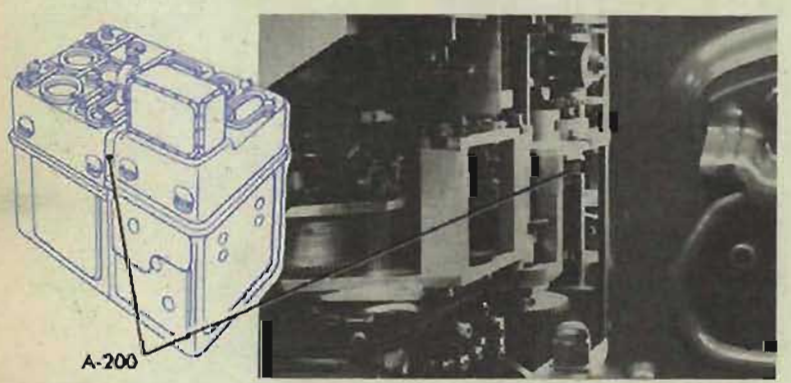
If the *Br* dials do not read 11°40', hold *jB'r* against the stop. Loosen A-199. Use a gear pusher to turn the gear on which A-199 is mounted until the *Br* dials read their proper value. Tighten A-199, and recheck by running *jB'r* to the lower limit. The *Br* dials should read 348°20'.

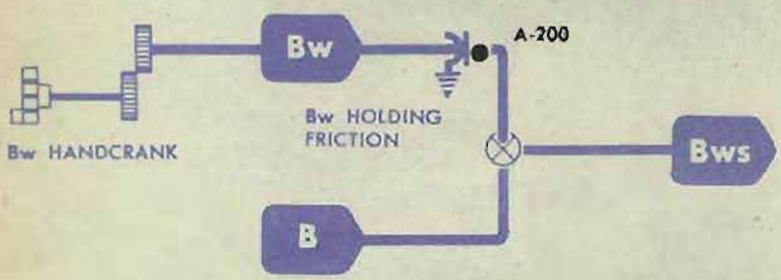
Remove the wedges from the *Dd* and *B'gr* lines.

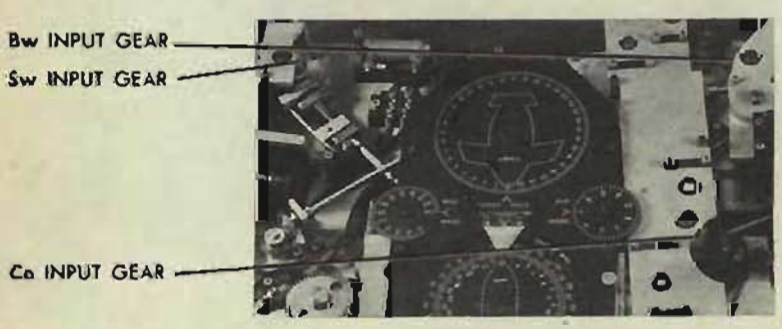
Check A-62.



A-200 Bw HOLDING FRICTION







Location

A-200 is under cover 1, at the right rear.

Check

The friction should hold the *Bw* setting without too much drag on the line.

Set *Sw* at 40 knots. Use the *Sw* input gear.

Turn the *Co* input gear.
There should be no motion of the *Bw* input gear.

Adjustment

If the *Bw* input gear moves, loosen A-200 and turn the clamp until there is enough friction to hold the setting.

Tighten A-200, and recheck.

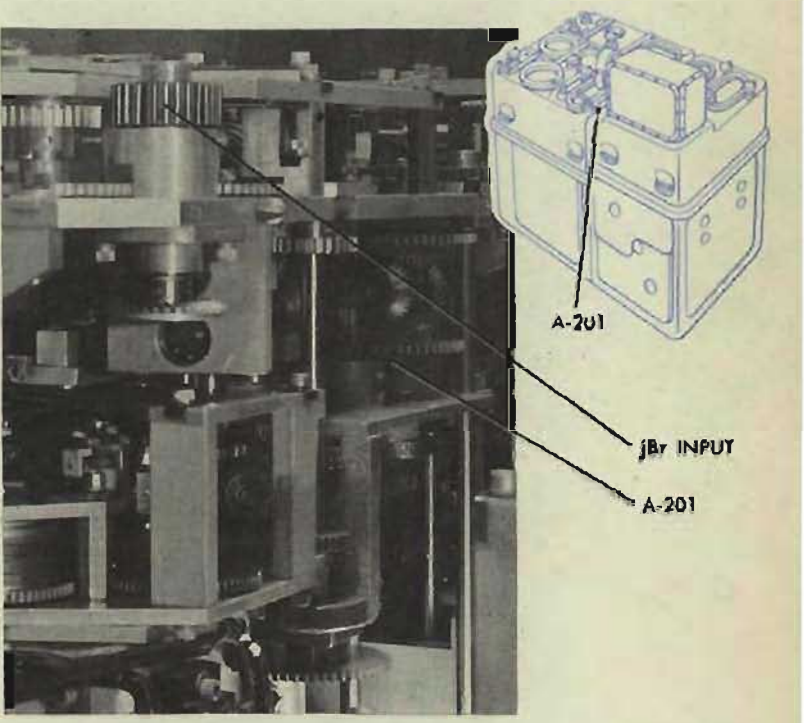
IMPORTANT

Increase the friction only to the point where no motion backs through *Bw*, and the *Bw* input gear still turns easily.

A-201 jBr HOLDING FRICTION

Location

A-201 is under cover 1, at the right rear.



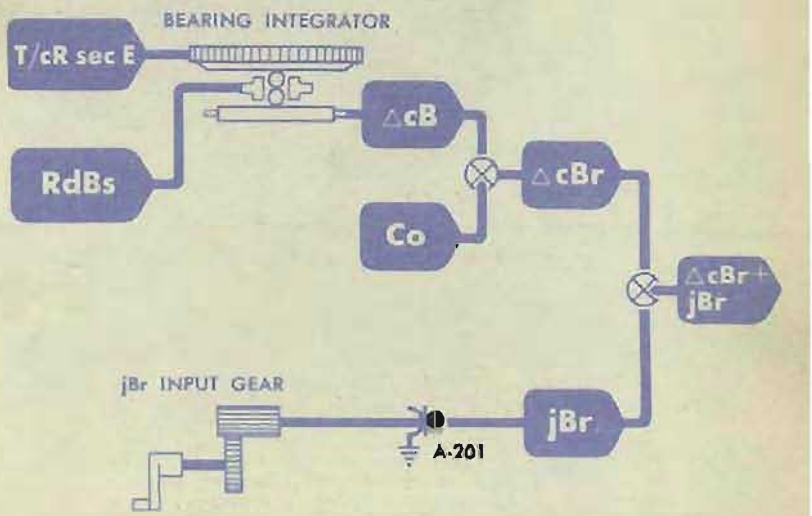
Check

This friction should hold the *jBr* setting without too much drag on the line.

Turn the power ON.
Turn the time motor ON.

Set *Br* at 0°.
Set *A* at 90° and wedge the line.

Increase *Sh* to 400 knots to offset the carriage of the bearing integrator. The integrator output should not back out the *jBr* input gear.



Adjustment

If any of the integrator output backs through the *jBr* input gear, loosen A-201 and turn the clamp clockwise to increase the friction.

Tighten A-201 and recheck.

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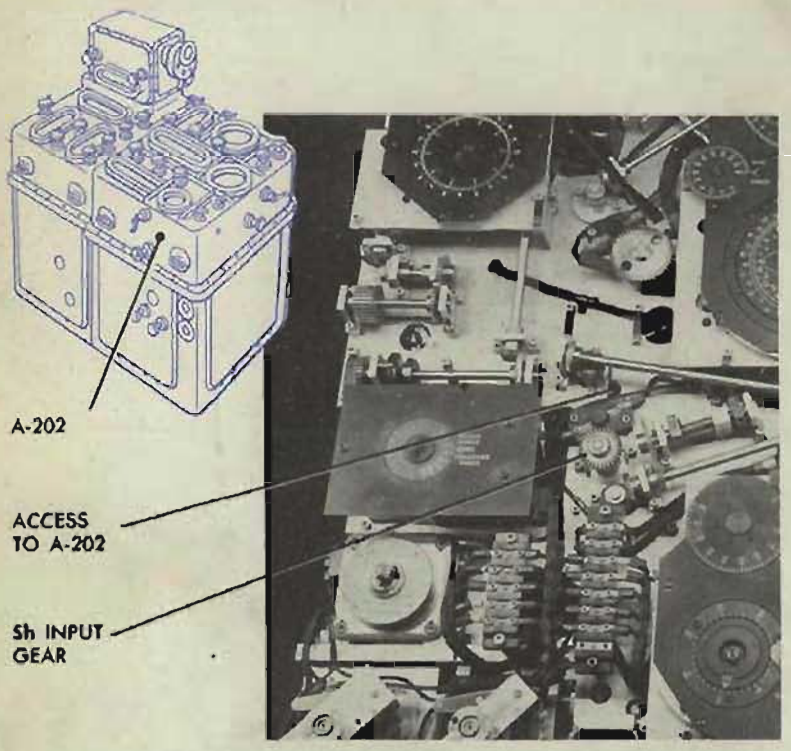
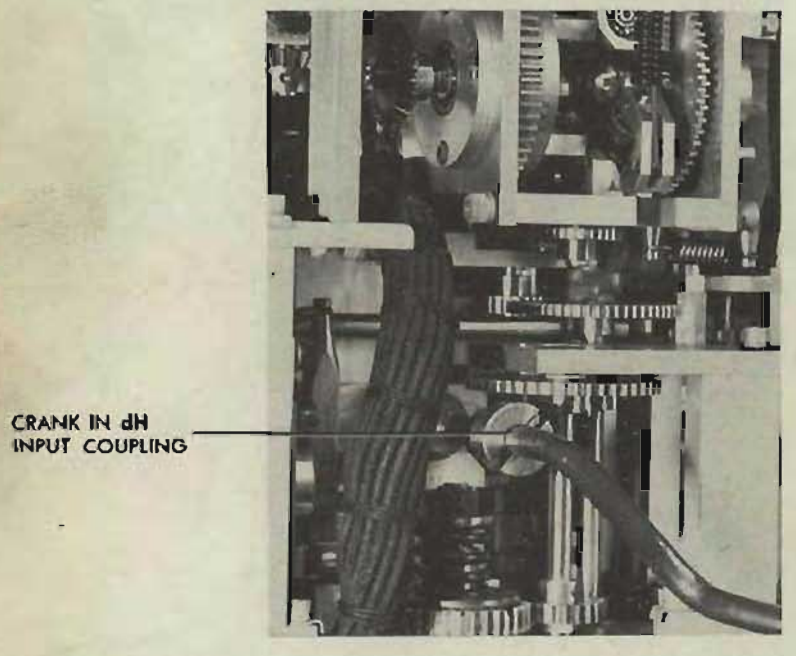
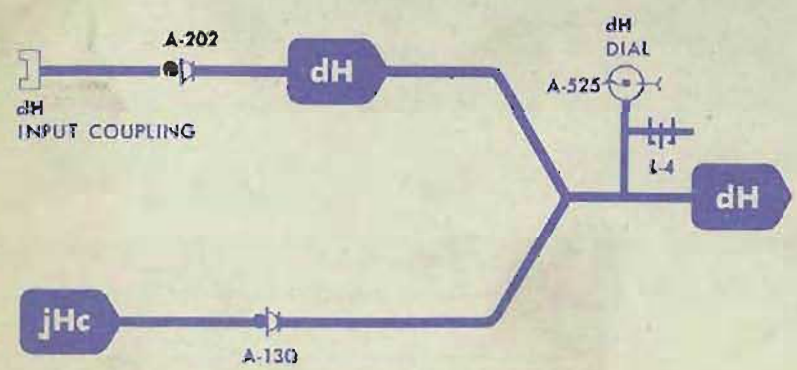
A-202 dH FRICTION DRIVE







Location

A-202 is under cover 1, on the end of the *dH* input shaft.

Check

A-202 should drive the *dH* line whenever an input is made manually. It should slip when the *dH* line runs against either end of the limit stop.

Turn *dH* rapidly for several revolutions, then slowly, then rapidly again. The *dH* dial should follow the movement of the handcrank closely, without slipping. If the dial moves erratically, the friction drive is too loose.

Run the line into the stop. The friction drive should slip without requiring the handcrank to be forced. If it does not slip with normal turning effort, the friction is too tight.

Adjustment

If the check shows that A-202 is out of adjustment, loosen the screw and turn the clamp clockwise to increase the friction, or counterclockwise to decrease it.

Tighten A-202, and recheck.

A-203 R3 COUNTER to R2 COUNTER

Location

A-203 is under cover 4, at the lower left of the fuze ballistic computer.

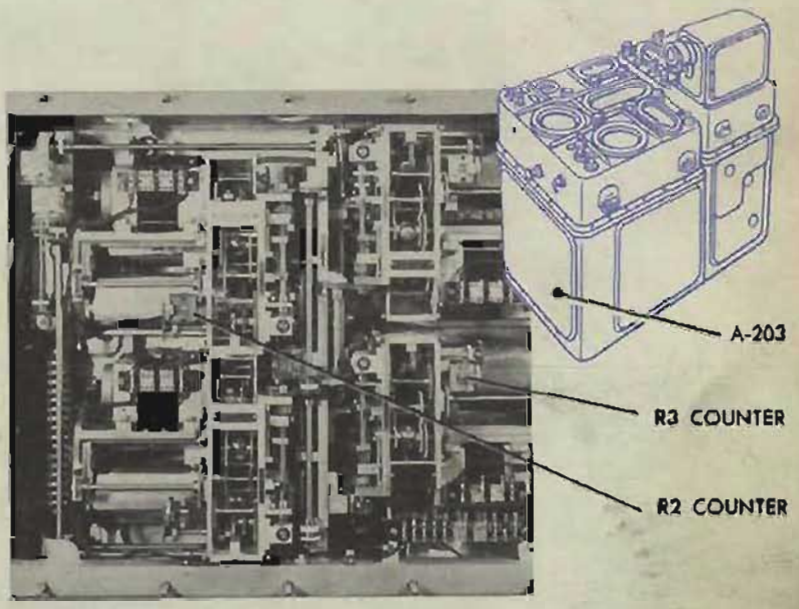
Check

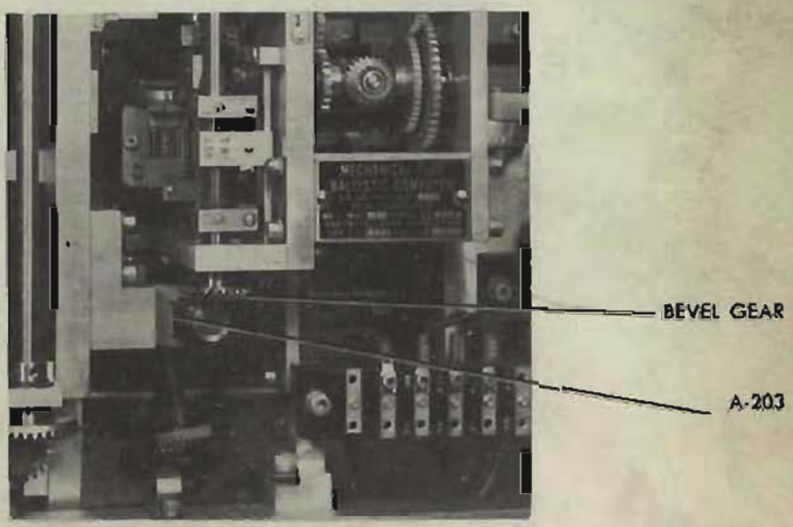
FOR SER. NOS. 780 AND LOWER:
Set *Tg* at 0 seconds.
Set *dR* at 0 knots.
The *R3* counter on the fuze ballistic computer should agree with the *R2* counter on the *Tf* ballistic computer.
FOR SER. NOS. 781 AND HIGHER:
Set *Tg* at 0 seconds.
Disconnect leads A and AA on the *Tf* follow-up, and leads D and DD on the *F* follow-up. Set *F* equal to *Tf*.
Turn the power ON.
Set *So*, *Sh*, and *dH* at 0 knots.
Put the *dR* handcrank at AUTO.
Set *I.V.* at 2550 f.s.
The *R3* counter on the fuze ballistic computer should agree with the *R2* counter on the *Tf* ballistic computer.
NOTE: Before readjusting A-203, check A-48 and A-47 on Ser. Nos. 780 and lower; check A-48 on Ser. Nos. 781 and higher.

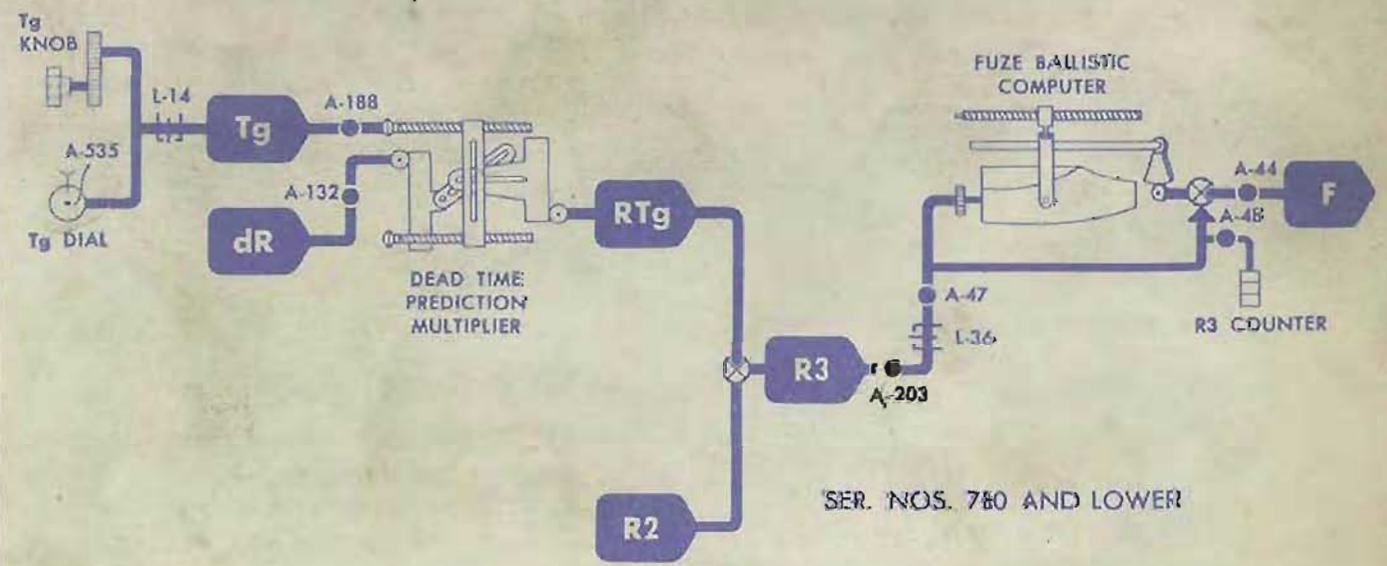
Adjustment

If the counters do not agree, make A-203 slip-tight. Turn the bevel gear in front of A-203 until the *R3* counter reads the same as the *R2* counter.

Tighten A-203, and recheck.







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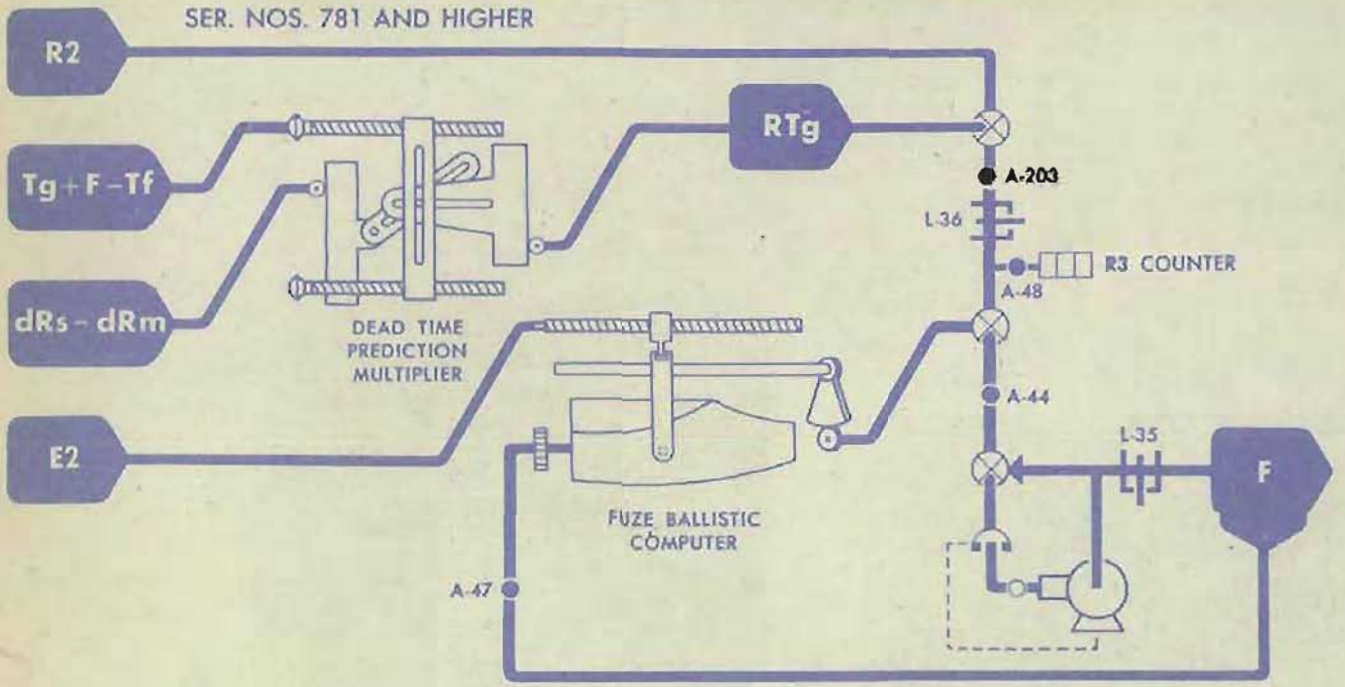
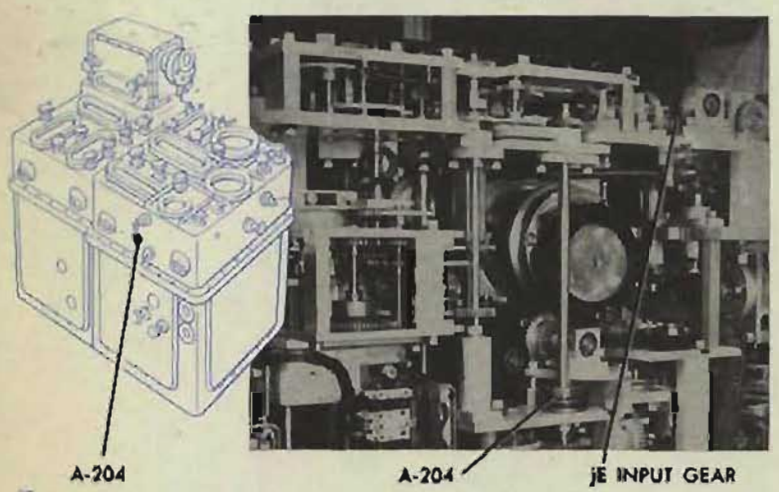
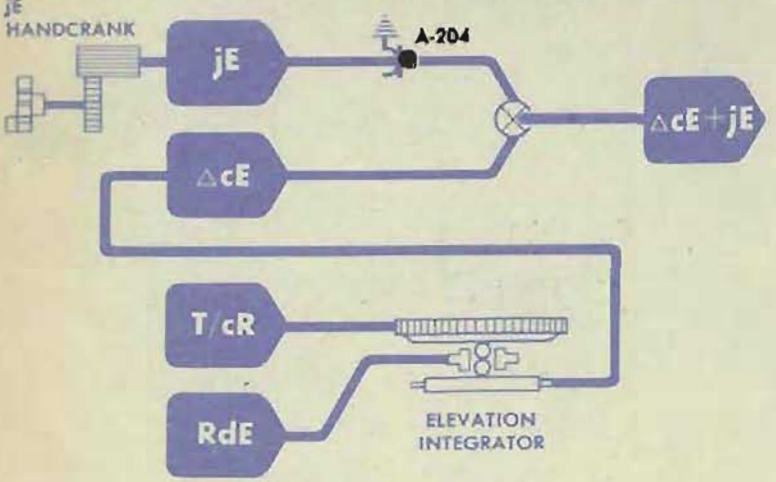


A-204 jE HOLDING FRICTION





Location

A-204 is under cover 1, at the left.

Check

A-204 should hold the *jE* setting without too much drag on the line.

Turn the time motor ON.

Set *E* at 0° and increase *dH* to +150 knots to offset the carriage of the elevation integrator. The integrator roller output should not back out the *jE* input gear.

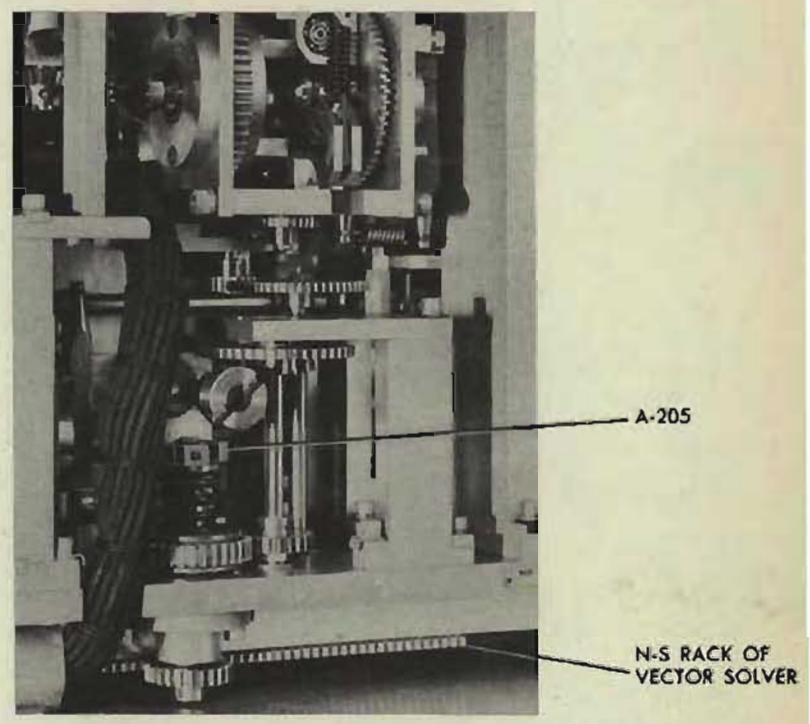
Adjustment

If A-204 is not properly adjusted, loosen the screw and turn the clamp clockwise to increase the friction. Tighten the screw, and recheck.

A-205 VECTOR SOLVER FRICTION DRIVE

Location

A-205 is under cover 1, at the left center.

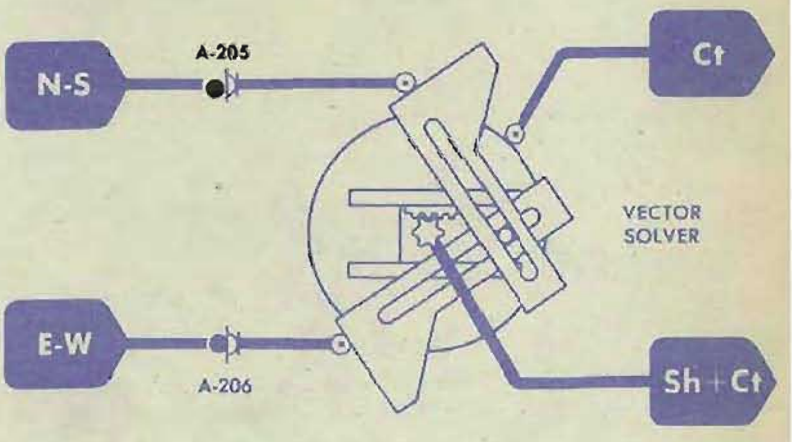


Check

This friction should be tight enough to allow the N-S line to drive the N-S rack and position the vector solver during rate control. It should slip, however, when *Sh* or *Ct* is introduced manually.

Adjustment

Loosen A-205 and turn the threaded clamp until it barely touches the washer below it. Then turn the clamp clockwise 3½ turns, thereby compressing the spring. Tighten the screw and recheck.



Note

The friction loads on A-205 and A-206 should be equal.

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