11-B

crawler tractor

service manual

UNDERCARRIAGE

S/N 16C16001 - UP
25L16001 - UP

Form 70681647 English
(SAME AS 0681647-4)

WARNING

DO NOT OPERATE THIS MACHINE
WITHOUT FIRST READING
THE OPERATOR MANUAL

English

FIAT-ALLIS

SUPPLEMENT NO.1
SERVICE MANUAL FORM 0681647-4
UNDERCARRIAGE
HD-11 SERIES B

(5-74)

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FOREWORD

This manual contains the Fiat-Allis approved procedures for overhaul of 11-B UNDERCARRIAGE, including operating techniques to prolong the life of undercarriage components.

All torque values given in this manual unless indicated otherwise are for clean and lubricated threads.

Assure best results and maintain original quality by always using Fiat-Allis parts.

Always furnish Dealer with Crawler Tractor Serial Number when ordering parts.

Many equipment owners employ the Dealer's service department for all work other than routine lubrication, adjustments, and minor service. This practice is encouraged, as our Dealers are well informed and equipped to render factory approved service.

NOTICE

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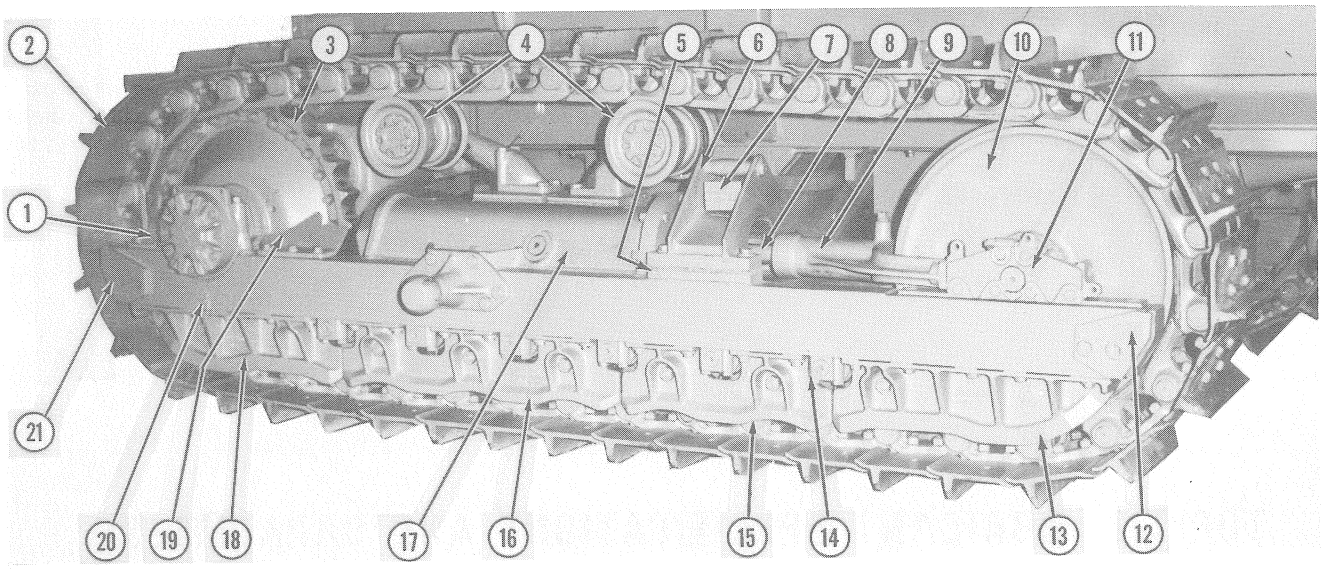

T-76721

FIG. 1 UNDERCARRIAGE COMPONENTS (Standard 40 Link Track)

1. Rear sprocket guard
2. Track
3. Sprocket segment
4. Carrier rollers
5. Shock pad
6. Equalizing beam bracket
7. Equalizing beam
8. Track release push rod
9. Track idler yoke
10. Track idler
11. Idler bracket
12. End guard
13. Front roller guard
14. Track roller
15. Front intermediate roller guard
16. Rear intermediate roller guard
17. Track release housing
18. Rear roller guard
19. Front sprocket guard
20. Track frame
21. Rear end guard

1.1 GENERAL

1.1.1
Major components of undercarriage are: track frame, track rollers, track carrier rollers, track release, track idler, track (each side), equalizing beam, and sprocket segments.

1.1.2
Track frame is fabricated from special steel sections welded into a rigid frame. Bottom of track frame, top of frame idler location, equalizing beam bracket pads and track carrier roller brackets are machined to within a few thousandths of an inch to provide accurate alignment of undercarriage components.

1.1.3
Each track frame is secured at rear pivot shaft and sprocket shaft outboard bearing; pivot shaft is secured to bottom of main housing by pivot shaft caps. Sprocket shaft outboard bearing is installed in sprocket shaft outboard bearing cage; track frame is attached to outboard bearing cage by cap-screws. Track frames support tractor main frame by use of an equalizing beam.

1.1.4
Track rollers revolve on tapered roller bearings and are attached to track frames by cap-screws inserted through attaching brackets and threaded into replaceable tapped blocks.

1.1.5
Track carrier rollers and track idlers revolve on a tapered roller bearings; internally their construction is similar to track rollers.

1.1.6
Track idlers are solid type, supported by track idler brackets which are guided on track frames by replaceable slide bars. Tension by track release spring against track idler (through idler yoke) maintains constant tension on track.

1.1.7
Track rollers, carrier rollers, and track idlers contain positive type seals; they are lubricated for life at time of assembly. No further lubrication service is required on these assemblies except when they are being reassembled after repair.

1.1.8
Track release mechanism is direct push type fully enclosed in housing. The housing is sealed to retain lubricant and to keep foreign material out. Components within housing are lubricated with oil at all times. Tracks are hydraulically adjusted.

1.1.9
Track frame guard equipment (some of which is special equipment) consists of track roller guards, track sprocket guards, and guards for ends of track frame.

1.1.10
Sprocket teeth are segmented and bolted to sprocket hub. Sprocket segments and sprocket hub are machined to provide accurate mounting surfaces. Segments are made of special material to provide long life.

TOPIC 2 LUBRICANT SPECIFICATIONS AND CAPACITIES

2.1 TRACK RELEASE HOUSING (Fig.1)

2.1.1
Capacity: 2 gals. (7.6 lit).

2.1.2
Specified lubricant is SAE Regular type Gear Lubricant purchased from reputable oil company.

CAUTION

Do not use Extreme Pressure (EP) Gear Lubricant.

2.1.3
Use lubricant of following viscosity:

ATMOSPHERIC TEMPERATURE	VISCOSITY
Above 32°F (0°C)	SAE 90 Gear Lube
32°F (0°C) and below	SAE 80 Gear Lube

2.2 TRACK IDLER, TRACK CARRIER ROLLERS AND TRACK ROLLERS

2.2.1
Capacity:
Track idler ---------- 2 lb. (.907 kg)
Carrier roller -------- .5 lb. (.23 kg)
Track roller --------- .8 lb. (.363 kg)

2.2.2
Grease used for lubricating these assemblies must have good pumpability and cold temperature characteristics, have minumum effect on synthetic rubber seal boots, be extremely stable, both mechanically and chemically and not deteriorate excessively with long usage. If any above assemblies are removed for disassembly and rebuild, they must be lubricated (when reassembled) with NLGI #0 calcium soap base grease.

2.3 TRACK FRAME PIVOT PIN

2.3.1
Use a ball and roller bearing lubricant with a minumum melting point of 300°F.(149°C). This lubricant should have a viscosity range to assure easy handling in lubricating gun at prevailing atmospheric temperature and must be waterproof.

TOPIC 3 PROLONGING UNDERCARRIAGE LIFE

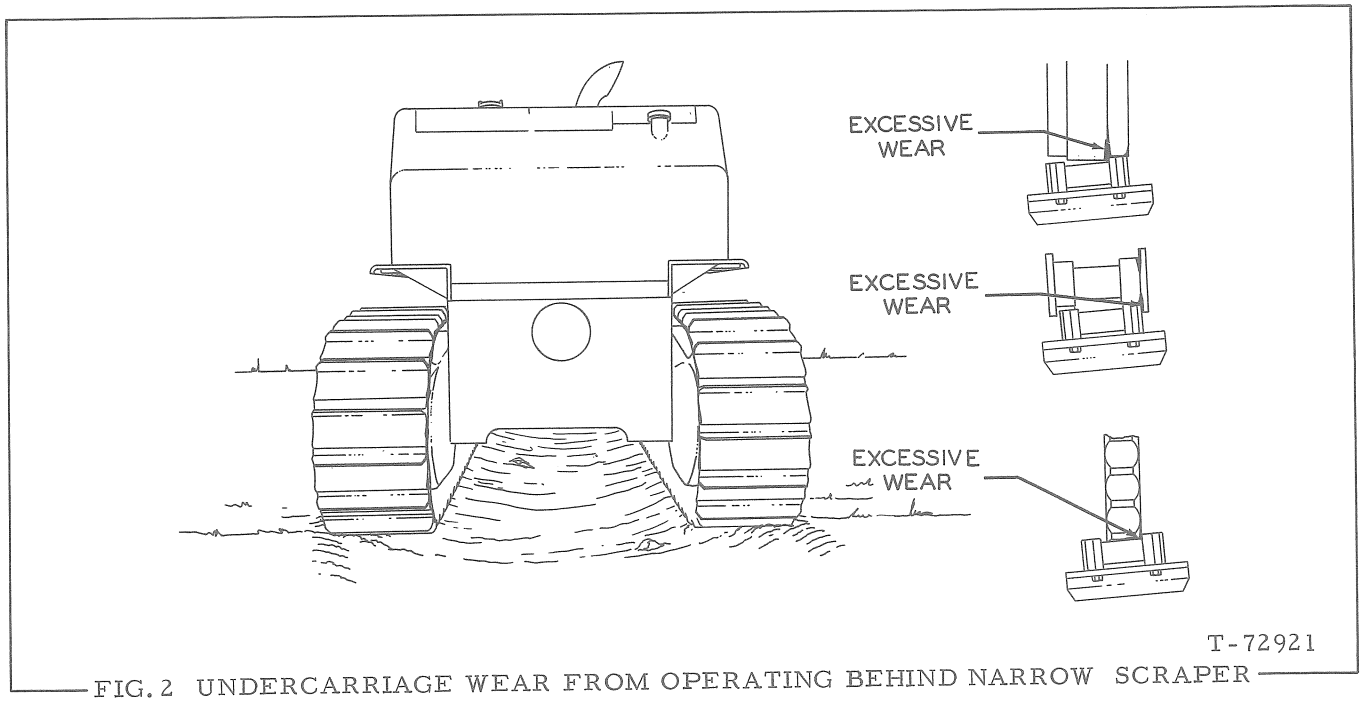

FIG. 2 UNDERCARRIAGE WEAR FROM OPERATING BEHIND NARROW SCRAPER

3.1 GENERAL

3.1.1
Undercarriage life cannot be measured in hours of operation only. Ideal operating and soil conditions, proper operating technique, and proper maintenance can extend undercarriage life several times over life obtained under extremely severe conditions and poor maintenance. Operating conditions and terrain cannot be controlled, but "common sense" operating techniques and regular inspection along with an effective maintenance program can materially prolong undercarriage life. Following material is given to assist in setting up and carrying out program to prolong undercarriage life.

3.2 OPERATING TECHNIQUES

3.2.1 General Information

3.2.1.1
Some types of operation impose abnormal stress on entire undercarriage; continued use of tractor under these conditions will noticeably shorten undercarriage life. Operator should attempt to avoid, if possible, the following operations:

3.2.1.2
Making sharp turn when tracks are not completely on the ground.

3.2.1.3
Using end of dozer blade to raise stump (this is extremely damaging if tractor is turned while pushing).

3.2.1.4
"Bouncing" tractor to dislodge (with dozer blade) material imbedded in ground.

3.2.1.5
Pushing tree from ramp with dozer blade in maximum raise position.

3.2.1.6
Allowing tractor to tip from edge of bank or truck onto sprocket or idler.

3.2.2 Speed

3.2.2.1
Uncessary high speed operation causes rapid wear and damage, as entire undercarriage is subjected to extreme shock loading. If speed is great enough, tracks will "arc" over carrier rollers and strike underside of fenders. Operate tractor with load heavy enough to permit full use of horsepower range. A job at 3 mph (4.82 km/h) with half load requires same time if done at 1.5 mph (2.41 km/h) with full load; however, undercarriage wear is greater at higher speed. If tractor is over loaded though, tracks will spin; this results in nothing but accelerated track wear. Speed used should allow tractor to work at maximum capacity.

3.2.3 Operating Behind Scraper

3.2.3.1
Tractors operating behind scrapers are subjected to undue undercarriage wear because of high speed return trips in reverse to start of cut, sometimes to wait for scraper to re-enter cut. If return speed is slowed to allow both units to arrive at start of cut at same time, undercarriage wear will be reduced considerably.

3.2.3.2
Operating behind scraper with narrow cut. Fig. 2, will cause rapid wear to outer flange

of track rollers, outer side of idler center flange, and sides and edges of track links, with resulting wear to sprocket teeth and carrier rollers, Nothing can be done to eliminate rapid wear, but undercarriage life can be extended by switching track assemblies and idlers, and changing track rollers to another position as wear becomes pronounced.

3.2.4 Hillside Operation

3.2.4.1
Accelerated undercarriage wear will be evident if tractor is used on hillside, Fig. 3. Track on high side will wear outer flange on track rollers, inner side of idler center flange, and inner side of sprocket. Track on low side will wear inner flange on track rollers, outer side of idler center flange, and outer side of sprocket. Most practical way to prolong undercarriage life is to operate tractor in both directions to equalize wear on each track. If this is not possible or practical, undercarriage life can be prolonged by switching track rollers and idlers. If wear on one side of sprocket teeth is pronounced, segments can also be switched to obtain new wear surface.

3.2.5. Using Tractor To Back-Fill

3.2.5.1
Back-fill operation causes excessive load on idlers and front track rollers when tractor is brought to edge of fill. Proper operating technique, Fig. 4, will reduce this load, but track rollers should be inspected regularly; at first indication of abnormal wear, front track roller(s) can be switched (moved to another position) to prolong life.

3.3 TRACK ALIGNMENT

3.3.1
Wear on undercarriage components cannot be prevented, but a systematic inspection program can lead to longer component life with less down time. Proper track alignment can be determined by regular visual inspection as any misalignment will cause visible wear to all undercarriage components. A complete inspection program is given in Topic 4.

3.4 TRACK

3.4.1 Track Shoes

3.4.1.1
A variety of shoes are available to meet requirements of operating conditions and terrain. Use of proper track shoes not only assures maximum shoe life, but also minimizes wear on all track components.

3.4.1.2
Wear on grouser can be determined by use of a gauge, Fig. 5, available through Fiat-Allis Dealer. Wear gauge can also be used to check for proper height when grouser is reconditioned.

3.4.2 Track Links and Seals

3.4.2.1
Forged track links, Fig. 6, are machined before heat treat, then heat treated and quenched for uniform strength. Bushing and track pin bores are broached for precision fit. On sealed track a synthetic seal with a bonded sealing face is inserted into counterbore in link; when track is assembled seal is compressed to form dirt tight seal between seal and bushing. Bottom of links will wear as they pass over idler, carrier rollers, and track rollers; amount of wear and projected replacement time can be determined by use of wear gauge Fig. 6.

3.4.3 Track Pin and Bushing

Track pins and bushings, their relation to each other and sprocket teeth, are the most important factors in track life. Distance between centers of adjacent track pins is track pitch; pitch in new track corresponds to distance between sprocket teeth at pitch line. As pins and bushings wear, track pitch increases, Fig. 8, but sprocket teeth pitch naturally remains the same; as a result bushings and sprocket teeth wear excessively.

3.4.3.1
Increase in track pitch also loosens track; looseness may be taken up by adjusting track, but bushing-sprocket contact can only be changed by turning pins and bushings 180°, Fig. 9. Turning exposes new wear surface on pins and bushings and restores track pitch to near new specifications. When to turn can be determined by measuring track pitch using wear gauge, Fig. 7, available through Fiat-Allis Dealer. Measure pitch along top half of track, at least two links either side from master pin; tracks must be tight when measuring.

3.4.3.2
In some instances when it is preferred to operate pins and bushings to end life rather than turn, wear gauge can be used to project estimated replacement time.

CAUTION

The safe maximum allowable wear pitch per track link (pin and bushing combined) is 7.1" (180.34mm), and the extreme allowable wear of 7.18"(182.59mm) or greater will destruct all mating components.

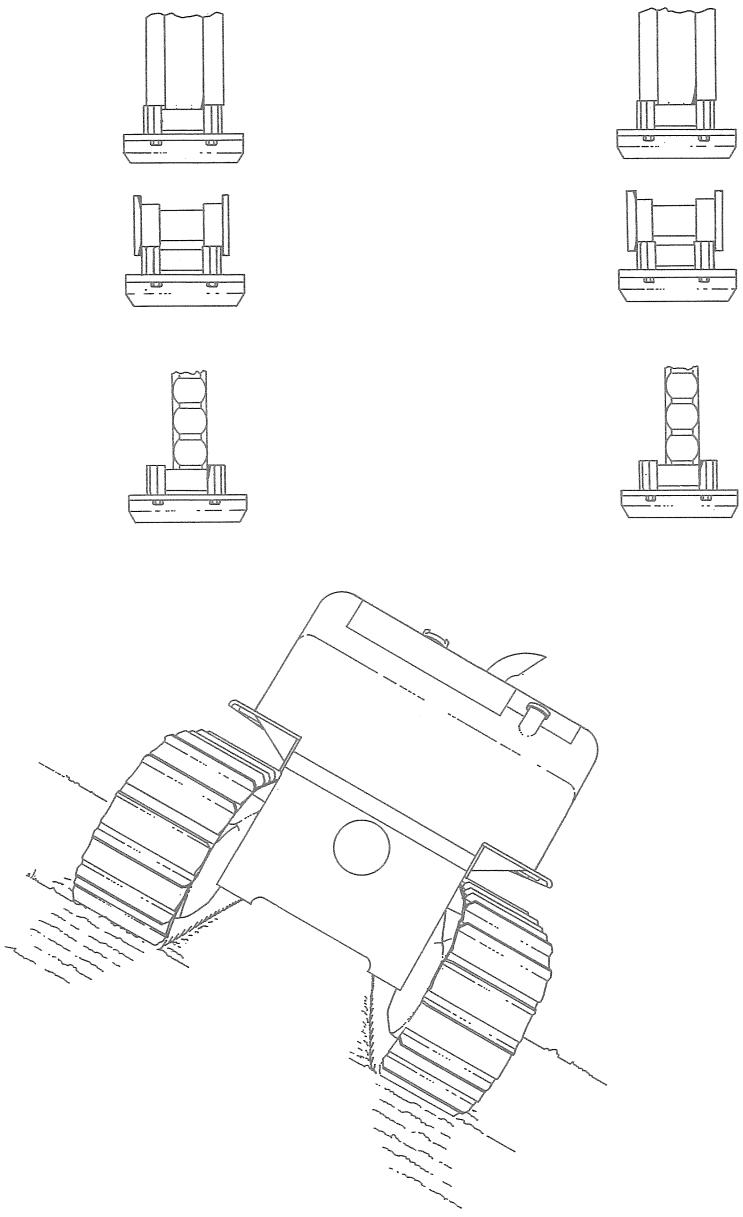

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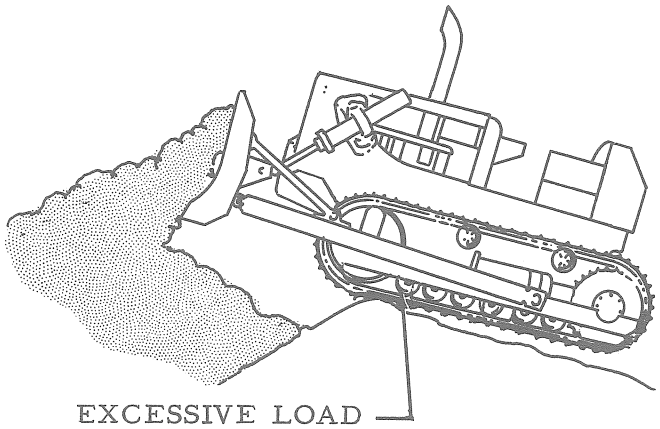
FIG. 3 UNDERCARRIAGE WEAR FROM HILLSIDE OPERATION

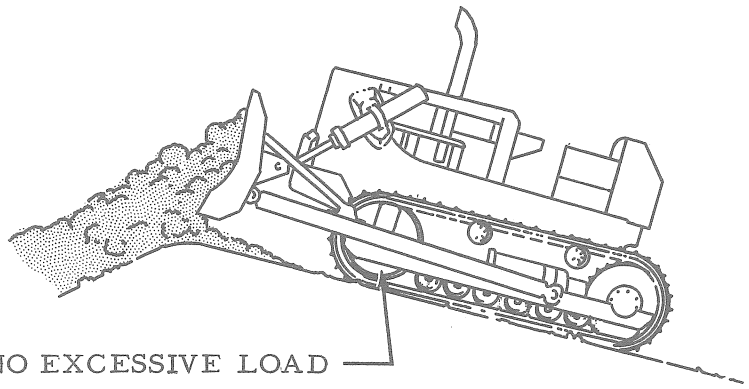
3.4.4 Track Adjustment

3.4.4.1
Operating tractor with tracks too loose or too tight results in accelerated wear on undercarriage components. Tracks too tight create excessive friction between pins and bushings as track links hinge over sprocket and idler; friction causes excessive wear to affected components, and also absorbs tractor power. Tracks too loose, will not stay aligned properly, causing excessive wear to idler center guide, carrier roller flanges, and sides and tips of sprocket teeth. Loose tracks also permit track to jump sprocket teeth (especially in reverse) causing uncessary wear to sprocket teeth and track bushings.

3.4.4.2
When operating in material which tends to pack in track, check track adjustment frequently to prevent over-tightening due to packing conditions.



TRACTOR RUN TO EDGE OF FILL BEFORE RAISING BLADE



RAISE BLADE SLIGHTLY BEFORE REACHING EDGE OF FILL

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FIG. 4 BACK-FILL OPERATION

3.4.5 Track Shoe Capscrew Torque

3.4.5.1
Tightness of track shoe attaching capscrews should be checked periodically;retorque capscrews to 250 to 300 lbs. ft. (34.56 -- 41.47kg/m).

3.5 TRACK ROLLER AND TRACK CARRIER ROLLERS

3.5.1
Track rollers and carrier rollers should be checked periodically for freedom of movement and signs of grease leakage. Wear can be measured by using wear gauge, Fig. 10 and 11. Under certain types of operation, some track rollers will wear more than others(refer to3.2). In these cases, track roller positions can be switched to obtain maximum and equal life from all track rollers. Track rollers should be switched when rollers with heavy wear are about half worn; amount of wear and remaining life can be determined by use of wear gauge.

3.6 IDLERS

3.6.1
Idler flanges and rims are machined for precision alignment, then induction hardened to resist wear. Idlers should be checked periodically for signs of lubricant leakage and proper alignment. Wear gauge, Fig. 12, can be used to measure idler flange wear and determine remaining useful life of idler. If uneven wear pattern indicates misalignment, refer to Topic 4 and perform checks and adjustments necessary to re-align idler.

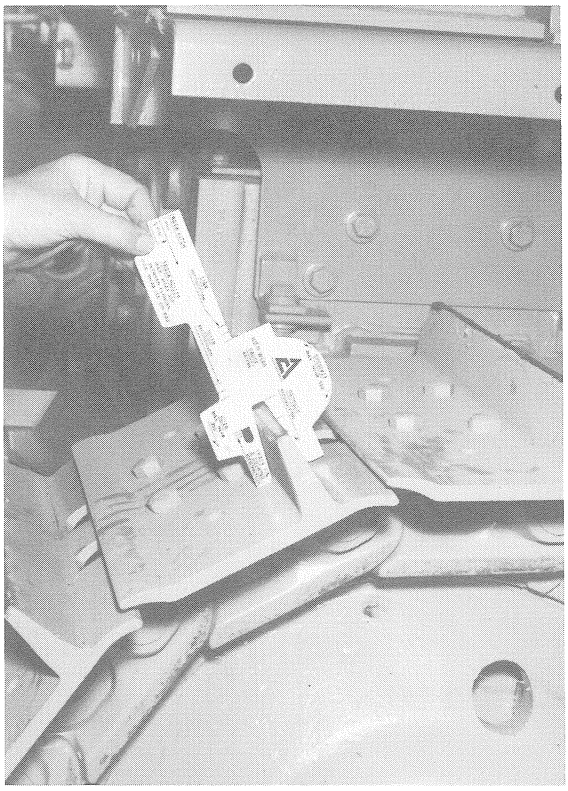

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FIG. 5 CHECKING GROUSER WEAR

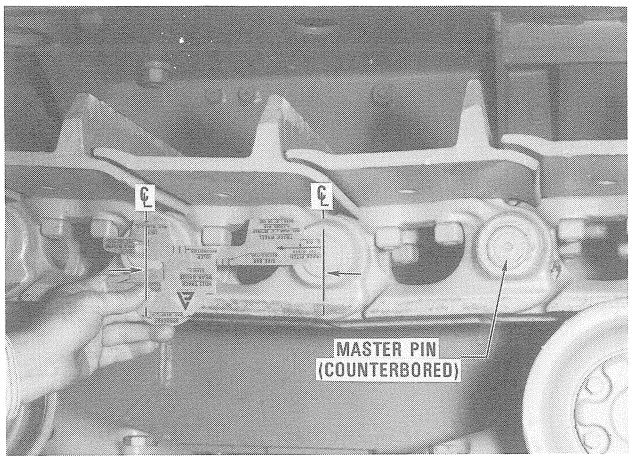

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FIG. 7 CHECKING TRACK PITCH TO DETERMINE PIN AND BUSHING WEAR

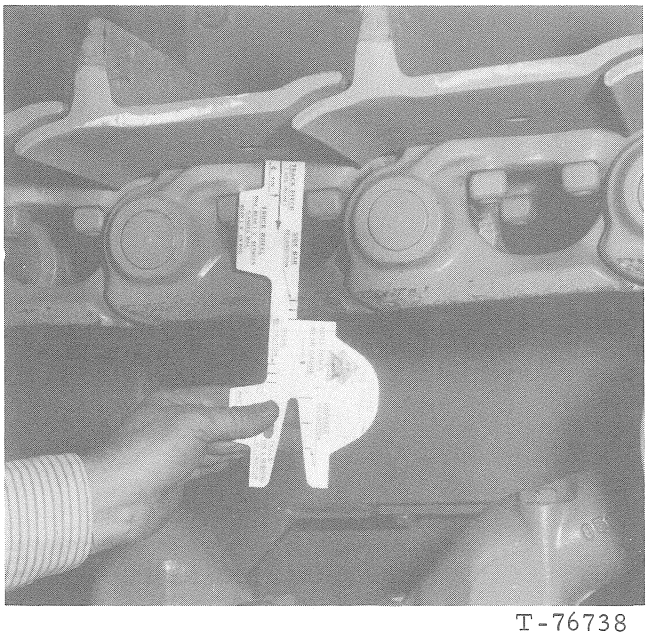

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FIG. 6 CHECKING TRACK LINK WEAR

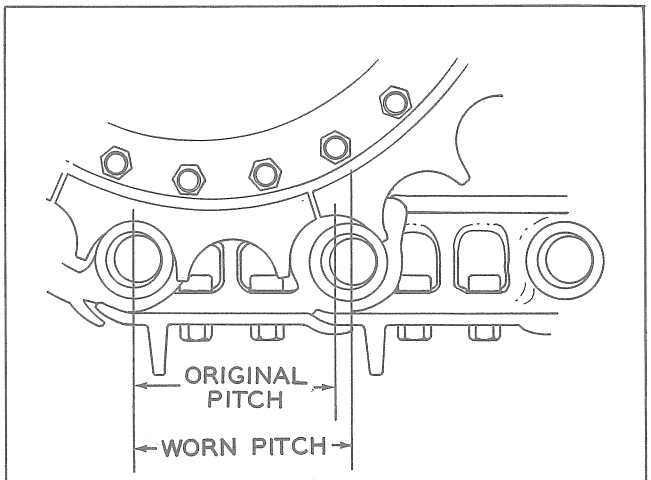

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FIG. 8 SPROCKET, PIN, AND BUSHING WEAR

3.7 SPROCKETS

3.7.1
Sprocket teeth (segmented) are precision ground to insure proper contact between teeth and bushing; teeth are induction hardened to resist wear. Odd number of sprocket teeth enables track bushings to contact different tooth each revolution (commonly known as hunting tooth sprocket), thereby increasing both bushing and sprocket life. Wear guage, Fig. 13, can be used to measure sprocket teeth wear and determine remaining useful life of sprocket. Segmented sprockets and sprocket hub are precision machined to maintain good alignment and retention. Periodically tighten segment capscrews to 220—240 lbs. ft. (30.41-33.18 kg/m).

3.8 TRACK FRAMES

3.8.1
Each track frame is fabricated from special steel sections welded into a rigid frame. Track idler location and entire bottom of track frame are machined parallel within a few thousandths of an inch to assure proper alignment of track frame to idler and track rollers. Carrier

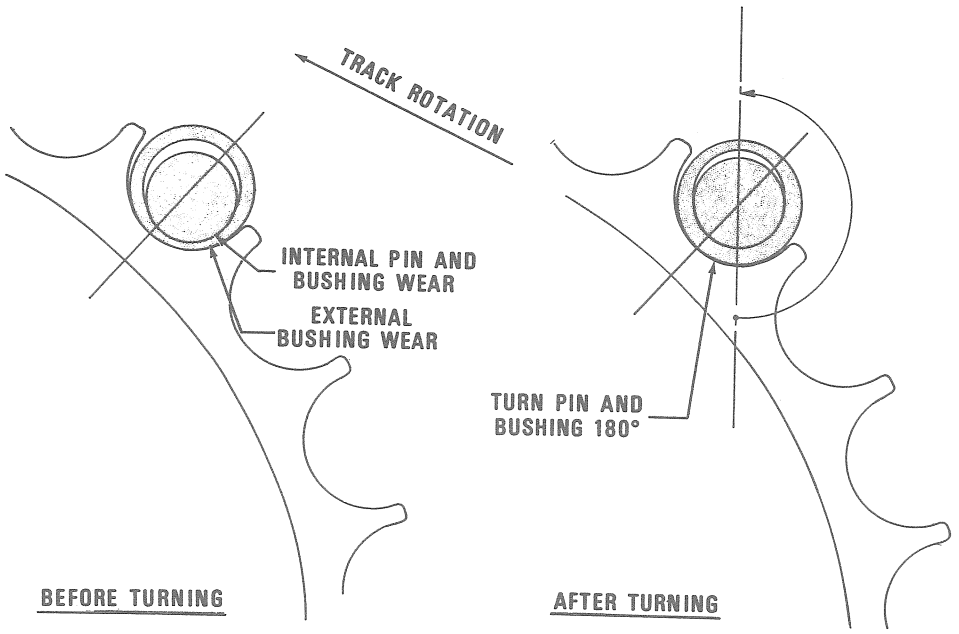

FIG. 9 PIN AND BUSHING WEAR

roller mounting surfaces are machined to provide proper alignment of carrier rollers;pivot shaft and sprocket shaft bores are line bored to provide accurate alignment of track sprocket shaft. Structural design and rigid construction enables track frame to absorb many shock loads without damage, however some types of operation impose abnormal stress which may damage track frames (see 3.2). If track frame damage is suspected, check track frame alignment (refer to Topic 4.).

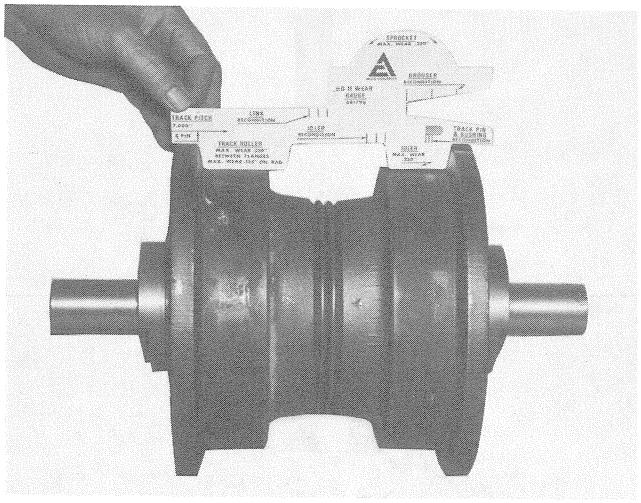

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FIG. 10 CHECKING TRACK ROLLER WEAR

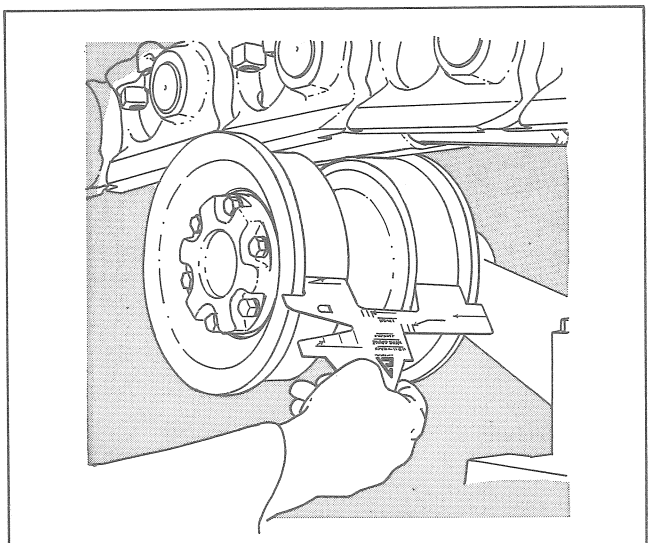

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FIG. 11 CHECKING TRACK CARRIER ROLLER WEAR -- FLANGE DEPTH

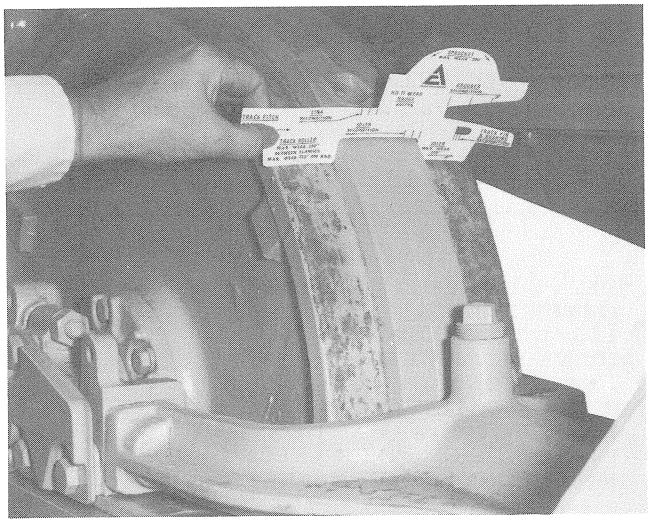

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Fig. 12 CHECKING IDLER FLANGE WEAR

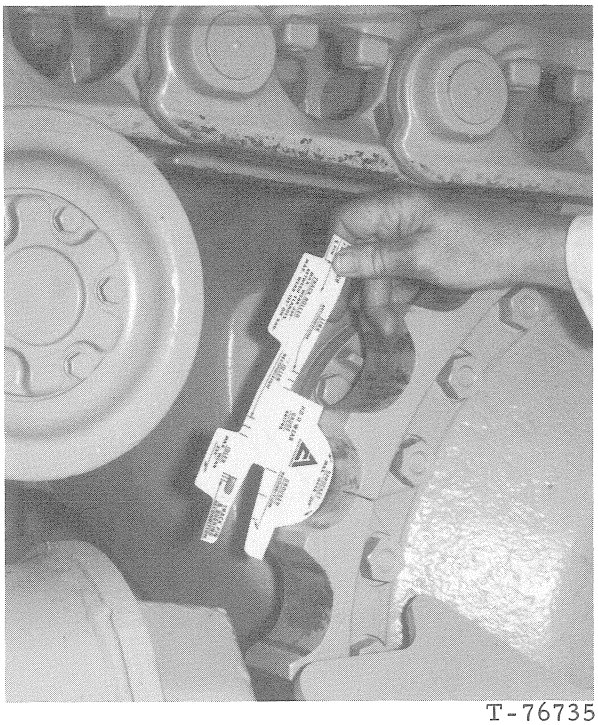

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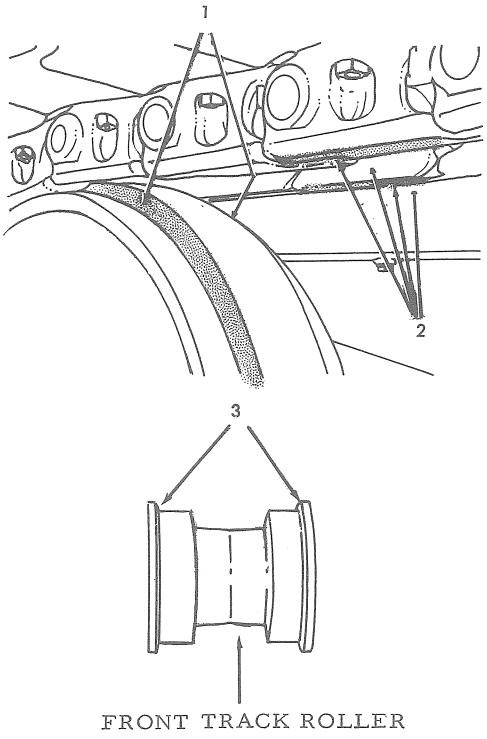
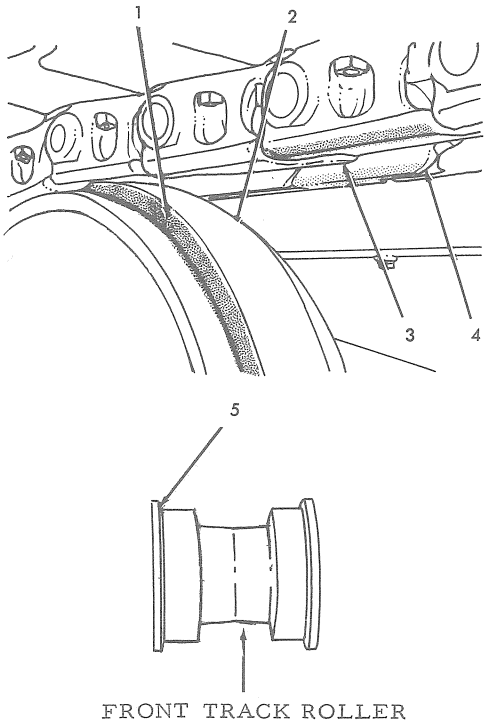
FIG. 13 CHECKING SPROCKET TEETH WEAR

TOPIC 4 UNDERCARRIAGE ALIGNMENT CHECKS



1. LIGHT EVEN CONTACT ON EACH SIDE OF IDLER FLANGE
2. LIGHT EVEN CONTACT ON BOTH SIDES OF SIDE LINKS
3. LIGHT EVEN CONTACT ON ALL FLANGES OF TRACK ROLLERS

FIG. 14 WEAR PATTERN -- TRACK AND IDLER PROPERLY ALIGNED T-72954



1. HEAVY CONTACT ON IDLER OUTER FLANGE
2. LIGHT TO NO CONTACT ON IDLER INNER FLANGE
3. HEAVY CONTACT ON INNER SIDE OF OUTER TRACK LINK
4. LIGHT TO NO CONTACT ON INNER SIDE OF INNER TRACK LINK
5. MORE CONTACT ON FLANGES.

FIG. 15 WEAR PATTERN -- IDLER OFF-CENTER TOWARD OUTSIDE T-72954

4.1 GENERAL

4.1.1
Proper alignment of undercarriage components in respect to each other and to the unit is essential; improper alignment will result in accelerated wear to ALL undercarriage components. Following illustrations and text show undercarriage wear patterns, causes of uneven wear patterns and methods to check undercarriage alignment both on and off the tractor.

4.2 WEAR PATTERNS

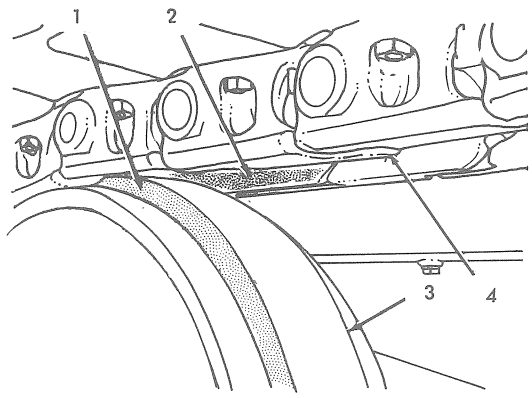
4.2.1
Wear patterns shown (Figs. 14 thru 20) will occur when track and idler are misaligned. Track and idler wear patterns should be checked periodically; misalignment detected early may be corrected with minor adjustment. As wear increases, however, cause of wear becomes more diffcult to determine and a complete alignment check may be re-required.

4.3 "ON UNIT" ALIGNMENT CHECKS

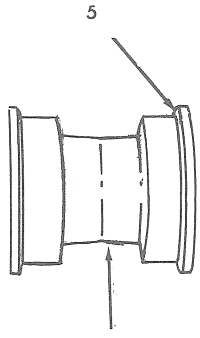
4.3.1 Center Idler Between Track Frame Channels

4.3.1.1
Clean area along outer edges of track frame channels, opposite idler rim (rear). Using a measuring scale, check the distance between idler rim and track frame channels (each side of idler) shown in Fig. 21. Dimension A and B should be same within .06 in. (1.524 mm).

4.3.1.2
If measurements are not within .06 in. (1.524 mm), idler must be recentered. Release all tension from track; loosen idler shaft clamping capscrew (each bracket) and drive a wedge in bracket slots to free idler shaft.

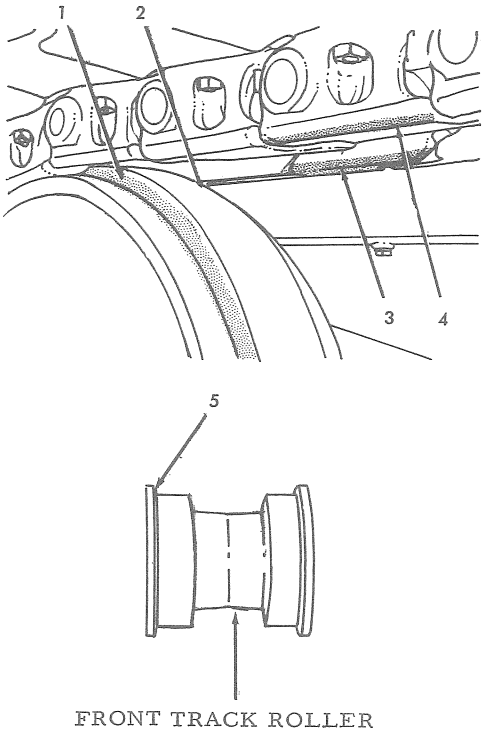


1. LIGHT TO NO CONTACT ON IDLER OUTER FLANGE
2. HEAVY CONTACT ON INNER SIDE OF INNER SIDE LINK
3. HEAVY CONTACT ON IDLER INNER FLANGE
4. LIGHT TO NO CONTACT ON INNER SIDE OF OUTER SIDE LINK
5. MORE CONTACT ON INNER FLANGE THAN OUTER FLANGES.



FRONT TRACK ROLLER

FIG. 16 WEAR PATTERN -- IDLER OFF-CENTER TOWARD INSIDE T-72954



1. LIGHT OR NO CONTACT ON IDLER OUTER FLANGE
2. HEAVY CONTACT ON IDLER INNER FLANGE.
3. HEAVY CONTACT ON INNER SIDE OF INNER SIDE LINK
4. HEAVY CONTACT ON OUTSIDE OF OUTER SIDE LINK
5. HEAVY CONTACT ON OUTER FLANGES.

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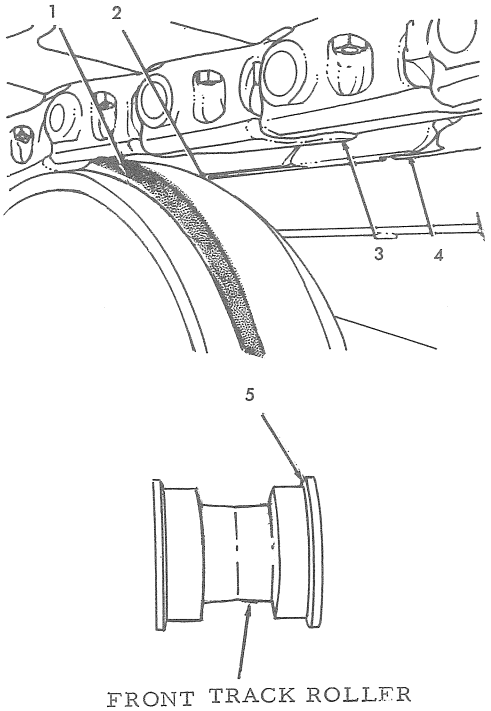
FIG. 17 WEAR PATTERN - IDLER LOW TOWARD INSIDE



1. HEAVY CONTACT ON IDLER OUTER FLANGE
2. LIGHT OR NO CONTACT ON IDLER INNER FLANGE
3. HEAVY CONTACT ON INNER SIDE OF OUTER SIDE LINK
4. HEAVY CONTACT ON OUTER SIDE OF INNER SIDE LINK
5. HEAVY CONTACT ON INNER FLANGES

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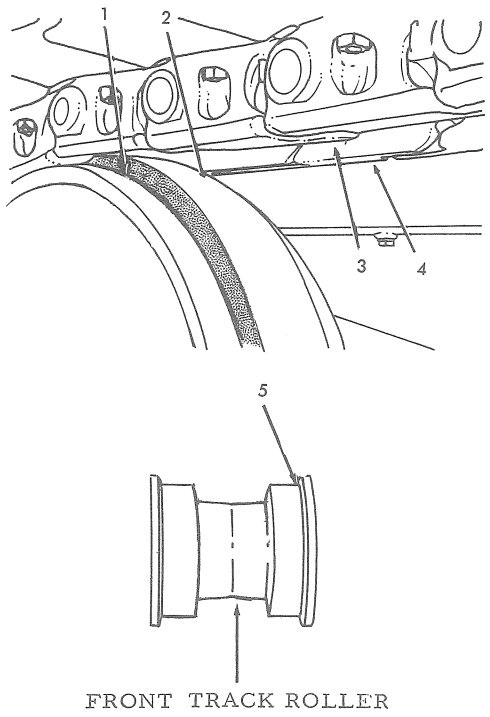
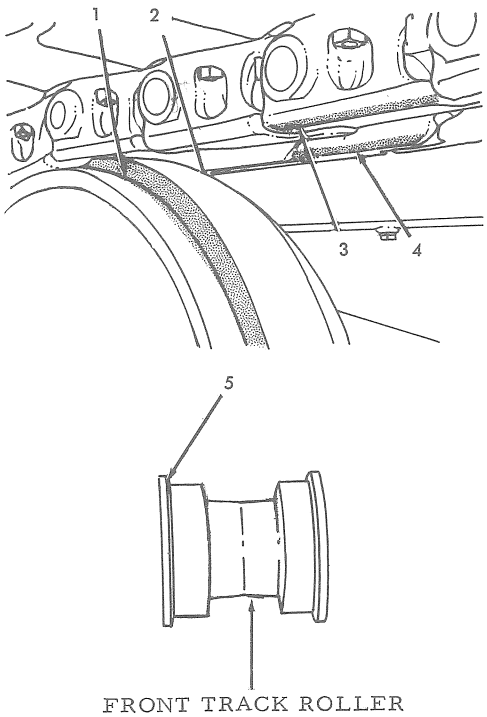
FIG. 18 WEAR PATTERN - IDLER LOW TOWARD OUTSIDE



1. HEAVY CONTACT (CUTTING IF TOE-IN IS 1/4"(6.35mm) OR MORE) ON IDLER OUTER FLANGE
2. MODERATE CONTACT ON IDLER INNER FLANGE
3. HEAVY CONTACT (CUTTING IF TOE-IN IS 1/4"(6.35mm) OR MORE) ON INNER SIDE OF OUTER SIDE LINKS
4. HEAVY CONTACT ON OUTER SIDE OF INNER SIDE LINKS
5. HEAVY CONTACT ON INNER FLANGES

T-72954

FIG. 19 WEAR PATTERN - IDLER "TOED-IN"



1. MODERATE CONTACT ON IDLER OUTER FLANGE
2. HEAVY CONTACT (CUTTING IF TOE-OUT IS 1/4"(6.35mm) OR MORE) ON IDLER INNER FLANGE
3. HEAVY CONTACT ON OUTER SIDE OF OUTER SIDE LINKS
4. HEAVY CONTACT (CUTTING IF TOE-OUT IS 1/4"(6.35mm) OR MORE) ON INNER SIDE OF INNER SIDE LINKS
5. HEAVY CONTACT ON OUTER FLANGES

T-72954

FIG. 20 WEAR PATTERN - IDLER "TOED-OUT"

4.3.1.3
Center the idler equally between track frame slide bars (Fig. 21); remove wedges from idler brackets and torque clamping capscrews to 170 to 190 lbs. ft. (23.50 -- 26.26 kg/m).

NOTE: Make certain that idler brackets have proper clearance to slide bars before tightening clamping capscrews. Refer to Topic 6 for clearance dimensions.

4.3.1.4
Install guide plate and proper amount of guide plate shims to provide clearance between guide plates and upper slide bars, then secure guide plates with capscrews.

4.4 CHECKING LEVEL OF UPPER SLIDE BARS

4.4.1
Inner and outer upper slide bars on each track frame must be level to maintain proper idler alignment. Upper slide bars are level from factory; they will remain level unless they are worn or track frame becomes damaged by abnormal use or abuse.

NOTE: Checking the track frame upper flanges on top or next to the slide bars will indicate the slide bar level. The following procedure is assuming the slide bars are in good condition with track and track idler installed.

4.4.2
Park the tractor on level surface; preferably a level concrete slab.

4.4.3
Place an accurate protractor level across top (machined surface) of main housing, Fig. 22. Center the level bubble with protractor and lock protractor in position, making certain that protractor level is not turned end for end.

4.4.4
Position a precision straight edge on the top of each track frame channel (upper flange) along the upper slide bars as shown in Fig. 23, making certain the front ends of straight edges are within 2 in. (50.8 mm) of the track shoe then clamp the straight edges to frame or slide bar in this position.

4.4.5
Insert a 1 in. (25.4 mm) square precision bar approximately 24 in. (609.6 mm) long through the track side links (Fig. 23) and rest it on top of the two straight edges.

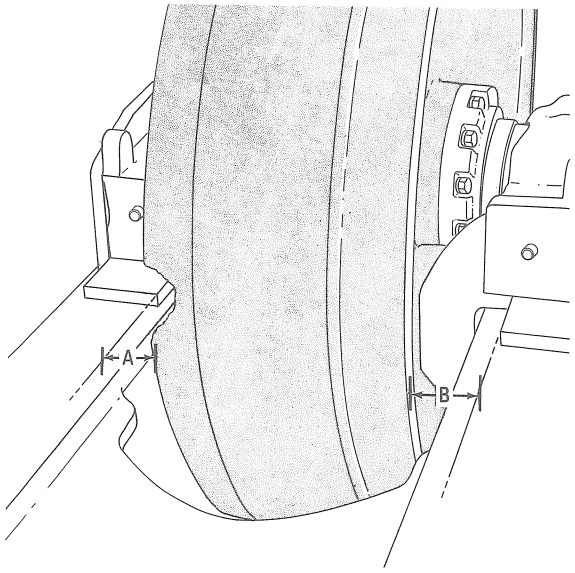
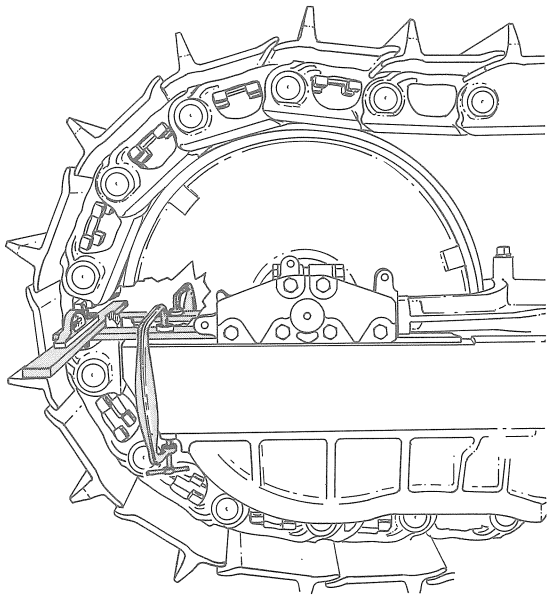


FIG. 21 CHECKING CENTER OF TRACK IDLER (Yoke Removed For Clear View Only) T-75762

T-76731
FIG. 22 LEVELING PROTRACTOR ON MAIN HOUSING



T-76732
FIG. 23 CHECKING LEVEL OF UPPER SLIDE BAR AREA

NOTE: It may be necessary to move tractor to prevent any interference between side links and square bar. If tractor is moved, step 4.4.3 must be repeated.

4.4.6
Place the protractor level on the square bar (Fig. 23) making certain that the level was not turned end for end. If the level bubble is not centered, this indicates that the pivot pins and /or bushings are worn or the frame is bent and will be necessary to consult your dealer to correct a bent frame condition.

4.5 TRACK FRAME TOE-IN/TOE-OUT

4.5.1
Track frames must be parallel to assure proper track and idler alignment. When track frames are not parallel it indicates that either the track frame pivot pins and bushings are worn or cap retaining capscrews are loose. If track frame pivot pins and bushings are not worn and frames are not parallel, then the frames have been damaged.

4.5.2
Check the looseness of the track frame pivot pin to bushing as outlined:

4.5.2.1
Raise the tractor until the entire undercarriage is off the surface and is bearing no weight. Block beneath main housing and equalizing beam.

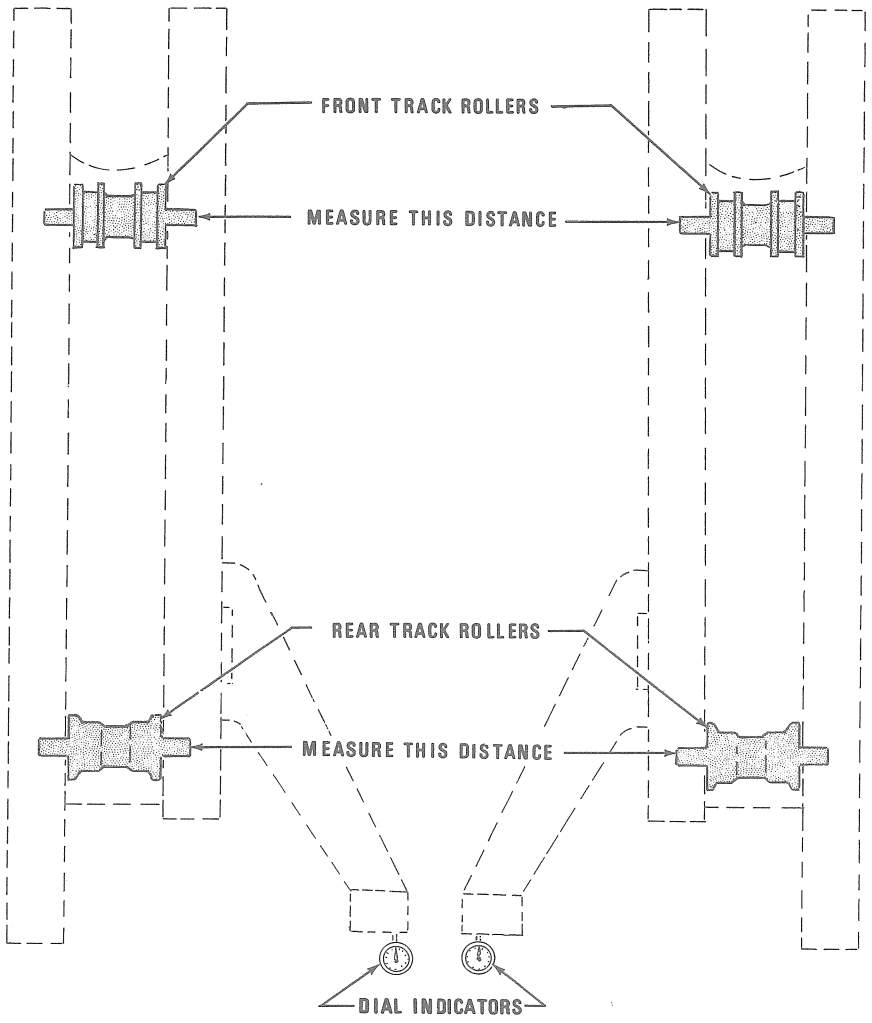
4.5.2.2
Install a dial indicator gauge on each track frame pivot as shown in Fig. 24. Using a spreader bar, force each track frame outward (at front end) as far as possible and zero the dial indicators.

4.5.2.3
Using a lifting - puller or come-along hoist, pull the frames together (inward at front end) as far as possible, then read each dial indicator. An approximate allowable wear of .02 in. (.508 mm) may be tolerated but if found to be excessive then the pins and/or bushings should be replaced. Refer to Topic 10 for pin and bushing replacement.

4.5.2.4
If the pivot pins and bushings are within .02 in. (.508 mm) then using the tool shown in Fig. 25, extend the tool until it contacts the inner ends of the rear track roller shafts (each side) as shown in Fig. 24, then lock the tool in this position. Accurately measure the length of tool and record this measurement.

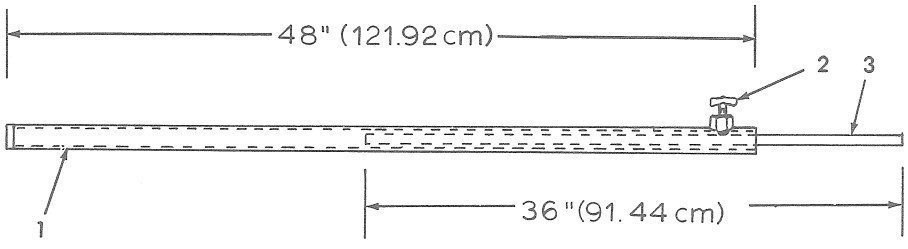
4.5.2.5
Extend the tool between the inner ends of the front track roller shafts and lock the tool in this position. Measure the length of tool and compare dimensions from front and rear readings. If the difference is greater than .17 in. (4.32 mm) then one or both frames are damaged. By using straight edges, strings, or visually, determine which frame is damaged. Remove the damaged frame as outlined in Topic 10 and remove all components to complete alignment checks of frame.

NOTE: If dial indicators at pivot pin locations are near limits of .02 in. (.508 mm)(either slightly over or under), then replacement of pivot pins and bushings will normally restore the track frame parallelism. Alignment checks of the other undercarriage components will be necessary.



T-75452

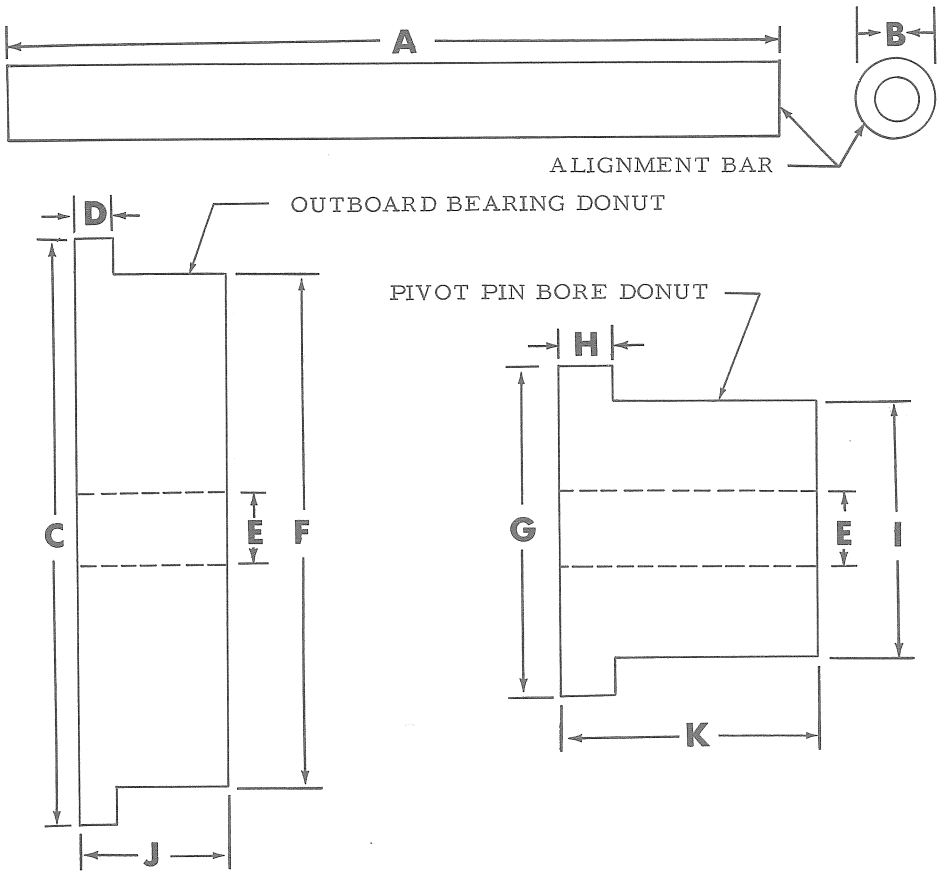
FIG. 24 MEASURING POINTS TO DETERMINE TRACK FRAME PARALLELISM



T-75714

FIG. 25 TOOL USED TO CHECK TRACK FRAME TOE-IN/TOE-OUT

1. Gauge tube
2. Lock screw
3. Extension



NOTE: Chart includes inches and millimeters.

A	B	C	D	E	F	G	H	I	J	K
36"	2"	7.25"	.44"	2.001"	6.246"	4.000"	.44"	3.107"	2.50"	5.500"
924.4	50.8	184.15	11.28	50.82	158.64	101.6	11.28	78.92	63.5	149.7

T-72979

FIG. 26 ALIGNMENT BAR AND DONUTS USED TO CHECK TRACK FRAME

4.6 OFF TRACTOR ALIGNMENT CHECKS

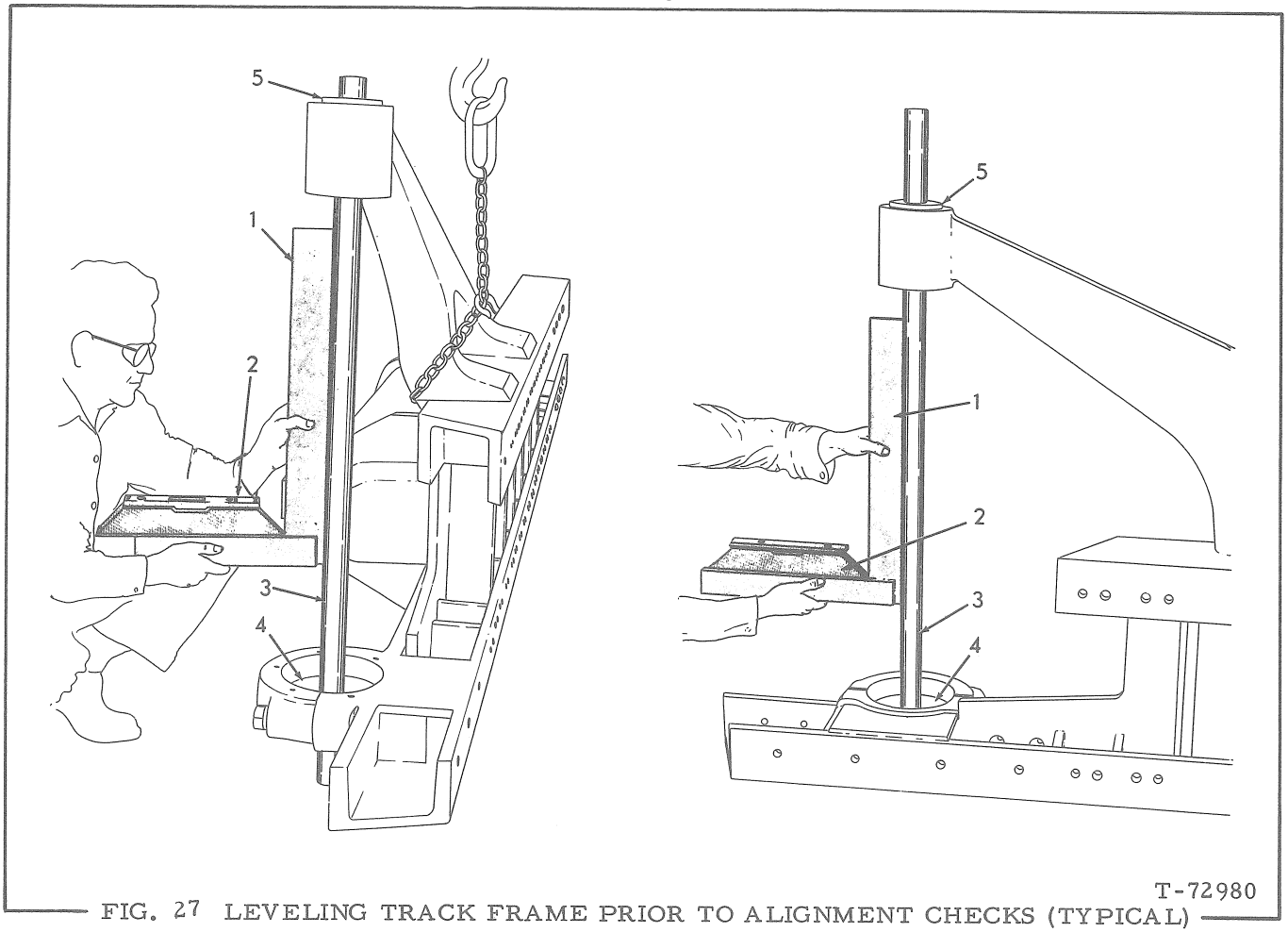
4.6.1 Position Of Track Frame For Alignment Checks

4.6.1.1
All checks can be made with track frame resting level on its outside channel, Fig. 27. Position track frame as follows:

4.6.1.2
Remove all components (track rollers, slide bars, etc.) from track frame; remove pivot shaft bushing from bore.

4.6.1.3
Lay track frame on outer channel, with leveling jacks under outer channel and one under track release housing, Fig. 28.

4.6.1.4
Install alignment bar and donuts, Fig. 26 and 27, hold square and level against rear side of alignment bar, Fig. 27 and adjust leveling jacks to level track frame from front to rear. Hold square and level against top side of alignment bar, Fig. 27 and adjust leveling



T-72980

FIG. 27 LEVELING TRACK FRAME PRIOR TO ALIGNMENT CHECKS (TYPICAL)

1. Square
2. Master level
3. Alignment bar
4. Outboard bearing bore donut
5. Pivot shaft bore donut

jack beneath track release housing to level track frame from top to bottom. Recheck and adjust until track frame is level.

4.6.2 Check Level Of Slide Bar Mounting Surfaces

4.6.2.1
With alignment bar and donuts, installed, check level against alignment bar, then take reading along slide bar mounting surfaces, Fig. 29. Channels must be level within .030 in. (.76 mm).

4.6.2.2
If channels are not level, within .030 in. (.76 mm), consult Dealer about possibility of straightening or replacing track frame.

4.6.3 Check Track Frame Toe-In/Toe-Out

4.6.3.1
With track frame properly leveled, install front and rear track roller mounting

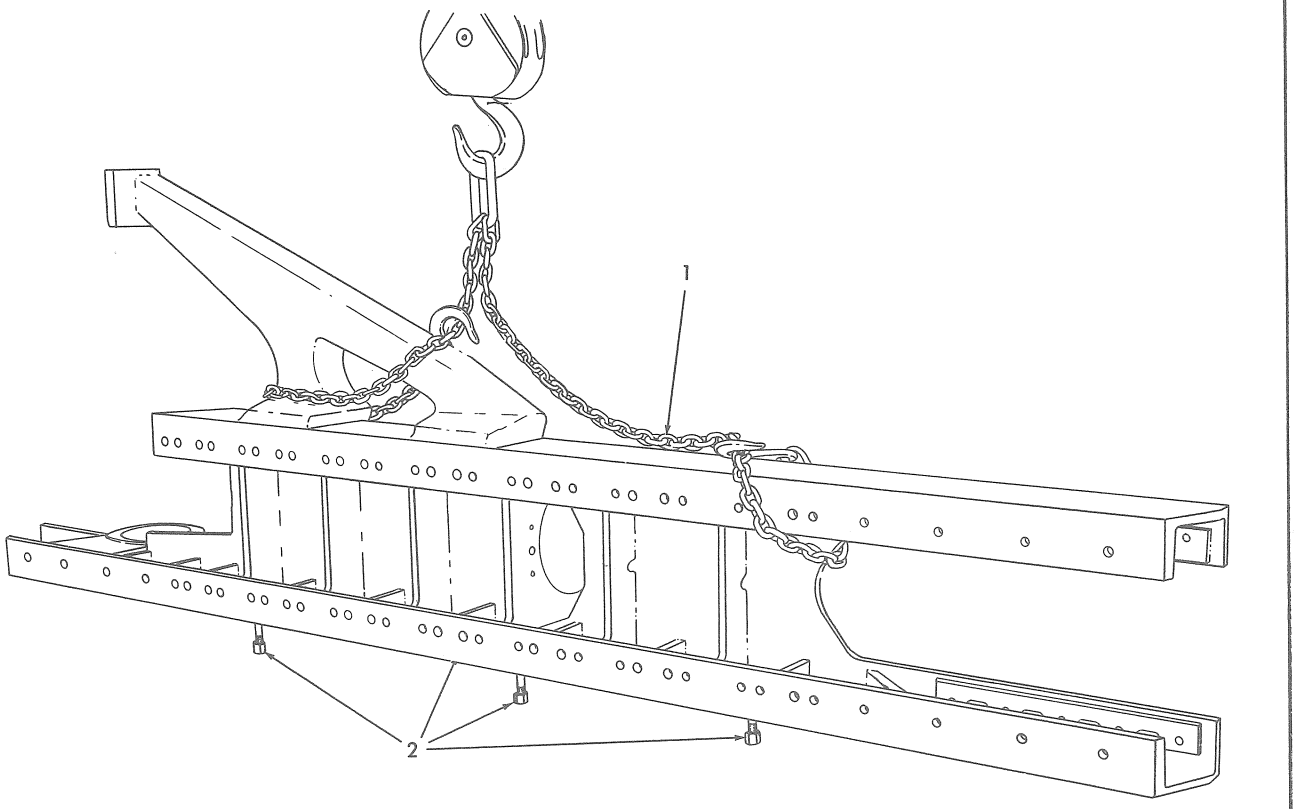
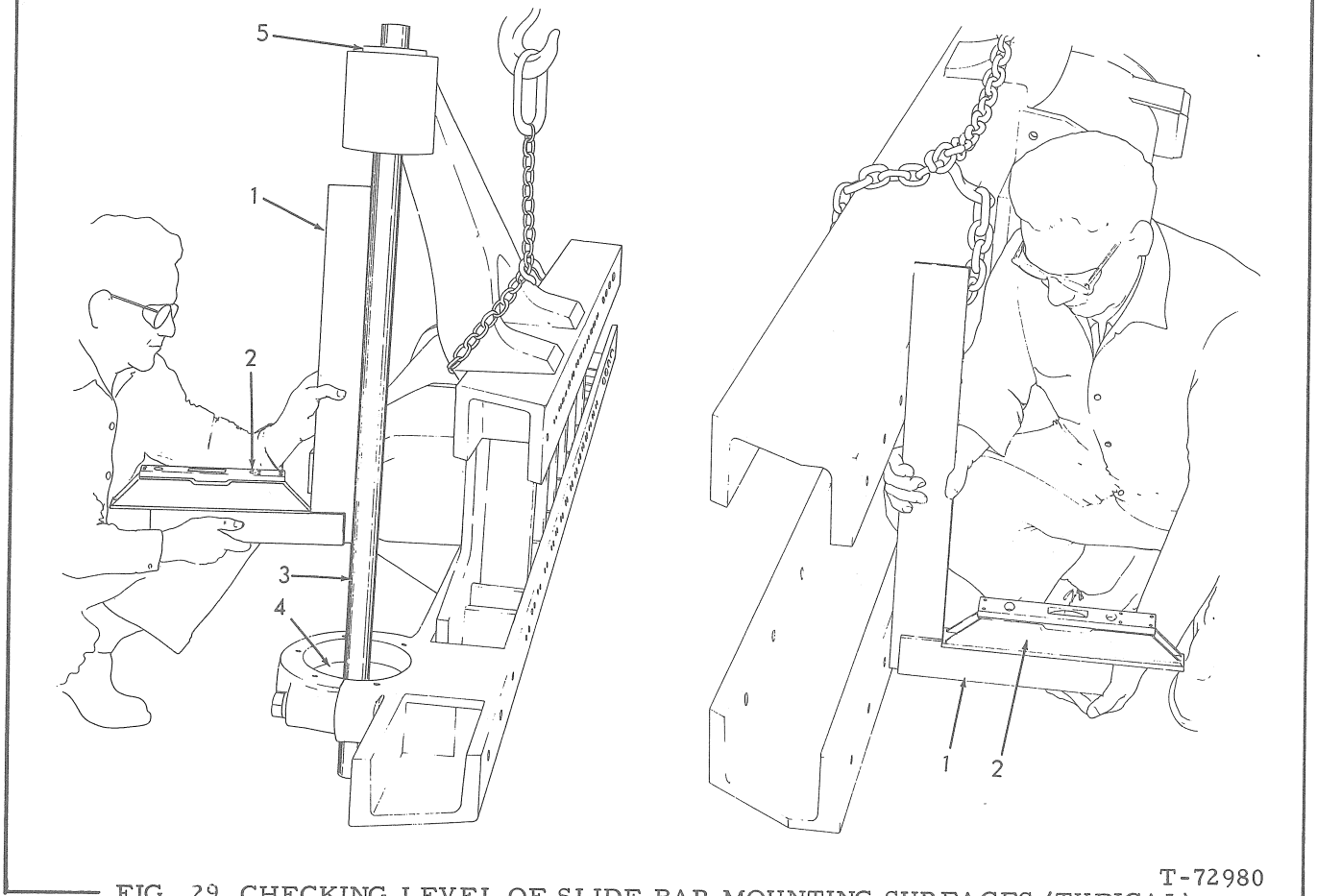


FIG. 28 TRACK FRAME POSITIONED FOR ALIGNMENT CHECKS (TYPICAL)

1. Safety chain
2. Leveling jacks

capscrews in lower channel. Lay accurate straight edge on the flat side of the capscrew heads, Fig. 30, and place level on straight edge. Raise straight edge (if necessary) to center level bubble; if straight edge must be raised more than .06 in. (1.52 mm), track frame is bent beyond use. Consult Dealer about possibility of straightening or replacing frame.

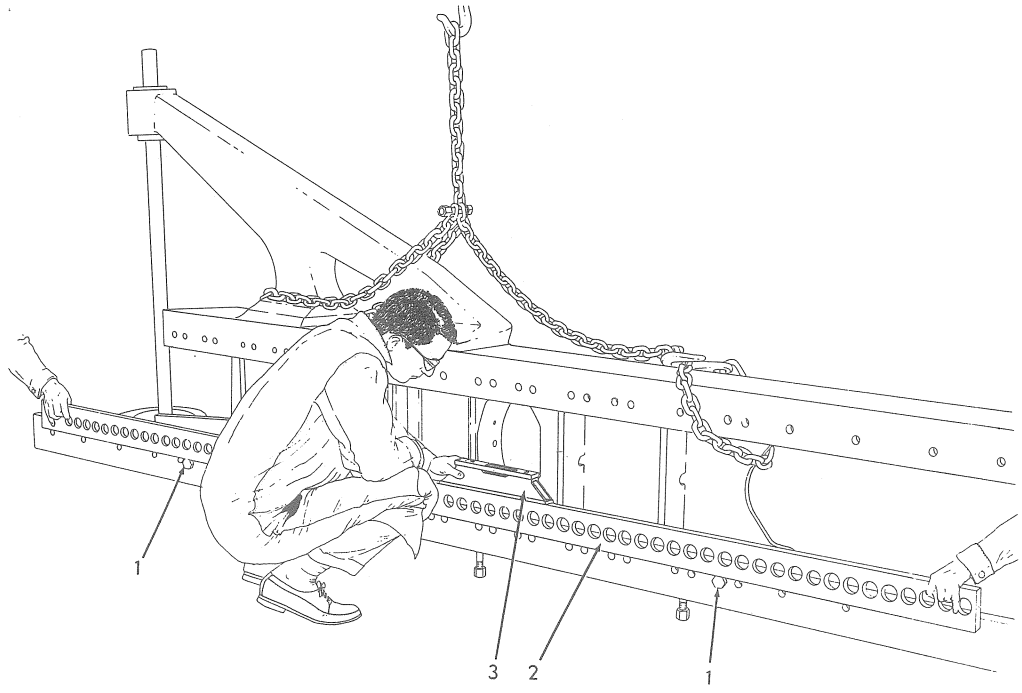
4.6.3.2
Repeat step 4.6.3.1 to check upper channel.



T-72980

FIG. 29 CHECKING LEVEL OF SLIDE BAR MOUNTING SURFACES (TYPICAL)

1. Square
2. Master level
3. Alignment bar
4. Outboard bearing bore donut
5. Pivot shaft bore donut



T-72982

FIG. 30 CHECKING TRACK FRAME TOE-IN/TOE-OUT (TYPICAL)

1. Capscrews
2. Straight edge
3. Master level

TOPIC 5 TRACK

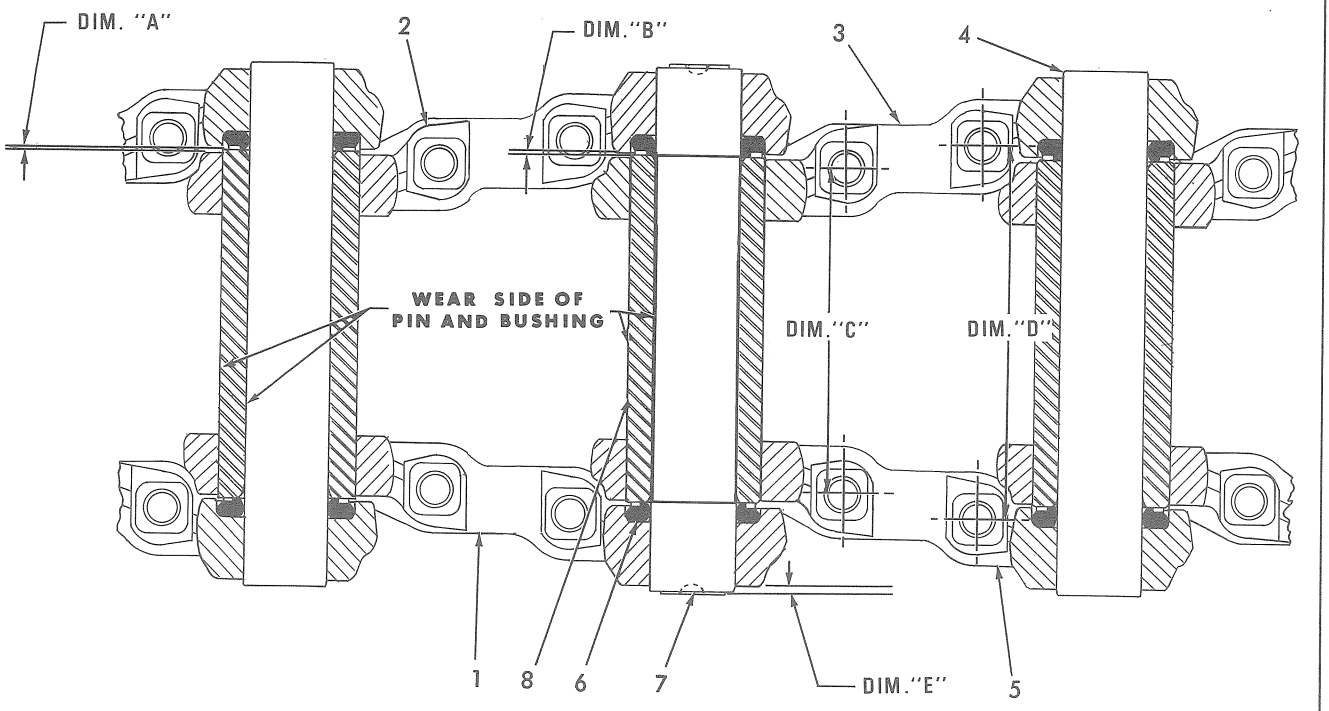


FIG. 31 SEALED TRACK ASSEMBLY T-75111

1. Link (left hand)
2. Link (right hand)
3. Master link (right hand)
4. Track pin
5. Master link (left hand)
6. Seal
7. Master track pin
8. Track bushing
   DIM "A" Equidistant within .010"(.254mm)
   DIM"B" Equidistant within .012"(.305mm)
   DIM "C" 4.750"(120.65mm)
   DIM "D" 5.750"(146.05mm)
   DIM "E" Equidistant within .02"(.508mm)

5.1 DESCRIPTION

5.1.1
Tracks are designed to provide the utmost in performance, long life and durability through proper selection of steels, heat-treating methods, and accurate machining.

5.1.2
The track link design puts more steel at points of highest stress for maximum strength. Exclusive heat-treating methods and precision machining eliminate built-in stresses and assure optimum hardness to resist abrasives.

5.1.3
Bushings are heat-treated and hardened for a tough core and very hard surface. Life of bushing is extended through use of "hunting tooth" sprocket.

5.1.4
All track shoe bolts are a high-tensile, special alloy, heat-treated steel with hardened heads to resist wear.

5.1.5
Seal rings provide a seal against end of bushing to keep out dirt and water.

NOTE: On special non-sealed tracks, seal rings are not used.

5.1.6
Master pins are slightly undersized in diameter than others to facilitate installation and removal and are indentified with a counter-bore in each end.

5.2 ADJUSTMENT

5.2.1
Each track is properly adjusted when upper part of track (between front carrier roller and track idler) has from 1" to 1.5" (25.4 -- 4.38 mm) sag.

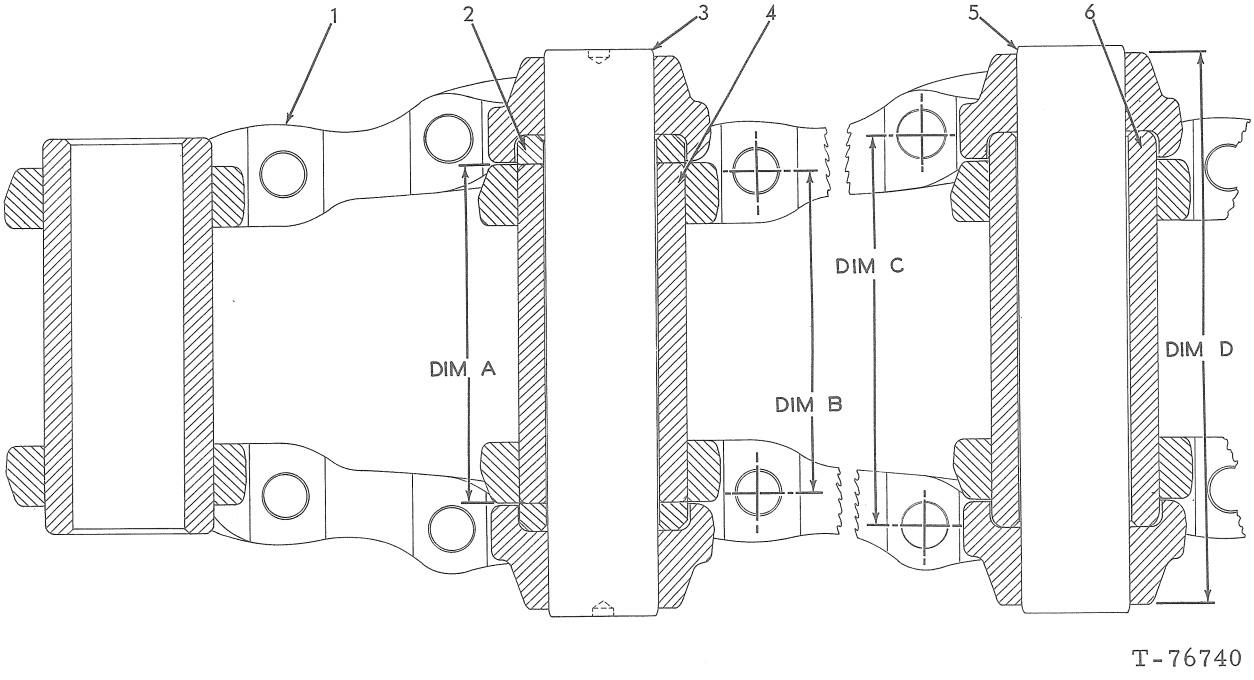


FIG. 32 NONSEALED TRACK

1. Side Link
2. Spacer
3. Master Pin
4. Master Bushing
5. Track Pin
6. Track Bushing
   DIM "A" -- 4.999"(126.97 mm)
   DIM "B" -- 4.750"(120.65 mm)
   DIM "C" -- 5.750"(146.05 mm)
   DIM "D" -- 8.175"(207.65 mm)

5.2.2
A combination lube fitting and relief valve in the track idler yoke provides the means for adjusting track. To tighten track, add pressure gun lubricant through lube fitting until correct track adjustment is obtained. To loosen track, loosen the relief valve assembly slowly until grease leaks out sufficiently to provide proper track adjustment. Tighten relief valve assembly securely and install plug.

5.3 UNCOUPLING TRACK

5.3.1
The track may be uncoupled at the top between the front carrier roller and track idler, Fig. 34, using a universal support bracket without removing track shoes. It may be uncoupled also beneath and to the rear of sprocket, Fig. 35. If this method is used some track shoes must be removed from track but no universal support bracket is required. The first method will be covered in this topic.

NOTE: If a track press is not available, refer to 5.3.16 to remove master pin and 5.5.9 to install it. Never attempt to heat the master pin or side link to remove or install the pin.

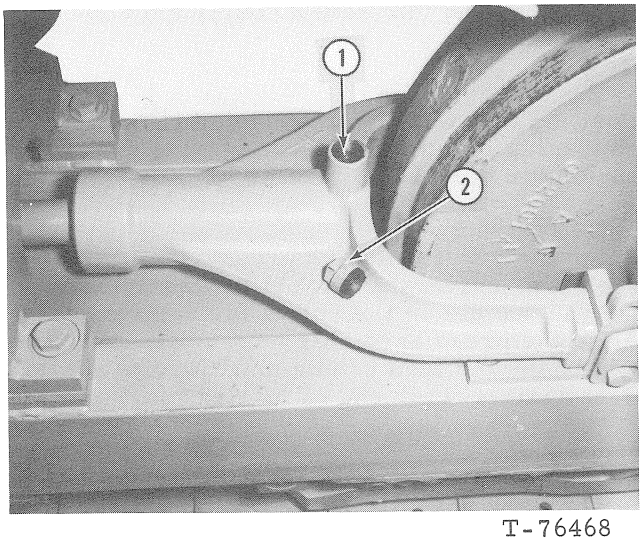


FIG. 33 TRACK ADJUSTER

1. Valve assembly fitting
2. Plug

5.3.2
Move the tractor as necessary to position the master pin (pin with counter-bore) between front carrier roller and track idler.

5.3.3
Refer to 5.2.2 and remove all track tension from idler yoke.

5.3.4
Install the universal support bracket as shown in Fig. 34 on master link track shoe and secure with wing nut.

5.3.5
Refer to Fig. 36, and install screw coupling (11) on forcing screw and secure with setscrew.

CAUTION

The use of correct adapter tools for this particular model tractor is important to prevent damage to track links and bushings.

5.3.6
Install the aligning adapter (8) in "C" frame and secure the adapter with lock screw.

5.3.7
Install the forcing screw (2) in the hydraulic ram (1) with screw coupling toward "C" frame then install the two tie rods on hydraulic ram and "C" frame; secure the tie rods with nuts.

5.3.8
Install the forcing pin (3) through the bore of "C" frame and into screw coupling and secure with setscrew.

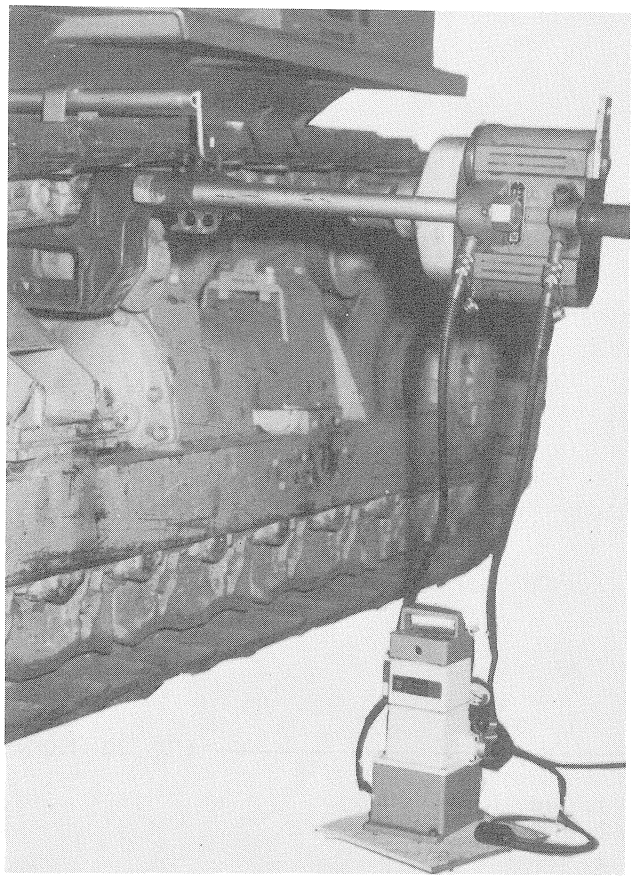
5.3.9
Position the two aligning bushing (10) on flattened forcing pin (4) and insert forcing pin and bushing in bore of "C" frame.

5.3.10
Raise the "C" frame and press assembly and hook it on universal support bracket. Install the "T" handle on the end of forcing screw. Align the press assembly on inner master link (pin boss) and turn handle until forcing pin is tight against outer end of master pin.

5.3.11
Install hydraulic pump hoses on hydraulic ram. If rams are not fully retracted turn handle in while retracting ram pistons to keep press in alignment on master link.

WARNING

Necessary precautions should be taken to protect eyes and body from possible flying steel chips when removing track master pin or the forcing pin.



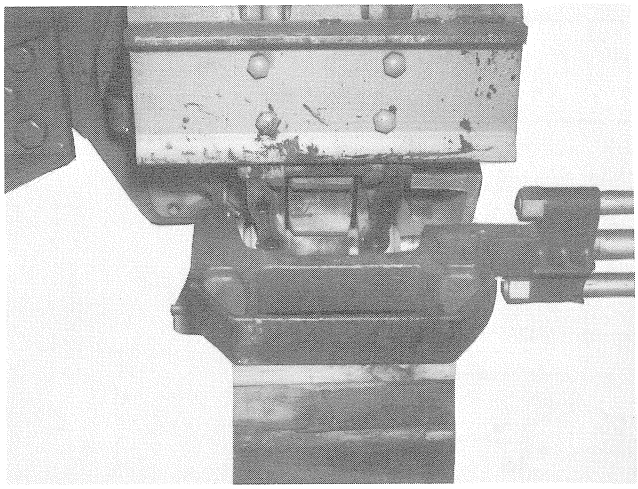
T-75461
FIG. 34 REMOVING MASTER PIN AT TOP (Typical)

5.3.12
To remove master pin, it will be necessary to fully retract the ram, remove one aligning bushing and extend the forcing screw in the ram head after it has reached its maximum stroke of 5" (127 mm) then continue to remove the pin. Leave forcing pin in track.

5.3.13
Remove press and "C" frame assembly from universal support bracket and remove bracket from track shoe.

5.3.14
Move tractor as necessary to position master link just below center-line of track idler and remove flattened forcing pin from track using care to prevent bodily injury when track links separate.

5.3.15
Move tractor rearward until upper part of track is free of the sprocket.



T-75460

FIG. 35 REMOVING MASTER PIN BEHIND SPROCKET

5.3.16
If a track press is not available, move tractor until master pin is located just below center line of track idler then hold a "bucking bar" against inner master link pin boss, close to master pin.

5.3.17
Place a soft iron driving pin (with handle attached) against outer end of master pin and using a heavy sledge, drive master pin out.

WARNING

Take necessary precautions to protect the eyes and body from flying chips of steel while driving master pin or when track links separate.

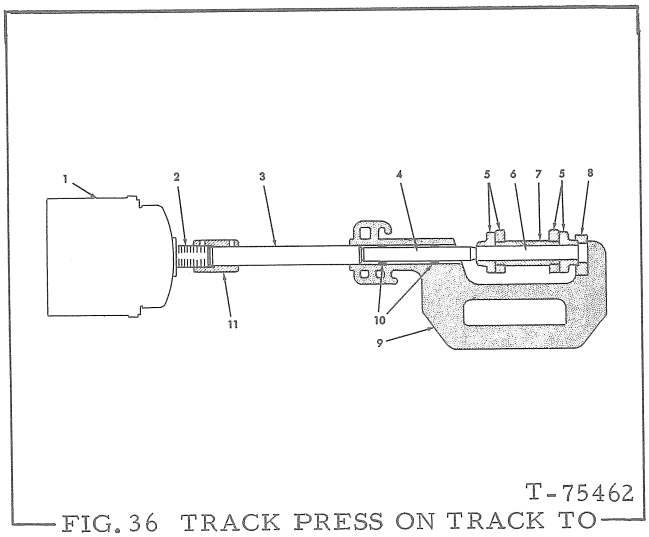
5.4 REMOVAL

5.4.1
After track has been uncoupled, move tractor rearward until track is free of sprocket.

5.4.2
Using a suitable hoist or jack, raise track frame and tractor sufficiently to remove track, then block tractor and track frame (beneath equalizing beam) in this position.

5.4.3
Remove track assembly from beneath track frame.

5.4.4
If track is to be rebuilt refer to 5.6 and Topic 13.



T-75462

FIG. 36 TRACK PRESS ON TRACK TO REMOVE MASTER PIN

1. Ram(100 ton)
2. Forcing Screw
3. Forcing Pin
4. Flattened Forcing Pin
5. Track Links
6. Master Pin
7. Track Bushing
8. Aligning Adapter
9. "C" Frame
10. Aligning Bushings
11. Screw Coupling

5.5 TRACK INSTALLATION

5.5.1
Position track assembly beneath track frame with bushing end of track toward front of tractor then lower tractor onto track assembly.

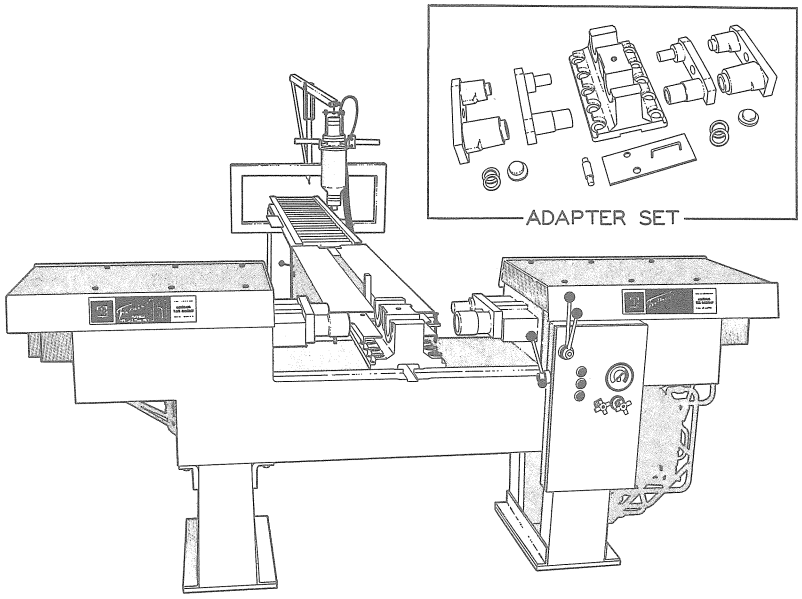
5.5.2
Place a 8" (203.2 mm) wood block under grouser of first track shoe (front or bushing end).

5.5.3
Place long pry bar in pin holes of link at rear end of track.

5.5.4
Move tractor rearward until bar may be hooked on a tooth of track sprocket making certain there is no slack in track beneath sprocket. Move tractor forward, holding bar firmly in place in sprocket tooth, so track will follow sprocket.

5.5.5
Hold end of track up so it will pass over track carrier rollers and track idler as tractor is moved forward. Remove pry bar.

5.5.6
Lubricate end of bushings and insert lubricated seal rings (or spaces on non-sealed track)in the counterbores of master links. Using shim stock between bushing and seal rings, position master links in alignment with bushing(pin hole), then remove shim stock. Insert flattened forcing pin in pin bores of side links and bushing.



T-75946

FIG. 37 PRESS FOR REBUILDING TRACK

5.5.7
Move rearward until master link is located between front carrier roller and track idler.

5.5.8
Assemble track press as outlined in step 5.3.5 thru 5.3.12, using master pin in place of flattened pin (step 5.3.9) and press master pin in until pin ends protrude equidistant from side links (pin bosses).

5.5.9
If a track press is not available follow steps 5.5.9 thru 5.5.11 to install master pin. Thoroughly clean rust, scale, and paint from master pin including deburring the pin ends. Also clean the bores of the side links and apply a light coat of grease.

5.5.10
Freeze master pin by packing in dry ice for 50 minutes to an hour.

5.5.11
Using a heavy sledge hammer and a soft iron driving bar (with handle attached), install master pin making certain that master pin ends are protruding from side links equally (pin bosses).

WARNING

Take necessary precautions to protect the eyes and body from chips of steel while driving master pin in position.

5.6 TRACK REBUILD

5.6.1
To successfully assemble or disassemble track chains, a track press and necessary adapters are required, Fig. 37. Therefore it is recommended that track rebuild be done by your Fiat-Allis Dealer.

5.6.2
When it has been determined track assembly is to be rebuilt by welding (build-up) the side links and turning pins and bushings 180°, it is necessary to build-up the side links by using an automatic welding machine before the chain is disassembled. Refer to 13.2 and Topic 14 for rebuild dimensions.

CAUTION

Do not attempt to hand weld single side links as this will over heat the links and destroy the heat treat and distort the link bores.

5.6.3
Before assembling sealed track, bushing ends should be inspected and, if rough or corroded, they should be refaced. No more than .010" (.25 mm) may be removed from each end of bushing to allow minimum compression of .03" (.76 mm)on sealing rings when chain is assembled. New seal rings must be installed.

5.6.4
To rebuild the chain assembly use the following sequence:

5.6.4.1
Uncouple and remove track assembly.

5.6.4.2
Remove track shoes from chain assembly.

5.6.4.3
Using an automatic welding machine, build-up the side links to specified rebuild dimensions; also use welding wire and heat recommended by manufacturer of the particular welding machine used.

5.6.4.4
Using a track press and proper adapter, Fig. 37, remove pins and bushings from side links.

5.6.4.5
Thoroughly clean and inspect all pins, bushings, and side links for cracks. If cracks or excessive wear is noted, component must be replaced.

5.6.4.6
Turn the pins and bushings 180° from their original position so new wear surfaces are exposed to the WEAR SIDE as shown in Fig. 31 and 32. When assembling the chain, lubricating the pin and bushings is not recommended. However, if desired on sealed track a dry film graphite or molybenum disulfide base lubricant may be used on the bushing ends only.

5.6.4.7
When pin and bushings are being pressed in position in side links, it is adviseable to use a link gauge for spacing link clearance and hole dimensions as shown in Fig. 31 and 32.

5.6.4.8
Install track shoes on chain assembly with cleats (grouser) toward pin end of link. Torque bolts to 250 -- 300 lbs. ft. (34.56 -- 41.47kg/m)

IMPORTANT: Mating surfaces of track shoes and side links must be absolutely clean before installation of shoes and torquing track bolts.

5.6.4.9
Refer to 5.5 and 5.2 install and adjust track assembly.

TOPIC 6 TRACK IDLERS

6.1 DESCRIPTION

6.1.1
The rims and flanges are machined for precision alignment and are heat treated on the wear surfaces to prevent flaring and to resist abrasive wear; the idler bearings are tapered rollers which are permanently lubricated at time of assembly and require no further service; positive type seals are used to retain lubricant in bearings.

6.1.2
The track idler assembly is attached to the track frames by use of idler brackets providing necessary adjustment for precision alignment to track rollers and track frame; shims located beneath upper slide bars provide vertical adjustment of idler assembly.

6.2 MAINTENANCE

6.2.1
Maintenance of track idler consists of a periodic check for bearing adjustment, idler bracket shim adjustment, slide bar wear, lubricant leakage, and track alignment. Using a wear gauge, check the remaining amount of useful life of idler wear surfaces and repair if necessary.

6.2.2
Periodically check track release mechanism by inserting a 2" (50.8 mm) pin in sprocket tooth and moving tractor rearward. Track will ride up on pin and, if track release is working properly, the idler will move back approximately 1" (25.4 mm)

6.2.2.1
Release all track tension as outlined in 5.2 and Fig. 33.

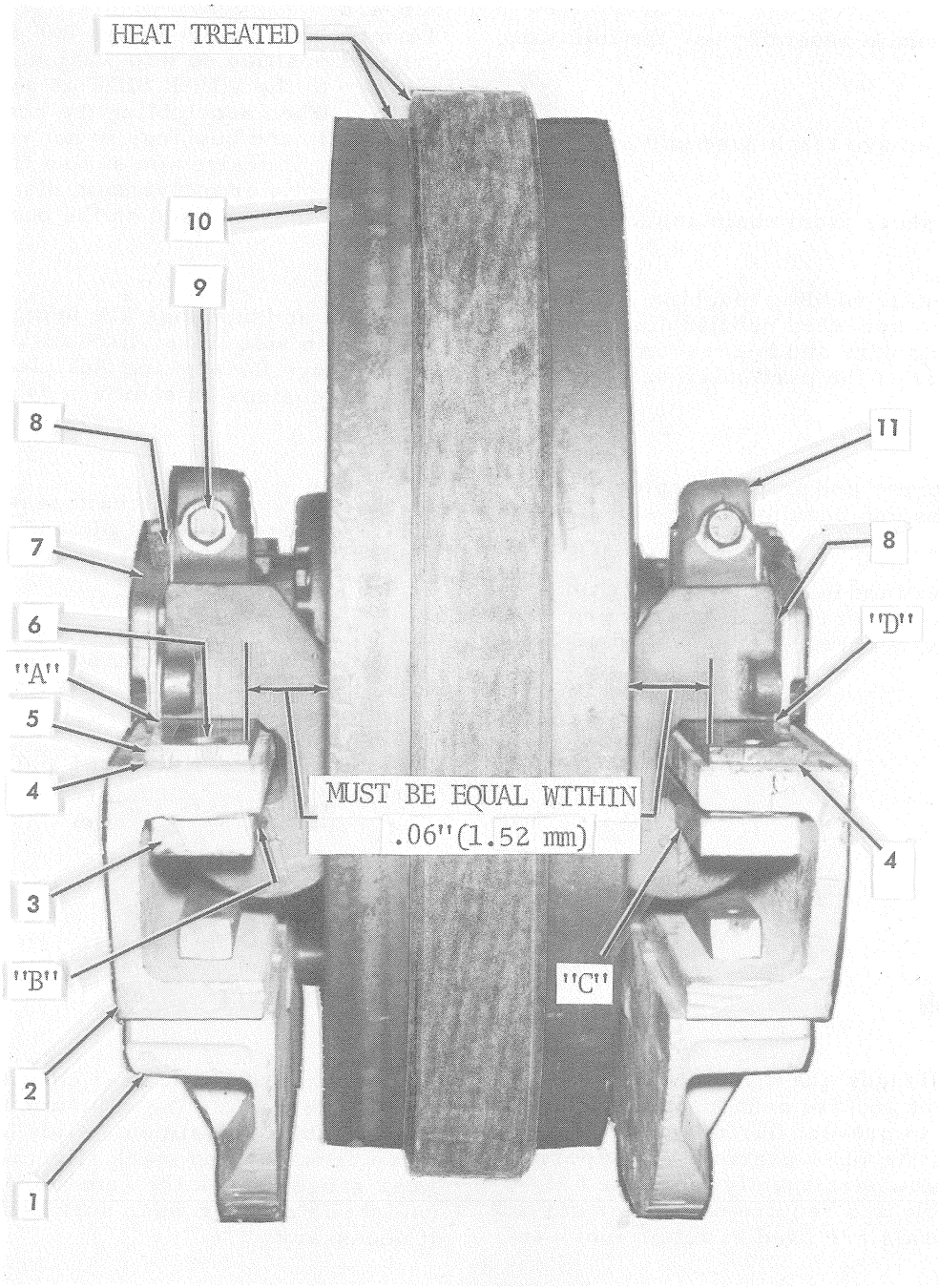


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FIG. 38 TRACK IDLER INSTALLED -- FRONT VIEW

1. Track guards
2. Track frame channel
3. Lower slide bar
4. Shims
5. Upper slide bar
6. Dowel belts
7. Guide plate
8. Shims
9. Bracket clamping capscrew
10. Track idler
11. Idler Bracket

Point "A"
"B"
"C"
"D"

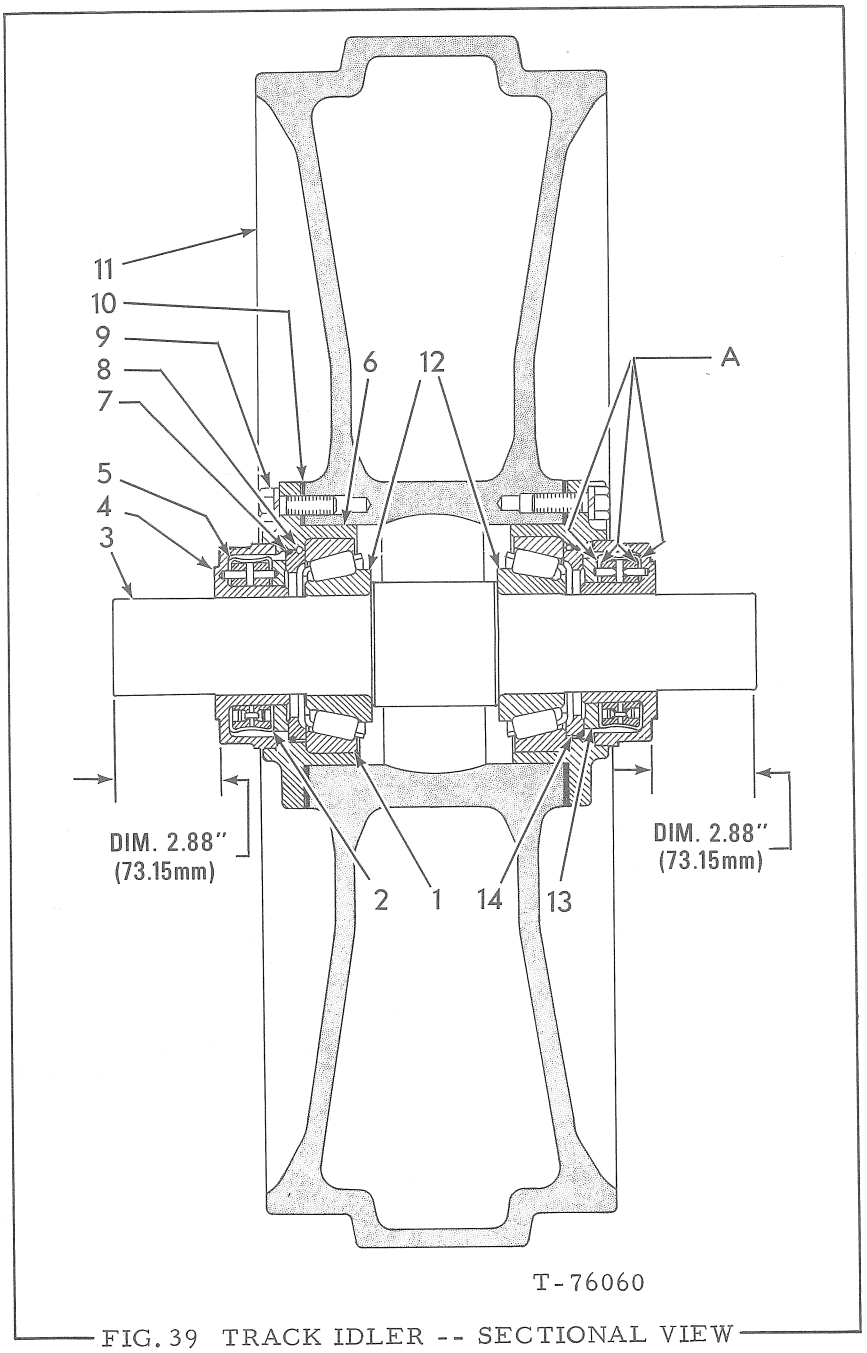

FIG. 39 TRACK IDLER -- SECTIONAL VIEW

LEGEND FOR FIG. 39

1. Bearing cup
2. Seal boot
3. Idler shaft
4. Seal retainer
5. Seal spring assembly
6. Bearing retainer
7. O-ring
8. Steel ball
9. Capscrew
10. Shims
11. Track idler
12. Bearing cones
13. Seal ring (outer)
14. Seal ring (inner)

"A" =Surfaces to be cemented (both boots)

6.2.2.2
Place a block of wood in front of track and move tractor forward until block is directly under front track roller to remove any weight or load on idler.

6.2.2.3
Using a long pry bar, pry against track idler bearing retainer and idler bracket and check for end play in bearings. If any end play is found, idler assembly must be removed and repaired.

NOTE: When lubricant leakage is apparent at seals, this is a possible indication of loose bearing adjustment which requires removal and repair of idler assembly.

6.3 REMOVAL

6.3.1
Loosen all tension from track assembly (refer to 5.2 and Fig. 33), and remove idler guards.

6.3.2
Refer to 5.3, Figs. 34 or 35, and remove master pin; then uncouple track assembly.

6.3.3
Move tractor as necessary to remove track assembly from above track idler.

6.3.4
Slide track idler and bracket assembly forward from idler yoke and track frame.

6.3.5
If track idler is to be rebuilt refer to 13.4 and 14.3 for rebuild dimensions.

6.4 DISSEMBLY

6.4.1
Thoroughly clean idler assembly.

6.4.2
Refer to Fig. 38, and remove track idler guide plates (7), and shims (8). Attach shims to guide plates with tie wire. Remove idler from track frame by sliding forward.

6.4.3
Refer to Fig. 38, and loosen idler shaft clamping capscrews (9) in brackets (11) and using a a broad faced chisel in slot of bracket, remove brackets from shaft.

6.4.4
Remove bearing retainer attaching capscrews from each bearing retainer, Fig. 39.

6.4.5
Using suitable press or puller assembly push the idler shaft in one direction until seal retainer (opposite end) is free on shaft then remove retainer, bearing retainer and bearing cup with shims. Using press or puller assembly on opposite end of shaft, remove opposite seal retainer, bearing retainer and cup assembly. Tie each shim pack to its respective bearing retainer.

6.4.6
Remove shaft and bearing cone assembly from idler.

6.4.7
Using suitable press or puller assembly remove bearing cones from idler shaft. Keep cone mated to its respective bearing cup.

6.4.8
Remove seal rings from bearing and seal retainers making certain that seals are not damaged and components are kept mated.

CAUTION

Use care to prevent scratching or chipping of seal rings if they are to be reused.

6.5 INSPECTION

6.5.1
Refer to 6.6 -- 13.4 -- 14.3 during the inspection procedure.

6.5.2
Clean all parts before inspection.

6.5.3
Make visual inspection of idler shaft to be certain bearing cones were not turning on shaft. Check for cracks and damaged bearing shoulders or bent shafts. If evidence of bent shaft is apparent, place shaft in lathe between centers and check with dial indicator.

6.5.4
Make visual inspection of bearing cones, rollers and cups. If they are found to be pitted, chipped or have rough surfaces, they should be replaced.

6.5.5
Inspect sealing surfaces of seal rings for scratches, nicks, or heavy grooving. These surfaces must be smooth and flat.

CAUTION

If a seal ring is damaged, it will be necessary to replace it and its mate.

6.5.6
Examine seal ring spring assembly; if it is excessively worn, assembly should be replaced as a unit.

6.5.7
Inspect seal boots; be certain they are free of cracks and are pliable.

6.5.8
It is advisable to replace inner seal O-rings.

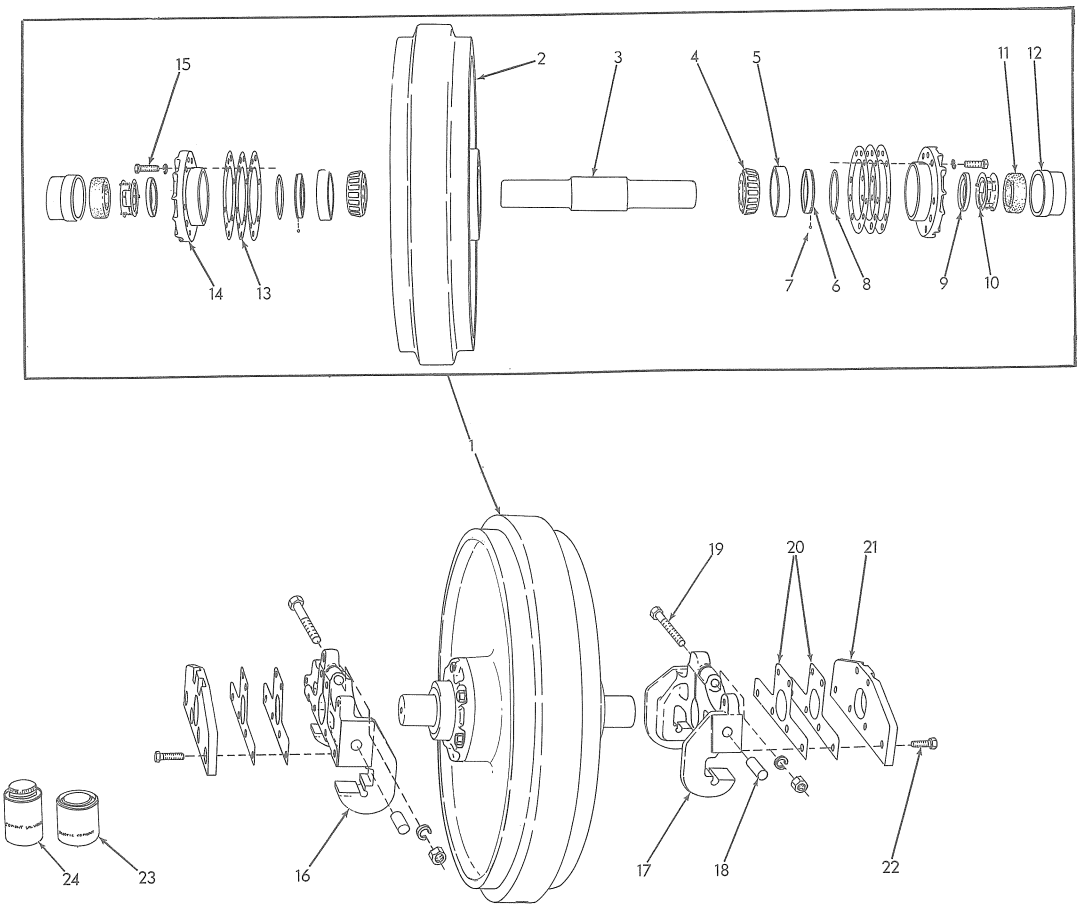

FIG. 40 TRACK IDLER

1. Idler assembly
2. Track idler
3. Idler shaft
4. Bearing cone
5. Bearing cup
6. Seal ring (inner)
7. Ball (locking)
8. O-ring
9. Sealing ring (outer)
10. Spring assembly
11. Boot
12. Seal retainer
13. Shims
14. Bearing retainer
15. Capscrews
16. Left bracket
17. Right bracket
18. Dowel pin
19. Clamping capscrew
20. Guide shims
21. Guide plate
22. Capscrew
23. Cement
24. Solvent

6.5.9
Check wear surfaces of track idler with wear gauge and if found to be badly worn either repair or replace track idler. If bearing cups are loose in bores of idler, refer to Topic 13 and measure bore. Replace idler if necessary.

6.6 REBUILDING TRACK IDLER

6.6.1
After it has been determined track idler guiding flange and wear rim requires rebuilding by welding, it is advisable to use an automatic welder. It is recommended idler shaft, bearings, seals and bearing retainers be removed to prevent any damage due to electrical arcing while being welded.

6.6.2
Be certain recommended welding wire and heat are used and that welding be accomplished around, rather than across, rim or flange. Refer to 13.4 and 14.3 for proper dimensions for rebuilding.

6.7 ASSEMBLY

6.7.1
Make certain all components are clean and have been thoroughly inspected. Refer to Fig. 39 and assemble track idler.

6.7.2
Apply a coat of neoprene cement in seal bore of seal retainer (4).

6.7.3
Apply a coat of cement on boot contact surfaces of spring assembly, Fig. 39 (5); coat boot (2) inner contact surfaces and install boot on spring assembly with pin and holes aligned.

6.7.4
Cement outer contact surfaces of boot; install boot and spring assembly in seal retainer making certain pins of spring are in holes of retainer.

6.7.5
Cement outer seal ring surface and install ring on boot; be certain pins are in holes in seal ring. Place seal retainer and seal assembly on clean cloth with seal ring downward; place heavy weight on seal retainer. Allow cement to dry for several minutes before installing seal assembly on idler shaft.

6.7.6
Install a bearing cone on each end of idler shaft against shoulder; be certain taper is toward ends of shaft.

6.7.7
Install new O-ring in groove of each inner seal ring and install seal rings and locking ball in bearing retainers; be certain seal rings are identified with each mating seal ring in seal retainer.

6.7.8
Install a bearing cup in one bore of idler and shaft in idler bore.

6.7.9
Install a bearing retainer assembly on bearing cup side of track idler with original amount of shims and secure with capscrew.

6.7.10
Install other bearing retainer assembly (with seal ring in place) on end of shaft and track idler using original amount of shims; secure with capscrews. While tightening capscrews, turn idler shaft to be certain bearings are not damaged. Add or remove shims beneath bearing retainer to provide 15 to 45 inch pounds (17.28 -- 51.84 kg/cm) preload on bearings. Make certain same amount of shims are beneath each bearing retainer.

NOTE: Bearing pre-load is calculated from center of shaft.

6.7.11
It is advisable to divide shims evenly beneath each bearing retainer. Torque bearing retainer capscrews to 85 to 95 lbs.ft.(11.75 -- 13.13 kg/m).

6.7.12
Use lubrication fixture similar to one shown in Fig. 41;position track idler so inner seal ring of idler is properly seated on rubber seal ring in lubricating fixture adapter. Use high volume lubricating gun;fill idler with specified lubricant until it is forced out through upper bearing retainer. Grease used must have good pumpability and cold temperature characteristics, have minimum effect on synthetic rubber seal boots, and be an extremely stable grease both mechanically and chemically that will not deteriorate excessively with long usage.

6.7.13
Lubricate each seal ring surface with clean oil; use suitable press to install seal retainers on shaft to dimensions shown in Fig. 39.

6.7.14
Determine side of unit on which idler is to be installed so dowel pin end of each idler bracket will be toward rear when idler is installed. Spread track idler brackets using a broad faced chisel in slot of bracket. Position brackets on shaft and install bracket clamping capscrews and high nuts but do not tighten at this time.

6.8 INSTALLATION AND ALIGNMENT

6.8.1 GENERAL INFORMATION

6.8.1.1
When track, track idler brackets, and slide bars are properly aligned, an even contact (wear pattern) will be noted on each side of flange of track idler (Fig. 14). Light contact will be apparent on inner side of track links and all flanges of track rollers. To assure proper alignment of tracks, idlers must be centered with track rollers between track frame channels (Fig. 21); idler bracket-to-slide bar clearances must be properly set and carrier rollers centered in line with track sprocket and idler (Fig. 42).

6.8.2 INSTALLATION AND ALIGNMENT

6.8.2.1
Install upper slide bars, Fig. 38 (5), and lower slide bars (3); use original amount of shims (4) under upper slide bars. Secure slide bars with tapped dowels and Nylok capscrews; torque capscrews to 30 -- 40 lbs.ft.(4.148 -- 5.530 kg/m).

6.8.2.2
Install idler assembly (including brackets) on track frame with dowel pin end of brackets toward rear.

6.8.2.3
Refer to Fig. 38 and adjust idler and bracket assembly by first centering idler in track frame.

6.8.2.4
Pull brackets outward until they contact points "B" and "C" making certain idler did not move.

6.8.2.5
Add shims (8) at "A" to produce gap at "D" of .020" -- .050"(.508 -- 1.27 mm) then tighten all capscrews on this side.

6.8.2.6
Add shims (8) on other bracket to maintain clearance of .020" to .050"(.508 -- 1.27 mm) at "A" with brackets contacting at "B" or "D".

6.8.2.7
Make certain all clamping capscrews (9) are torqued to 130 to 140 lbs. ft. (17.97 -- 19.35 kg/m) and guide plate capscrews torqued to 110 to 120 lbs.ft. (15.20 -- 16.59 kg/m).

6.8.2.10
Make certain carrier rollers are on center line of track idler and sprocket and level so that the side links contact both wear flanges of carrier roller.

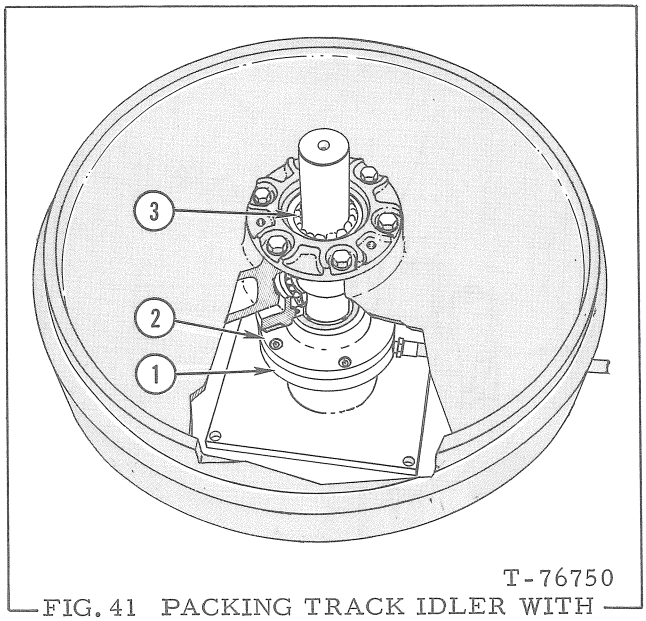

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FIG. 41 PACKING TRACK IDLER WITH GREASE USING GREASING FIXTURE

1. Lubricating fixture (OTC-AC-400)
2. Adapter (included in AC-400 set)
3. Lubricant

TOPIC 7 TRACK CARRIER ROLLERS

7.1 DESCRIPTION

7.1.1
The track carrier roller consists of a shaft, tapered roller bearings, positive type lubricant seals, and a forged, heat treated roller. The rollers are permanently lubricated when assembled and require no further lubrication service.

7.2 MAINTENANCE

7.2.1
Alignment of carrier rollers to track sprocket and idler and proper track adjustment are important factors determining the life of the rollers. Periodic checks should be made as follows:

7.2.1.1
Check flanges of roller; if one flange is worn more than the other, carrier roller must be shifted in bracket to provide equal clearance between track links and flanges of the rollers. It may be necessary to loosen bracket retaining capscrews and align bracket on frame.

7.2.1.2
Raise and block the track assembly above the carrier rollers; using a pry bar, check rollers for end play in the bearings. Should any end play exist, roller assembly must be removed and repaired.

7.2.1.3
Inspect rollers for lubricant leakage. If leakage is apparent carrier roller should be removed and repaired.

7.2.1.4
After it has been determined that carrier roller is to be rebuilt by welding, carrier roller should be disassembled. Refer to Topic 13 for rebuild dimension.

CAUTION

When disassembling carrier rollers, keep all mated components such as bearings, seals, shims, and retainers identified so they can be reinstalled in their original location and be properly mated if re-used.

7.3 DISASSEMBLY (Fig.43)

7.3.1
Thoroughly clean exterior of track carrier roller, especially around the bearing and seal retainers.

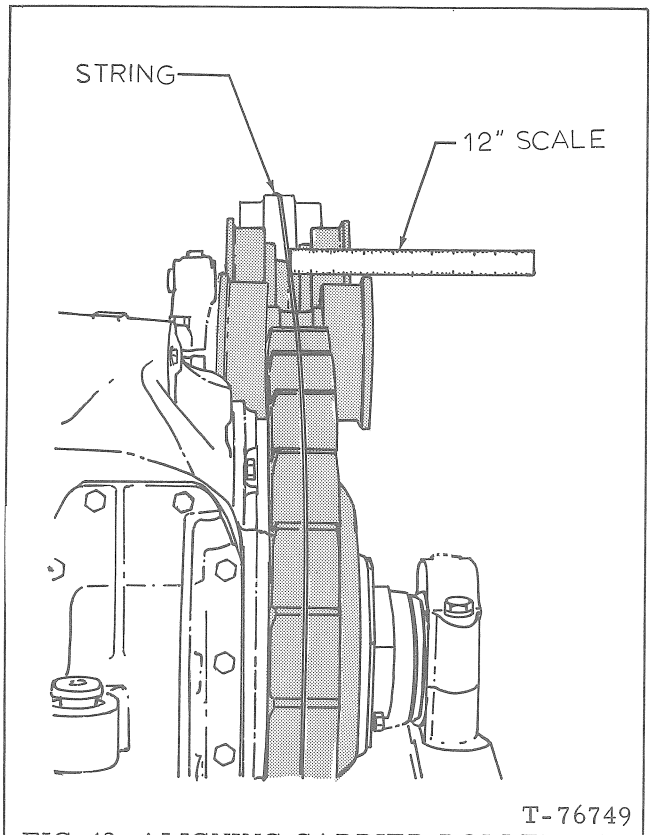

FIG. 42 ALIGNING CARRIER ROLLER TO TRACK IDLER AND SPROCKET

7.3.2
Remove bearing retainer capscrews; then remove outer bearing retainer (5) and shims (7).

7.3.3
Place the roller assembly in suitable press with shaft upward and press on shaft until bearing cup (4) is removed. Press on other end of shaft until seal guard (14), seal assembly, and bearing retainer (9) (including bearing cup (4)) is removed from roller and shaft.

7.3.4
Remove bearing cones (3) from shaft (18).

7.3.5
Keep the bearing cones and cups mated and tie the shims to their respective retainer.

7.3.6
Clean the components in clean solvent and dry with compressed air. Wrap the components in a clean cloth or paper and after inspection lubricate with clean oil, if they are to be reused.

7.4 INSPECTION

7.4.1 Bearings

7.4.1.1
Inspect the bearing cups. If they are pitted, chipped or loose in the roller bores, they must be replaced.

7.4.1.2
Inspect the bearing cones. If the rollers or inner cone is pitted, chipped or loose on the shaft the cones must be replaced.

7.4.2 Shaft

7.4.2.1
Inspect the shaft at the bearing cone locations. If it is indicated that the bearing cones have been turning on shaft, the shaft should be replaced.

7.4.2.2
If it is suspected that the shaft is bent, check the shaft in a lathe (between centers if possible) and check with a dial indicator. If shaft is bent it must be replaced.

7.4.3 Roller

7.4.3.1
Refer to 13.3 and check the roller for wear. If the roller has to be welded it may be necessary to rebore the bearing bores to specifications after the welding operation.

7.4.4 Seals

7.4.4.1
Check spring assembly for worn or broken springs and pins. Check rubber for cracks. Replace if necessary.

7.4.4.2
Inspect the seal rings. If they are pitted, grooved or chipped they must be replaced. Replace the mating ring also.

7.4.5 Shims

7.4.5.1
Make certain that shims are clean and free of kinks before they are reinstalled. The shim packs should be equal within a few thousandths on each side of roller.

7.4.6 Retainers

7.4.6.1
The retainers should be clean and free of any cement or oil in the seal areas to provide good adhesion of the seal assembly.

7.5 ASSEMBLY (Fig.43)

7.5.1
Make certain all components are clean and lubricated with clean oil before assembling.

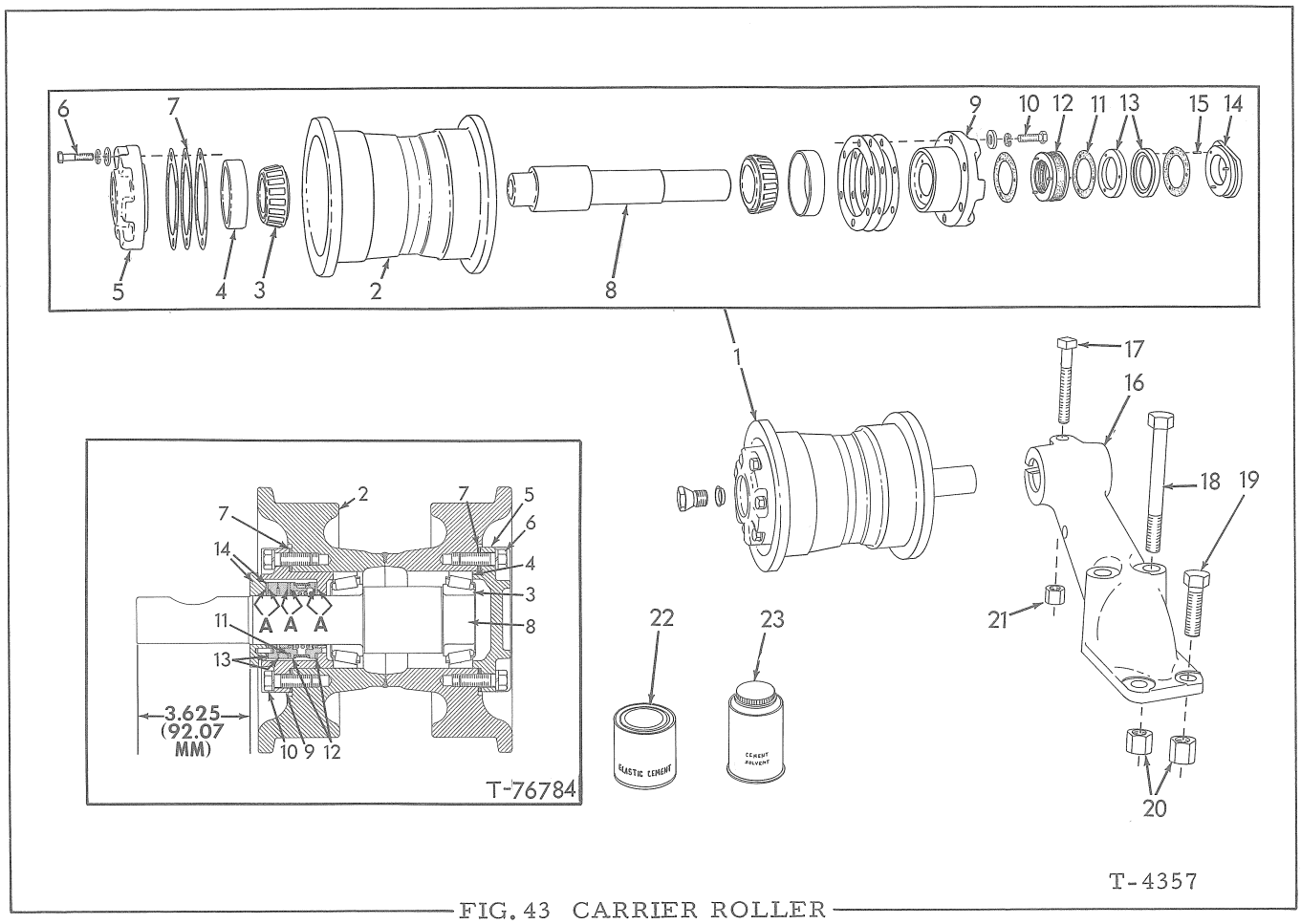

FIG. 43 CARRIER ROLLER

1. Roller assembly
2. Roller
3. Bearing cone
4. Bearing cup
5. Bearing retainer (outer)
6. Capscrew
7. Shims
8. Shaft
9. Bearing retainer (inner)
10. Capscrews
11. Gasket
12. Spring assembly
13. Seal rings
14. Seal guard
15. Dowel pin
16. Roller bracket
17. Clamping capscrew
18. Bracket capscrew
19. Bracket capscrew
20. Nut
21. Nut
22. Cement
23. Solvent

"A"-Surfaces to be cemented

7.5.2
Install the two bearing cones (3) on shaft (with press) making certain bearings are against shoulder on shaft.

7.5.3
Install shaft assembly in roller (2); then install both bearing cups (4) in roller.

7.5.4
Using a equal amount of shims beneath each retainer, install the retainers and secure them with capscrews. Check the preload on shaft. The preload should be 15 to 45 lbs. in. (17.28 -- 51.84 kg/cm) with 30 to 35 lbs. ft. (4.147 to 4.839 kg/m) torque on capscrews. Add or remove shims to obtain preload. After preload is obtained remove retainer (9), and fill roller assembly with specified lubricant using special mixture shown in Fig. 41.

7.5.5
Cement the gaskets to each side of spring assembly (12) making certain each surface is coated. Cement the face of seal ring and install on gasket making certain pin holes are properly engaged. Coat the retainer bore with cement and install spring and seal in retainer making certain pins are engaged in holes.

7.5.6
Install retainer (9) on shaft and roller and secure with capscrews to torque specified in 7.5.4.

7.5.7
Cement the gasket and seal guard and install gasket on guard.

7.5.8
Apply a coat of cement on seal ring (13) and install on guard assembly (14).

7.5.9
Press the guard and seal assembly on shaft to diminsion shown in Fig. 43.

7.5.10
Install roller assembly in bracket (16) and secure with clamping capscrews after aligning the roller to sprocket and idler as shown in Fig. 42.

TOPIC 8 TRACK ROLLERS

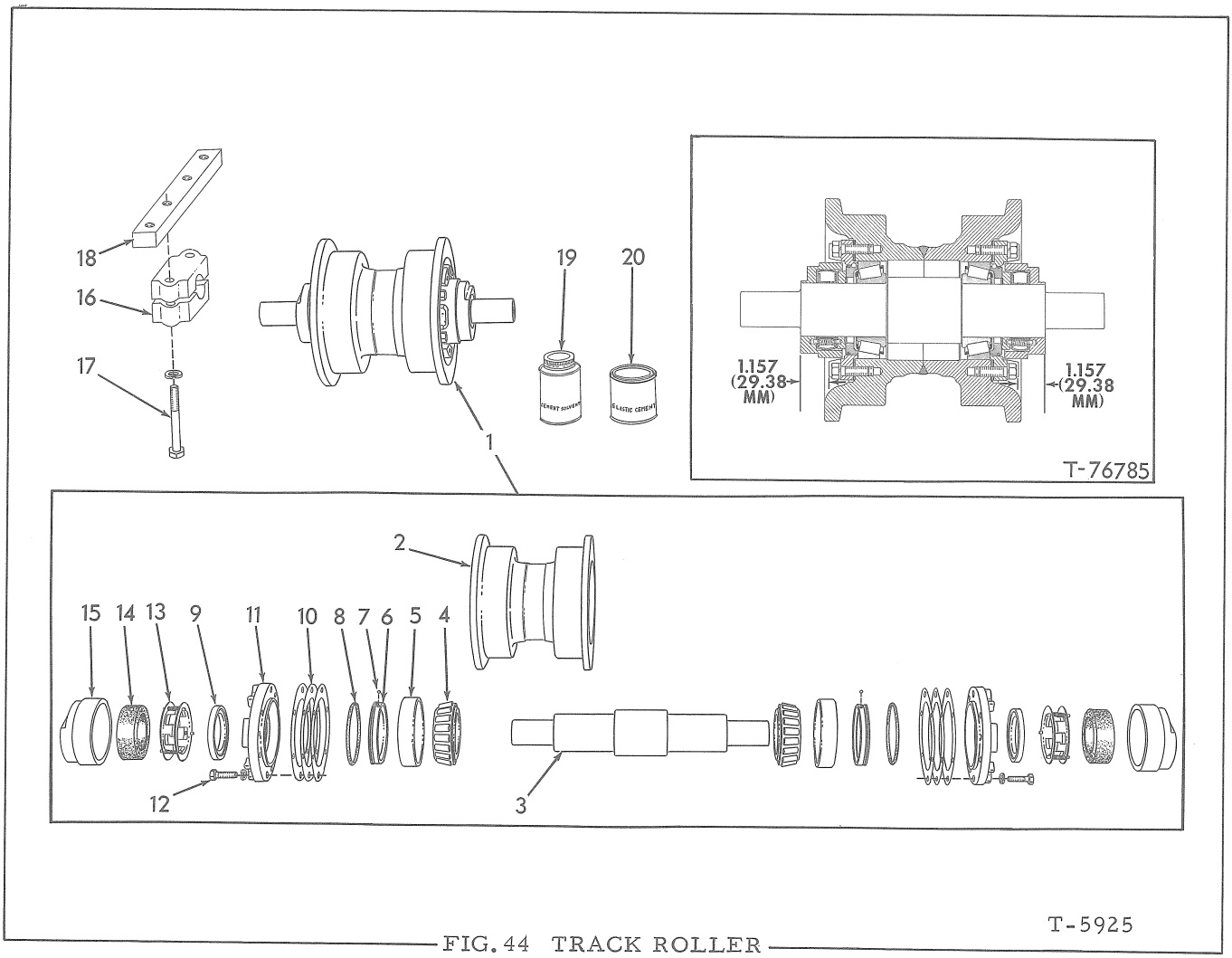

FIG. 44 TRACK ROLLER

1. Roller assembly
2. Roller
3. Shaft
4. Bearing cone
5. Cup
6. Seal inner ring
7. Ball (.19" -- 4.82 mm)
8. O-ring
9. Seal outer ring
10. Shims
11. Bearing retainer
12. Capscrew
13. Spring assembly
14. Boot
15. Seal retainer
16. Attaching bracket
17. Capscrew
18. Tapped block
19. Solvent
20. Cement

8.1 DESCRIPTION

8.1.1
The track rollers are made from special forged steel to provide good wearability and bearing bore retention. The rollers are formed in halves, heat treated and machine welded. The bores are broached to provide accurate bearing bores after welding and heat treatment.

8.1.2
Single flange rollers are used throughout on each track frame.

8.2 CHECKING AND REMOVAL

8.2.1
The track rollers should be checked periodically for loose mounting capscrews, loose bearings, lubricant leakage and roller wear.

8.2.2
The track rollers may be checked or removed without uncoupling track. To check or remove track roller, loosen all tension on track by releasing lubricant pressure in track idler yoke (5.2).

CAUTION

Never remove relief valve in yoke until all lubricant pressure is released.

8.2.3
Place blocks approximately 16" (406.4mm) high in front of track and move tractor forward until blocks are under first track roller. Then place blocks approximately 12" to 16" (304.8 to 406.4mm) high just to rear of track and move tractor backward until the weight is being carried by track sprocket and track idler. Lock parking brake in applied position. With tractor in this position, slack will be at bottom of track; check for bearing end play; if there is end play or indication of lubricant leakage, affected track rollers must be removed and repaired. If track frame is removed it should be turned over for removal of track roller.

NOTE: The track rollers are attached to track frames by capscrews inserted through attaching brackets and threaded into replaceable tapped blocks. If equipped with track guiding guards it will be necessary to remove guards.

8.2.4
With tractor placed on blocks as explained, remove capscrews attaching track roller to track frame and remove track roller from frame.

NOTE: Do not remove tapped blocks from track frame; however, it is advisable to clean threads with tap.

8.3 DISASSEMBLY

8.3.1
When disassembling track roller keep parts for each roller together so they may be reassembled in their original positions. Refer to Fig. 44 and disassemble as follows:

8.3.2
Clean outside of track roller thoroughly; remove attaching bracket from each end of shaft.

8.3.3
Remove capscrews from bearing retainer and press bearing retainers and seal retainers (with seal assembly) from each end of shaft. Tie bearing adjustment shims to bearing retainer to prevent loss. The bearing cups will be removed simultaneously when removing seal and bearing retainers.

8.3.4
Remove seal rings from bearing retainers using care to prevent damage to seals and make certain sealing rings are kept mated.

8.3.5
If bearings or cups require replacement, the bearings cones should be removed from roller shaft by using a suitable press or puller assembly.

8.4 INSPECTION

8.4.1
Clean track roller components thoroughly before inspection. Refer to Topic 14.

8.4.2
Visually inspect shaft and bearings; if bearing cones or cups are pitted, chipped, or show excessive wear, they must be replaced. If bearing cups are loose in bore of track roller, replace necessary parts. Shafts can be checked in a lathe between centers using a dial indicator.

8.4.3
Inspect sealing surfaces of mating seal rings for scratches, nicks, or burrs; these surfaces MUST be smooth and flat. If either seal ring requires replacement, both mating seal rings must be replaced. Also check rubber boots for pliability and cracks. Replace if necessary.

8.4.4
Check track roller with proper wear gauge and determine whether or not to rebuild roller by welding; refer to TOPICS 13, 14 for roller rebuild and dimensions.

8.5 ASSEMBLY AND INSTALLATION ((Fig.44)

8.5.1
Make certain that all parts are clean, lubricated and in good condition before assembling roller.

8.5.2
Using suitable press install bearing cones (4) on shaft (3) making certain they are against the shoulder of shaft and with taper of cone toward ends of shaft.

8.5.3
Position shaft assembly in roller (2) then install bearing cup (5) in each end of roller.

8.5.4
Using a equal amount of shims (10) on each bearing retainer (11) install bearing retainer on each end of roller (without O-ring (8)) and secure each retainer with three capscrews equally spaced. Torque capscrews to 45 lbs. ft. (6.22 kg/m).

CAUTION

Shims should be kept equally divided on each end of roller, to properly center roller in frame. Also rotate shaft while torquing cpascrews; if shaft becomes tight more shims should be added or retainer may crack.

8.5.5
Check the bearing preload. Add or remove shims equally (each side) to obtain 50 to 70 lbs. in. (57.6 to 80.6 kg/cm) preload on bearings. Make certain capscrews are properly torqued before checking preload; also observing CAUTION above.

8.5.6
Apply grease to locking ball (7) and insert it in hole of inner seal (6); also insert O-ring (8) in groove of seal ring.

8.5.7
With track roller on end, carefully install inner seal ring assembly in bearing retainer (11), making certain that steel ball is in groove of retainer (11) and seal is against the bearing cup (5). Turn roller end for end and install the other inner seal ring.

8.5.8
Using fixture similiar to one shown in Fig. 41, fill the roller with specified lubricant.

8.5.9
Thoroughly clean seal boot (14) with solvent (10) and install boot on spring assembly. Spread seal boot and apply cement (20) on inner surface of boot and face of spring assembly. Position boot on dowel pins and press boot to surface of spring assembly.

8.5.10
Apply a coat of cement on outer faces of boot (14) and inner surface of seal retainer (15) and insert boot and spring assembly in bore of retainer (15). Apply coat of cement on outer seal ring (9) and install on spring assembly.

CAUTION

Make certain spring assembly dowel pins are properly installed in pin holes of outer seal ring and seal retainer.

8.5.11
Apply a light coat of oil on sealing surfaces of inner and outer seals then press the seal and retainer assembly on shaft to dimension shown in Fig. 44; measure (from bearing retainer to outer force of seal retainer).

8.5.12
Position track roller on track frame so mill cut of seal retainers are next to frame and secure roller to frame with brackets (16) and attaching capscrews and lockwashers (17). torque the capscrews to 230 lbs.ft. (31.79kg/m). The roller should be centered in frame as near as possible to align roller to adjacent rollers before tightening capscrews.

8.5.13
Drive tractor forward until blocks used under rear of tractor can be removed; back tractor off blocks used under front of track. Install guards if so equipped.

8.5.14
Refer to 5.2 and adjust track.

TOPIC 9 TRACK RELEASE

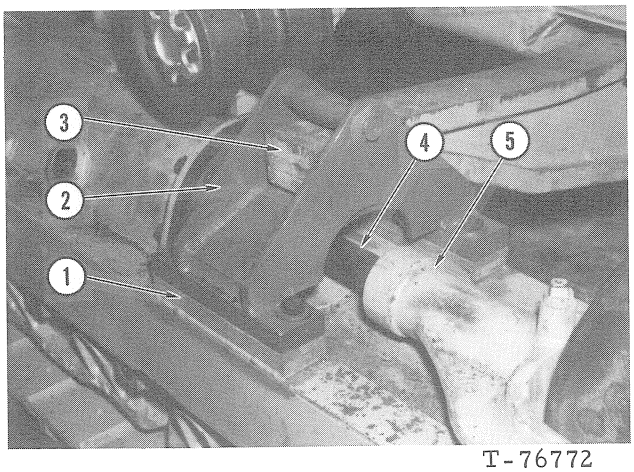

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FIG. 45 EQUALIZING BRACKET

1. Shock pad
2. Bracket
3. Equalizing beam
4. Push bar
5. Idler yoke

9.1 PERIODIC CHECKS

9.1.1
Periodic check should be made to assure a free moving track idler and proper function of release mechanism. Remove rocks, dirt or debris that may have accumulated around track idler and idler yoke.

9.2 REMOVAL

9.2.1
Refer to 5.3 and uncouple track; remove track idler, push bar and yoke from frame.

9.2.2
Remove capscrews attaching equalizing beam shock pad bracket. Using a suitable jack, raise the equalizing beam sufficiently to remove the shock pad bracket.

9.2.3
Remove oil filler plug; using a suitable suction pump remove the oil from housing.

9.2.4
Remove crosshead, Fig. 46, (12), by fusing a 1/4" electric welding rod into countersunk end of crosshead; pull crosshead from cover of release housing.

9.2.5
Springs must be compressed before cover, Fig. 46 (13), is removed. Refer to Fig. 47 for spring compressing bolt and thrust washers. Install the two thrust washers on spring compressing bolt. Lubricate washers and threads of bolt. Insert the bolt in crosshead bore of cover, Fig. 46 (13), and tighten bolt until spring just starts to rotate in housing.

9.2.6
Remove capscrews attaching cover (13) to track release housing and remove cover from housing. Remove the spring assembly from the housing.

9.2.7
Carefully loosen the compression bolt until it is free of the spring seat and remove the bolt. Remove inner spring from assembly.

9.3 INSPECTION

9.3.1
Clean the components and the interior of housing.

9.3.2
Inspect inner and outer springs for cracks; replace if cracked. The outer spring free length should be not less than 35.25" (895.35 mm) and the inner spring should be not less than 30" (762 mm).

9.3.3
Inspect the spring seat threads; if the threads appear to be fractured, seat should be replaced.

9.3.4
Inspect the bore of spring housing cover. If the bore is rough or grooved, cover should be replaced. Check bore and if the I. D. is greater than 2.750" (69.85 mm) the cover should be replaced.

9.3.5
Inspect the crosshead for wear, scuffing and grooves. If the crosshead O. D. is less than 2.740" (69.59 mm), it should be replaced. If a welding rod was fused in push bar counterbore the surplus metal from welding rod should be removed and counterbore dressed to a spherical seat. This may be accomplished with a spherical burring tool or grinder.

9.3.6
Inspect the bore of idler yoke if the I. D. is greater than 2.764" (70.20 mm) the yoke should be replaced.

9.3.7
Check the O. D. of yoke piston. If it is less than 2.698" (68.53 mm) (counterbored end), it should be replaced.

9.3.8
Replace all the wear rings and seals.

9.4 ASSEMBLY AND INSTALLATION

9.4.1
Refer to Fig. 46; insert the inner spring (16) in outer spring (17) and position seat (18) on end of springs.

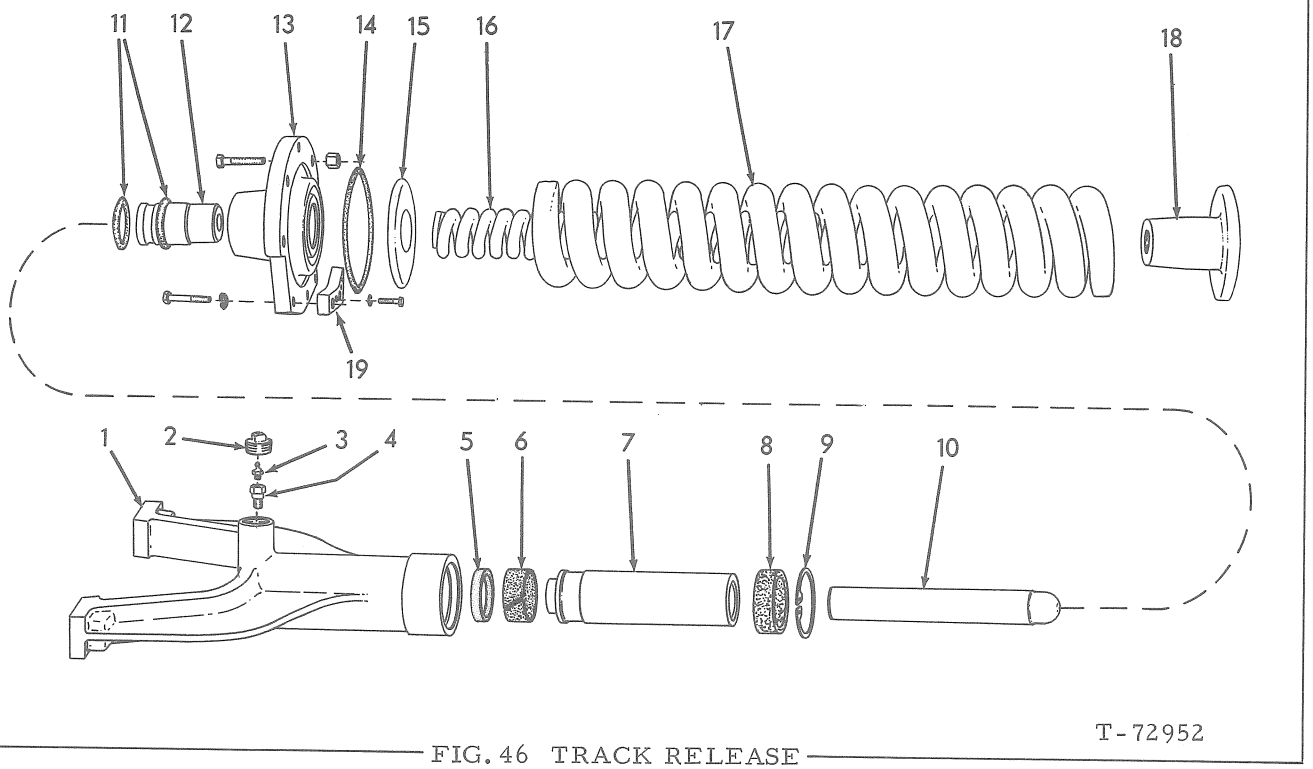

FIG. 46 TRACK RELEASE

1. Idler yoke
2. Plug
3. Fitting
4. Valve
5. Piston seal
6. Wear ring
7. Adjusting piston
8. Wear ring
9. Snap ring
10. Push bar
11. Crosshead O-ring
12. Crosshead
13. Cover
14. Seal
15. Spring washer
16. Inner spring
17. Outer spring
18. Seat
19. Tapped block

9.4.2
Lubricate the two thrust washers, Fig. 47, with coating of grease and install thrust washers on spring compressing bolt.

9.4.3
Position washer, Fig. 46 (15), on spring compressing bolt and insert the bolt through inner spring; thread the bolt into the spring seat. Compress the springs to a overall length of 32.62" (828.55 mm) (from outside of washer to outer side of spring seat).

9.4.4
Install spring and bolt assembly in track release housing with spring seat to rear of housing.

9.4.5
Position gasket (14) in groove of cover (13) and install cover on housing. Secure cover with capscrews and high nuts.

9.4.6
Remove spring compressing bolt and thrust washers from assembly.

9.4.7
Install O-rings (11) on crosshead (12) and lubricate the crosshead assembly. Install crosshead assembly in bore of cover with counter bore outward.

9.4.8
Install new wear rings on adjusting piston (7) and in yoke (1).

9.4.9
Install new seal (5) on piston with lip of seal toward end of piston. Install piston assembly in bore of yoke, seal end first.

9.4.10
Insert push bar (10) in bore of piston (7) and install yoke assembly.

9.4.11
Fill the track release housing with specified lubricant (2 gals. -- 7.6 lit). Install plug with gasket on housing and secure.

9.4.12
Install equalizing beam bracket shock pads and bracket on track frame. Lower beam until all the bracket capscrews can be started, then lower beam all the way. Remove jack or blocks; tighten the capscrews to torque of 410 lbs.ft. (56.68 kg/m).

9.4.13
Refer to 5.5 and install track and adjust to proper tension.

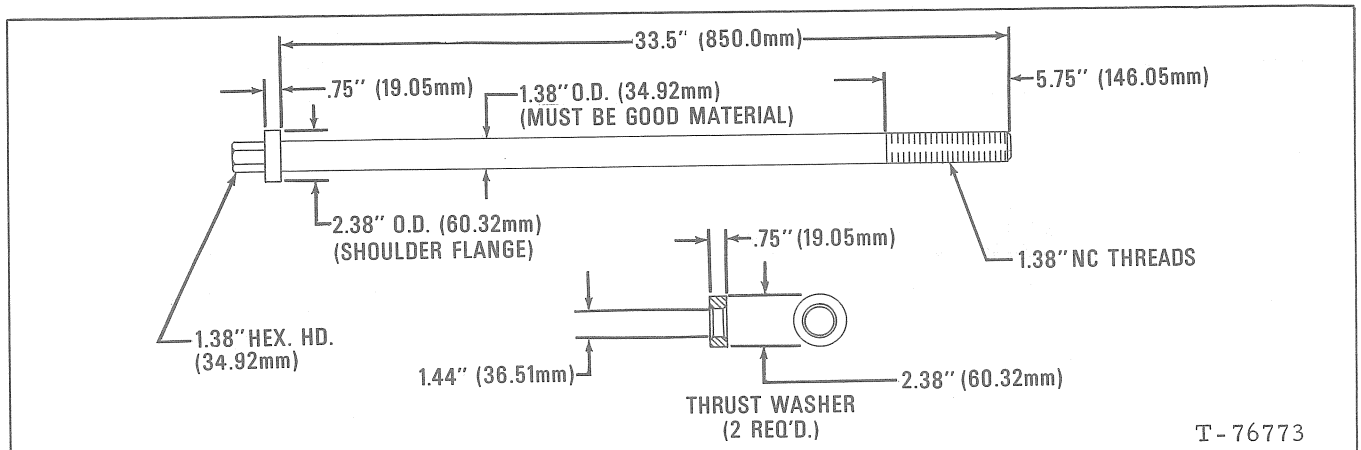

FIG. 47 SPRING COMPRESSING BOLT

TOPIC 10 TRACK FRAME

10.1 PERIODIC CHECKS

10.1.1
Periodically check track frames (including pivot shafts and bushings) and relative components for alignment and wear.

10.1.2
The pivot shafts and bushings are pressure gun lubricated periodically. The pivot shaft inner and outer cap retaining capscrews should be periodically checked for proper torque of 380 to 400 lbs. ft. (52.53 to 55.30 kg/m).

10.2 REMOVAL (Fig.48)

10.2.1
Refer to 5.3 and uncouple track; move tractor backward until track is off of idler, carrier rollers and sprocket, then move tractor rearward until rear track roller is even with rear end of track.

10.2.2
Remove equalizing beam bracket retaining capscrews.

10.2.3
Remove track frame pivot shaft caps located at bottom rear of main housing. The caps are identified so they can be reinstalled in same location. Remove sprocket guards.

10.2.4
Center punch or mark, and then remove sprocket shaft outboard bearing cage cap; remove outboard bearing cover (tie shims to cover); remove cotter pin and loosen bearing retainer nut 5 or 6 turns. Using a suitable puller, pull bearing cage and bearing out against the nut. This will allow removal of track frame without damage to bearing cage shims.

10.2.5
Raise tractor with suitable jack or hoist high enough to permit removal of track frame and block the tractor in this position.

10.2.6
Move track frame forward until it is clear of tractor.

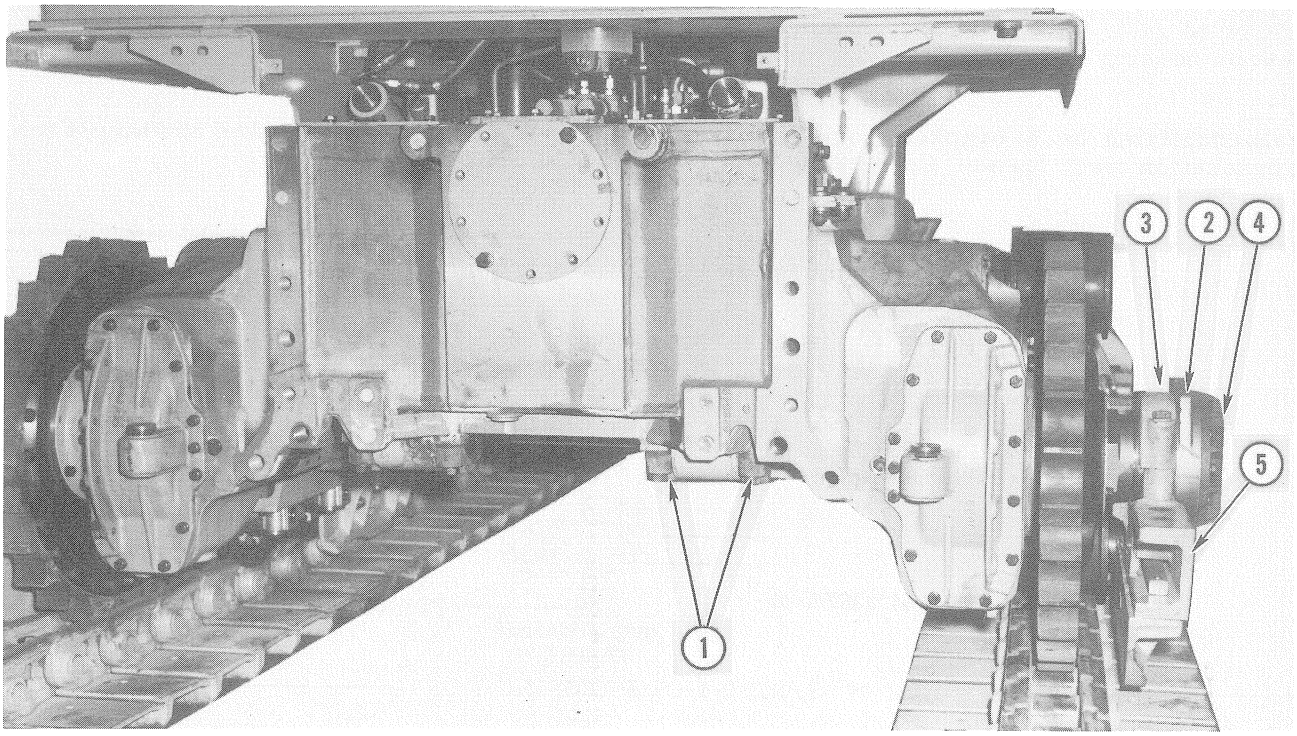

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FIG. 48 TRACK UNCOUPLED FOR TRACK FRAME REMOVAL

1. Pivot shaft caps
2. Outboard bearing cage
3. Bearing cage cap
4. Bearing cover
5. Track frame

10.3 REMOVAL AND INSTALLATION OF SHAFT, SEALS AND BUSHINGS

10.3.1
The pivot shaft can be removed by hand unless it has been damaged; in some cases, tools may be required to press shaft out.

10.3.2
Remove seals from each side of bushing with pry bar. Using tools similar to those shown in Figs. 49 and 50, remove bushings, taking care to prevent scoring or galling the bore in track frame.

10.3.3
Check the bore of track frame for smoothness and burrs and remove any if found. If pivot pins and bushings are worn beyond .02" (.508 mm), replace.

10.3.4
Lubricate the outer diameter of bushing and inner diameter of track frame. Start bushing in bore of frame (be sure grease groove in bushing will line up with lube fitting in frame). Assemble tools shown in Fig. 51, and press bushing into bore so that bushing is centered in bore (ends equidistant in bore).

10.3.5
Refer to Fig. 52 and install a seal in bore of track frame with lips of seal away from bushing or outward. Make certain seal does not protrude from bore of frame.

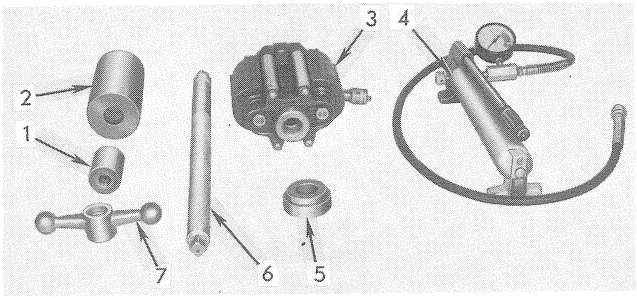
10.4 INSPECTION

10.4.1
Thoroughly clean track frame and all its components. Visually inspect track frame components such as track rollers, idlers, carrier rollers and track release mechanism for excessive wear and repair or replace as necessary.

10.4.2
Refer to 4.6 and check track frame to see if it is bent. If the frame is bent, refer to 10.5.

10.5 STRAIGHTENING TRACK FRAME (Fig.53)

10.5.1
In the event a track frame is bent it frequently is possible to straighten the frame by using proper procedures. For example, if the frame channels are bent upward in an area ahead of the track release housing as illustrated in Fig. 53, there would be a stretching of metal in area shown .



T-20872

FIG. 49 TOOLS FOR REMOVING AND INSTALLING PIVOT SHAFT BUSHING

1. Threaded adapter
2. Tube
3. Ram
4. Hydraulic pump
5. Adapter
6. Forcing screw
7. Speed nut

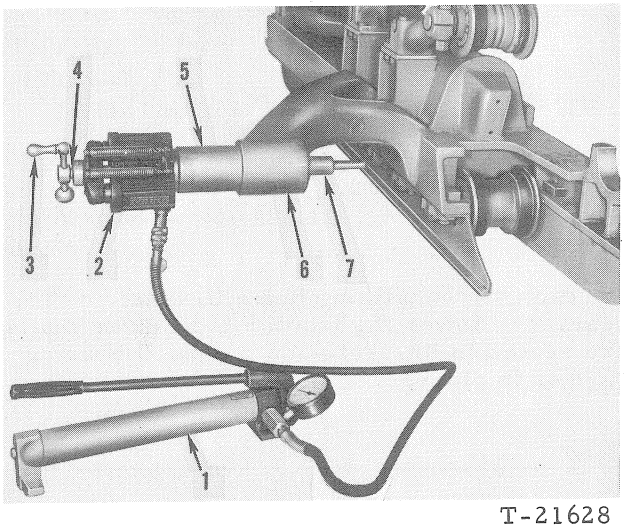


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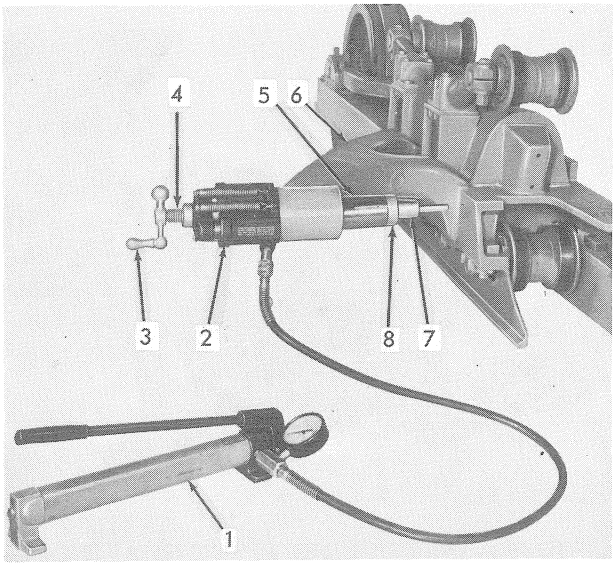
FIG. 50 REMOVING PIVOT SHAFT BUSHING (TYPICAL)

1. Hydraulic pump
2. Ram
3. Crank
4. Forcing screw
5. Tube
6. Track frame
7. Threaded adapter

10.5.2
To properly straighten this type of bend heat must be used. If efforts are made to cold straighten, the already stretched area will not compress and a similar stretched area would form on the upper section of the channel; this will thin the channel and reduce the yield point of the material.



T-21629

FIG. 51 INSTALLING PIVOT SHAFT BUSHING (TYPICAL)

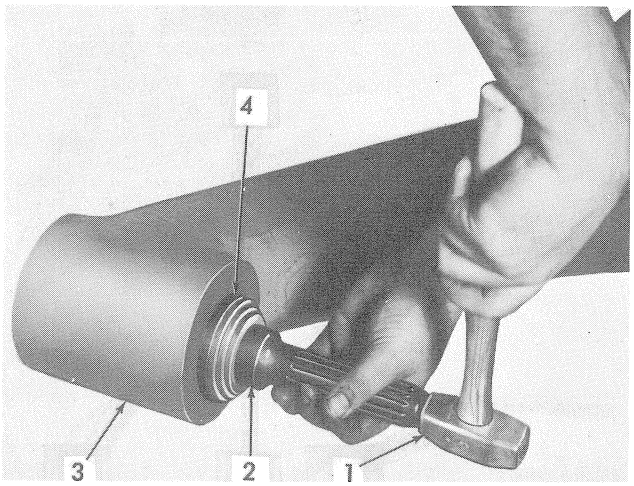
1. Hydraulic pump
2. Ram
3. Crank
4. Forcing screw
5. Pivot shaft bushing
6. Track frame
7. Threaded adapter
8. Adapter

10.5.3
To straighten, a support should be put at point (B) and pressure applied at point (A). As pressure is applied the channel should be heated in the stretched metal area including the lower flange or leg of the channel. By using this method the upper portion of the channel will not stretch but the heated area will compress back to its normal thickness.

10.5.4
In the heating process the temperature of metal should never exceed 1200 F. (648C^{o}) or the metallurgical value of the metal is destroyed again reducing the yield point. The temperature of the metal may be checked by the color method or preferably a surface reading pyrometer.

10.5.5
The equipment and skills used in track frame straightening will be the factors in the end result and will determine the ability of the frame to withstand continued severe operation.

10.5.6
Bending in other areas of the frame will set up a similar pattern and must be corrected in a similar manner.



T-21630

FIG. 52 INSTALLING PIVOT SHAFT OIL SEAL

1. Hammer
2. Installing tool
3. Track frame
4. Seal

10.6 INSTALLATION

10.6.1
Make certain all components such as track rollers, track guiding guards, track idler are reinstalled on track frame then position the track frame beneath tractor so that pivot shafts are aligned to their brackets and the outboard bearing with shims will seat in track frame.

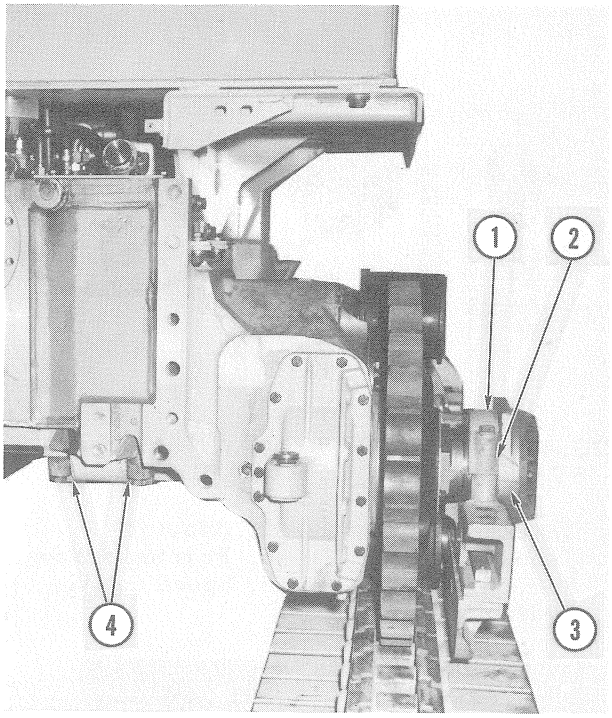


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FIG. 53A TRACK FRAME ADJUSTMENT

1. Track frame
2. Shim
3. Outboard bearing cage
4. .06" $^{+}_{-}$ .02" clearance (1.524 mm $\pm$ .508 mm)

10.6.2
Position the equalizing beam bracket on the beam then lower the tractor until pivot shafts are seated in brackets and outboard bearing cage is in place.

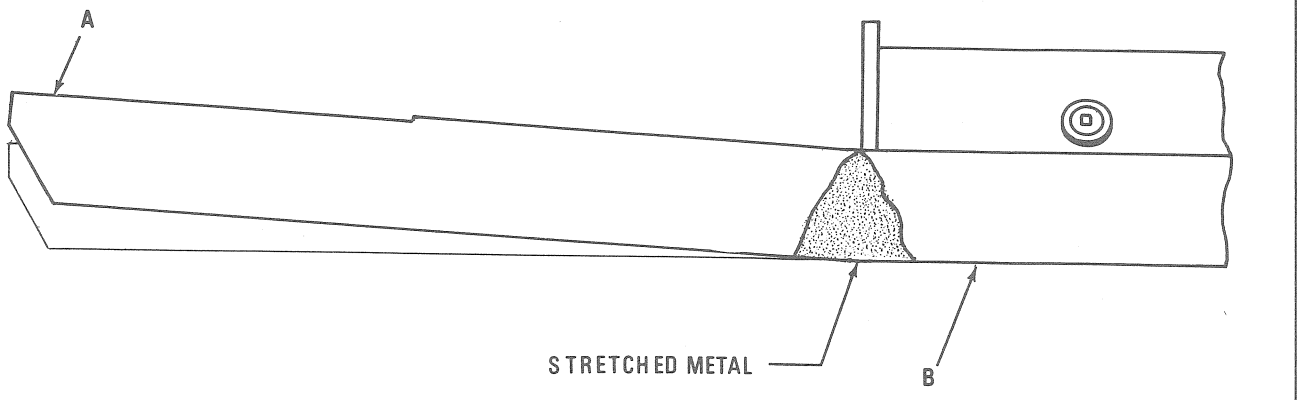

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FIG. 53 STRAIGHTENING TRACK FRAME

10.6.3
Install pivot shaft caps making certain that they are installed in proper location (matched marks) and secure with capscrews to a torque of 380 -- 400 lbs. ft. (52.53 -- 55.30 kg/m).

10.6.4
Using a jack, raise equalizing beam sufficiently to install both inner and outer shock pads beneath the bracket and install capscrews. Lower equalizing beam and secure capscrews to a torque of 380 -- 400 lbs.ft.(52.53 -- 55.30 kg/m).

10.6.5
Tighten the sprocket shaft outboard bearing retaining nut making certain the capscrew holes in shims are properly aligned and cotter pin holes in sprocket shaft are in alignment with slots in nut. Install cotter pin.

NOTE: A clearance of .06" ± .02" (1.524 mm ± .508 mm) between pivot arm and shaft brackets, Fig. 53A (4), must be maintained by adding or removing outboard bearing cage shims (2). Also it is important to align the rear track roller to sprocket, therefore a compromise may have to be made. It may be necessary to loosen track roller retaining capscrews and move track roller.

10.6.6
Position the sprocket shaft bearing cap on frame and install capscrews loosely. Tighten after step 10.6.7.

10.6.7
Install outboard bearing cap with shims on bearing cage and secure with capscrews to a torque of 115 -- 120 lbs.ft., (15.89 -- 16.59 kg/m) on 1/2" (12.7 mm) capscrews. Tighten bearing cap capscrews to a torque of 380 to 400 lbs.ft. (52.53 -- 55.30 kg/m).

10.6.8
Install and secure sprocket guards on track frame.

10.6.9
Refer to 5.5 and install and couple the track and adjust. Adjust the track until there is 1" to 1.5"(25.4 to 38.1 mm) sag between front track carrier roller and track idler.

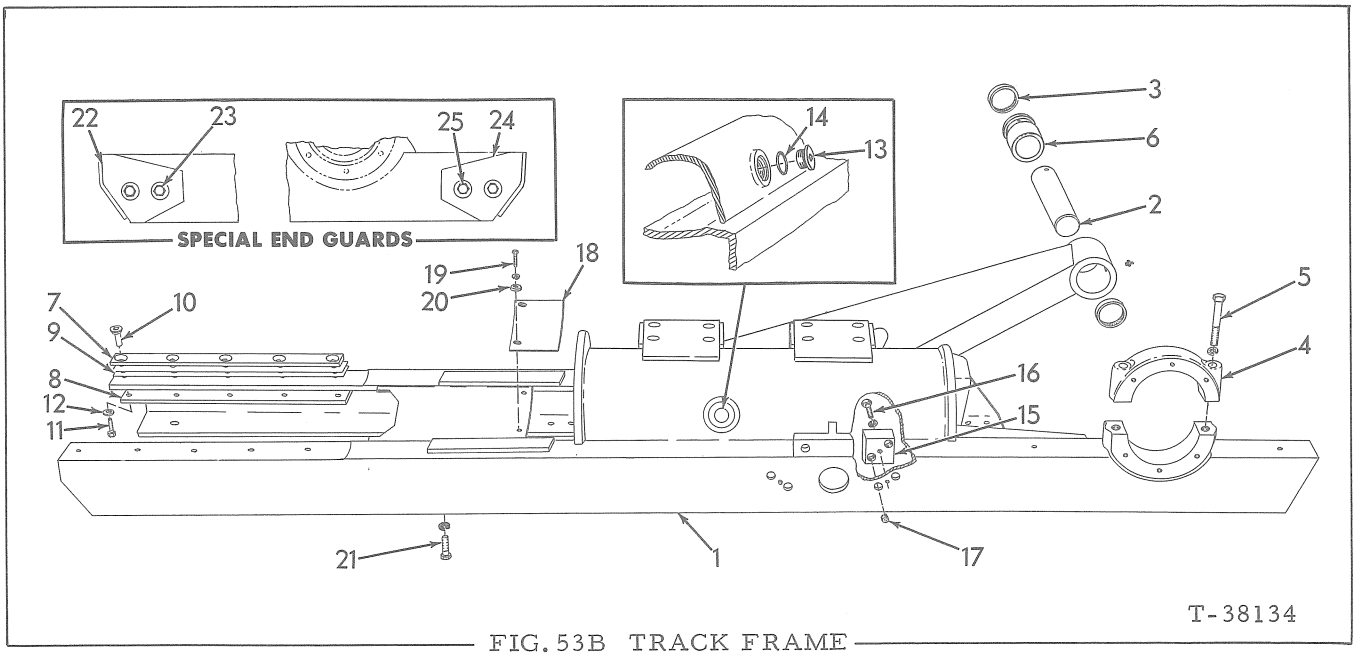


FIG. 53B TRACK FRAME

1. Frame assembly
2. Pivot shaft
3. Seal
4. Sprocket shaft bearing cap
5. Capscrew
6. Bushing
7. Upper slide bar
8. Lower slide bar
9. Shim
10. Dowel
11. Capscrew
12. Washer
13. Plug
14. Gasket
15. Tapped block
16. Capscrew
17. Cork
18. Plate
19. Capscrew
20. Washer
21. Capscrew
22. Guard
23. Capscrew
24. Guard
25. Capscrew

TOPIC 11 EQUALIZING BEAM

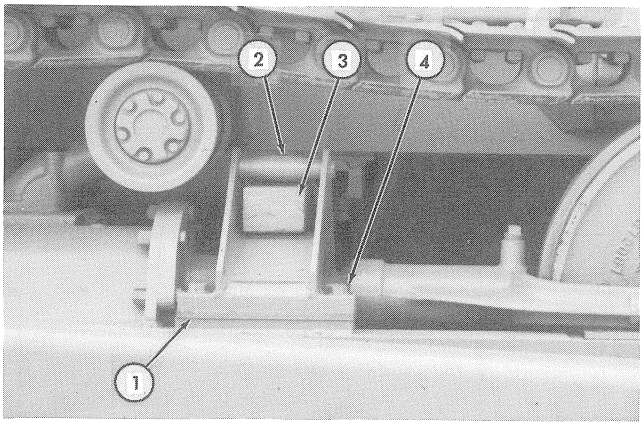
11.1 PERIODIC CHECK

11.1.1
Check pivot pin retaining plate capscrews for proper torque of 115 lbs.ft. (15.89 kg/m).

11.1.2
Raise front end of tractor sufficiently to remove weight and to allow the equalizing beam to move freely. Check pivot pin and bushing wear by prying on the end of equalizing beam. If beam can be moved excessively, pivot pin and/or bushings are worn.

11.1.3
Check the torque or bracket attaching capscrews and if they are found loose, retighten to 380 to 400 lbs.ft.(52.53 -- 55.30 kg/m).

11.1.4
Check the shock pads to see if they are damaged.



T-76775
FIG.54 EQUALIZING BEAM INSTALLED

1. Shock pad
2. Shock pad bracket
3. Equalizing beam
4. Capscrews

11.2 REMOVAL

NOTE: The following procedure covers standard tractors. Procedure for tractors with special 44 link track is similar. See Fig.55.

11.2.1
Remove the shock pad bracket attaching capscrews from both brackets. Remove the pivot pin retaining plate attaching capscrews and remove plate.

11.2.2
Raise the front of the tractor sufficiently to allow the removal of shock pad brackets and equalizing beam pivot pin from tractor then block tractor in this position. Remove pivot pin brackets.

11.3 INSPECTION

11.3.1
Inspect the pivot pin for wear. If it is indented more than .03" (.762 mm) the pivot pin should be replaced.

11.3.2
If bushings in equalizing beam are worn more than .05" (1.27 mm) the bushings should be replaced.

11.3.3
Check the equalizing beam for cracks and bending. Repair as necessary or replace. If the pad contact surfaces are badly worn they may be rebuilt by hard surface welding.

11.3.4
If the bracket surfaces in contact with equalizing beam are worn badly, they may be hard surface welded to restore original thickness.

11.3.5
If the inner and outer shock pads are torn or worn they should be replaced. It is advisable to replace them to increase shock absorption.

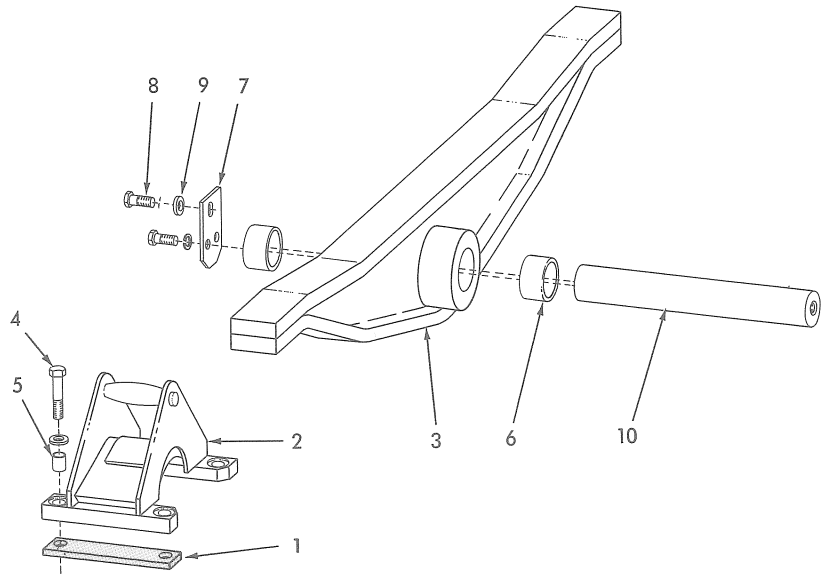
11.4 ASSEMBLY AND INSTALLATION

11.4.1
Press a new bushing into each end of bore of equalizing beam until it is flush with bore face. Apply a light coat of grease in the bushing bores and on pivot pin.

11.4.2
Install one inner and outer shock pad and bracket on one of the track frames. Secure with spacers and capscrews tightened to a torque of 380 -- 400 lbs.ft.(52.53 -- 55.30 kg/m)

11.4.3
Position the equalizing beam in bracket on track frame and into position on main frame with pivot pin holes aligned. Install pivot pin through main frame plates and beam bore. Make certain capscrew holes are to the rear when installing pivot pin. Secure pivot pin with plate and capscrews. Tighten capscrews to a torque of 115 lbs.ft. (15.89 kg/m).

11.4.4
Position the inner and outer shock pads on opposite track frame. Place bracket on end of equalizing beam and lower front of tractor until bracket just touches shock pads. Install spacers in bracket. Insert attaching capscrews and start into threads. Lower tractor completely, then tighten capscrews to a torque of 380 -- 400 lbs.ft. (52.53 -- 55.30 kg/m).



STANDARD

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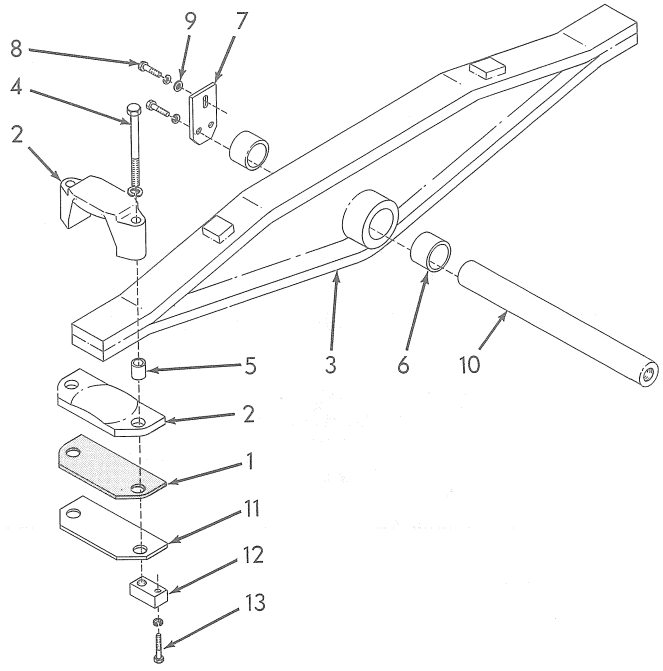

SPECIAL FOR 44 LINK TRACK

T-72332

FIG. 55 EQUALIZING BEAM

1. Shock pad
2. Shock pad bracket
3. Equalizing beam
4. Capscrews
5. Spacer bushing
6. Bushing
7. Pin retaining plate
8. Capscrew
9. Washer
10. Pivot pin
11. Shock pad plate
12. Tapped block
13. Block retaining capscrews

TOPIC 12 SPROCKET SEGMENTS

12.1 GENERAL

12.1.1
Each sprocket uses nine segments which are common to either the right or left side and need no particular orientation on either sprocket hub. The teeth on segment are indexed to hub capscrews holes therefore eliminating the need of orientation.

12.1.2
It is important that when track chain is rebuilt or replaced the sprocket segments should be replaced to provide the proper pitch for new or rebuilt track. Also if for some reason the chain is in good condition, but segment teeth are worn it is advisable to replace segments to prolong life of track chain.

12.1.3
To determine when to replace segments, use wear gauge shown in Fig. 13. Also review Topic 3.

12.2 PERIODIC MAINTENANCE

12.2.1
Periodically the capscrews attaching the segments to the hub should be checked and torqued to 230 lbs. ft. (31.79 kg/m) dry. This is especially true after new segments have been installed.

12.3 REMOVAL

12.3.1
Position the sprocket segments as shown in Fig. 56, then remove the attaching capscrews and segment.

12.3.2
Clean the hub surfaces with wire brush making certain the metal is clean and free of any debris which may prevent metal to metal contact when new segment is installed.

12.3.3
Attaching capscrews must be buffed on a wire wheel and thoroughly cleaned before reusing.

12.4 INSTALLATION

12.4.1
Make certain that sprocket segment is clean and free of any burrs or materials which will prevent metal to metal contact.

12.4.2
Position the segment on sprocket hub and secure with capscrews and nuts evenly to a torque of 230 lbs. ft. (31.79 kg/m)

12.4.3
Move tractor to expose and position next segment and remove and replace the segments until all segments have been replaced.

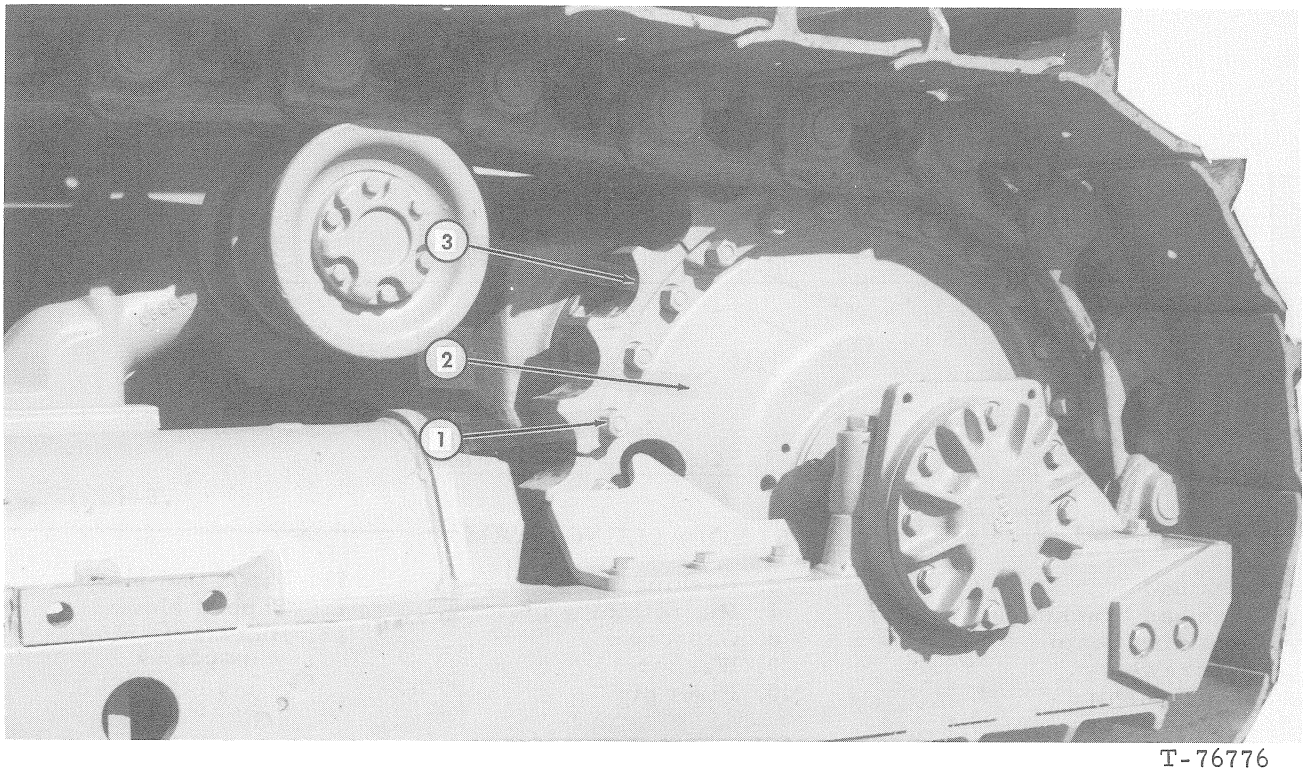

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FIG. 56 SPROCKET SEGMENTS INSTALLED

1. Segment attaching bolts
2. Hub
3. Sprocket segments

TOPIC 13 TRACK FRAME AND COMPONENT REBUILD DIMENSIONS

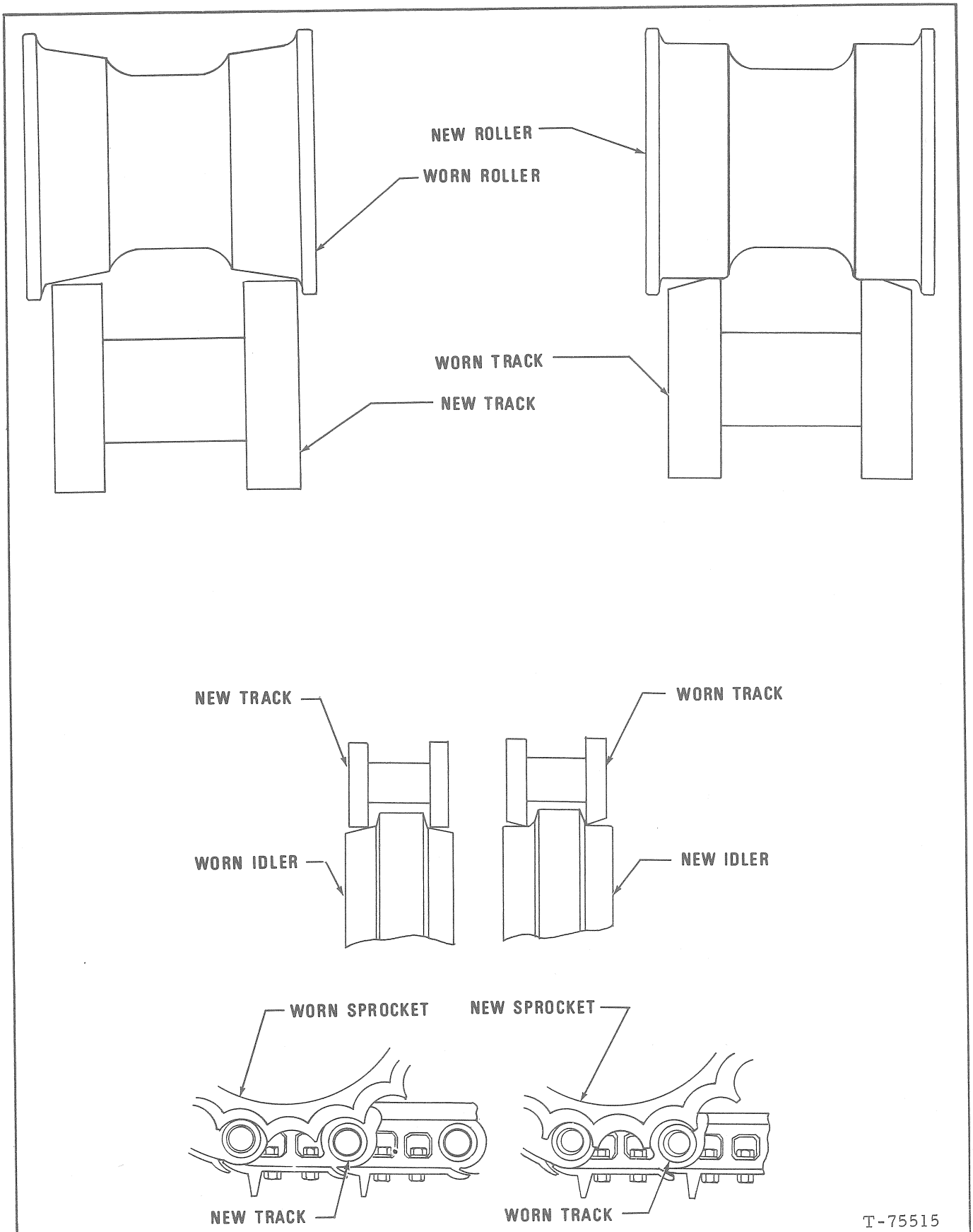

FIG. 57 MATING WORN COMPONENTS WITH NEW OR REBUILT COMPONENTS

13.1 GENERAL INFORMATION

13.1.1
When one component is replaced or rebuilt it is important that all mating components be carefully checked for wear which may cause mis-matching (Fig. 57) and as a result shorten the life of all components.

13.1.2
When rebuilding components by welding, it is advisable to use an automatic welding machine following the recommendations of machine manufacturer for proper welding rod and heat.

CAUTION

Do not attempt to electrically ground through bearings, positive type seals, or shafts, since this may seriously damage them.

13.1.3
Weld should be smooth and when possible, the component should be ground to a smooth finish. This will extend the life of mating components.

13.1.4
Wear gauge , obtainable through your Fiat-Allis Dealer, can be used to determine when a component should be replaced or rebuilt.

13.1.5
When rebuilding track carrier rollers, track rollers, or track links, the bores should be checked AFTER welding and if they are distorted or shrunk they should be very carefully restored to their original dimension by grinding or maching. It is important that all bores be in alignment to within .001" (.0254mm) of its center line.

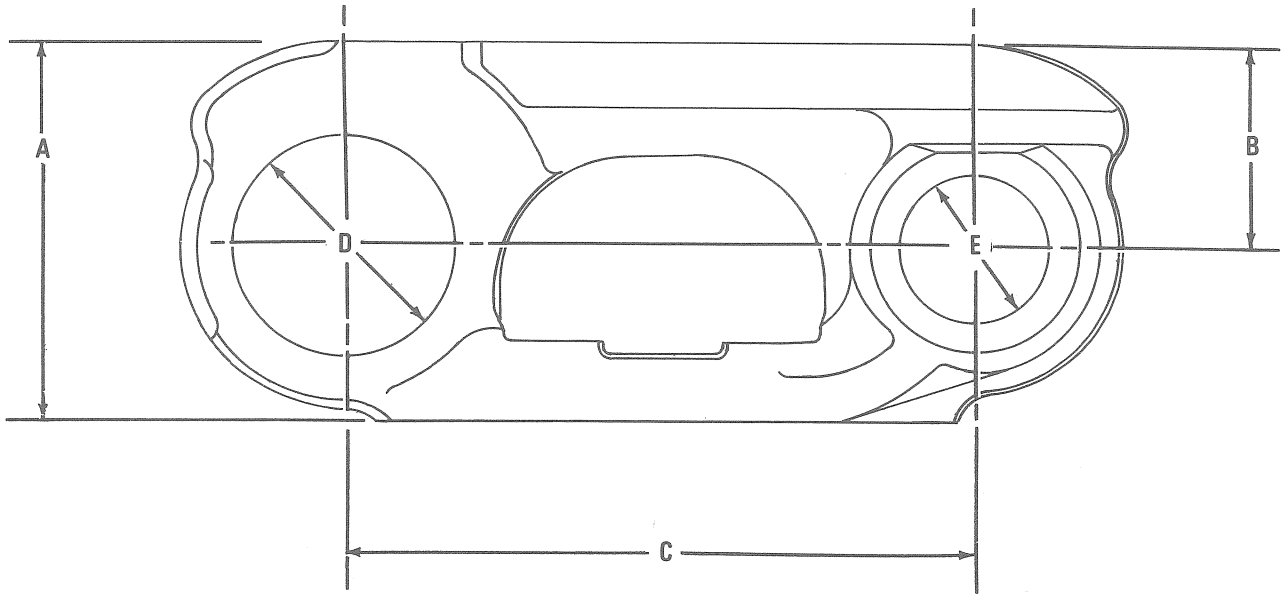

FIG. 58 TRACK LINK

13.2 TRACK LINK (Fig.58)

A (Nominal)	B (Nominal)	C-PITCH (Nominal)	D*	E*
4.250" (107.95mm)	1.938" (49.23mm)	** 7.00" (177.8mm)	2.495" (63.36mm)	1.615" (41.02mm)

*All Dimensions in Columns D and E are plus or minus .001" (.0254mm)
**Dimension is plus .005" (.127mm) to minus .006" (.152mm)

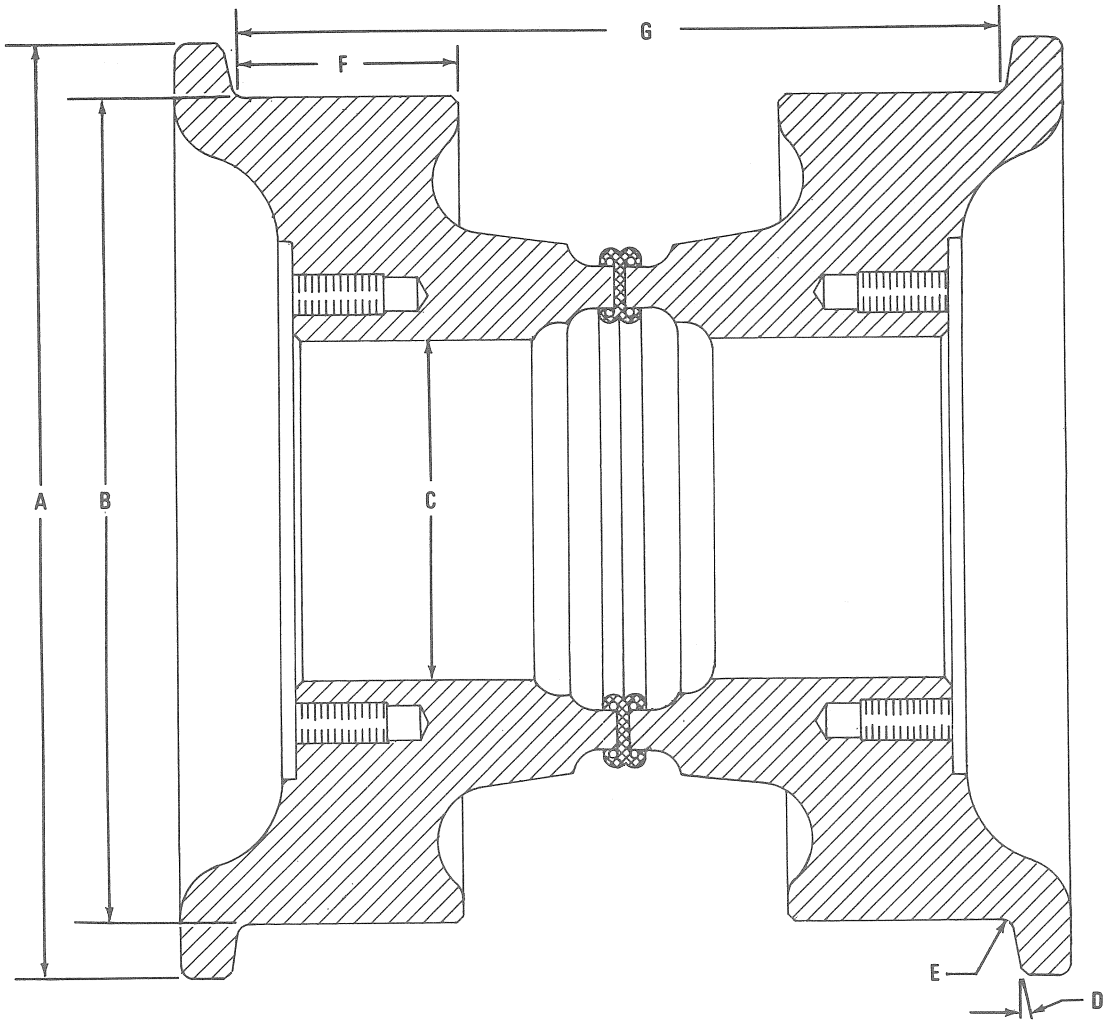

FIG. 59 CARRIER ROLLER

13.3 TRACK CARRIER ROLLER (Fig.59)

A	B	C	D	E	F	G
8.50" (215.9 mm)	7.50" (190.5 mm)	3.124" (79.35 mm)	10°	.09" (2.28 mm)	2.00" (50.8 mm)	7.00" (177.8 mm)

NOTE: Max. misalignment of bores .002" (.0508mm)
Bores must be round within .001" (.0254mm)

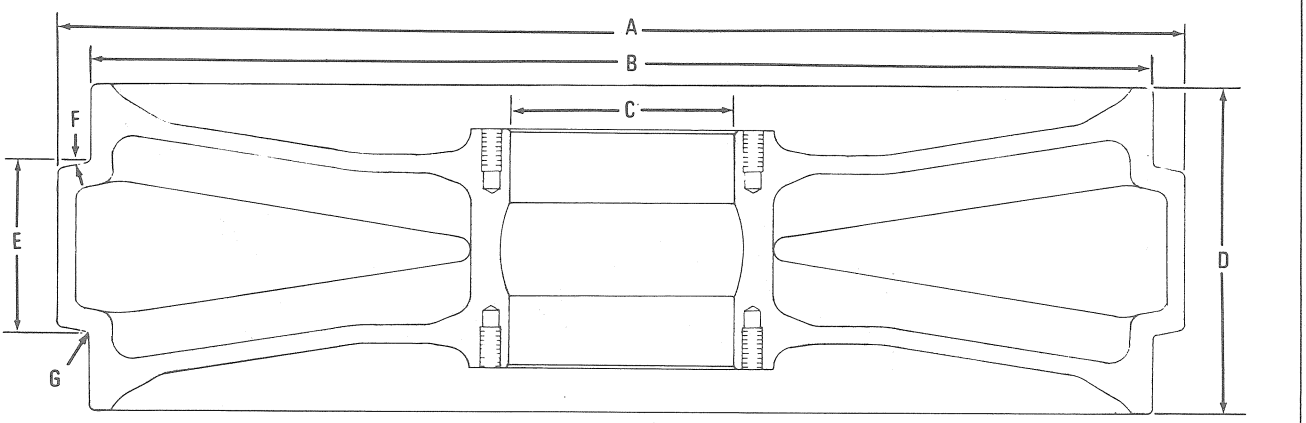

FIG. 60 TRACK IDLER

13.4 TRACK IDLER (Fig.60)

A	B	C	D	E	F	G
27.50" (698.50 mm)	26.00" (660.4 mm)	4.755" (120.78 mm)	6.76" (171.7 mm)	3.14" (79.75 mm)	10°	.09" (2.28 mm)

NOTE: Max. misalignment of bores. .002" (.0508mm)
Bores must be round within .001" (.0254mm)
Dimensions A&B plus or minus .06 (1.52mm)
Dimension C plus or minus .001" (.0254 mm)
Dimension E plus or minus .03" (.76 mm)

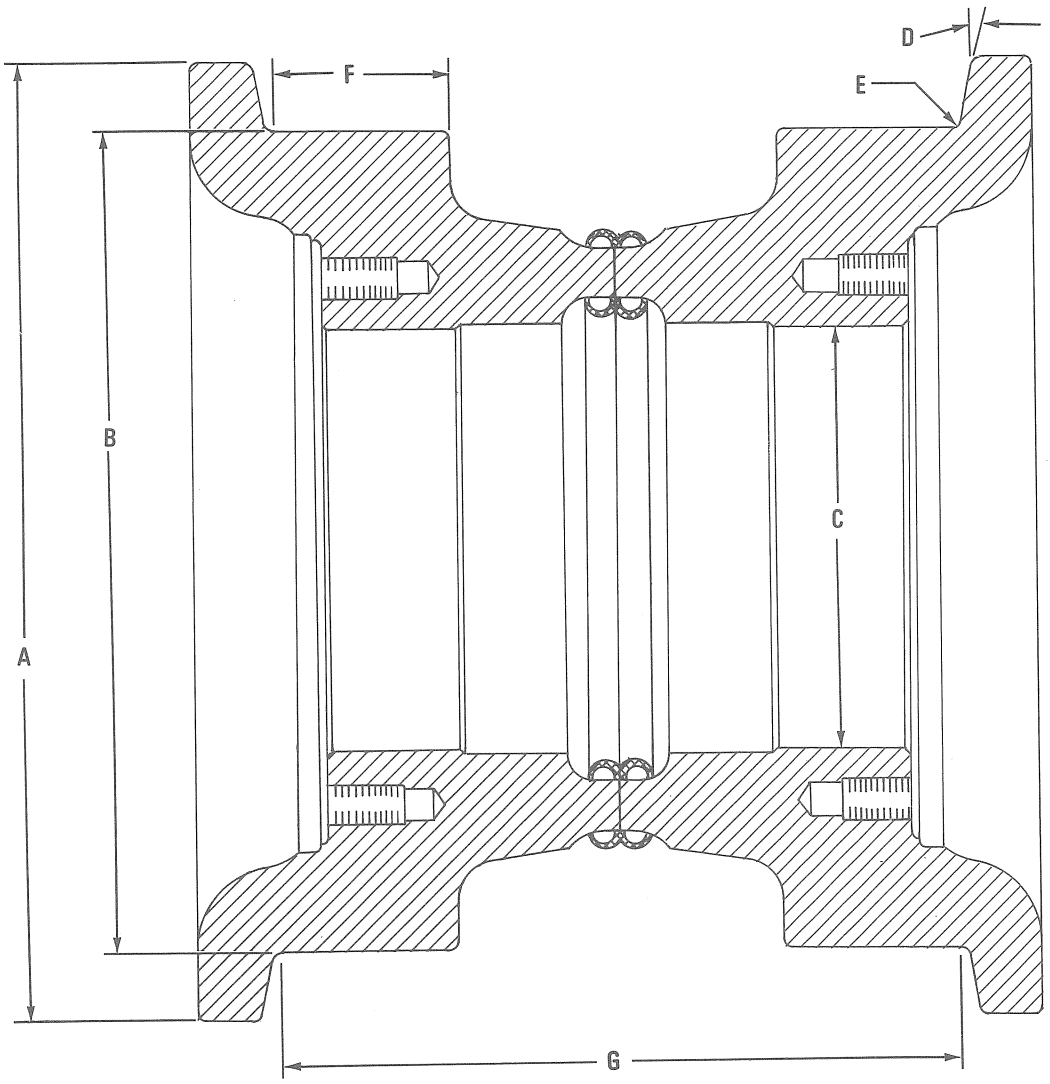

FIG. 61 TRACK ROLLER

13.5 TRACK ROLLER (Fig.61)

A	B	C (NOMINAL)	D	E	F	G
9.50" (241.3mm)	8.00" (203.2mm)	4.122" (104.7mm)	10°	.09R (2.28mm)	1.75" (44.45mm)	7.02" (178.9mm)

NOTE: Dimension A -- plus or minus .06" (1.52 mm)
Dimension D -- plus or minus 1°
Dimension G -- plus or minus .05" (1.27 mm)

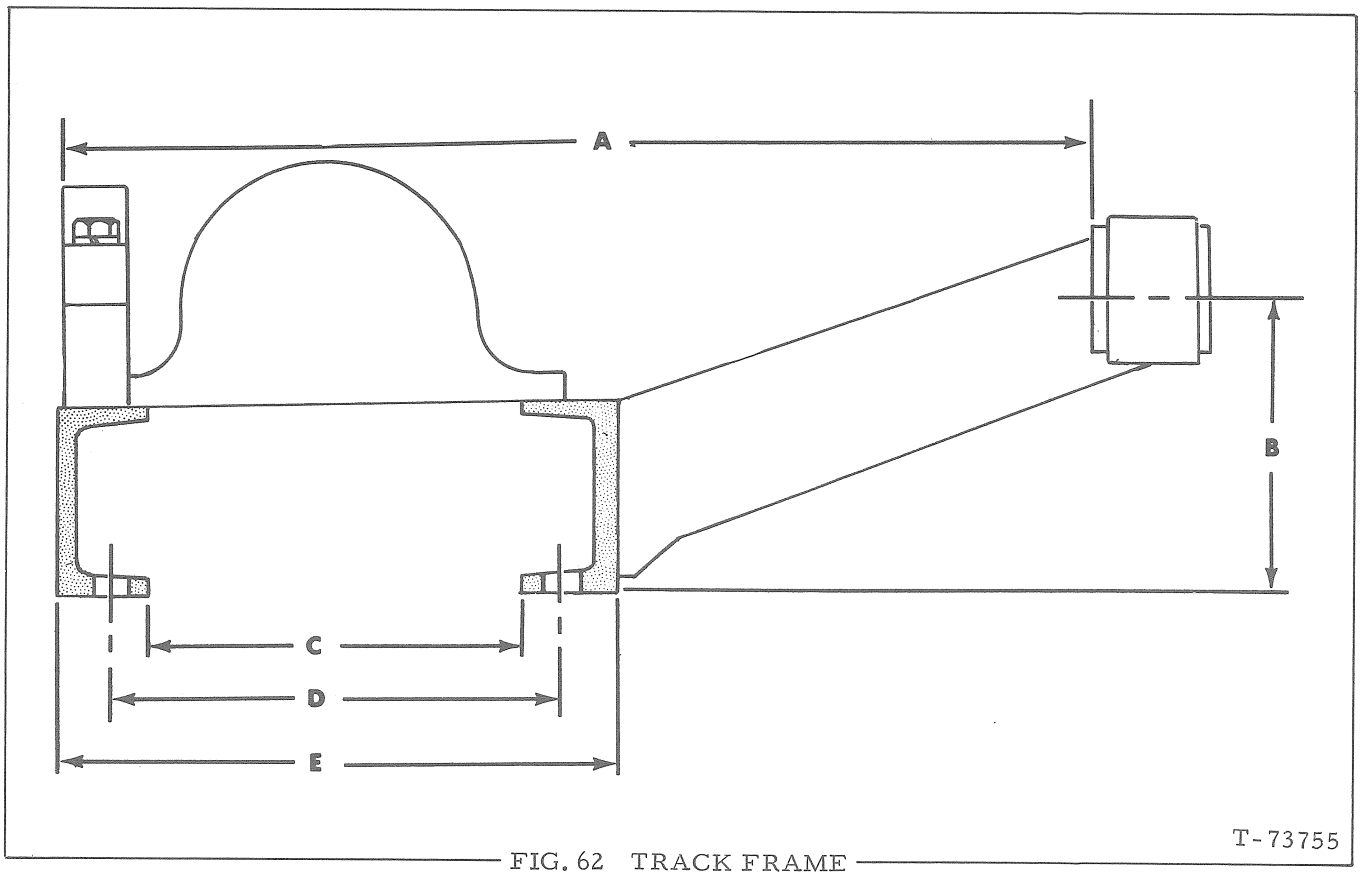

FIG. 62 TRACK FRAME

13.6 TRACK FRAME (Fig.62)

A	B	C	D
30.656" (678.66 mm)	8.518" (215.36mm)	9.76" (247.90mm)	12.75" (323.85mm)

NOTE: Dimension A plus or minus .015" (.381mm)
Dimension C plus or minus .06" (1.52mm)
Dimension D plus or minus .06" (1.52mm)

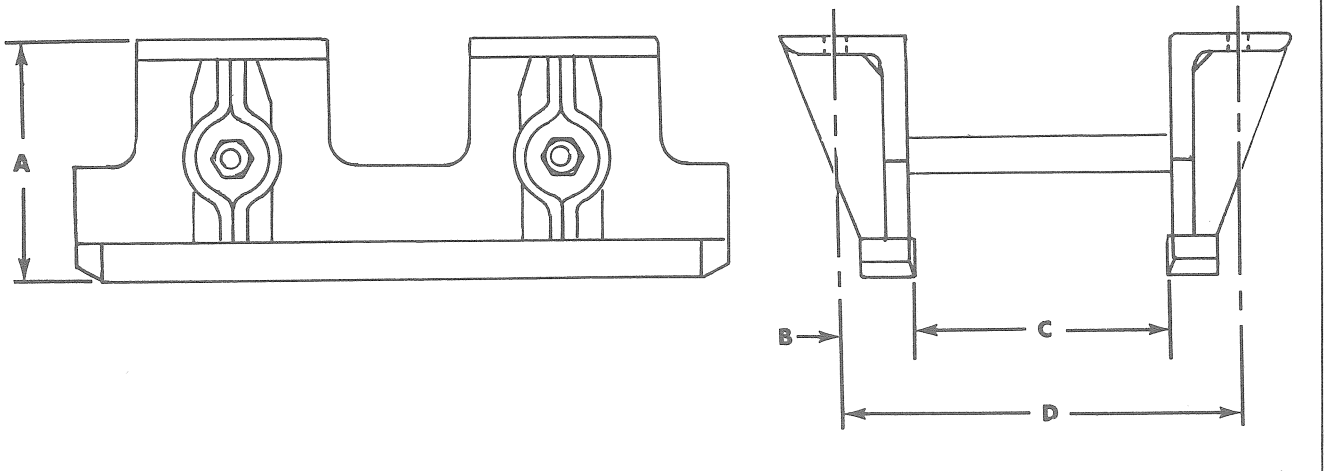

FIG. 63 TRACK ROLLER GUARD

13.7 TRACK ROLLER GUARDS (Fig.63)

A	B	C	D
7.50" (190.50mm)	1.69" (42.93mm)	9.37" (237.99mm)	12.75" (323.85mm)

Dimension B plus or minus .03" (0.762mm)
Dimension C plus or minus .12" (3.04mm)
Dimension D plus or minus .010" (0.254mm)

TOPIC 14 FITS AND TOLERANCES

14.1 TRACK ROLLER

14.1.1
Bearing cone .001" -- .0025" (.025 -- .0635 mm) press fit on shaft.

14.1.2
Bearing cup .0015" to .0025" (.038 -- .063mm) press fit in roller.

14.1.3
Bearing preload 50 -- 70 lbs. in (57.6 -- 80.6 kg/cm).

14.1.4
Seal retainer .002" -- .004"(.050 -- .101mm) press fit on shaft

14.1.5
Bearing retainer capscrew torque -45 lbs.ft (6.22 kg/m).

14.2 TRACK CARRIER ROLLER

14.2.1
Bearing cone .001" -- .0025"(.025 -- .063mm) press fit on shaft.

14.2.2
Bearing cup .001" -- .003" (.025 -- .076mm) press fit in roller.

14.2.3
Bearing preload 15 to 45 lbs. in)(17.28-- 51.846 kg/cm).

14.2.4
Bearing retainer capscrew torque -30 to 35 lbs. ft. (4.147 -- 4.84 kg/m)

14.2.5
Seal retainer .002" -- .004" (.050 -- .101mm) press fit on shaft.

14.3 TRACK IDLER

14.3.1
Bearing cone .0015" -- .0025" (.038 -- .063 mm) press fit on shaft.

14.3.2
Bearing cup .001" -- .004"(.025 -- .101mm) press fit in bearing retainer.

14.3.3
Bearing retainer. 000" -- .002"(.000 -- .050 mm) tight in idler.

14.3.4
Bearing preload 15 -- 45 lbs. in. (17.28 51,84 kg/cm).

14.3.5
Seal retainer .002" -- .004"(.050 -- .101mm) press fit on shaft.

14.3.6
Bracket .001" -- .004" (.025 -- .101 mm) free fit on shaft.

14.3.7
Bracket clamping capscrew torque 150 -- 165 lbs.ft. (20.73 -- 22.81 kg/m).

14.4 TRACK FRAME

14.4.1
Bore for outboard bearing cage (6.248" -- 6.250" (158.7 to 158.75 mm).

14.4.2
Bore for pivot shaft bushing 3.109" -- 3.111" (78.97 to 79.02 mm).

14.4.3
Pivot shaft bushing .002" to .003" (.050 -- .076 mm) press fit in track frame.

14.4.4
Pivot shaft .005" -- .009" (.127 to .228 mm) free fit in bushing.

14.5 EQUALIZING BEAM

14.5.1
Pivot shaft .015" -- .022" (.381 -- .558mm) free fit in bushing.

14.6 TRACK RELEASE

14.6.1
Inner spring (small) should have a free length of 30.09" (764.29 mm)
Outer spring (large should have a free length of 35.5" (901.7 mm)

14.6.2
Crosshead to end cover bore .003" to .007" (.076 to .177 mm) free fit.

14.6.3
Piston to idler yoke .009 to .018" (.228 to .457 mm) free fit.

14.7 TRACK PIN

Standard Track Pin	
Diameter	Press Fit in Link
1.620" to 1.624" (41.14 to 41.24 mm)	.006" to .012" (.152 to .304 mm)

Master Pin	
Diameter	Press Fit in Link
1.619" at each end (41.12 mm)	.003" to .006" (.076 to .152 mm)

14.8 TRACK BUSHING

O. D.	I. D.	length ± .005"(.127mm)
2.500" to 2.508" (63.50 to 63.70mm)	1.642"min. (41.60mm)	5.023" (127.81mm)

14.9 SIDE LINK

14.9.1
The overall height of side links is 4.250" (107.95 mm)

14.9.2
The bushing bore is 2.492" (63.29 mm).

14.9.3
The pin bore is 1.569" to 1.579", (39.85 to 40.106 mm).

TOPIC 15 SERVICE TOOLS

Any special purpose service tools required to perform the repair operations shown in this manual are listed below; order these tools from company listed.

All other tools are considered to be standard service tools.

SPECIAL PURPOSE SERVICE TOOLS

FIG. NO.	TOOL PART NO.	DESCRIPTION	ORDER FORM
5, 6, 7, 10, 11, 12, 13,	75000528	Wear gauge	Fiat-Allis dealer
41	OTC-AC-400 (discontinued)	Lubricating Fixture	
34, 35, 36	OTC-X-4	Master Pin Installing and Removing Set	Owatonna Tool Co. 375 Cedar St. Owatonna, Minn. 66050
49, 50, 51	OTC-AC-320, (disc.)	Track Frame Pivot Pin Removing and Installing Tool	

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