Research Product 85-09

M60A3 Tank Procedure Guides

ARI Field Unit at Fort Knox, Kentucky
Training Research Laboratory

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U. S. Army Research Institute for the Behavioral and Social Sciences

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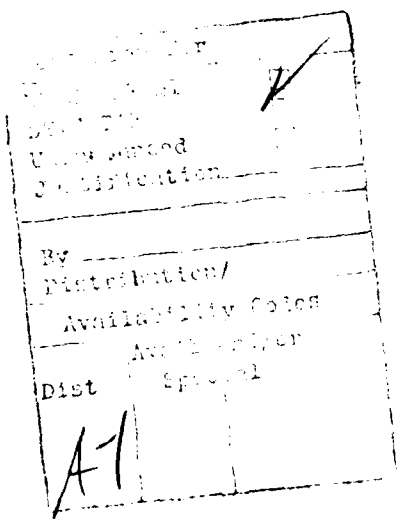

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This research product presents M60A3 Procedure Guides which are designed to aid experienced tank crewmen and gunners to remember and perform pre- and post-operation procedures for the M60A3 battle tank. One of the notable innovations of the Procedures is the abbreviated algorithmic format for presenting task information. Also, separate booklets were developed for tank commander and gunner tasks. And both booklets were designed to be reduced and inserted into plastic binders. These innovations were intended to make the Procedure Guides easy to use and rugged enough to withstand the rigors of the tank environment.

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M60A3 Tank Procedure Guides

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FOREWORD

The Army Research Institute (ARI) Field Unit at Fort Knox, Kentucky, is engaged in research and development on armor training and performance problems related to armor weapon systems. One such problem is that the armor crewman must perform a number of lengthy and complex procedures to prepare the M60A3 battle tank for operation and to power the tank down after operation. Although the M60A3 Operator's Manual (TM 9-2350-253-10) provides complete documentation on these procedural tasks, the TM is a less than ideal job performance aid for the armor crewman who is familiar with the tasks. The Procedure Guides presented herein provide appropriate and convenient aids to help experienced armor crewmen remember and perform procedures for the M60A3 tank.

The M60A3 Procedure Guides were developed along the lines of the M1 Procedure Guides which incorporate a number of innovations. One of the more notable innovations is the abbreviated task information presented in an algorithmic format. Also, the booklets are specific to either tank commander or gunner tasks. And both booklets can be reduced and inserted into plastic ring binders. These innovations were designed to make the Procedure Guides easy to use and rugged enough to withstand the rigors of the tank environment.

The armor community has demonstrated considerable interest in the Procedure Guides. Both the M1 and M60A3 Procedure Guides have been adopted by the Armor School for distribution to armor units worldwide. Furthermore, the development methodology and format of these armor documents were used by the Fort Benning Field Unit to produce Procedure Guides for the Infantry Fighting Vehicle.

EDGAR M. JOHNSON
Technical Director

M60A3 TANK PROCEDURE GUIDES

CONTENTS

OVERVIEW

Background

To prepare the M60A3 battle tank for operation and to power down after operation, armor crewmen have to perform a number of procedural tasks. Although the M60A3 Operator's Manual (TM 9-2350-253-10) presents complete documentation on these tasks, it provides a less than ideal job performance aid for experienced armor crewmen. Some of the problems with the TM include:

- Excessive detail: The procedures are described at an inappropriate level of detail for the experienced performer.
- Large size: The TM is large and cumbersome to use.
- One per tank: Because only one TM is issued per tank, it is unavailable to three of the four crewmen during pre- and post-operations checks.

The M60A3 Procedure Guides were designed to address these problems by providing position-specific job aids that are convenient and complete.

Development

Eighteen tank commander and 15 gunner procedures were chosen to be included in the Procedure Guides. The format for the M60A3 Guides was taken from Procedure Guides previously developed for the M1 tank.[1,2] All task information was derived from the TM in order to make the Guides compatible with the TM.

Features

Some of the more notable features of the M60A3 Procedure Guides are listed below:

- "Part . . . action" format: Task information is abridged by casting each step in this format.
- Algorithmic conventions: Flowchart symbols are used to describe branch points in more complex tasks.
- Notes/cautions/warnings: These items which concern task performance, safety, or system integrity are identified at appropriate points in the procedure.

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[1]Silbernagel, B. L., Vaughan, J. J., Jr., and Schaefer, R. H. Development of M1 Abrams Tank Sustainment Training Material. ARI Research Report 1334, June 1982.

[2]Vaughan, J. J., Silbernagel, B., and Goldberg, S. L. M1-Abrams Tank Procedure Guides. ARI Research Product 82-09, July 1982.

- **Identification of common subprocedures:** To avoid duplication of information, common subprocedures are identified and presented as separate procedures.

- **Convenient, rugged packaging:** The guides are designed to be reduced to a smaller (4½" x 7") format and inserted in plastic covered ring binders.

- **Separate booklets:** Separate Procedure Guides are provided for tank commander and gunner tasks.

- **Preventive Maintenance Checks and Services (PMCS):** PMCS tasks are presented in the appropriate books, and the tank commander book also has a master checklist.

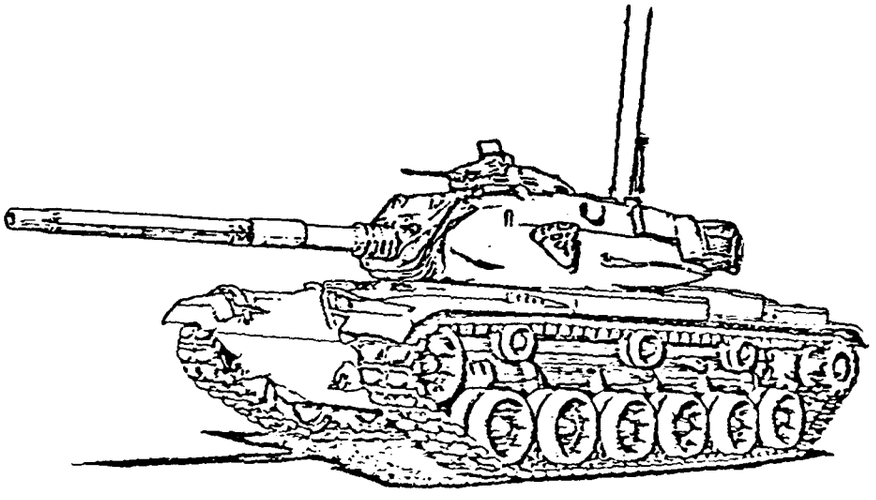
How To Use

The Procedure Guides are designed to complement the TM, not to replace it. The TM is still the most appropriate reference for the details of equipment operation. And the TM should be used for initial training of procedures. The Procedure Guides should be introduced only after soldiers are reasonably familiar with the equipment and task terminology. Additional training on the Procedure Guides themselves is also required to acquaint soldiers with its algorithmic style and abbreviations.

TANK COMMANDER

PROCEDURE GUIDES

M60A3 TANK



July 1982

PREPARED BY THE U.S. ARMY RESEARCH INSTITUTE
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GENERAL INFORMATION

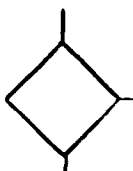
This booklet contains M60A3 tank commander procedures guides. Each guide is for a single pre-operation, post-operation, or during operation activity. Each guide is matched to TM 9-2350-253-10 (Operator's Manual for Tank, Combat, Full-Tracked: 105-MM Gun, M60A3).

PURPOSE OF PROCEDURE GUIDES

The guides in this booklet will not take the place of the M60A3 Operator's Manual or M60A3 training materials. The guides will aid you in remembering long or difficult sets of procedures. In short, the guides will help to "jog your *memory*."

USE OF THIS BOOKLET

The Table of Contents (on the next page) lists the procedure guides in this booklet. Each guide gives you a step-by-step outline for completing an activity. The following instructions will help you to better use each guide.

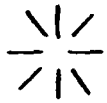


1. Some steps within a procedure are followed by a page number. On that page you will find a detailed breakdown of the step.

2. Some of the procedure guides include a question(s). Each question is stated inside a diamond shape. Your "yes" or "no" to the question will show you which path to follow.

3. Some paths lead to an instruction to go to a particular step number within a procedure. The step number is given within a circle.

4. Some steps within a procedure guide are followed by a box. In the box you will find more information on the step or a caution/warning.



5. Certain steps within a procedure guide require that a knob or switch be turned to a certain position. In some cases, that position might be written like the symbol to the left. The symbol means that a light should also come on.

6. Master check-off lists of all before, during, and after operations preventative maintenance checks and services (PMCS) performed by crewmembers are included as an aid in your supervision of these activities.

7. At the beginning of each procedure, the TM page number reference for the procedure is given under the task name. These references will help you if you need more information to complete the task.

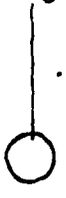
TABLE OF CONTENTS

INSTALLING COMMANDER'S PERISCOPE M36E1

(TM page 3-122)

LINK ASSEMBLY MUST BE DISCONNECTED FROM PERISCOPE AND ATTACHED TO STOWAGE HANGER BEFORE INSTALLING PERISCOPE DAYLIGHT BODY

1. Daylight body . . . . . Slide into position carefully
2. Daylight body latches . . . . Engage — Support daylight body with one hand
3. Passive elbow . . . . . Slide into position carefully
4. Passive elbow latches . . . . Engage — Support passive elbow with one hand
5. Two electrical connectors . . Connect to rear of daylight body
6. Quick-disconnect clamp . . . . Disconnect from stowage hanger/ connect to periscope elevation arm
7. Stowage hanger . . . . . Place in cupola ceiling stowage clip



OPERATING COMMANDER'S PERISCOPE M36E1

(TM page 2-234)

1. MASTER BATTERY . . . . . ON

2. CUPOLA POWER . . . . . ON

3. Ballistic shield cover . . . . Open — Rotate handle either clockwise or counter-clockwise (to lock)

4. Headrests . . . . . Adjust — Locking levers back to adjust/forward to lock in place

5. Daylight body eyepiece . . . . Obtain image

6. Diopter ring . . . . . Rotate to sharpen image

7. Lamp housing of light source control . . . . Connect to slot on daylight body

8. Light source control knob . . Adjust reticle brightness — Close ballistic shield if outside light is too bright

9. IS LRF TO BE USED ?
   - YES → 9a. Laser filter . . . . Remove from telescope filter box
   - 9b. Laser filter . . . . Insert in eyeshield groove → GO TO 10
   - NO → GO TO 10

OPERATE PASSIVE ELBOW ONLY UNDER LOW LIGHT CONDITIONS OR WITH BALLISTIC SHIELD COVER CLOSED

10.. Passive elbow shutter lever . Move to the left — Opens shutter and activates power switch

11. RETICLE control . . . . . Adjust reticle brightness — Use lowest possible intensity

12. TUBE control . . . . . Adjust tube brightness

13. Diopter ring . . . . . Focus background

14. Focus ring . . . . . Focus target image

15. Tube control . . . . . Readjust for clearest image

REMOVING COMMANDER'S PERISCOPE M36E1

(TM page 3-122)

1.	Cal .50 machine gun	Elevate to upper limit
2.	Quick-disconnect clamp	Disconnect from periscope elevation arm
3.	Elevation arm	Move toward rear of cupola
4.	Quick-disconnect clamp	Connect to stowage hanger

LINK ASSEMBLY MUST BE DISCONNECTED FROM PERISCOPE AND ATTACHED TO STOWAGE HANGER BEFORE REMOVING M36 PERISCOPE DAYLIGHT BODY.

5.	Two electrical connectors . .	Disconnect from rear of daylight body
6.	Lamp housing	Disconnect from daylight body (dovetail slot)
7.	Lamp housing	Connect to light source control (dovetail slot)
8.	M30 instrument light	Disconnect from passive elbow
9.	Passive elbow latches	Release

Support passive elbow with one hand

GO TO 10

GO TO 10

10. Passive elbow . . . . . Lower carefully

11. Daylight body latches . . . . Release

12. Daylight body . . . . . Lower carefully

Support daylight body with one hand

OPERATING LASER RANGEFINDER (LRF)

(TM page 2-246)

LIMIT SUSTAINED RANGING RATE TO THREE PER MINUTE OR SIX PER TWO MINUTES WITH THREE-MINUTE INTERVALS BETWEEN EACH TWO MINUTE RANGING PERIOD.

DO NOT LEAN AGAINST RECEIVER-TRANSMITTER WHEN VIEWING THROUGH EYEPIECE OR LASING.

MAKE SURE BLISTER COVER IS LOCKED IN THE OPEN POSITION WHEN RANGING.

A-9

1. MODE . . . . . TEST

2. MASTER BATTERY . . . . . ON (driver)

3. POWER . . . . . ON (gunner)

4. Headrest . . . . . Adjust — Use serrated knob to release and lock

GO TO 5

5.	Blister cover	Lock in open position
6.	Eyepiece	Sight image
7.	Diopter ring	Adjust until image is sharp and clear
8.	RETICLE BRIGHTNESS	Adjust reticle brightness
9.	6X/12X switch	Select appropriate power
10.	Rubber eye shield	Pull off
11.	Laser filter	Remove from stowage bracket/ snap over eyepiece
12.	Rubber eye shield	Replace

LASER RANGEFINDER SELF-TEST

(TM page 2-248)

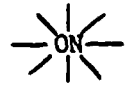
1.	MODE	TEST
2.	MASTER BATTERY	ON
3.	POWER	ON (gunner)
4.	MANUAL/RANGEFINDER	RANGEFINDER (gunner)
5.	LIGHT/DIM/TEST	TEST
6.	Control panel indicators . . .	All should illuminate
7.	RANGE (METERS)	Should display 8888
8.	RETURNS	Should display 8
9.	LIGHT/DIM/TEST	LIGHT or DIM
10.	Control panel indicators . . .	The following should illuminate: RANGE, RESET, FEED, BATL RNG, LAST, TEST

GO TO 11

11. RANGE (METERS) . . . . . Should display 0000

12. RETURNS . . . . . Should display 0

DO NOT PRESS RANGE SWITCH OR THUMB SWITCHES ON GUNNER'S CONTROL HANDLES WHILE MODE SWITCH IS IN ON OR AUTO, LASER WILL FIRE.

13. MODE . . . . . 

14. MODE . . . . . 

15. RANGE indicator . . . . . Should flash within 4 seconds

16. MANUAL/RANGEFINDER . . . . . MANUAL (gunner)

17. RANGE indicator . . . . . Should not flash

18. MANUAL/RANGEFINDER . . . . . RANGEFINDER (gunner)

19. MODE . . . . . 

20. EMER POWER . . . . . ON (gunner)

21. Indicators on electronics unit . . Should remain on

22. EMER POWER . . . . . XMTR TEST (gunner)

23. Indicators on electronics unit . . Should remain on

24. EMER POWER . . . . . OFF (gunner)

25. RANGE pushbutton . . . . . Depress/Hold

26. RANGE (METERS) . . . . . Should display 0002

27. MALF . . . . . Should illuminate

28. RANGE . . . . . Release

29. BATL RNG . . . . . Depress — Indicator should illuminate

30. LRF panel . . . . . Perform logic test — Use Ranging and Logic Table (page 14)

DO NOT LOOK INTO LRF EYEPIECE
WHEN FIRING LASER INTO THE BLISTER DOOR.

31. Blister door . . . . . Assure closed

32. Blister door pin . . . . . Assure installed

33. EMER POWER . . . . . XMTR TEST (gunner)

34. MODE . . . . . ON

GO TO 35

35. RANGE indicator . . . . . Should flash within 4 seconds

36. RANGE pushbutton . . . . . — Press/Release —

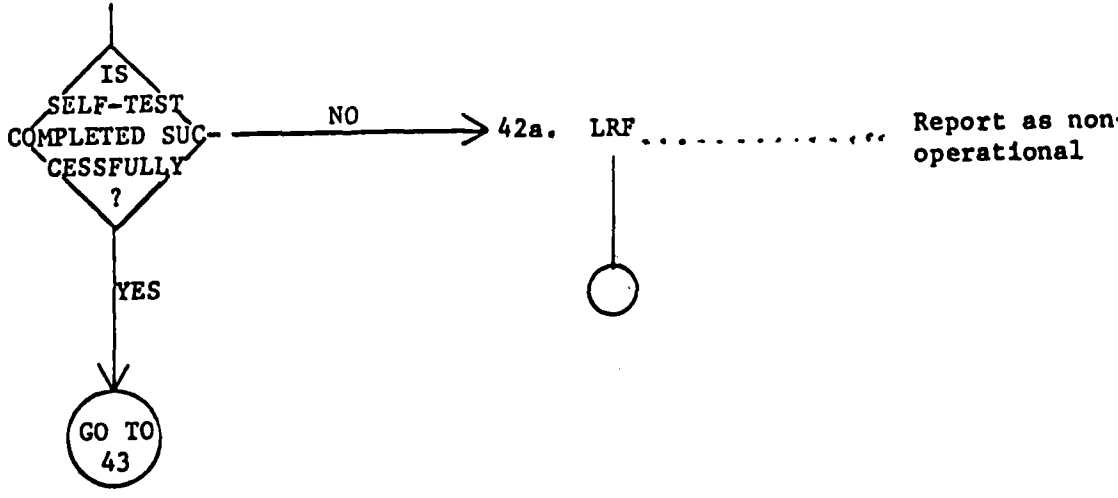
37. Selector lights . . . . . LAST should illuminate

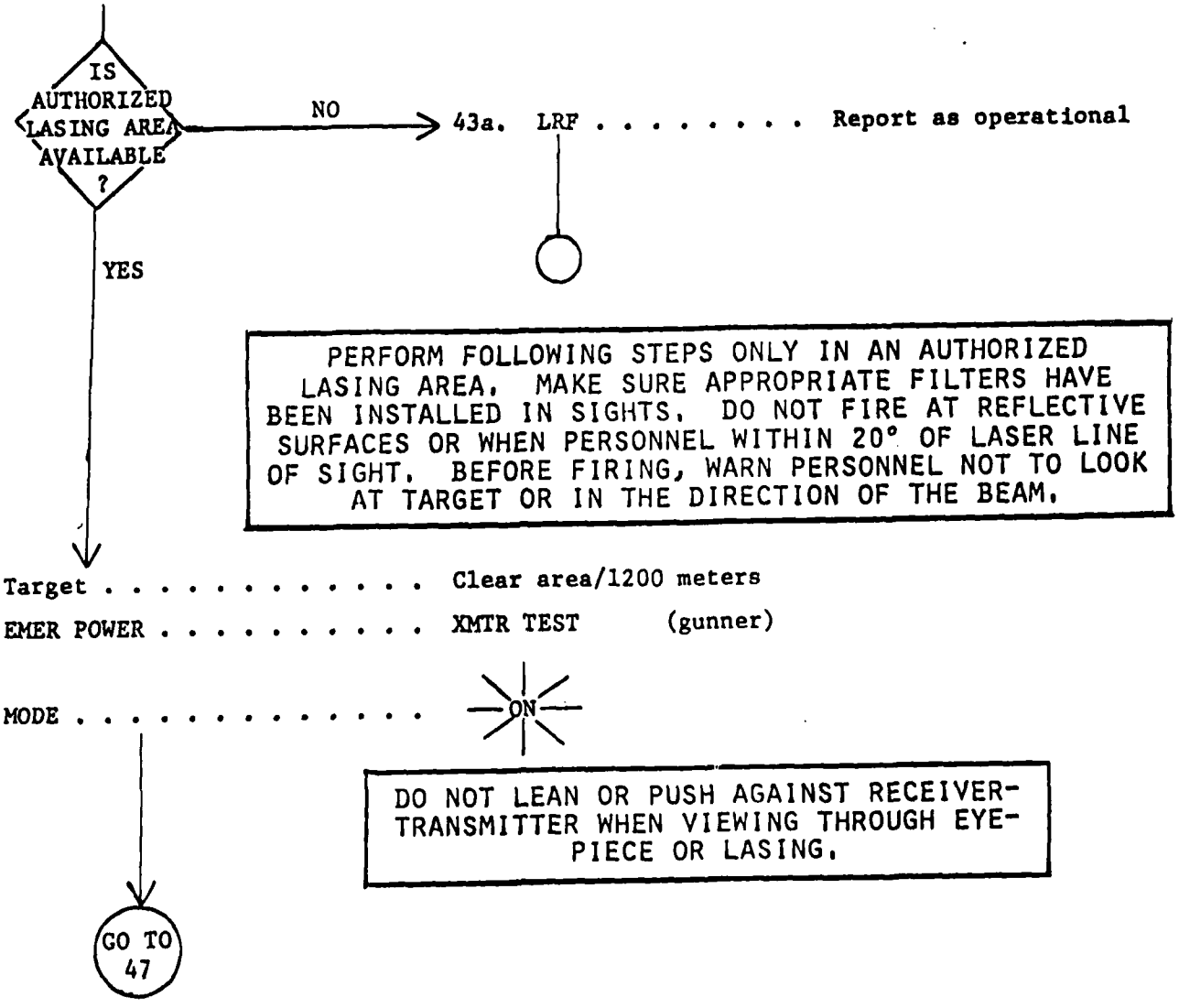
38. RETURNS . . . . . Should display 0

39. RANGE (METERS) . . . . . Should display 9995 (±15)

40. SEL light . . . . . Should be on

41. GO light . . . . . Should be off




43.
IS AUTHORIZED LASING AREA AVAILABLE ?
NO
43a. LRF . . . . . Report as operational
YES
PERFORM FOLLOWING STEPS ONLY IN AN AUTHORIZED LASING AREA. MAKE SURE APPROPRIATE FILTERS HAVE BEEN INSTALLED IN SIGHTS. DO NOT FIRE AT REFLECTIVE SURFACES OR WHEN PERSONNEL WITHIN 20° OF LASER LINE OF SIGHT. BEFORE FIRING, WARN PERSONNEL NOT TO LOOK AT TARGET OR IN THE DIRECTION OF THE BEAM.
44. Target . . . . . Clear area/1200 meters
45. EMER POWER . . . . . XMTR TEST (gunner)
46. MODE . . . . . ON
DO NOT LEAN OR PUSH AGAINST RECEIVER-TRANSMITTER WHEN VIEWING THROUGH EYE-PIECE OR LASING.
GO TO 47

47. LRF reticle . . . . . Lay on target

48. LRF panel . . . . . Perform firing test

Use LRF Firing Test Table (page 15)

IF TARGET RANGE IS NOT OBTAINED DURING LRF TEST, MAKE SURE THAT LRF AND GUNNER'S RETICLES ARE ON THE SAME POINT. IF NOT REBORESIGHT THE SYSTEM AT EARLIEST OPPORTUNITY.

49. EMER POWER . . . . . OFF

50. MODE . . . . . TEST

Ranging and Logic Table

	Inputs	Indications				
Step	Press and Release	Selector Lights	RETURNS Display	RANGE (METERS) Display (+ 15)*	SEL Light	GO Light
Set MODE switch to TEST						
1	RESET	LAST	0	0000	OFF	OFF
2	RANGE	LAST	1	850	OFF	ON
3	BATL RNG	LAST	0	0000	OFF	OFF
4	RANGE	LAST	1	850	OFF	ON
5	1	LAST	1	850	OFF	ON
6	2	LAST	1	850	OFF	ON
7	RANGE	LAST	2	1850	OFF	ON
8	RANGE	LAST	3	2850	OFF	ON
9	RANGE	LAST	4	2850	ON	OFF
10	1	1	4	850	ON	OFF
11	2	2	4	1850	ON	OFF
12	LAST	LAST	4	2850	ON	OFF
13	2	2	4	1850	ON	OFF
14	FEED	2	4	1850	OFF	ON
15	RESET	LAST	0	0000	OFF	OFF
16	2	2	0	0000	OFF	OFF
17	RANGE	2	1	9995**	ON	OFF
18	FEED	2	1	9995	ON	OFF
19	RANGE	2	2	1850	ON	OFF
20	FEED	2	2	1850	OFF	ON
21	Range***	LAST	0	0000	OFF	OFF
22	RESET	LAST	0	0000	OFF	OFF

*Last digit of range display must always be 0 or 5

**If RANGE (METERS) displays 0000, go back to step 15.

***Set ELEV/TRAV POWER switch to ON position and range from gunner's handles.
Set ELEV/TRAV POWER switch to OFF position.

LRF Firing Test

	Inputs	Indications				
Step	Press and Release	Selector Lights	RETURNS Display	RANGE (METERS) Display (± 15)**	SEL Light	GO Light
1	RESET	LAST	0	0000	OFF	OFF
2	2	2	0	0000	OFF	OFF
3	RANGE	2	1	9995*	ON	OFF
4	1	1	1	Target Range****	ON	OFF
5	FEED	1	1	Target Range	OFF	ON
6	Range***	LAST	1	Target Range	ON	OFF

*If RANGE (METERS) displays 0000, press RESET and repeat test sequence.

**Last digit of range display must always be 0 or 5.

***Set ELEV/TRAV POWER switch to ON position and range from gunner's station. Set ELEV/TRAV POWER switch to OFF position.

****If RANGE (METERS) displays 9995, set EMER POWER to OFF and repeat steps 1-4.

BORESIGHTING LASER RANGEFINDER (LRF)

(TM page 2-350)

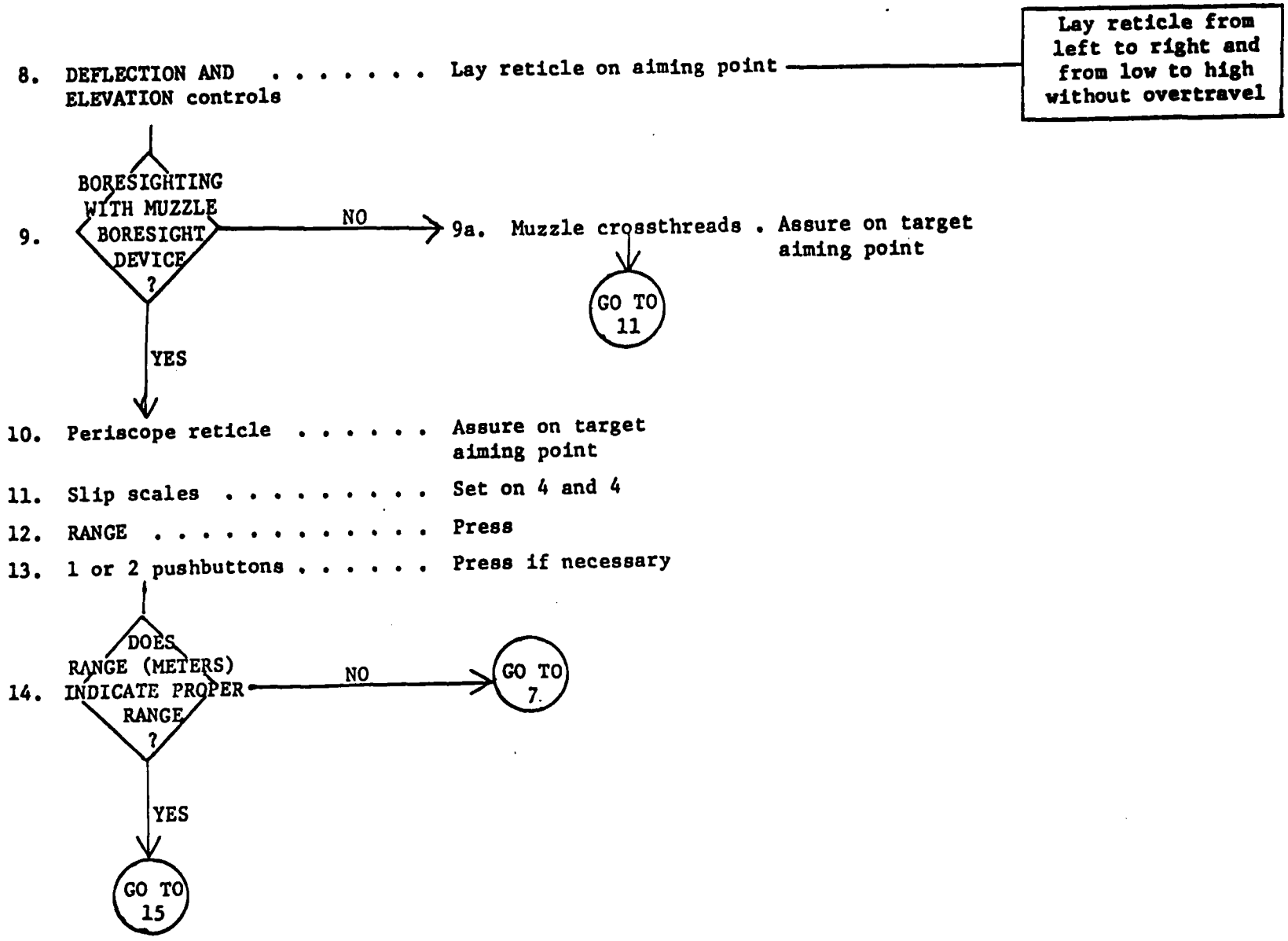
DO NOT VIEW LASER BEAM THROUGH DEVICE NOT FILTERED FOR LASER LIGHT. FIRE LASER IN AUTHORIZED LASING AREA ONLY.

1. Laser filter . . . . . Install on eyepiece
2. RETICLE BRIGHTNESS . . . . . Rotate until reticle is just visible
3. MANUAL/RANGEFINDER . . . . . RANGEFINDER
4. MODE . . . . . ON
5. BATL RNG . . . . . Press

DO NOT LEAN OR PUSH AGAINST RECEIVER-TRANSMITTER WHEN VIEWING THROUGH EYEPIECE OR LASING.

6. 6X/12X 12X
7. Eyepiece . . . . . Sight target

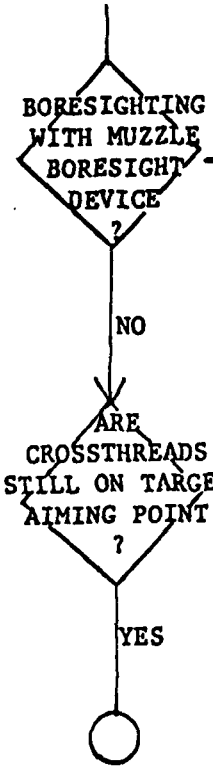
GO TO 8


8. DEFLECTION AND ELEVATION controls . . . . . Lay reticle on aiming point
Lay reticle from left to right and from low to high without overtravel
9. BORESIGHTING WITH MUZZLE BORESIGHT DEVICE ?
NO
9a. Muzzle crossthreads . Assure on target aiming point
GO TO 11
YES
10. Periscope reticle . . . . . Assure on target aiming point
11. Slip scales . . . . . Set on 4 and 4
12. RANGE . . . . . Press
13. 1 or 2 pushbuttons . . . . . Press if necessary
14. DOES RANGE (METERS) INDICATE PROPER RANGE ?
NO
GO TO 7.
YES
GO TO 15

15. FEED . . . . . Press. → GO will light

16. MODE . . . . . TEST

17. Laser filter . . . . . Remove from eyepiece/ replace in holder



18. 18a. Periscope reticle. . Assure on target aiming point

19. 19a. Control handles . . Relay main gun on target

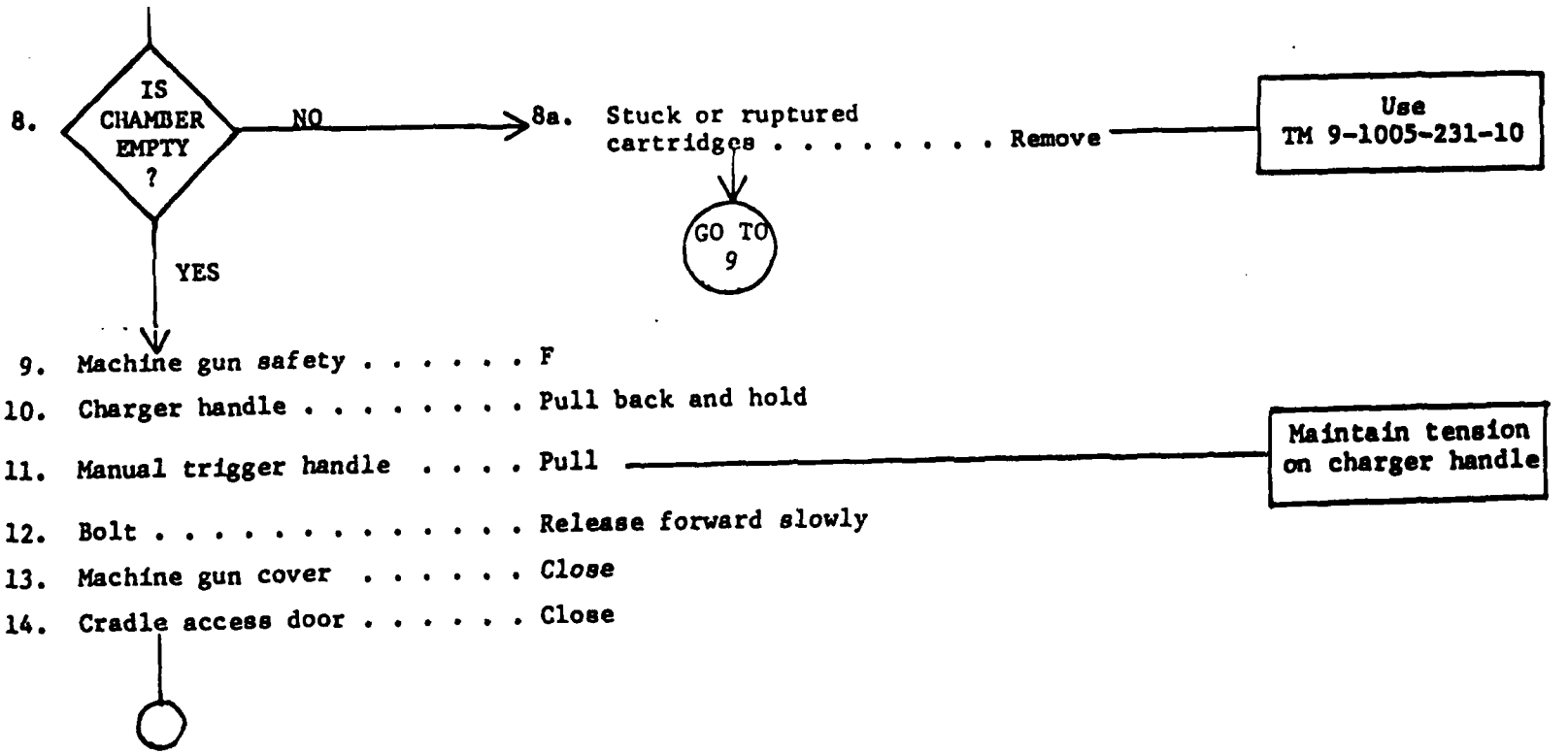
19b. DEFLECTION and ELEVATION . . . Lay reticle on aiming point

19c. Slip scales . . . . Set on 4 and 4

CLEARING CALIBER .50 MACHINE GUN

(TM page 2-337)

1. GUN SAFETY . . . . . OFF
2. CUPOLA POWER . . . . . OFF
3. Machine gun safety . . . . . S
4. Cradle access door . . . . . Prop open — Secure with hold/close latch
5. Machine gun cover . . . . . Open
6. Ammunition . . . . . Remove
7. IS BOLT FORWARD ?
   - YES → 7a. Machine gun safety . . F
     - 7b. Bolt . . . . . Pull to rear — Sear must engage before releasing
     - 7c. Machine gun safety . . S
     - GO TO 8
   - NO → GO TO 8

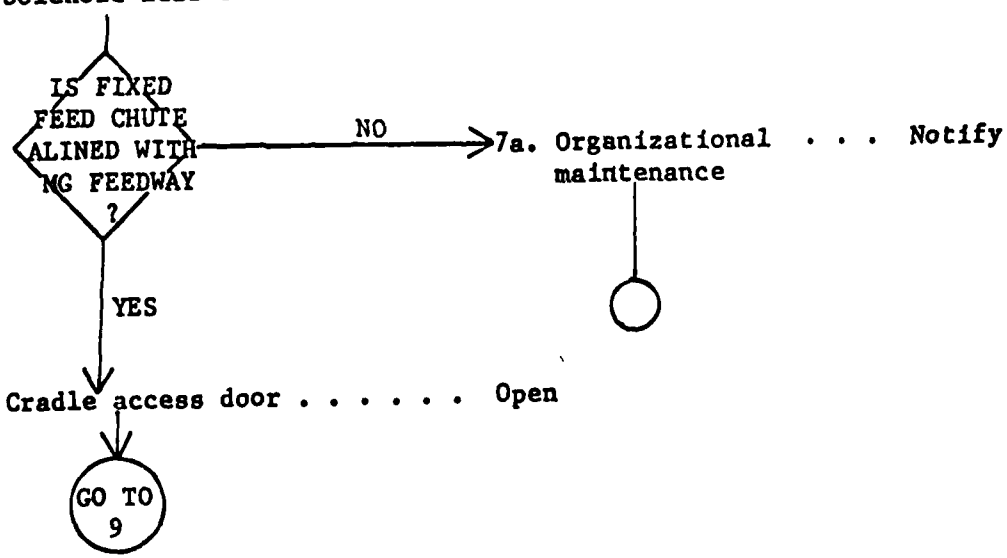

8.
IS CHAMBER EMPTY ?
NO
8a. Stuck or ruptured cartridges . . . . . Remove
Use TM 9-1005-231-10
GO TO 9
YES
9. Machine gun safety . . . . . F
10. Charger handle . . . . . Pull back and hold
11. Manual trigger handle . . . . Pull
Maintain tension on charger handle
12. Bolt . . . . . Release forward slowly
13. Machine gun cover . . . . . Close
14. Cradle access door . . . . . Close

INSTALLING CALIBER .50 MACHINE GUN

(TM page 3-122)

LINK ASSEMBLY MUST BE CONNECTED TO STOWAGE HANGER BEFORE INSTALLING CAL .50 MACHINE GUN.

1. Machine gun . . . . . Clear (page 19)
2. Rear mounting pin . . . . . Remove
3. Machine gun cradle . . . . . Elevate — So that gun can slide under TC's periscope
4. Machine gun . . . . . Slide in cradle
5. Rear mounting pin . . . . . Secure gun in cradle
6. Solenoid lead connector . . . Connect to end plate



7. 7a. Organizational maintenance . . . Notify

8. Cradle access door . . . . . Open

9.	Barrel	Insert/rotate 1/4 turn
10.	Cradle access door	Close
11.	Quick-disconnect clamp	Disconnect from stowage/ hanger/connect to periscope elevation arm
12.	Stowage hanger	Place in cupola ceiling stowage clip
13.	Cal .50 firing circuit	Test (page 23)

TESTING CALIBER .50 MACHINE GUN FIRING CIRCUIT

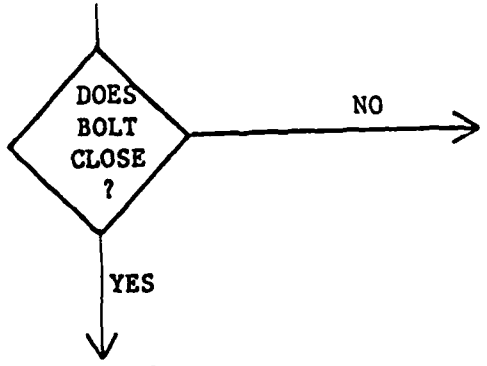
(TM page 3-121)

1. Machine gun . . . . . Clear (page 19)
2. MASTER BATTERY . . . . . ON
3. CUPOLA POWER . . . . . ON
4. GUN SAFETY . . . . . ON
5. Dummy ammo . . . . . Load
   or
   Last round sensing switch . . Depress
6. LAST ROUND OVERRIDE . . . . . OFF
7. IS GUN READY LIGHT ON ?
   - NO → 7a. LAST ROUND OVERRIDE . . . . . ON
     - GO TO 8
   - YES → GO TO 8

8. Machine gun safety . . . . . F

9. Charger handle . . . . . Pull to rear — Sear must engage before releasing

10. Firing trigger . . . . . Press — Maintain tension on charger handle



11a. Organizational . . . Notify maintenance

12. GUN SAFETY . . . . . OFF

13. Machine gun safety . . . . . S

14. CUPOLA POWER . . . . . OFF

BORESIGHTING CALIBER .50 MACHINE GUN

(TM page 2-366)

1.	Tank position	Level
2.	Machine gun	Elevate to upper limit
3.	M36E1 Periscope	Remove (page 4)
4.	Machine gun	Clear (page 19)
5.	Solenoid lead connector . . .	Disconnect from backplate assembly
6.	Backplate	Lift off — Depress lock and raise latch on backplate
7.	Bolt buffer group	Remove — Rotate spring guide 1/8 turn in either direction
8.	Sear assembly	Remove — Depress sear detent
9.	Charger handle	Pull slowly
10.	Cover	Open
11.	Bolt assembly	Pull out — Hold lever and ejector assembly to the left
12.	Cover	Close
13.	Boresight target	Right angle/500 meters

GO TO 14

14. Center of barrel . . . . . Aline on target aiming point — Use manual controls

15. AZIMUTH LOCK . . . . . Push up

16. Azimuth adjustment knob . . . Adjust azimuth precisely if necessary

17. Machine gun/cupola . . . . . Do not move

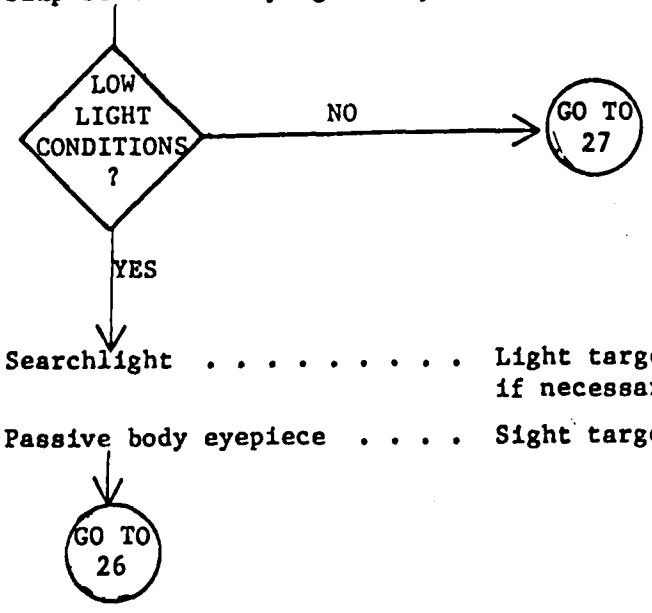
18. M36E1 Periscope . . . . . Install (page 1)

19. M36E1 Periscope . . . . . Prepare for operation (page 2)

20. Daylight body eyepiece . . . . Sight target/disengage

21. Daylight body elevation and deflection knobs . . . Aline boresight cross on target aiming point

22. Slip scales of daylight body . Set on 4 and 4



23.

24. Searchlight . . . . . Light target momentarily if necessary

25. Passive body eyepiece . . . . Sight target/disengage

26.	Passive body elevation and deflection knobs . . .	Aline reticle on aiming point
27.	Slip scales of passive elbow .	Set on 4 and 4
28.	Daylight body reticle	Verify still on target aiming point

LINK ASSEMBLY MUST BE DISCONNECTED FROM PERISCOPE AND ATTACHED TO STOWAGE HANGER BEFORE ASSEMBLING CAL .50 MACHINE GUN.

29.	Cal .50 machine gun	Elevate to upper limit
30.	Quick-disconnect clamp	Disconnect from periscope elevation arm
31.	Elevation arm	Move toward rear of cupola
32.	Quick-disconnect clamp	Connect to stowage hanger
33.	M36E1 Periscope	Remove (page 4)
34.	Cover	Open
35.	Bolt locks	Depress
36.	Bolt assembly	Slide into barrel extension assembly
37.	Hand	Remove from lever assembly
38.	Bolt assembly	Slide forward

Hold lever and ejector assemblies to the left

Force cartridge ejector to the left

GO TO 39

39.	Sear assembly guide rails . .	Aline with grooves in receiver
40.	Sear assembly	Slide forward
41.	Bolt buffer group	Install
42.	Backplate group	Aline with grooves in receiver
43.	Backplate group	Slide downward
44.	Machine gun cover	Close
45.	Cradle access door	Close
46.	Cradle cover	Close
47.	Bolt	Place forward
48.	Safety	F
49.	M36E1 Periscope	Install (page 1)
50.	Quick-disconnect clamp	Disconnect from stowage hanger/ connect to elevation arm assembly
51.	Stowage hanger	Place in cupola ceiling stowage clip

Detent should engage

Rotate rod 1/4 turn in either direction in receiver to secure

Depress lock and raise latch

Should lock and latch

ZEROING CALIBER .50 MACHINE GUN

(TM page 2-397)

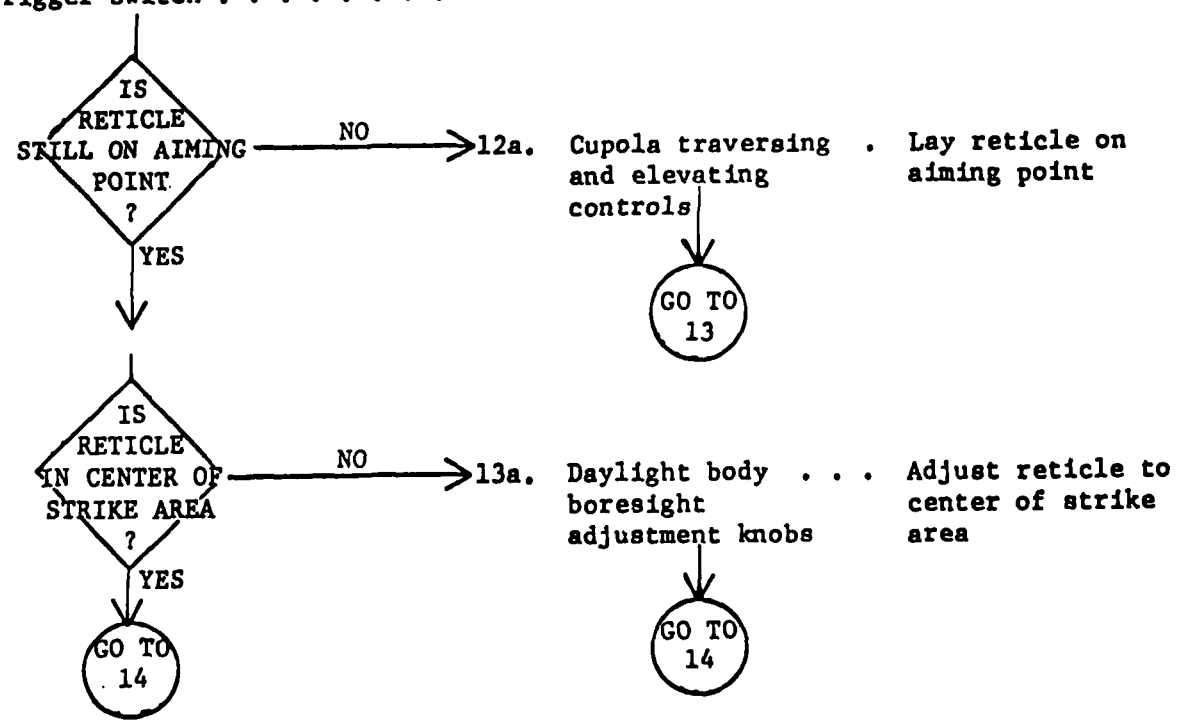
1. Machine gun . . . . . Boresight (page 25)
2. Aiming point . . . . . Right angle/500 meters
3. Daylight body eyepiece . . . . Sight target
4. Cupola traversing and elevating controls . . . Lay periscope reticle on aiming point — Use 500 meter crosshair
5. Machine gun cover . . . . . Unlatch and open — Hold with hold-open latch on cradle access door
6. IS BOLT FORWARD ?
   - NO →
     - 6a. Safety . . . . . F
     - 6b. Charger handle . . . Pull to rear
     - 6c. Trigger extension handle . . Pull — Maintain tension on charger handle
     - 6d. Bolt . . . . . Close slowly
     - GO TO 7
   - YES ↓
7. Ammo belt . . . . . Place in feed tray — Open side of links down
8. Machine gun cover . . . . . Close
   - GO TO 9

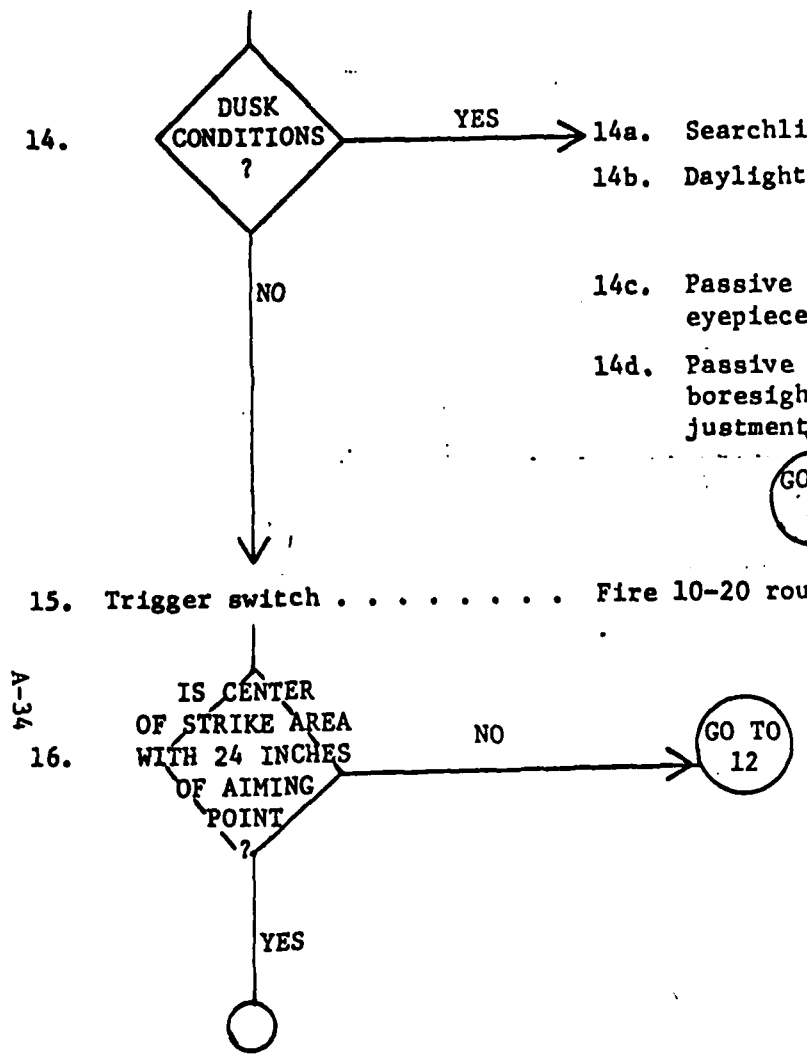
SAFETY MUST BE IN F BEFORE CHARGING WEAPON. CHARGING IN S MAY CAUSE THE WEAPON TO FIRE ACCIDENTALLY.

9. Safety . . . . . Assure in F

10. Charger handle . . . . . Pull to rear — Sear must be engaged before releasing

11. Trigger switch . . . . . Fire 10-20 round burst




14.
DUSK CONDITIONS ?
YES
NO
14a. Searchlight . . . . Illuminate target area
14b. Daylight eyepiece. . Assure daylight body reticle is still on target
14c. Passive elbow eyepiece . . . Sight target
14d. Passive elbow boresight adjustment knobs . . . Adjust reticle to center of strike area
GO TO 15
15. Trigger switch . . . . . Fire 10-20 round burst
16. IS CENTER OF STRIKE AREA WITH 24 INCHES OF AIMING POINT ?
NO
GO TO 12
YES

REMOVING CALIBER .50 MACHINE GUN

(TM page 3-122)

1. Machine gun . . . . . Clear (page 19)
2. CUPOLA POWER . . . . . OFF
3. Machine gun . . . . . Elevate — To disconnect solenoid lead connector
4. Solenoid lead connector . . . Disconnect from end plate
5. Cradle access doors . . . . . Open
6. Barrel . . . . . Rotate 1/4 turn/remove — Press down on barrel latches
7. Machine gun . . . . . Elevate — So that gun can slide under TC's periscope

LINK ASSEMBLY MUST BE CONNECTED TO STOWAGE HANGER BEFORE REMOVAL OF CAL .50 MACHINE GUN.

8. Quick-disconnect clamp . . . . Disconnect from elevation arm
9. Elevation arm . . . . . Move toward rear of cupola
10. Quick-disconnect clamp . . . . Connect to stowage hanger
11. Rear mounting pin . . . . . Remove
12. Machine gun . . . . . Slide from cradle

PREPARING TO FIRE PROCEDURE
(TM page 2-400)

COMMAND: PREPARE TO FIRE

1. Exterior lenses and vision devices . . . . . Clean
2. Cupola ballistic periscope shield . . . . . Check operation
3. MASTER BATTERY . . . . . ON (driver)
4. Instrument lights . . . . . Check
5. LRF . . . . . Check for MALF light

COMMAND: CHECK FIRING SWITCHES

6. MAIN GUN . . . . . ON (gunner)
7. Engine . . . . . Start (driver)
8. 105-mm gun safety switch . . . In FIRE (loader)
9. Circuit tester . . . . . Insert (loader)
10. TC . . . . . Announces: ON THE WAY

GO TO 11

11. TC's control handle . . . . . Check trigger

Loader announces NO FIRE if circuit tester does not light

12. Gunner's control handles . . . Check triggers (gunner)

13. MAIN GUN . . . . . OFF (gunner)

14. MACHINE GUN . . . . . 

(gunner)

15. Coaxial machine gun . . . . . Cock (loader)

16. TC . . . . . Announces: ON THE WAY

17. TC's control handle . . . . . Check trigger

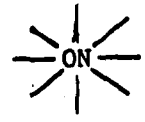
Loader announces NO FIRE if circuit tester does not light

18. Gunner's control handles . . . Check triggers (gunner)

COMMAND: CHECK GUN CONTROLS

19. Gunner . . . . . Announces: POWER

20. Turret . . . . . Unlock (loader)

21. ELEV/TRAV POWER . . . . . 

(gunner)

22. Gun/turret . . . . . Elevate/traverse using TC power controls

23. ELEV/TRAV POWER . . . . . OFF (gunner)

MAKE SURE THAT CREW IS READY AND NO PERSONNEL OR OBSTRUCTIONS ARE IN SURROUNDING AREA

COMMAND: CHECK GUN STABILIZATION

24. STAB ELECTRONICS . . . . . ON

25. POWER PACK BLOWER MOTOR . . . ON

26. ELEV/TRAV POWER . . . . . ON (gunner)

27. POWER on selector assembly . . ON (gunner) — Wait 15 seconds

28. STAB . . . . . ON (gunner) — System is operational when green STAB indicator lights

29. Gunner . . . . . Announces: TURRET STABILIZED

30. TRAV and/or EL BALANCE . . . . Rotate to null drift (gunner)

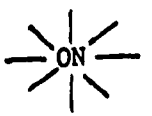
31. Gunner's control handles . . . Check function (gunner)

32. TC palm switch . . . . . Activate override

GO TO 33

33.	TC control handles	Check function
34.	STAB SHUT-OFF	Depress
35.	POWER on selector assembly . .	OFF (gunner)
36.	Gunner	Announces: STABILIZATION OFF

COMMAND: CHECK FIRE CONTROL

37.	CUPOLA POWER	
38.	GUN SAFETY	ON
39.	Cal .50 machine gun	Check operation
40.	XM21 computer	Perform self-test (gunner)
41.	105-*mm* gun	Prepare for boresighting (loader)
42.	LRF	Perform self-test (page 8)
43.	Gunner's telescope and periscope	Boresight (gunner)
44.	LRF	Boresight (page 14)
45.	Ammo switch	Select appropriate ammo (gunner)

46. MOVING/STATIONARY . . . . . Select appropriate setting (gunner)

47. Computer . . . . . Enter ballistic data (gunner)

48. Cal .50 machine gun . . . . . Boresight (page 18)

49. 7.62-mm machine gun . . . . . Load (loader)

50. 105-mm gun . . . . . Load (loader)

51. Cal .50 machine gun . . . . . Load

COMMAND: REPORT

52. Gunner/Driver/Loader . . . . . Announce: READY

DURING OPERATIONS PMCS

(TM page 2-105)

1.	Commander's seat	Check operation/adjustment	
2.	Amplifier AM-1780/VRC	Turn on	
3.	MONITOR	INT ONLY	
4.	VOLUME	Adjust	
5.	Radio/intercom	Check operation	
6.	Azimuth lock	Check operation	
7.	Azimuth interlock	Check operation	
8.	Azimuth lock	Unlock	
9.	Manual traversing handle . . .	Traverse cupola right/left	Check that cupola traverses smoothly
10.	Azimuth lock	Lock	
11.	Elevating handle	Depress/elevate Cal .50	Check that machine gun elevates smoothly
12.	TC control handles	Check operation	

GO TO 13

13.	Gunner control handles	Traverse turret (gunner) counterclockwise
14.	TC control handles	Override gunner and traverse turret clockwise — Depress palm switch
15.	M36E1 Periscope ballistic shield . .	Assure open
16.	M36E1 Periscope window	Clean — Use cleaning compound and lens tissue

TANK COMMANDER MASTER CHECK-OFF LIST

BEFORE OPERATIONS PMCS

(TM page 2-84)

Location	System	Equipment	CHECK												
			Adjustment	Clean/Clear	Damage	In Place	Leaks	Level	Missing Parts	Operation	Position	Pressure	Secure	Status
Exterior	Torsion Bars	Torsion Bars			X			X			X			
	External Fire Extinguisher Handles	Safety Wire-Lead Seals			X	X								
	Loader and TC Hatches	Hatches				X								
		Hold-Open Locking Handles								X				
	Travel Lock	Travel Lock									X			
Loader's Station	Turret Lock	Turret Lock								X	X			
Gunner's Station	Manual Controls	Elevation Handle								X				
		Traversing Handle								X				
Driver's Station	Driver's Hatch	Driver's Hatch								X	X			
	Driver's Seat	Driver's Seat	X							X				
		Backrest	X							X				
		Dump Lever	X							X				
	Driver's Escape Hatch	Escape Hatch				X								
		Plunger Bolts									X			
		Manual Control Lever								X	X			
	Fire Extinguisher System	Handle Seal			X	X								
		Three Cylinders				X								
		Lead Seal			X	X								
		Shrunk Tubing			X	X								
	Hydraulic Brake System	Shifting Lever									X			
		Pressure Gage										X		
		Brake Pedal								X	X			
		Master Cylinder					X							
	Indicator Lamps	MASTER BATTERY								X				
		POWER PLANT WARNING								X				

Location	System	Equipment	CHECK												
			Adjustment	Clean/Clear	Damage	In Place	Leaks	Level	Missing Parts	Operation	Position	Pressure	Secure	Status	
Hull	Air Cleaner Housings and Doors	Door			X	X									
		Door Fasteners			X	X									
		Housing			X										
		Door Hinges			X										
		Drain Plug				X									
		Inspection Plugs				X									
	Top Deck Grille Doors	Top Deck Grille Doors				X			X						
	Engine and Transmission Oil Level	Engine Oil (Stopped)						X							
		Transmission Oil (Stopped)						X							
		Engine Oil (Idling)						X							
		Transmission Oil (Idling)						X							
	Engine and Transmission Oil Coolers	Screens		X											
		Coolers			X		X								
	Air Cleaner Elbows, Hoses, and Clamps	Intake Hose			X	X									
		Outlet Hose			X	X									
		Intake Hose Elbow			X								X		
		Outlet Hose Elbow			X	X									
		Intake Hose Clamps			X	X									
		Outlet Hose Clamps													
	Air Cleaner Blower Motors	Air Cleaner Blower Motors								X					
	Restriction Indicators	Restriction Indicators			X	X									
		Pipe Plug			X	X									
		Window		X											

TANK COMMANDER MASTER CHECK-OFF LIST

DURING OPERATIONS PMCS

(TM page 2-101)

Location	System	Equipment	CHECK										
			Adjustment	Clean/Clear	Damage	In Place	Leaks	Operation	Position	Pressure	Secure	Status
Driver's Station	Idle Speed/ Accelerator Control	Engine Speed at Idle										X
		Accelerator Control						X				
		Engine Speed After Acceleration										X
	Gages	Power Plant Warning Light										X
		Battery - Generator										X
		Engine Oil Pressure										X
		Engine Oil Temperature										X
		Transmission Oil Pressure										X
		Transmission Oil Temperature										X
	Controls	Steering Control						X				
		Shifting Control						X				
		Brake Pedal						X				
Loader's Station	Ammunition Stowage Racks/Ammunition Ready Racks	Stowage Rack Tubes and Retainers			X							
		Ready Rack Locks			X	X						
		Cushioning Pads			X						X	
Commander's Station	Seat	Seat	X			X		X				
	Intercom/Radio	Intercom/Radio	X			X		X				
	Cupola Azimuth and Elevation Controls	Azimuth Lock						X				
		Azimuth Interlock						X				
		Manual Traversing Handle						X				
		Manual Elevating Handle						X				
	Turret Power Controls	Palm Switch						X				
		Control Handles						X				
	TC's Periscope	Outside Window		X								

TANK COMMANDER MASTER CHECK-OFF LIST

AFTER OPERATIONS PMCS

(TM page 2-110)

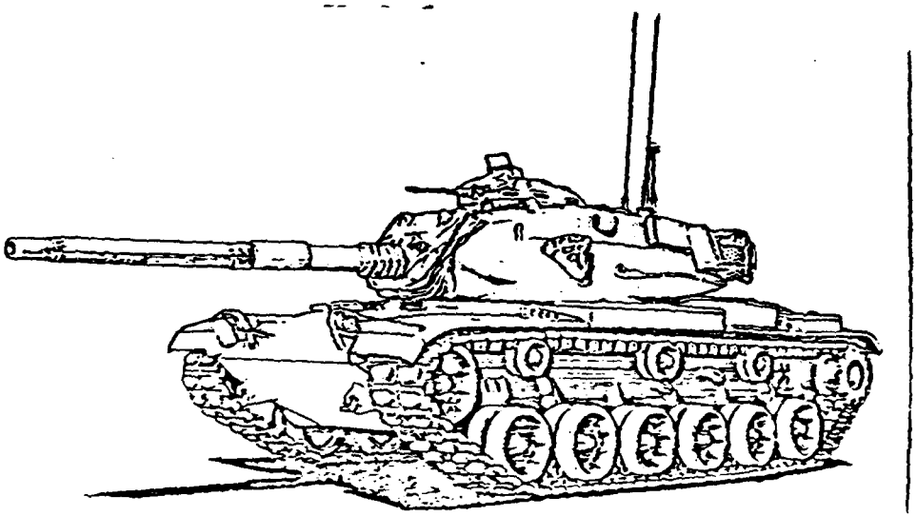
Location	System	Equipment	CHECK									
			Chunking/ Separation	Damage	Heat	In Place	Leaks	Missing Parts	Seated	Secure	Wear
Exterior/ Track	Rear Grille Doors	Rear Grille Doors		X		X		X		X	
	Final Drive	Final Drive/Sprocket Bottom					X				
		Mounting Studs									X
		Final Drive Hubs			X						
	Sprockets	Sprockets		X							X
	Roadwheels and Hubs	Roadwheels	X			X					
		Mounting Holes									X
		Hubs			X						
		Inside Wheel Rims				X					
	Roadwheel Arms	Roadwheel Arms		X		X					
	Shock Absorbers	Shock Absorbers		X			X	X			
	Track Support Rollers and Hubs	Track Support Rollers	X			X				X	
		Support Roller Hubs			X						
	Track End Connectors and Wedges	End Connectors		X		X				X	
		Bolts				X				X	
		Wedges				X			X	X	
	Track Center Guides	Track Center Guides		X		X				X	
	Track Pads	Track Pads	X			X				X	X
	Track Adjusting Links	Link Assembly		X		X					
		Cotter Pin				X					
	Track Shoes	Pins				X					
		Shoes		X							X
	Compensating Idler Wheels and Hubs	Inside Wheel Rims					X				
		Hub			X						

Location	System	Equipment	CHECK										
			Adjustment	Clean/Clear	Damage	In Place	Leaks	Operation	Position	Pressure	Secure	Status	
Gunner's Station	Seat	Seat	X			X		X					
	Fire Control Quadrant/Light Source Control	Scale		X									
		Index		X									
		Level Vial Cover						X					
		Level Vial			X								
		Light Source Control						X					
	Azimuth Indicator	Glass Cover			X								
		Rheostat						X					
	Turret Power Controls/Hydraulic Power	Hydraulic Fluid					X						
		Accumulator Pressure								X			
		Control Handles						X					
	Gunner's Sights	Periscope Window		X									
		Telescope Lens		X									

GUNNER

PROCEDURE GUIDES

M60A3 TANK



July 1982

PREPARED BY THE U.S. ARMY RESEARCH INSTITUTE
FOR THE
BEHAVIORAL AND SOCIAL SCIENCES

GENERAL INFORMATION

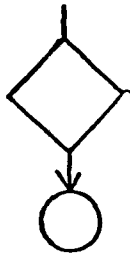
This booklet contains M60A3 gunner procedures guides. Each guide is for a single pre-operation, post-operation, or during operation activity. Each guide is matched to TM 9-2350-253-10 (Operator's Manual for Tank, Combat, Full-Tracked: 105-MM Gun, M60A3).

PURPOSE OF PROCEDURE GUIDES

The guides in this booklet will not take the place of the M60A3 Operator's Manual or M60A3 training materials. The guides will aid you in remembering long or difficult sets of procedures. In short, the guides will help to "jog your memory."

USE OF THIS BOOKLET

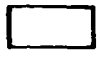
The Table of Contents (on the next page) lists the procedure guides in this booklet. Each guide gives you a step-by-step outline for completing an activity. The following instructions will help you to better use each guide.



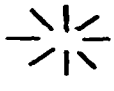
1. Some steps within a procedure are followed by a page number. On that page you will find a detailed breakdown of the step.

2. Some of the procedure guides include a question(s). Each question is stated inside a diamond shape. Your "yes" or "no" to the question will show you which path to follow.

3. Some paths lead to an instruction to go to a particular step number within a procedure. The step number is given within a circle.



4. Some steps within a procedure guide are followed by a box. In the box you will find more information on the step or a caution/warning.



5. Certain steps within a procedure guide require that a knob or switch be turned to a certain position. In some cases, that position might be written like the symbol to the left. The symbol means that a light should also come on.

6. At the beginning of each procedure, the TM page number reference for the procedure is given under the task name. These references will help you if you need more information to complete the task.

7. Two procedures are listed for boresighting with a boresighting device (taken from TRADOC Training Text 17-12-1) and without such a device (procedure in the Operator's Manual). Note that if a boresighting device is used, the zeroing procedure is <u>not</u> performed.

TABLE OF CONTENTS

OPERATING TANK THERMAL SIGHT (TTS)
(TM PAGE 2-236)

THE INFRARED OPTICS OF THE GUNNER'S PERISCOPE CONTAIN ANTIREFLECTIVE COATING WHICH IS SLIGHTLY RADIOACTIVE. DO NOT SWALLOW OR INHALE.

1. PMCS . . . . . Assure complete (crew)

2. MASTER BATTERY . . . . . ON (driver)

3. MODE on LRF . . . . . TEST (TC) — To prevent accidental firing of LRF

4. POWER on gunner's control unit . . . . . ON — Lift cover switch

ALWAYS LEAVE 4CB1 (CIRCUIT BREAKER) ON TTS POWER CONVERTER SET TO ON.

5. MODE on TTS . . . . . STBY

GO TO 6

6. COOL indicator . . . . . Will light until thermal detector has cooled (< 15 mins)

THERMAL CHANNEL DISPLAY MAY BE USED BEFORE BITE DISPLAY COOL LAMP GOES OUT, BUT SYSTEM OPERATES BEST AFTER COMPLETE COOLDOWN.

7. Ballistic shield cover . . . . . Open — Press pushbutton to open/release to lock

8. Daylight channel headrest . . . . . Adjust — Pull down lever to adjust/release to lock

9. Unity power window . . . . . Assure view is sharp and clear

10. RTCL control . . . . . Adjust until unity power reticle is visible

11. Daylight channel eyepiece . . . . . Obtain image

12. Diopter ring . . . . . Rotate to sharpen image

13. RTCL control . . . . . Adjust until daylight channel reticle is visible

GO TO 14

14. Filter selector lever . . . . . Select desired filter color — Push up to selected band color

15. Filter selector lever . . . . . Lock in place — Lever must point forward to prevent parallax

16. COOL indicator . . . . . Assure off

17. MODE on TTS . . . . . ON

18. BITE test switch . . . . . LAMP TEST

19. BITE lamps . . . . . All should light

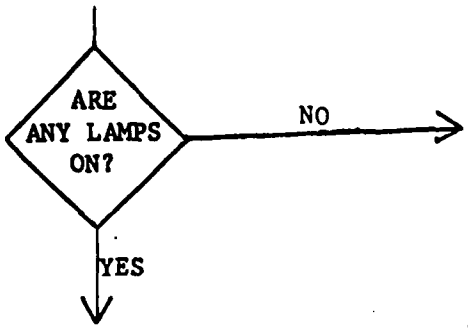
20. BITE test switch . . . . . SYS TEST

21. BITE lamps . . . . . None should light

22. IS CABLE LAMP ON?

NO → 22a. Cable connectors . . . Check → GO TO 23

YES → GO TO 23



23. 23a. Organizational . . . . . Notify maintenance

24. THERMAL CHANNEL FIELD OF VIEW . . . . . NAR

25. GUNNER/CMDR . . . . . GUNNER (TC)

26. TTS eyepiece . . . . . Select target

27. BRIGHT/CONTRAST controls . . . . . Adjust for normal viewing

28. THERMAL CHANNEL RANGE FOCUS . . . . . Adjust until view is sharp and clear

29. POLARITY switch . . . . . Move up or down for clearest view

Position depends on scene, temperature, and weather

30. WHT/BLK HOT indicators . . . . . Should alternate when POLARITY switch is moved

31. RTCL control . . . . . Adjust brightness of NAR FOV reticle, if necessary

GO TO 32

32.	THERMAL CHANNEL FIELD OF VIEW	WIDE
33.	BRIGHT/CONTRAST controls	Readjust if necessary
34.	WFOV indicator	Assure on
35.	RTCL control	Adjust brightness of WIDE FOV reticle, if necessary
36.	Commander's display eyepiece	Should have same image (TC) as gunner's display
37.	GUNNER/CMDR	CMDR (TC)
38.	BRIGHT	Should control brightness (TC)
39.	CONTRAST	Should control contrast (TC)
40.	POLARITY	Should interchange light (TC) and dark portions of image
41.	GUNNER/CMDR	GUNNER (TC)
42.	MODE on TTS	STBY

OPERATING TELESCOPE M105D
(TM PAGE 2-225)

1. Telescope/headrest . . . . . Adjust — Loosen retaining knob to adjust/ tighten to secure in place

2. Eyepiece . . . . . Sight target

3. Diopter ring . . . . . Rotate until view becomes sharp and clear

4. IS VEHICLE POWER AVAILABLE ?

NO →

4a. M50 instrument light housing . . . . . Disconnect from stowage slots

4b. M50 instrument light housing . . . . . Connect to top of telescope

4c. M50 instrument light rheostat . . . . . Adjust reticle brightness

GO TO 5

YES

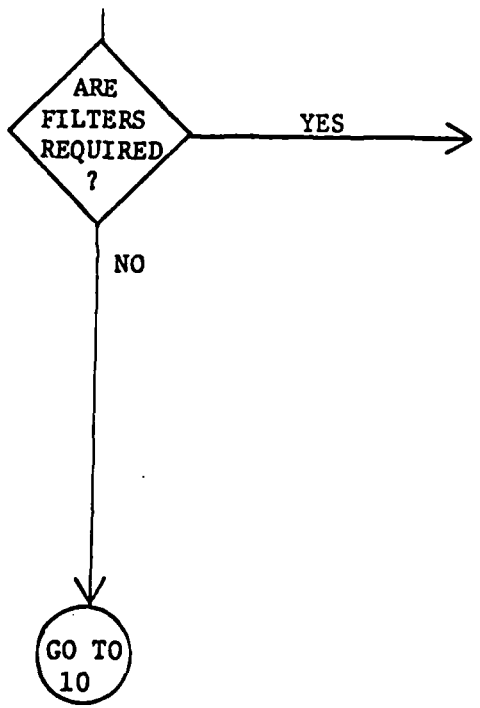
GO TO 5

5. MASTER BATTERY . . . . . ON (driver)

6. Lamp housing on light source control . . . . . Disconnect from storage slots

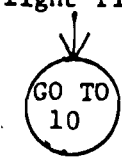
7. Lamp housing . . . . . Connect to top of telescope

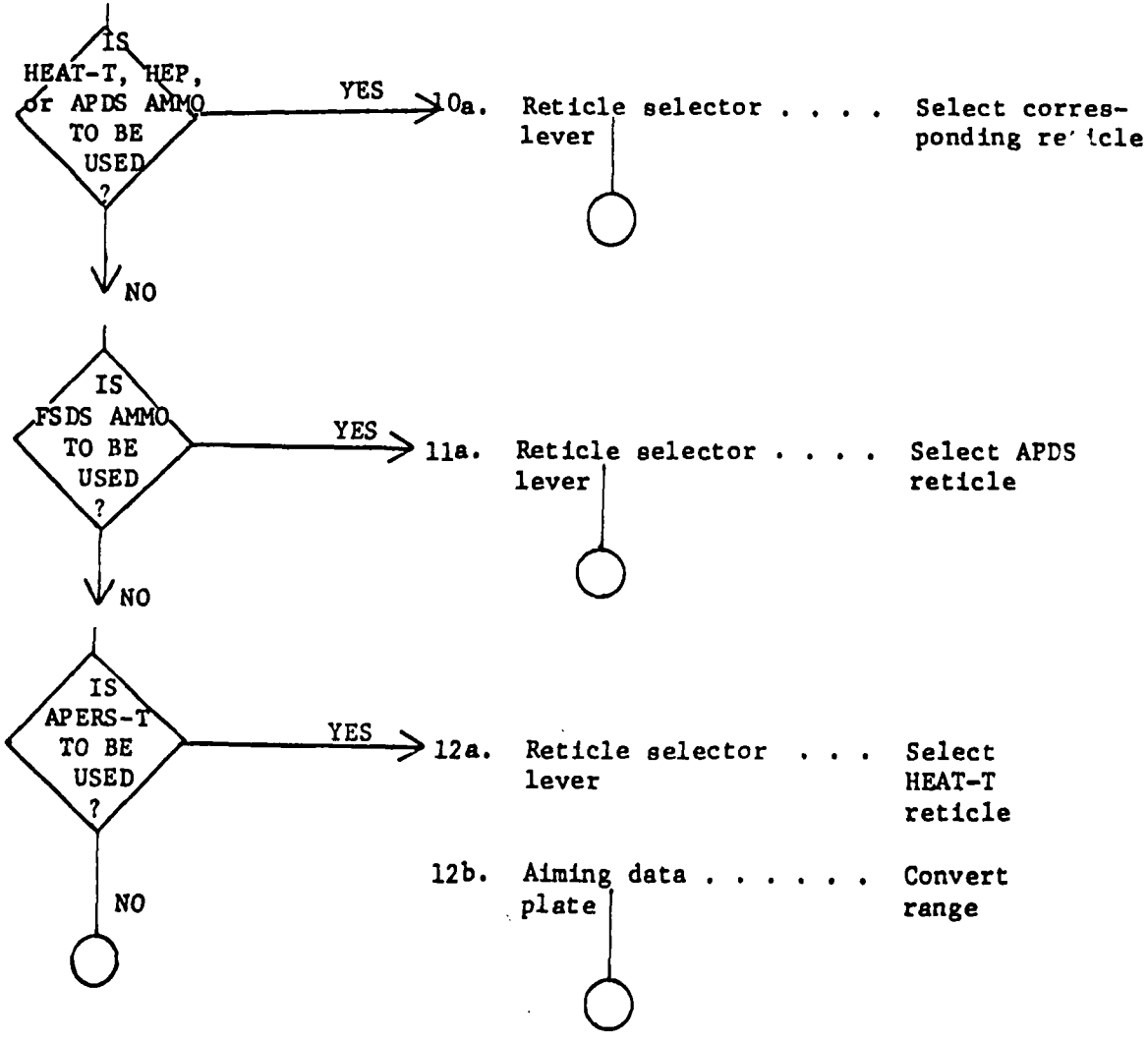
8. Light source control rheostat . . . . . Adjust reticle brightness



9a. Laser filters or daylight filters . . . . Remove from filter box

9b. Laser filters or daylight filters . . . . Snap over telescope eyepiece




10.
IS HEAT-T, HEP, or APDS AMMO TO BE USED ?
YES
10a. Reticle selector lever . . . . Select corresponding reticle
NO
11.
IS FSDS AMMO TO BE USED ?
YES
11a. Reticle selector lever . . . . Select APDS reticle
NO
12.
IS APERS-T TO BE USED ?
YES
12a. Reticle selector lever . . . Select HEAT-T reticle
12b. Aiming data plate . . . . . Convert range
NO

COMPUTER SELF-TEST
(TM PAGE 2-254)

THE 105-MM GUN MAY MOVE WHEN ELEV/TRAV POWER SWITCH IS ON AND LAMP/NORMAL/SYSTEM SWITCH IS SET IN OR OUT OF SYSTEM OIL LAMP.

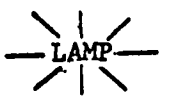
DO NOT PERFORM LRF SYSTEM SELF-TESTS WHILE PERFORMING COMPUTER SELF-TEST.

1. MODE on LRF . . . . . TEST (TC)
2. MASTER BATTERY . . . . . ON (driver)
3. POWER on gunner's control unit . . . . . ON
4. LIGHTS . . . . . Vary brightness

Panel lights should vary smoothly from dim to bright

5. LIGHTS . . . . . Adjust to normal brightness

GO TO 6

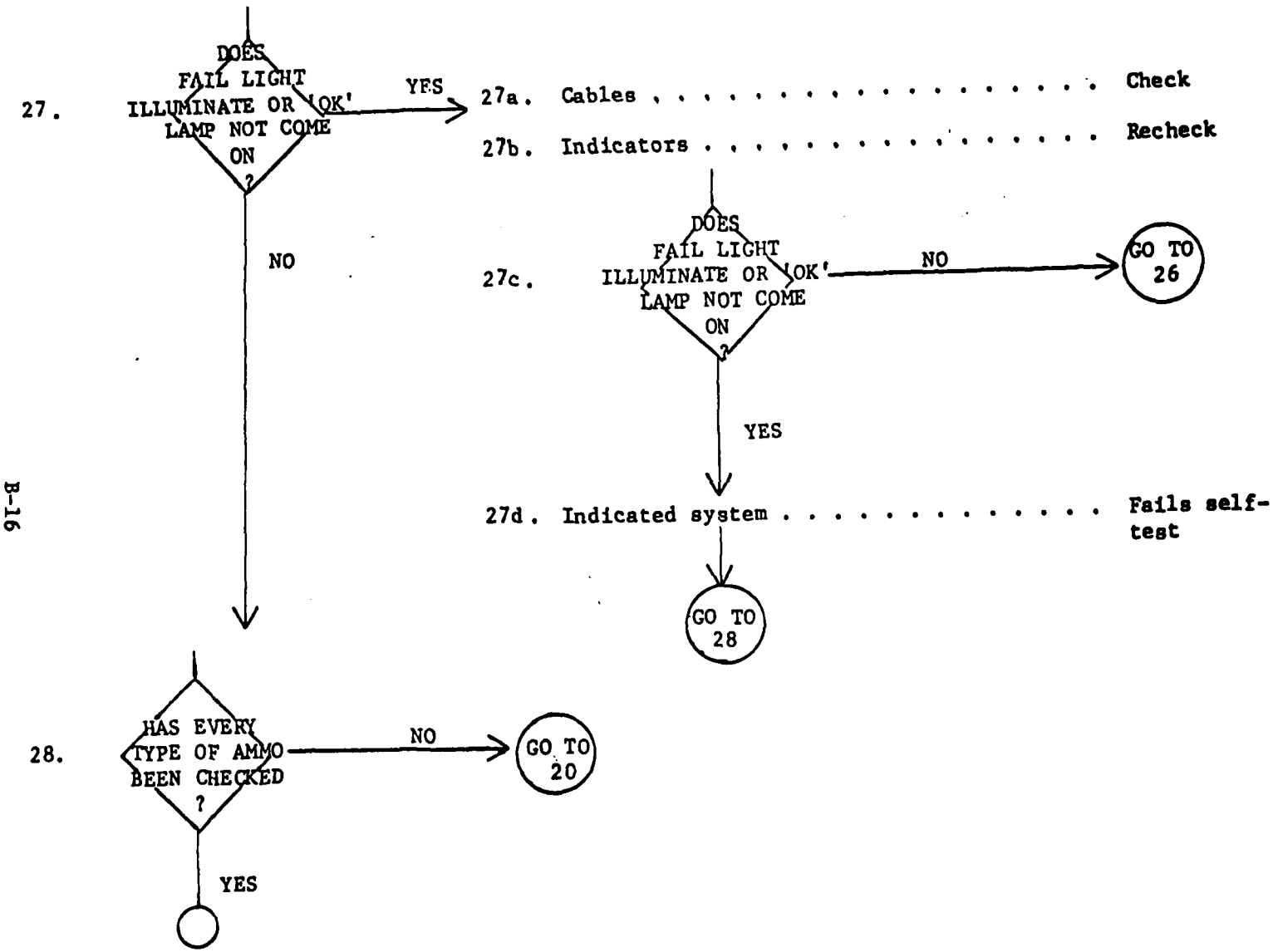
6.	DIM/BRIGHT controls on ammo select units	Vary brightness — Indicators should vary smoothly in brightness
7.	HEAT ammo switch	Assure in M456 position
8.	LAMP/NORMAL/SYSTEM	
9.	SELF TEST and SENSOR FAIL indicators	All should illuminate
10.	MANUAL/RANGEFINDER	MANUAL
11.	LAMP/NORMAL/SYSTEM	
12.	OK indicator	Should illuminate
13.	STATIONARY or MOVING indicators on ammo select units	Assure that one or the other indicator is illuminated
14.	MOVING/STATIONARY switch on either unit	

15.	MOVING/STATIONARY switch on gunner's unit	STATIONARY	STATIONARY should illuminate on both units
16.	MOVING/STATIONARY switch on commander's unit	MOVING	MOVING should illuminate on both units
17.	MOVING/STATIONARY switch on gunner's unit	STATIONARY	STATIONARY should illuminate on both units
18.	MOVING/STATIONARY switch on commander's unit	MOVING	MOVING should illuminate on both units
19.	Gunner's ammo select unit switches . . .	Depress each of the four in sequence	Pressed switch should be brighter than other three on both units
20.	Commander's ammo select unit switches	Depress each of the four in sequence	Pressed switch should be brighter than other three on both units
21.	MANUAL/RANGEFINDER	RANGEFINDER	

GO TO 22

WIND SENSOR MUST BE INSTALLED AND OPERABLE FOR A COMPLETE TEST. THE WIND SENSOR FAIL INDICATOR WILL LIGHT IF MANUAL WIND IS SELECTED OR IF WIND SENSOR IS NOT INSTALLED AND PROPERLY CONNECTED.

22.	Ammo select unit	Select ammo type
23.	LAMP/NORMAL/SYSTEM	
24.	OK indicator	Should illuminate
25.	RANGE (METERS)	Should indicate 1850 $\pm$ 15
26.	RETURN	Should indicate 2


27.
DOES FAIL LIGHT ILLUMINATE OR 'OK' LAMP NOT COME ON ?
YES
NO
27a. Cables . . . . . Check
27b. Indicators . . . . . Recheck
27c.
DOES FAIL LIGHT ILLUMINATE OR 'OK' LAMP NOT COME ON ?
NO
GO TO 26
YES
27d. Indicated system . . . . . Fails self-test
GO TO 28
28.
HAS EVERY TYPE OF AMMO BEEN CHECKED ?
NO
GO TO 20
YES

OPERATIONAL RESPONSE TEST:
(TM PAGE 2-258)

RATE TACHOMETER AND LEAD CIRCUITRY

1. MODE on LRF . . . . . TEST (TC)
2. MASTER BATTERY . . . . . ON (driver)
3. POWER on gunner's control unit . . . . . ON
4. MANUAL/RANGEFINDER . . . . . MANUAL
5. RANGE METERS X100 20
6. CROSSWIND AUTO/MANUAL . . . . MANUAL
7. CROSSWIND MPH . . . . . 0 MPH
8. MOVING/STATIONARY STATIONARY
9. HEAT switch . . . . . Depress

Heat switch should become brighter than other three

GO TO 10

10. Obstructions . . . . . Clear from tank and surrounding area

MAKE SURE CREW IS IN SAFE POSITION BEFORE OPERATING GUN ELEVATING AND TURRET TRAVERSING CONTROLS.

11. Gun tube . . . . . Release from travel lock

12. Travel lock . . . . . Stow

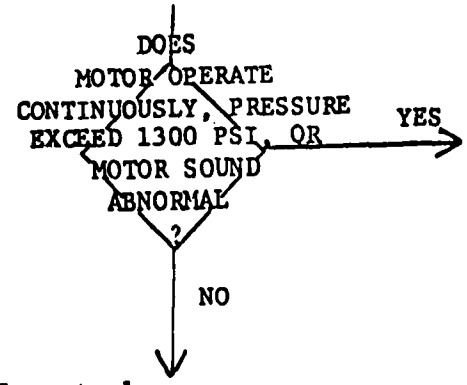
13. Turret . . . . . Unlock

14. Engine . . . . . Start (driver) — Set speed at 800-900 rpm

MAKE SURE MANUAL TRAVERSING HANDLE LOCKING LEVER IS IN DETENT POSITION.

15. ELEV/TRAV POWER . . . . . 

16. Turret hydraulic power pack motor . . . . . Should run until accumulator pressure gage reads 1175-1275 psi



17. 17a. Organizational maintenance . . . Notify

18. RTCL control . . . . . Adjust until reticle is visible

19. Turret . . . . . Hold steady

20. Palm switch . . . . . Depress/hold

21. Thumb switch . . . . . Momentarily depress

22. Reticle . . . . . Should not move

23. Gunner's palm switch . . . . . Release/depress

24. Turret . . . . . Slew turret to the right at medium speed

25. Thumb switch . . . . . Momentarily depress

26. Reticle . . . . . Should jump to the left

GO TO 27

27. Palm switch . . . . . Release

28. Reticle . . . . . Should jump to the right

29. Palm switch . . . . . Depress/hold

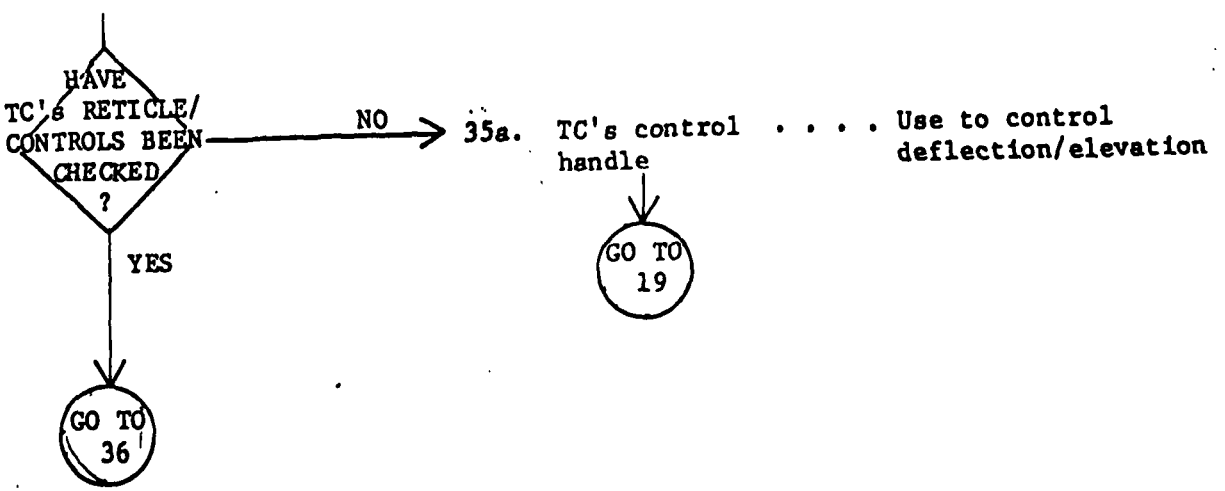
30. Turret . . . . . Slew turret to the left at medium speed

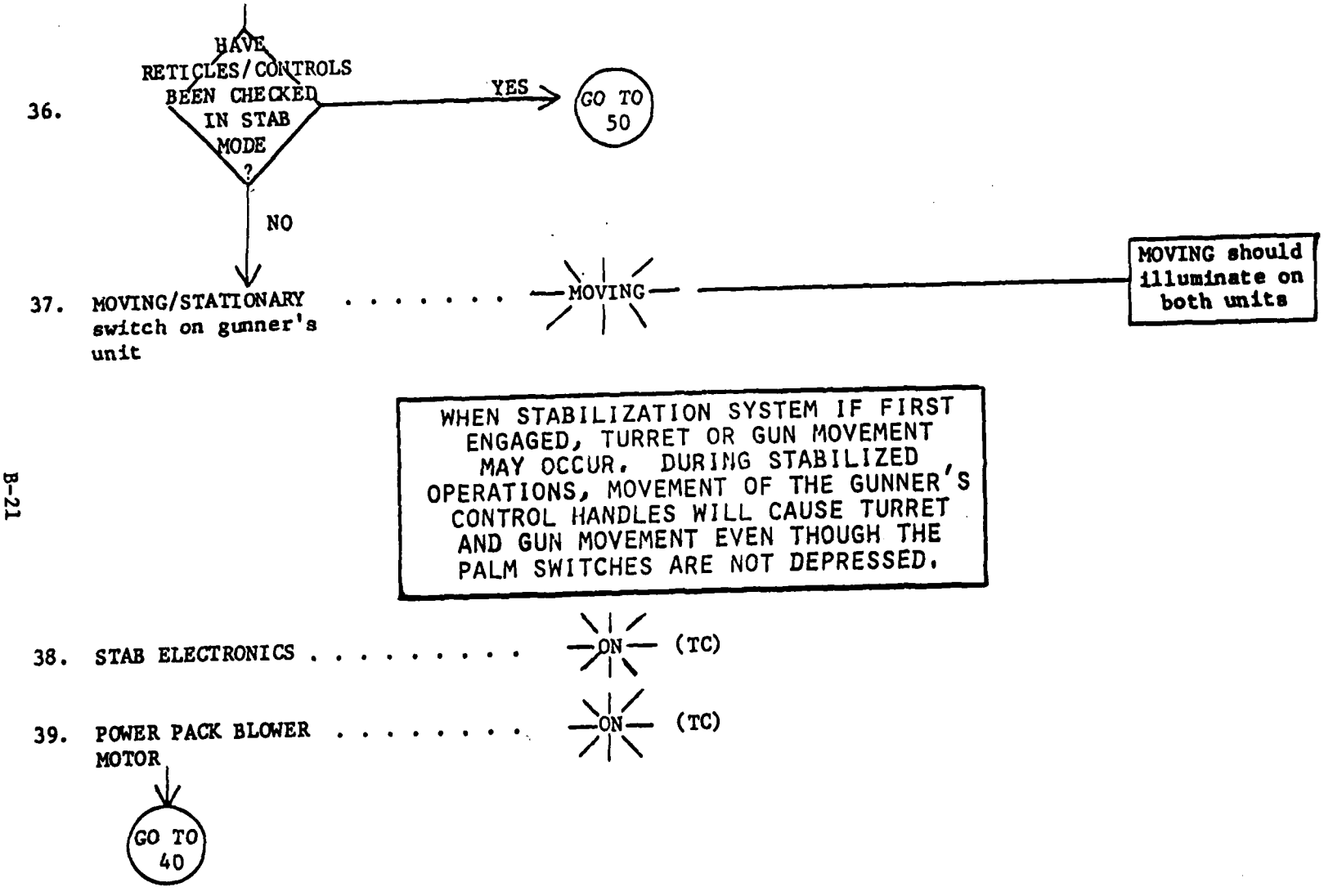
31. Thumb switch . . . . . Momentarily depress

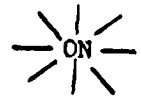
32. Reticle . . . . . Should jump to the right

33. Palm switch . . . . . Release

34. Reticle . . . . . Should jump to the left




36.
HAVE RETICLES/CONTROLS BEEN CHECKED IN STAB MODE ?
YES
GO TO 50
NO
37. MOVING/STATIONARY switch on gunner's unit
MOVING
MOVING should illuminate on both units
WHEN STABILIZATION SYSTEM IF FIRST ENGAGED, TURRET OR GUN MOVEMENT MAY OCCUR. DURING STABILIZED OPERATIONS, MOVEMENT OF THE GUNNER'S CONTROL HANDLES WILL CAUSE TURRET AND GUN MOVEMENT EVEN THOUGH THE PALM SWITCHES ARE NOT DEPRESSED.
38. STAB ELECTRONICS
ON
(TC)
39. POWER PACK BLOWER MOTOR
ON
(TC)
GO TO 40

40. POWER on Stabilization control selector . . . . . 

Wait 15 seconds

41. Gunner . . . . . Announces: STAB

42. STAB . . . . . 

System is operational when green STAB indicator lights

43. STAB SHUT-OFF indicators at TC and loader's stations . . . . . Should be on

DO NOT OPERATE STABILIZATION SYSTEM *UNLESS POWER PACK BLOWER MOTOR* COMES ON.

A DRIFT RATE OF 2 MILS/MIN IS ACCEPTABLE AFTER ADJUSTING BOTH TRAV *BALANCE AND ELEV BALANCE KNOBS.*

44. TRAV BALANCE knob . . . . . Rotate clockwise until drift occurs/note position

45.	TRAV BALANCE knob	Rotate counterclockwise until drift occurs/ note position
46.	TRAV BALANCE knob	Set halfway between first and second position
47.	ELEV BALANCE knob	Rotate clockwise until drift occurs/note position
48.	ELEV BLAANCE knob	Rotate counterclockwise until drift occurs/ note position
49.	ELEV BALANCE knob	Set halfway between first and second position

50.	POWER on stabilization control selector	OFF

OPERATIONAL RESPONSE TEST:
(TM PAGE 2-276)

WIND SENSOR TEST

1. MODE on LRF . . . . . TEST (TC)
2. MASTER BATTERY . . . . . ON (driver)
3. POWER on gunner's control unit . . . . . ON
4. ELEV/TRAV POWER . . . . . ON
5. MOVING/STATIONARY . . . . . STATIONARY
6. Ammo select unit . . . . . HEP/WP
7. MANUAL/RANGEFINDER . . . . . MANUAL
8. RANGE METERS X100 30
9. CROSSWIND AUTO/MANUAL . . . . . MANUAL

GO TO 10

10.	CROSSWIND MPH	0 MPH
11.	Tank	Position in left-to-right crosswind
12.	Gunner's control handles	Lay vertical bar of 8 X daylight reticle on distant target
13.	CROSSWIND MPH	5 MPH from the left
14.	Reticle	Should move to the right
15.	CROSSWIND MPH	0 MPH
16.	Reticle	Should return to aiming point
17.	CROSSWIND AUTO/ MANUAL	AUTO
18.	Reticle	Should move to the right
19.	CROSSWIND AUTO/ MANUAL	MANUAL
20.	Reticle	Should return to aiming point

MAKE SURE SURROUNDING AREA IS CLEAR FOR 360° OF TURRET TRAVERSE

21.	Turret	Traverse 180°
22.	Gunner's control handles	Lay vertical bar of 8X daylight reticle on distant target
23.	CROSSWIND MPH	5 MPH from the right
24.	Reticle	Should move to the left
25.	CROSSWIND MPH	0 MPH
26.	Reticle	Should return to aiming point
27.	CROSSWIND AUTO/ MANUAL	AUTO
28.	Reticle	Should move to the left
29.	CROSSWIND AUTO/ MANUAL	AUTO
30.	Reticle	Should return to aiming point

BORESIGHTING WITH MUZZLE BORESIGHT DEVICE

(TT 17-12-1)

Prepare

1. ELEV/TRAV POWER . . . . . ON

2. Tank position . . . . . Level

3. All weapons . . . . . Clear

4. Main gun breech . . . . . Open

5. Engine . . . . . Assure off

6. Target . . . . . 1200 meters

7. Ballistic drive coupling lever . . . . . Down/locked

8. Filter select lever . . . . . Locked into position

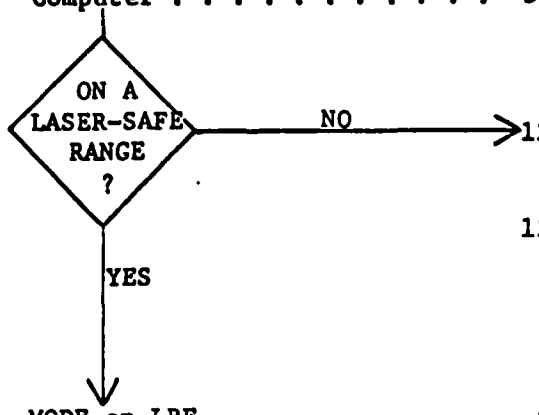
Lever must point forward, away from gunner

9. POWER on gunner's control unit . . . . . ON

10. Laser rangefinder . . . . . Self-test (TC)

GO TO 11

11. Computer . . . . . Self-test (page 9)



12. 12a. MODE on LRF . . . . . TEST

12b. RANGE (METERS) X100 . . . Manually index range

13. MODE on LRF . . . . . 

14. Gunner's control handles . . . Lay reticle on target

15. Thumb switches . . . . . Depress

16. RANGE (METERS) . . . . . Should display known range (TC)

17. GO light . . . . . Should be illuminated (TC)

18. MODE . . . . . 

19. NORMAL/BORESIGHT . . . . . BORESIGHT

20. Azimuth/elevation zero knobs . Assure on 0

21. CROSSWIND AUTO/MANUAL . . . . MANUAL

22. CROSSWIND knob . . . . . Assure on 0

23. Boresight device . . . . . Insert — Assure plunger is at 12 o'clock position

Adjust Daylight Channel of TTS

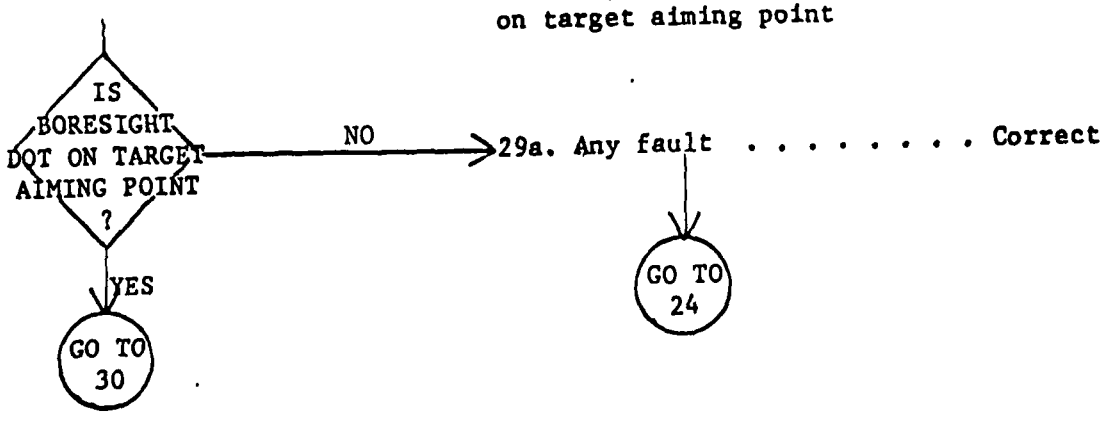
24. Gunner's control handles . . . Lay reticle aiming dot on target aiming point

25. Boresight eyepiece . . . . . Sight target (TC)

26. Gunner's control handles . . . Traverse and elevate as directed by TC to lay boresight dot on target aiming point — Last movement of gun must be up

27. Boresight knobs . . . . . Adjust so that reticle aiming dot is again on target aiming point — Assure knobs are seated after adjusting

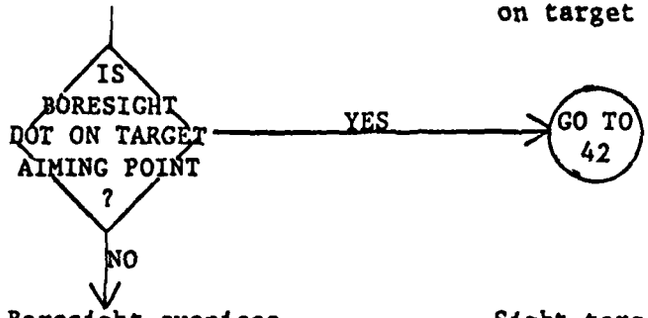
28. Gunner's control handles . . . Traverse and elevate off the target/re-lay reticle on target aiming point — Finish with upward movement



30. Boresight scales . . . . . Set on 4 and 4

31. Boresight device . . . . . Remove/rotate 180°/reinstall

32. Gunner's control handles . . . Traverse and elevate off the target/re-lay reticle on target aiming point

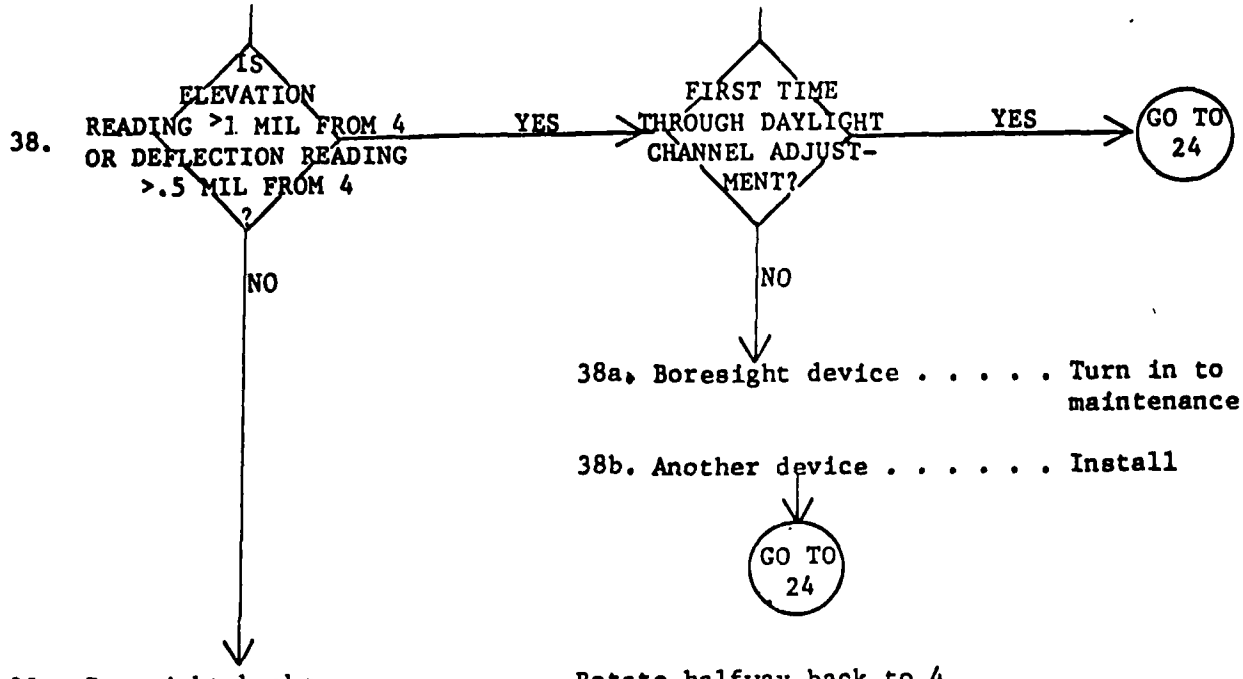


34. Boresight eyepiece . . . . . Sight target (TC)

35. Gunner's control handles . . . Traverse and elevate as directed by TC to lay boresight dot on target aiming point — Last movement of gun must be up

36. Boresight knobs . . . . . Adjust so that reticle aiming dot is again on target aiming point

37. Gunner . . . . . Announce boresight knob readings



39. Boresight knobs . . . . . Rotate halfway back to 4

40. Manual controls . . . . . Re-lay reticle aiming dot on target aiming point

41. Boresight scales . . . . . Set on 4 and 4 — Assure aiming dot does not move

42. Boresight device . . . . . Remove

GO TO 43

Adjust the M105D Telescope

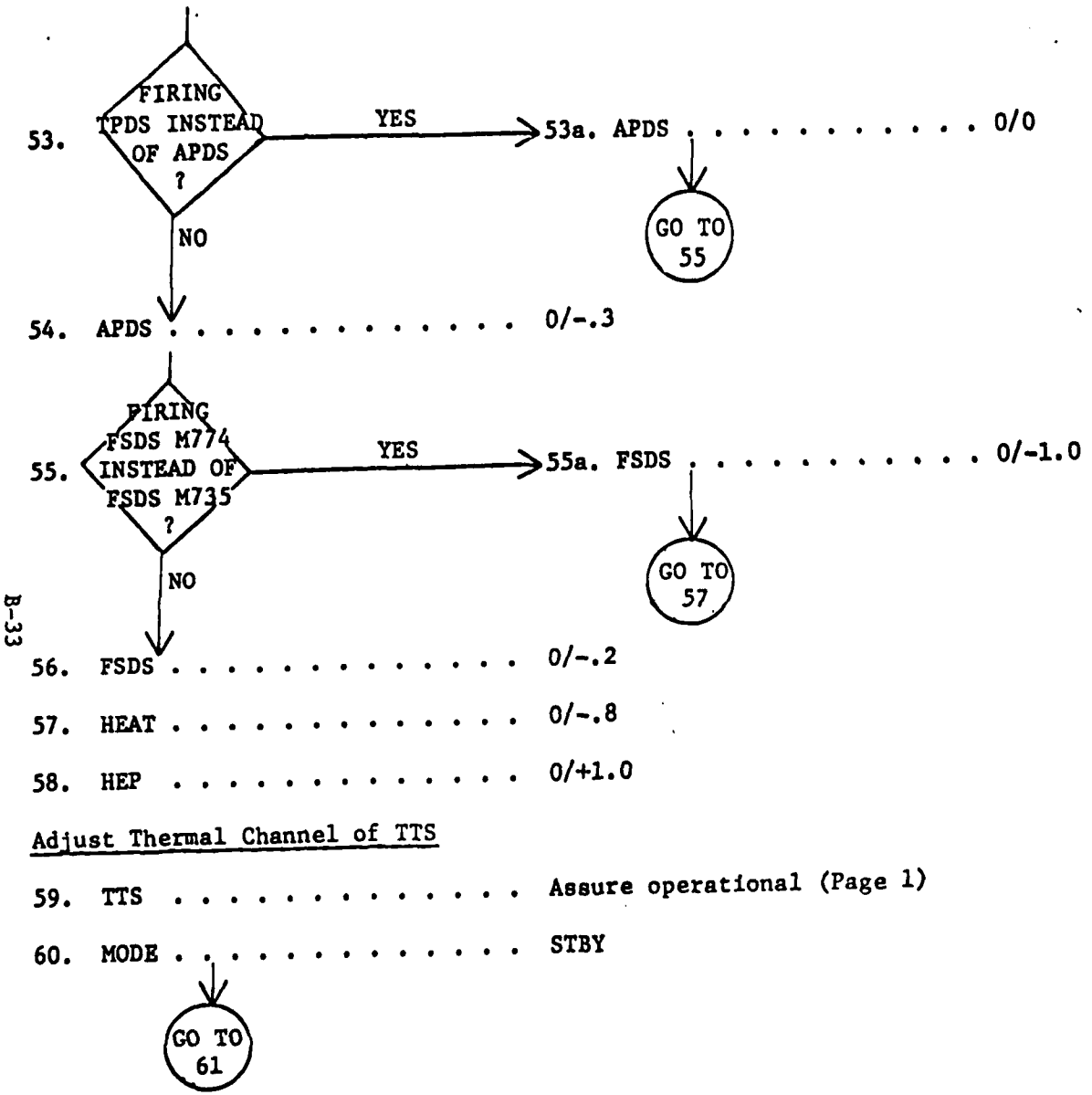
43.	M105D Telescope	Prepare for operation (Page 6)
44.	Reticle selector	Move to full-left or full-right position
45.	Boresight knobs	Adjust boresight cross on target aiming point
46.	Boresight scales	Set on 3 and 3

Adjust the Laser Rangefinder (LRF)

47.	BATL RNG	Press
48.	Gunner's sight	Assure on target aiming point
49.	6X/12X switch	12X
50.	LRF boresight knobs	Adjust reticle on target aiming point
51.	Boresight scales	Set on 4 and 4

Apply Computer Correction Factors

52.	COMMON ZERO	0/0 (azimuth/elevation)


53.
FIRING TPDS INSTEAD OF APDS ?
YES
53a. APDS 0/0
GO TO 55
NO
54. APDS 0/-.3
55.
FIRING FSDS M774 INSTEAD OF FSDS M735 ?
YES
55a. FSDS 0/-1.0
GO TO 57
NO
56. FSDS 0/-.2
57. HEAT 0/-.8
58. HEP . . . . . 0/+1.0
Adjust Thermal Channel of TTS
59. TTS . . . . . Assure operational (Page 1)
60. MODE . . . . . STBY
GO TO 61

61.	GUNNER/CDR	GUNNER (TC)
62.	COOL indicator	Assure off
63.	MODE	ON
64.	THERMAL CHANNEL FIELD OF VIEW	NAR
65.	THERMAL CHANNEL RANGE FOCUS	Adjust for sharpest view
66.	BRIGHT/CONTRAST controls . . .	Adjust for normal scene
67.	POLARITY switch	Set for best image
68.	RTCL control	Adjust until reticle is just visible
69.	Thermal channel eyepiece . . .	Sight target
70.	THERMAL CHANNEL BORESIGHT EL/AZ	Lay reticle aiming dot on target aiming point
71.	Boresight scales	Set on 4 and 4
72.	Zeroing procedure	Do not perform

Assure aiming dot does not move

BORESIGHTING WITHOUT MUZZLE BORESIGHT DEVICE

(TM PAGE 2-345)

Preliminary Procedure

1. Tank . . . . . Level ground
2. Cross-threads . . . . . Place on muzzle end of gun tube — **Threads should be directly over witness marks**
3. Target . . . . . 1200 meters
4. Breechblock crank stop . . . . Assure rearward

BREECHBLOCK OPERATING HANDLE IS UNDER SPRING TENSION UNTIL BREECHBLOCK IS FULLY OPENED AND LOCKED BY EXTRACTORS.

5. Breechblock operating handle . . . . Pull rearward/down — **Depress plunger**

FAILURE TO RETURN OPERATING HANDLE TO LATCHED POSITION MAY CAUSE INJURY TO PERSONNEL OR DAMAGE TO CLOSING MECHANISM WHEN BREECHBLOCK IS CLOSED.

6. Operating handle . . . . . Return to latched position

7. Breech . . . . . Close — Trip extractors using empty case or wooden block

KEEP HANDS CLEAR OF BREECH.

8. Firing pin spring . . . . . Release — Depress and move plunger to the right

9. Spring retainer . . . . . Remove — Turn counter-clockwise until lug alines with grooves

10. Firing pin/retractor guide/retractor . . . . . Remove — Pry out with screwdriver blade

11. MASTER BATTERY . . . . . ON (driver)

12. POWER on gunner's control unit . . . . . ON

IF THERE IS APPARENT RETICLE MOTION DURING BORESIGHTING, INCREASE ENGINE RPM OR TURN ENGINE OFF.

GO TO 13

13. LRF self-test . . . . . Perform (TC)

14. Computer self-test . . . . . Perform (page 9)

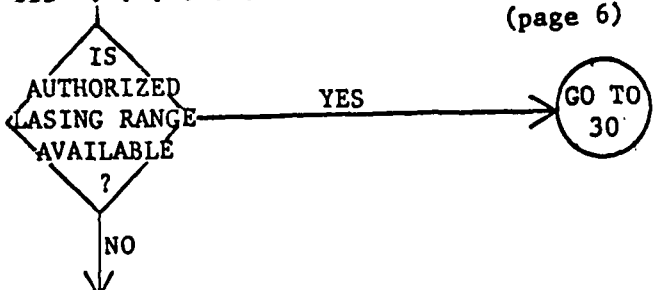
15. MODE on LRF . . . . . TEST

16. NORMAL/BORESIGHT . . . . . BORESIGHT

17. Right section of M17A1 binocular . . . . . Place over firing pin hole

18. Manual traversing and elevating controls . . . . Lay axis of gun on target aiming point — Lay gun from left to right and low to high without overtravel

19. TTS . . . . . Prepare for operation (page 6)



20.

Manual Range Procedure

21. MANUAL/RANGEFINDER . . . . . MANUAL

22. MODE on LRF . . . . . —TEST—

23. RANGE (METERS) . . . . . Should display 0000

24. RANGE METERS X100 . . . . . Dial to target distance

25. RETICLE BRIGHTNESS . . . . . Adjust until reticle is just visible

26. 6X/12X 12X

27. DEFLECTION and ELEVATION . . . controls — Lay reticle on target aiming point

Lay reticle from low to high and left to right without overtravel

28. Slip scales . . . . . Set on 4 and 4

29. Reticle/crossthreads . . . . . Assure on target aiming point

M105D Telescope Boresight Procedure

30. M105D Telescope . . . . . Prepare for operation (page 6)

TELESCOPE MUST BE BORESIGHTED AT 1200 METERS ONLY.

31. Eyepiece . . . . . Sight

GO TO 32

32. Reticle selector . . . . . Choose appropriate reticle

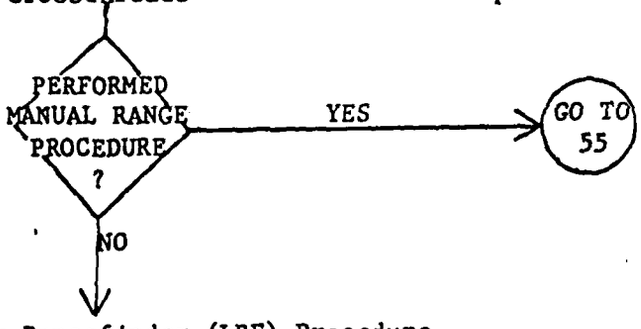
33. Locking levers . . . . . Unlock telescope boresight knobs

34. Boresight knobs . . . . . Lay boresight cross on target aiming point

35. Slip scales . . . . . Set on 3 and 3

36. Locking levers . . . . . Lock telescope boresight knobs

37. Boresight cross/ crossthreads . . . . . Assure on target aiming point

38. 

Laser Rangefinder (LRF) Procedure

DO NOT VIEW LASER BEAM THROUGH DEVICE NOT FILTERED FOR LASER LIGHT. FIRE LASER IN AUTHORIZED LASING AREA ONLY.

39. Laser filter . . . . . Install on receiver-transmitter eyepiece

40. RETICLE BRIGHTNESS . . . . . Adjust until reticle is just visible

41. MANUAL/RANGEFINDER . . . . . RANGEFINDER

42. MODE . . . . . ON

43. BATL RNG . . . . . PRESS

DO NOT LEAN OR PUSH AGAINST RECEIVER-TRANSMITTER WHEN VIEWING THROUGH EYEPIECE OR LASING.

44. 6X/12X 12X

45. LRF eyepiece . . . . . Sight target

46. DEFLECTION and ELEVATION controls . . . Lay reticle on target aiming point

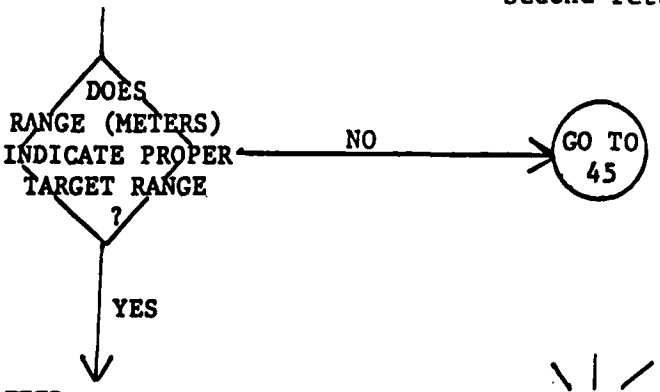
Lay reticle from left to right and from low to high without overtravel

47. Slip scales . . . . . Set on 4 and 4

GO TO 48

48. RANGE . . . . . Press

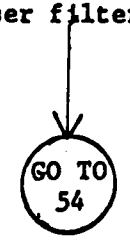
49. 1 or 2 pushbutton . . . . . Push to select first or second return if necessary

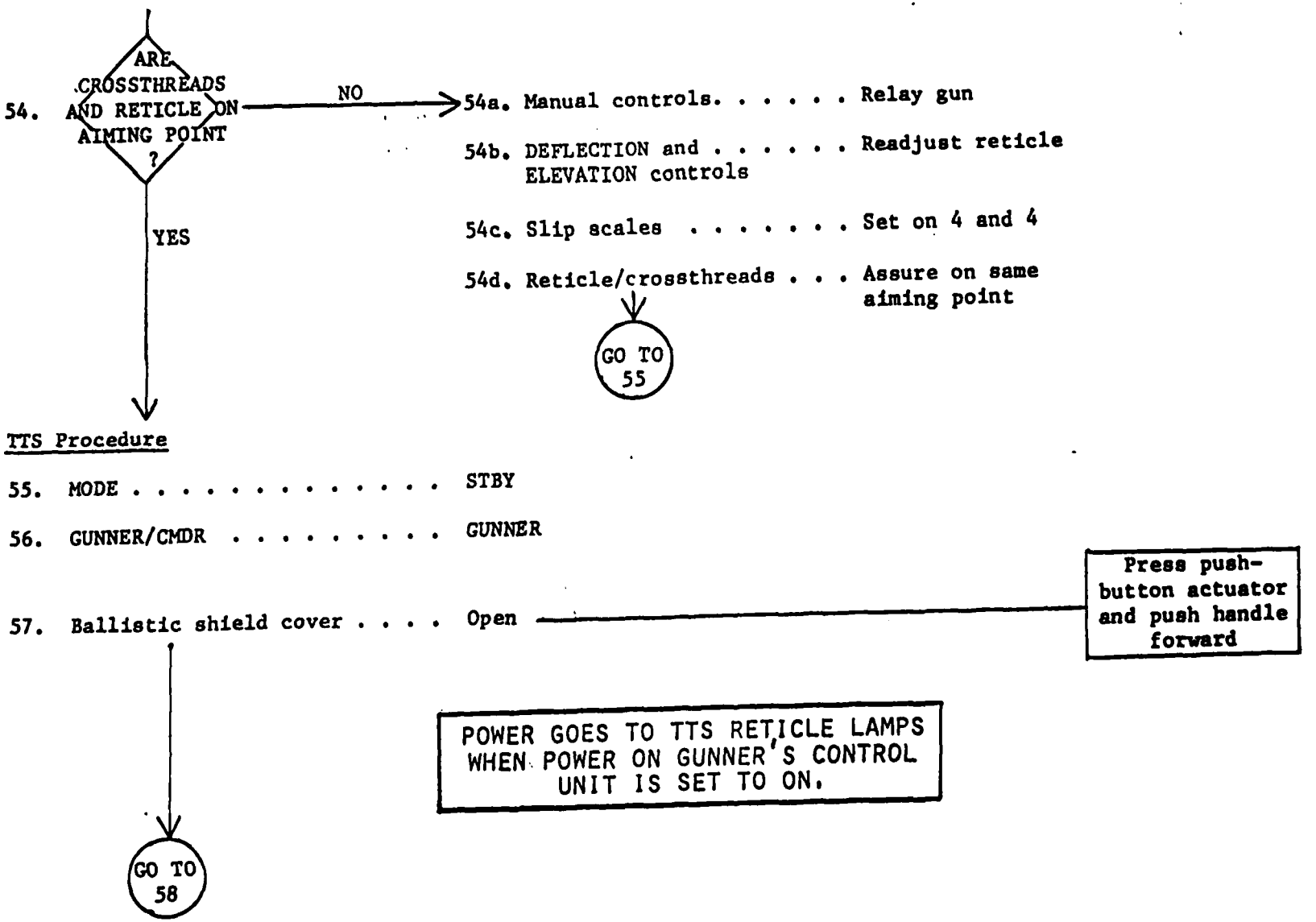


51. FEED . . . . . Press — GO will light

52. MODE . . . . . TEST

53. Laser filter . . . . . Remove from eyepiece/ replace in holder




54. ARE CROSSTHREADS AND RETICLE ON AIMING POINT ?
NO
YES
54a. Manual controls. . . . . Relay gun
54b. DEFLECTION and ELEVATION controls . . . . . Readjust reticle
54c. Slip scales . . . . . Set on 4 and 4
54d. Reticle/crossthreads . . . Assure on same aiming point
GO TO 55
TTS Procedure
55. MODE . . . . . STBY
56. GUNNER/CMDR . . . . . GUNNER
57. Ballistic shield cover . . . . Open
Press push-button actuator and push handle forward
POWER GOES TO TTS RETICLE LAMPS WHEN POWER ON GUNNER'S CONTROL UNIT IS SET TO ON.
GO TO 58

58. RTCL control . . . . . Adjust until reticle is just visible

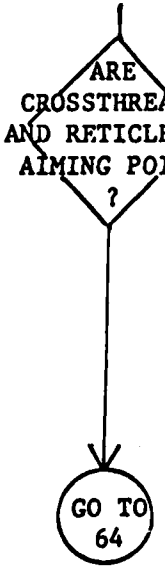
59. Eyepiece . . . . . Sight target

60. Diopter ring . . . . . Adjust for best reticle focus

61. DAY CHANNEL BORESIGHT . . . . Lay reticle on target aiming point
EL/AZ knobs

Lay reticle from low to high and from left to right without overtravel

62. Slip scales . . . . . Set on EL4 and AZ4



63. ARE CROSSTHREADS AND RETICLE ON AIMING POINT ? NO

63a. Manual controls . . . . . Relay gun

63b. DAY CHANNEL BORESIGHT . . Readjust reticle
EL/AZ knobs

63c. Slip scales . . . . . Set on EL4 and AZ4

63d. Reticle/crossthreads . . . Assure on target aiming point

64. COOL indicator . . . . . Assure out

65. THERMAL CHANNEL FIELD OF VIEW . . . . . NAR

66. THERMAL CHANNEL RANGE FOCUS. . Adjust for sharpest view

67. BRIGHT/CONTRAST . . . . . Adjust for normal scene

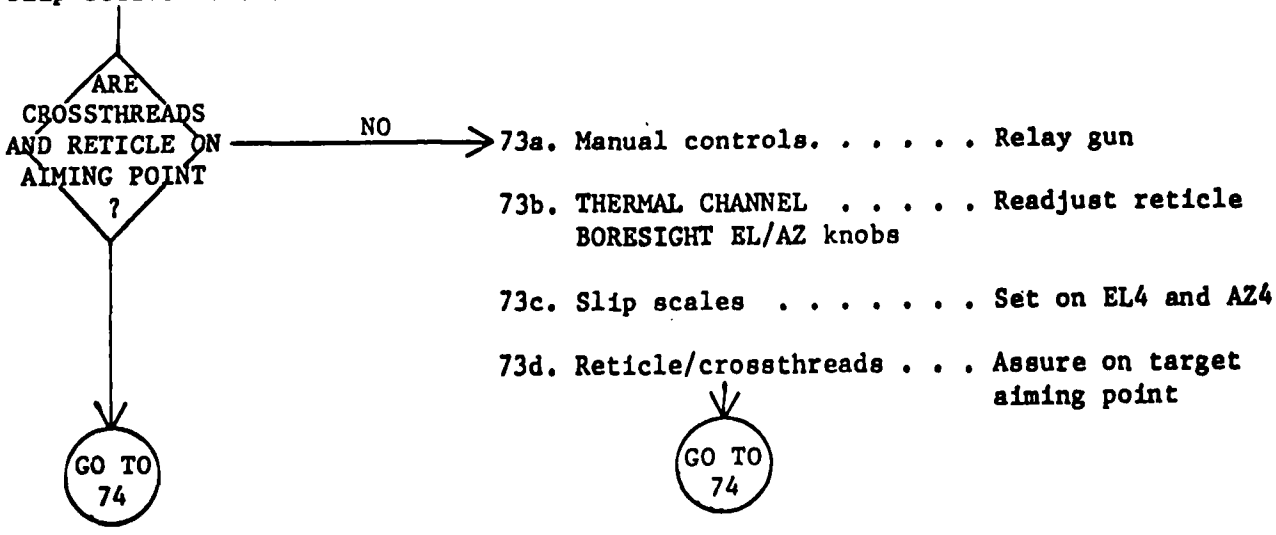
68. POLARITY . . . . . Set for best image

69. RTCL . . . . . Adjust until reticle is just visible

70. Eyepiece . . . . . Sight target

71. THERMAL CHANNEL BORESIGHT EL/AZ knobs . . . . . Lay reticle on target aiming point

72. Slip scales . . . . . Set on EL4 and AZ4



73. ARE CROSSTHREADS AND RETICLE ON AIMING POINT ? NO

73a. Manual controls. . . . . Relay gun

73b. THERMAL CHANNEL BORESIGHT EL/AZ knobs . . . . . Readjust reticle

73c. Slip scales . . . . . Set on EL4 and AZ4

73d. Reticle/crossthreads . . . Assure on target aiming point

GO TO 74

GO TO 74

74. Retractor guide/firing pin retractor . . . . Install — Should be flush with inner surface of firing pin well

75. Firing pin spring retainer . . Install — Depress plunger and rotate clockwise to lock position

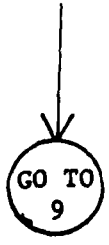
76. Zeroing procedure . . . . . Perform (page 43)

ZEROING 105-MM GUN

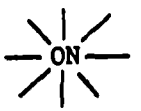
(TM PAGE 2-373)

DO NOT DISTURB KNOB ADJUSTMENT OF TTS 8X DAYLIGHT CHANNEL, TTS THERMAL CHANNEL, OR LASER R-T UNIT, EXCEPT DURING BORESIGHTING.

1. 105-mm gun . . . . . Bor ight (page 32)
2. MASTER BATTERY . . . . . ON (driver)
3. Target . . . . . Right angle/1200 meters
4. REMAINING TUBE LIFE . . . . . Rotate to computed value — Use TM 9-1000-202-14
5. AIR TEMP/ALTITUDE . . . . . Rotate to estimated values
6. APDS AMMO knob . . . . . Set on type of ammo to be used
7. HEAT AMMO knob . . . . . Assure in M456 position
8. Engine . . . . . Start/maintain speed at 800-900 rpm (driver)



9. POWER on gunner's control unit . . . . . 

10. ELEV/TRAV POWER . . . . . 

11. MODE on TTS . . . . . STBY

12. GUNNER/CMDR . . . . . GUNNER

13. RTCL control . . . . . Adjust until daylight channel reticle is just visible

14. BRIGHT/DIM . . . . . Adjust for adequate brightness in both channels

15. LIGHTS . . . . . Adjust brightness of panel lights

16. MOVING/STATIONARY . . . . . 

17. AZ/EL COMMON ZERO . . . . . Rotate from 3 to 0 without overtravel

18. AZ/EL ZEROING . . . . . Only for types rounds being zeroed, rotate from 3 to 0 without overtravel

19. NORMAL/BORESIGHT . . . . . NORMAL

Operating Procedure

DO NOT LEAN OR PUSH AGAINST RECEIVER-TRANSMITTER WHEN VIEWING THROUGH EYEPIECE OR LASING.

20. IN AN AUTHORIZED LASING AREA ?

NO →

20a. MANUAL/RANGEFINDER . . . . MANUAL

20b. MODE on LRF . . . . . TEST

20c. RANGE (METERS) X100 . . . Dial target range

GO TO 26

YES ↓

21. 6X/12Xon LRF 12X

22. LRF eyepiece . . . . . Sight target

23. TC's control handle . . . . . Lay reticle on target aiming point

Lay from left to right and low to high without overtravel

24. MANUAL/RANGEFINDER . . . . . RANGEFINDER

GO TO 25

25. RESET . . . . . Press/release

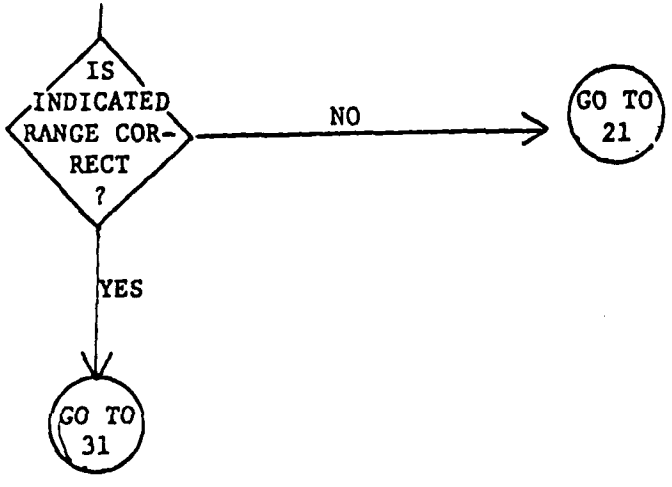
26. Laser safety filters . . . . . Attach to eyepieces of TTS/ M105D telescope/LRF

27. MODE on LRF . . . . . AUTO

DO NOT VIEW LASER BEAM THROUGH ANY UNFILTERED DEVICE. FIRE LASER IN AUTHORIZED LASING AREA ONLY.

28. RANGE . . . . . Press/release

29. GO light . . . . . Assure on



31. MODE on LRF . . . . . TEST

32. Laser filters . . . . . Remove from TTS, telescope, and LRF/replace in holders

IF ELECTRICAL POWER IS INTERRUPTED DURING REST OF PROCEDURE, REPEAT STEPS 20-32.

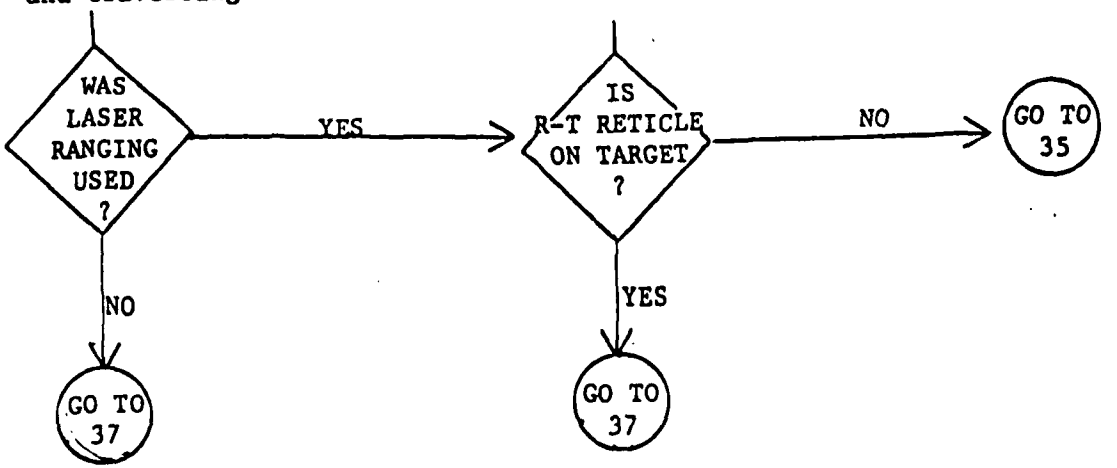
33. Ammo select switch . . . . . Select appropriate ammunition

34. 105-mm gun . . . . . Load (loader)

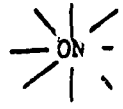
Make sure all rounds are from same lot

35. Turret manual elevation and traversing handles . . . Lay daylight reticle on target aiming point

Lay reticle from left to right and from low to high without overtravel



37. BLOWER . . . . . ON (TC)

38. MAIN GUN . . . . . 

IF RETICLE MOVES MORE THAN 0.1 MIL IN TWO SECONDS DUE TO WIND GUSTS, DELAY FIRING UNTIL WIND IS STEADY.

39. Trigger on manual elevating handle . . . . . Fire three-round shot group — Re-lay after each shot

40. Rounds . . . . . Must be within 0.5 mil from one another

41. BLOWER . . . . . OFF (TC)

42. ELEV/TRAV POWER . . . . . OFF

43. Hydraulic pressure selector valve . . . . . Open for 10 seconds/close

44. Manual elevation accumulator . . . . . Recharge

45. CROSSWIND AUTO/MANUAL . . . . MANUAL

46. CROSSWIND MPH . . . . . 0 mph

GO TO 48

47. Manual elevating and traversing handles . . . . . Re-lay daylight reticle on target aiming point

WHEN ZEROING FSDS AMMO, USE THE 1200 METER AIMING DOT OF THE TELESCOPE APDS-T RETICLE.

48. Telescope elevation and deflection locks . . . Unlock

49. Reticle selector lever . . . . Choose appropriate telescope reticle

50. Telescope eyepiece . . . . . Sight target

51. Elevation and deflection boresight knobs . . . Lay telescope reticle on target aiming point

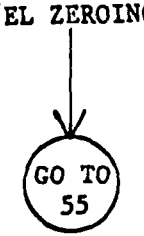
Lay from left to right and low to high without overtravel

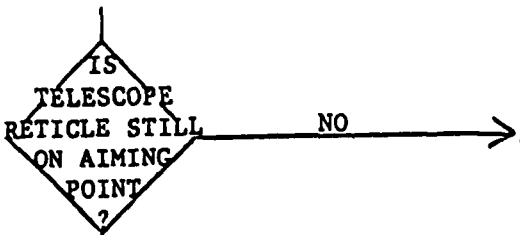
52. Elevation and deflection locks . . . Relock

53. Boresight scales . . . . . Do not slip

54. AZ/EL ZEROING CONTROLS . . . . Lay daylight reticle on center of shot group

Lay from left to right and low to high without overtravel





55. 55a. Manual controls . . . . Relay telescope reticle on target aiming point

55b. AZ/EL ZEROING CONTROLS . . . . . Relay daylight reticle on center of shot group

56. AZ/EL ZEROING CONTROL settings . . . . Record on computer door

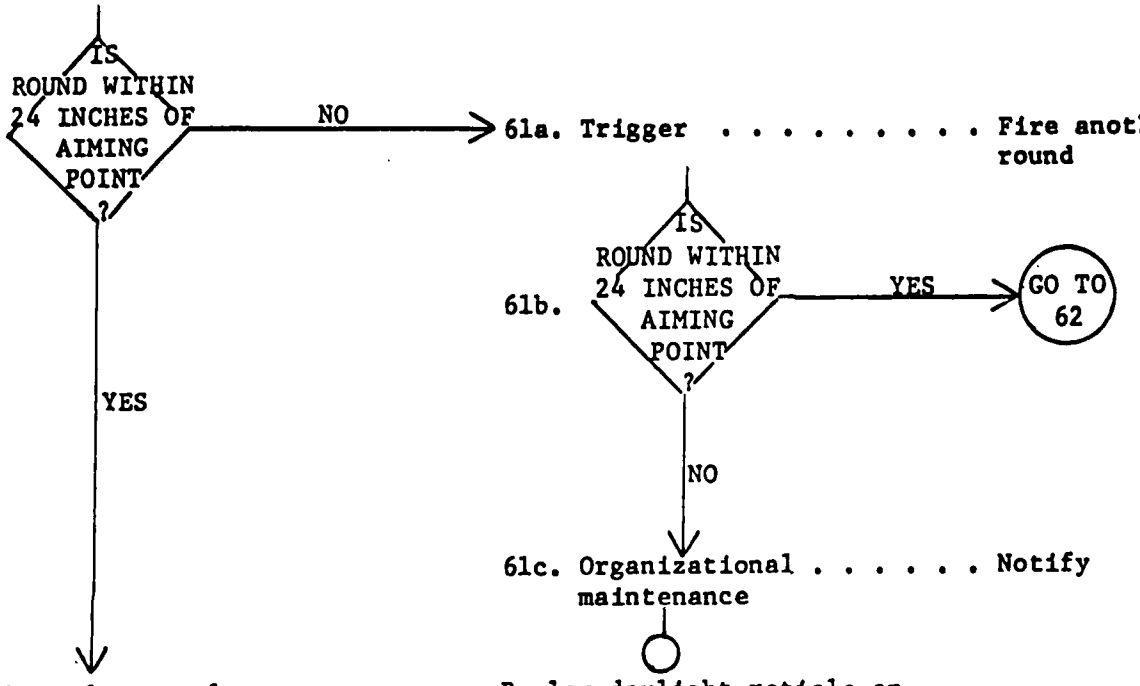
57. AUTO/MANUAL . . . . . AUTO

58. Gunner's manual controls . . . Re-lay daylight reticle on target aiming point

Lay from left to right and low to high without overtravel

59. BLOWER . . . . . ON (TC)

60. Trigger on manual elevating handle . . . . . Fire one round

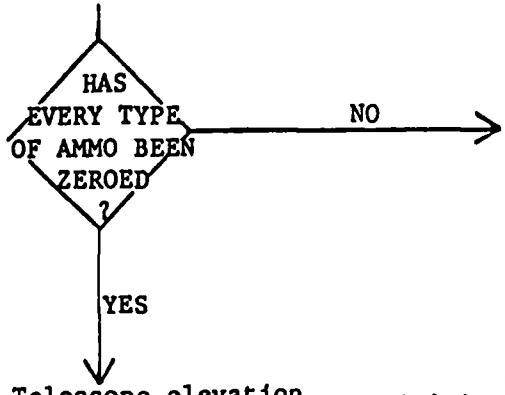

61. IS ROUND WITHIN 24 INCHES OF AIMING POINT ?
NO
61a. Trigger . . . . . Fire another round
61b. IS ROUND WITHIN 24 INCHES OF AIMING POINT ?
YES
GO TO 62
NO
61c. Organizational . . . . . Notify maintenance
YES
62. Manual controls . . . . . Re-lay daylight reticle on target aiming point
63. Telescope elevation and deflection locking levers . . . Unlock
64. Reticle selector lever . . . . Choose appropriate reticle
65. Telescope eyepiece . . . . . Sight target
GO TO 66

66. ELEVATION and DEFLECTION boresight knobs . . . Lay known target range line on target aiming point

67. Elevation and deflection locking levers . . . Relock

68. Telescope boresight scale readings . . . . . Record for each type of ammunition

69. Scales . . . . . Do not slip



70. 70a. Remaining ammo types . . . Select one

71. Telescope elevation and deflection locking levers . . . . . Unlock

72. Boresight knobs . . . . . Rotate to 5, then to 3

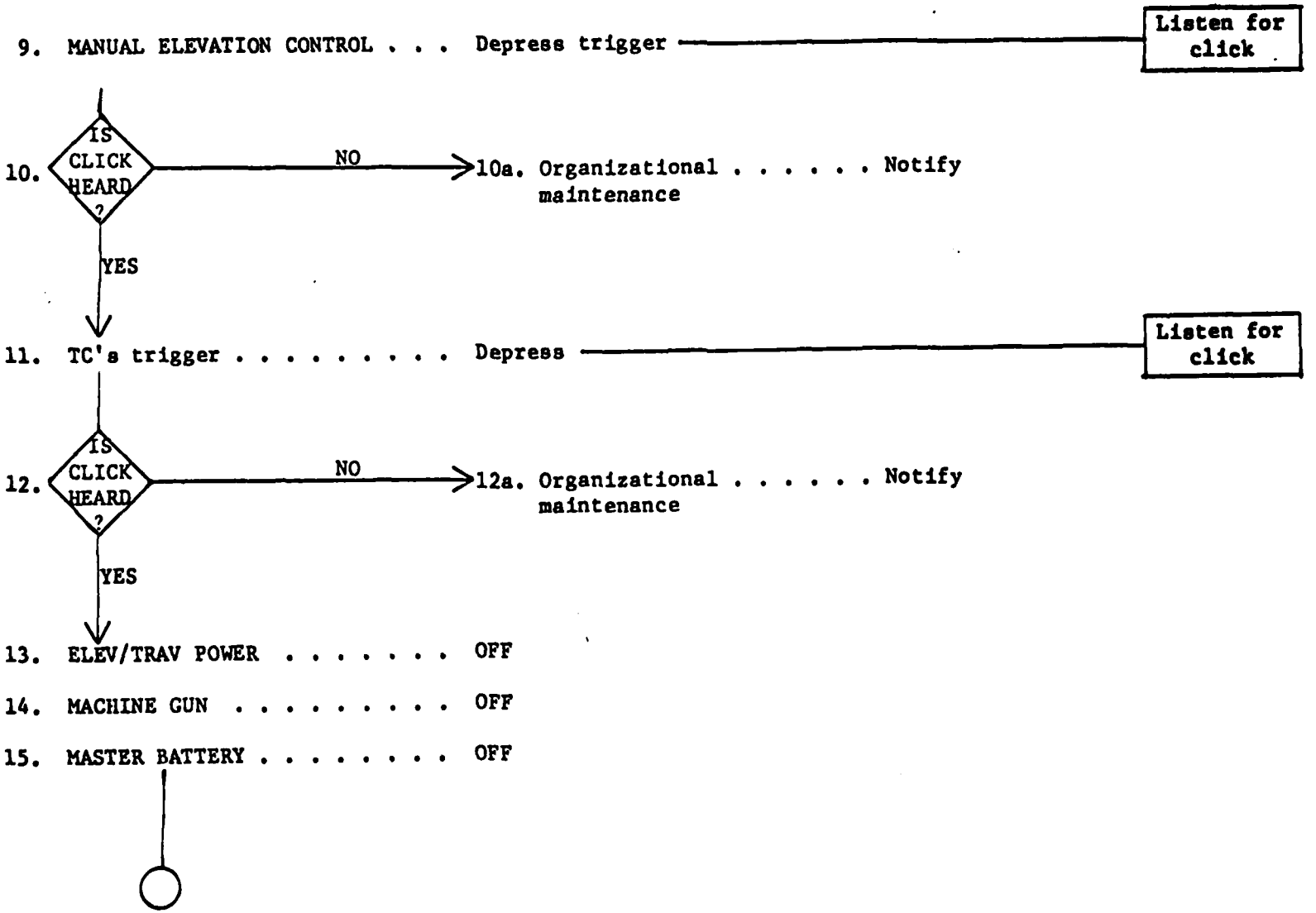
73. Elevation and deflection locking levers . . . Relock

74. Scales . . . . . Do not slip

TESTING 7.62-MM MACHINE GUN FIRING CIRCUIT

(TM PAGE 3-119)

1. Machine gun . . . . . Clear (loader)
2. MASTER BATTERY . . . . . ON (driver)
3. ELEV/TRAV POWER . . . . . ON
4. MAIN GUN . . . . . OFF
5. MACHINE GUN . . . . . ON
6. Machine gun safety . . . . . S
7. Gunner's triggers . . . . . Alternately depress left/right — Listen for clicks
8. ARE CLICKS HEARD ?
   - NO → 8a. Organizational maintenance . . . . . Notify
   - YES → GO TO 9

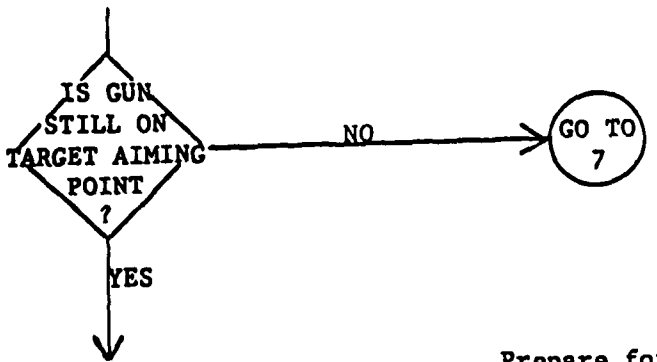

9. MANUAL ELEVATION CONTROL . . . Depress trigger
Listen for click
10. IS CLICK HEARD ?
NO
10a. Organizational . . . . . Notify maintenance
YES
11. TC's trigger . . . . . Depress
Listen for click
12. IS CLICK HEARD ?
NO
12a. Organizational . . . . . Notify maintenance
YES
13. ELEV/TRAV POWER . . . . . OFF
14. MACHINE GUN . . . . . OFF
15. MASTER BATTERY . . . . . OFF

BORESIGHTING 7.62-MM MACHINE GUN

(TM PAGE 2-360)

1.	Machine gun	Clear
2.	Buffer	Slide up and off — Depress release catch
3.	Cover/feed tray	Raise — Push in on cover latches
4.	Charger handle	Pull back
5.	Operating rod and bolt	Pull out
6.	Preliminary boresighting procedure . . .	Perform (Page 32)
7.	Front adjustment nut	Loosen
8.	M17A1 binocular	Sight through machine gun barrel bore
9.	Center of barrel	Aline of target aiming point — Use adjustment knobs on machine-gun mount
10.	Adjustment nut	Tighten — Turn additional 1/3 turn after tension is felt

GO TO 11



11.

12. TTS . . . . . Prepare for operation (Page 1)

13. UNITY RETICLE BORESIGHT . . . Aline aiming circle center on aiming point
EL and AZ

14. 17A1 binocular . . . . . Remove

15. Operating rod and bolt . . . . Push in

16. Charger handle . . . . . Pull back

17. Feed tray/cover . . . . . Lower

18. Drive spring . . . . . Push in

19. Buffer . . . . . Slide down — Catch will lock

20. Charger handle . . . . . Pull back to check operation

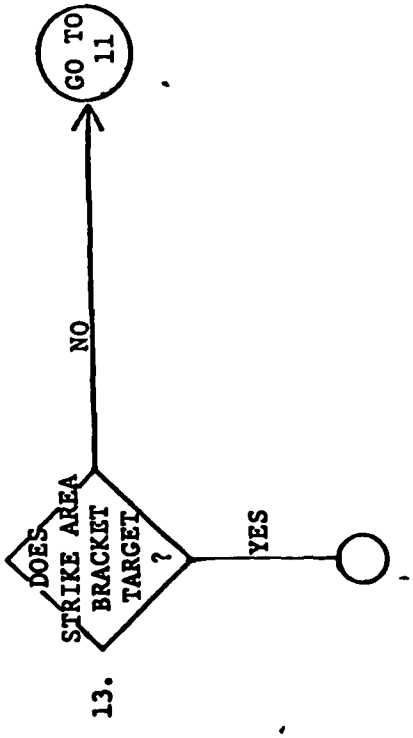
ZEROING 7.62-MM MACHINE GUN

(TM PAGE 2-393)

1.	Target	800 Meters
2.	MODE	STBY
3.	Unity power window	Sight target
4.	RTCL control	Adjust until reticle is barely visible
5.	MANUAL/RANGEFINDER	MANUAL
6.	RANGE METERS X100	Rotate to target distance
7.	Ammo select unit	HEP/WP
8.	Unity power window	Sight target
9.	Manual traversing and elevation handles	Lay target in center of aiming circle
10.	Machine gun	Load/charge
11.	UNITY RETICLE EL and AZ . . .	Move aiming circle to center of strike area
12.	Manual traversing and elevation handles	Relay target in center of aiming circle

Do not disturb lay of gun

GO TO 13


13.
DOES STRIKE AREA BRACKET TARGET ?
NO
GO TO 11
YES

PREPARING TO FIRE PROCEDURE
(TM PAGE 2-400)

COMMAND: PREPARE TO FIRE

1. Interior periscope and telescope sights . . . . Clean
2. Ballistic shield . . . . . Check operation
3. MASTER BATTERY . . . . . ON (driver)
4. Instrument lights . . . . . Check

COMMAND: CHECK FIRING SWITCHES

6. MAIN GUN . . . . . ON
7. Engine . . . . . Start (driver)
8. 105-mm gun safety switch . . . In FIRE (loader)
9. Circuit tester . . . . . Insert (loader)
10. TC's control handles . . . . . Check trigger (TC)
11. Gunner . . . . . Announces: ON THE WAY

GO TO 12

12. Gunner's control handle . . . Check trigger — Loader announces NO FIRE if circuit tester does not light

13. Gunner . . . . . Announces: ON THE WAY

14. Manual elevating control . . . Check trigger — Loader announces NO FIRE if circuit tester does not light

15. MAIN GUN . . . . . OFF

16. MACHINE GUN . . . . . ON

17. Coaxial machine gun . . . . . Cock

18. TC's control handle . . . . . Check trigger (TC)

19. Gunner . . . . . Announces: ON THE WAY

20. Gunner's control handles . . . Check triggers — Loader announces NO FIRE if circuit tester does not light

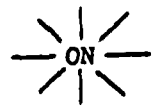
COMMAND: CHECK GUN CONTROLS

21. Gunner . . . . . Announces: POWER

22. Oil in turret control system . . . . Check

GO TO 23

23. Turret . . . . . Unlock (loader)

24. ELEV/TRAV POWER . . . . . 

25. Gun/turret . . . . . Elevate/traverse using gunner power controls

26. Magnetic brake/elevation shutoff valve . . . Check

27. Azimuth indicator . . . . . Check for accuracy/slippage

28. ELEV/TRAV POWER . . . . . OFF

29. Elevation quadrant . . . . . Check by use of gunner's quadrant

MAKE SURE THAT CREW IS READY AND NO PERSONNEL OR OBSTRUCTIONS ARE IN SURROUNDING AREA.

COMMAND: CHECK GUN STABILIZATION

30. STAB ELECTRONICS . . . . . 

(TC)

31. POWER PACK BLOWER MOTOR . . . 

(TC)

32. ELEV/TRAV POWER . . . . . ON

33. POWER on selector assembly . . ON — Wait 15 seconds

34. STAB . . . . . ON — System is operational when green STAB indicator lights

35. Gunner . . . . . Announces: TURRET STABILIZED

36. TRAV and/or EL BALANCE . . . . Rotate to null drift

37. Gunner's control handles . . . Check function

38. TC's control handles . . . . . Activate override/check function (TC)

39. STAB SHUT-OFF . . . . . *Depress* (TC)

40. POWER on selector assembly . . OFF

41. Gunner . . . . . Announces: STABILIZATION OFF

COMMAND: CHECK FIRE CONTROL

42. CUPOLA POWER . . . . . ON (TC)

43. GUN SAFETY . . . . . ON (TC)

GO TO 44

44. Cal .50 machine gun . . . . . Check operation (TC)

45. XM21 computer . . . . . Perform self-test (Page 9)

46. 105-mm gun . . . . . Prepare for boresighting (loader)

47. LRF . . . . . Perform self-test (TC)

48. Gunner's telescope and periscope . . . . Boresight (Page 24 or 32)

49. LRF . . . . . Boresight (TC)

50. Ammo switch . . . . . Select appropriate ammo

51. MOVING/STATIONARY . . . . . Select appropriate setting

52. Computer . . . . . Enter ballistic data

53. Cal .50 machine gun . . . . . Boresight (TC)

54. 7.62-mm machine gun . . . . . Load (loader)

55. 105-mm gun . . . . . Load (loader)

56. Cal .50 machine gun . . . . . Load (TC)

COMMAND: REPORT

57. Gunner/Driver/Loader . . . . . Announce: READY

BEFORE OPERATIONS PMCS

(TM PAGE 2-87)

1. Travel lock . . . . . Unlock/stow (loader)

2. Turret lock . . . . . Check operation/leave in unlocked position (loader)

MAKE SURE CREW IS IN SAFE POSITION BEFORE OPERATING MANUAL TRAVERSING AND ELEVATING HANDLES

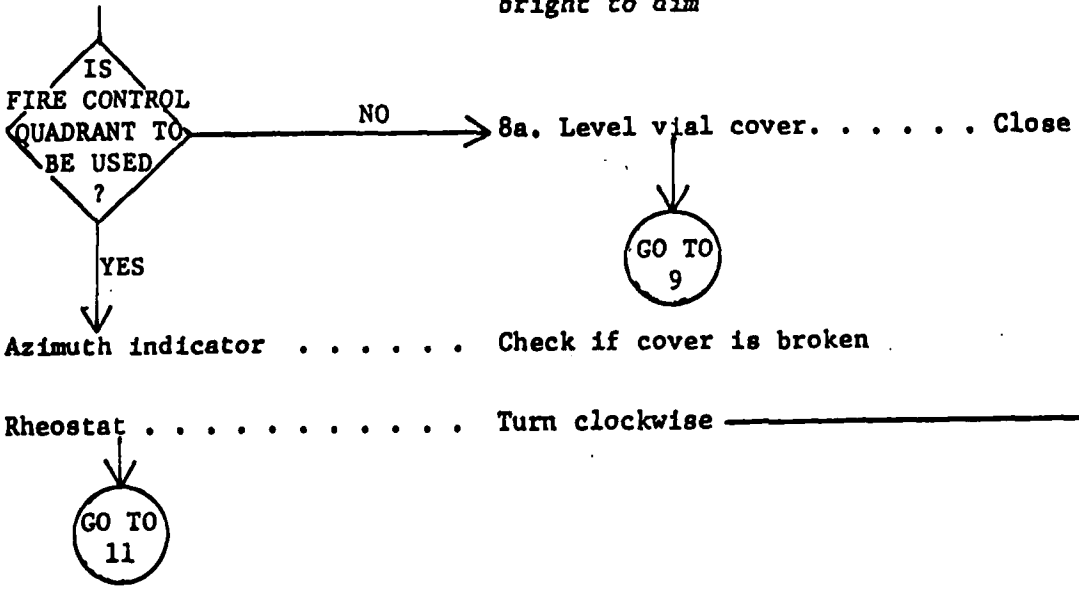
3. Manual elevating handle . . . Elevate/depress main gun — Check for smooth movement

4. Manual traversing handle . . . Traverse turret left/right — Check for smooth movement

DURING OPERATIONS PMCS

(TM PAGE 2-105)

1. Gunner's seat . . . . . Check if missing
2. Gunner's seat . . . . . Check operation/adjustment
3. Radio/intercom . . . . . Check operation
4. Fire control elevation quadrant . . . . Check if scale and index are readable
5. Level vial cover . . . . . Check for free movement
6. Level vial . . . . . Check if broken
7. Light source control . . . . . Check if light goes from *bright to dim*



8. IS FIRE CONTROL QUADRANT TO BE USED ? — NO → 8a. Level vial cover. . . . . Close → GO TO 9
9. Azimuth indicator . . . . . Check if cover is broken
10. Rheostat . . . . . Turn clockwise — Light should go from dim to bright

GO TO 11

11. Turret hydraulic system . . . Check for leaks

12. Hydraulic pressure gage . . . Should read between 900 and 1200 psi during hydraulic operations

13. Gunner control handles . . . . Traverse turret counter-clockwise — Depress palm switches

14. TC control handles . . . . . Override gunner and traverse turret clockwise (TC)

15. TTS ballistic shield . . . . . Assure open

16. TTS window/outside lens of M105D . . . Check/clean — Use cleaning compound and lens tissue