

WARN SELECTIVE DRIVE HUBS

U. S. PAT. NO. 2,684,140



NO. WD-255

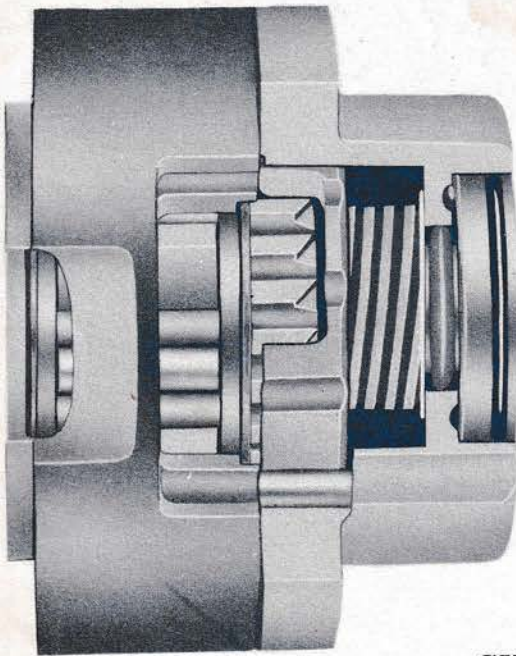
SERVICE and REPAIR MANUAL

ASSEMBLY OF WARN AUTOMATIC,
AND WARN LOCKING HUBS, ALL MODELS
(WILLYS MODELS ILLUSTRATED)

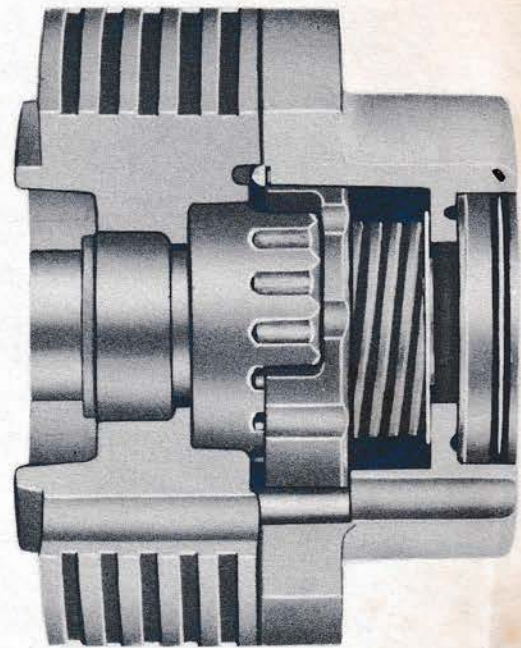


TABLE OF CONTENTS

	<u>Pages</u>
WARN AUTOMATIC HUB	
Clutch Assembly	1-11
Body Assembly	12-14
WARN LOCKING HUB	
Clutch Assembly	1-11
Body Assembly	15-16



AUTOMATIC (Willys)



LOCKING (Willys)

CUTAWAY
VIEWS

CLUTCH ASSEMBLY-Figure 1



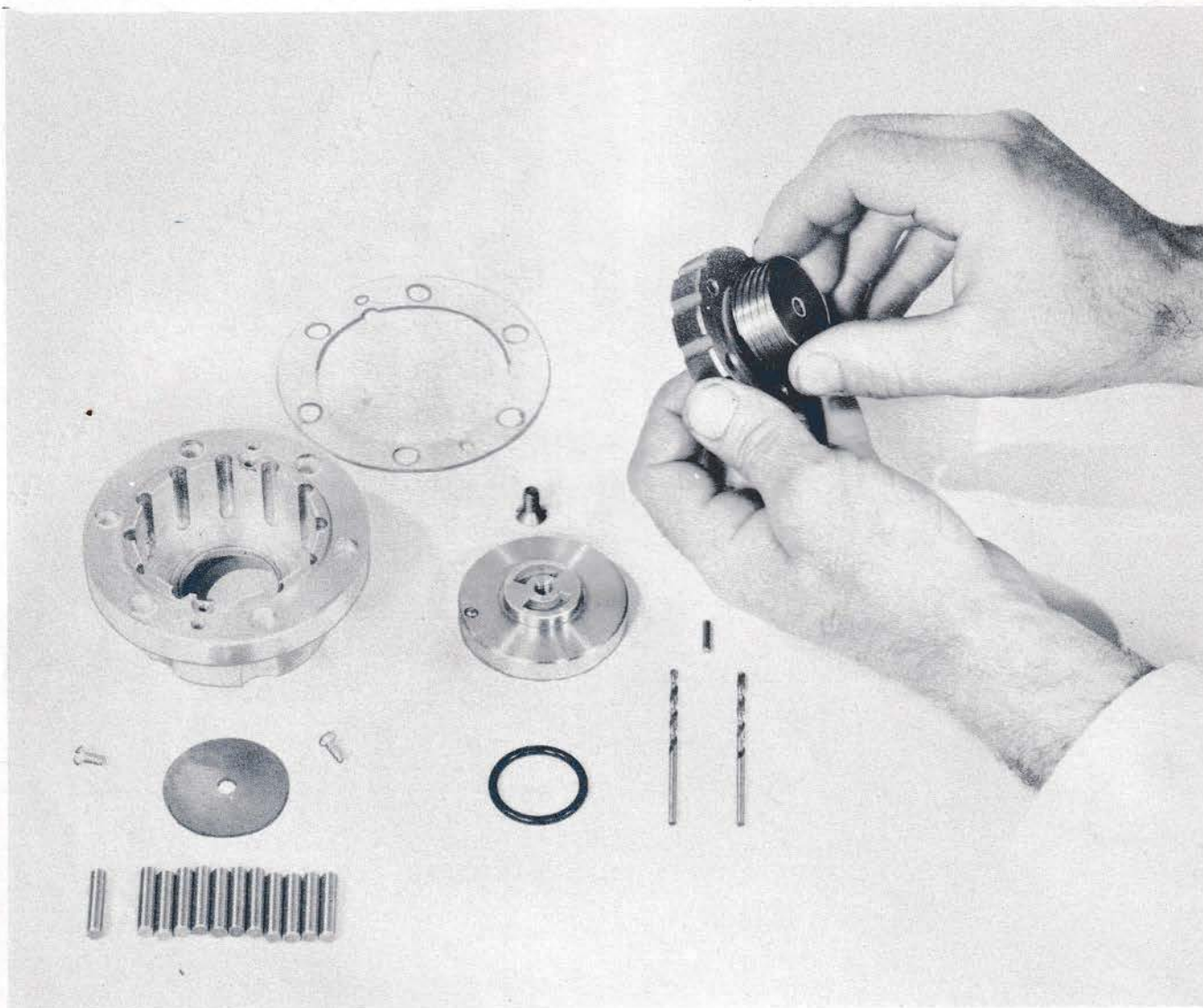
LAYOUT OF CLEANED PARTS AND TOOLS NEEDED FOR CAP ASSEMBLY

Before starting assembly place the bronze dial assembly in the aluminum cap so that the spring loaded ball is in the socket hole of the aluminum cap. Then center punch a spot in the cap directly in line with the point of the arrow of the bronze dial, remove the dial and make a drill spot approx. 3/16" diam., using a 1/4" drill.

After drilling the spot put some red paint in it so it is plainly visible. This will be your permanent locator.

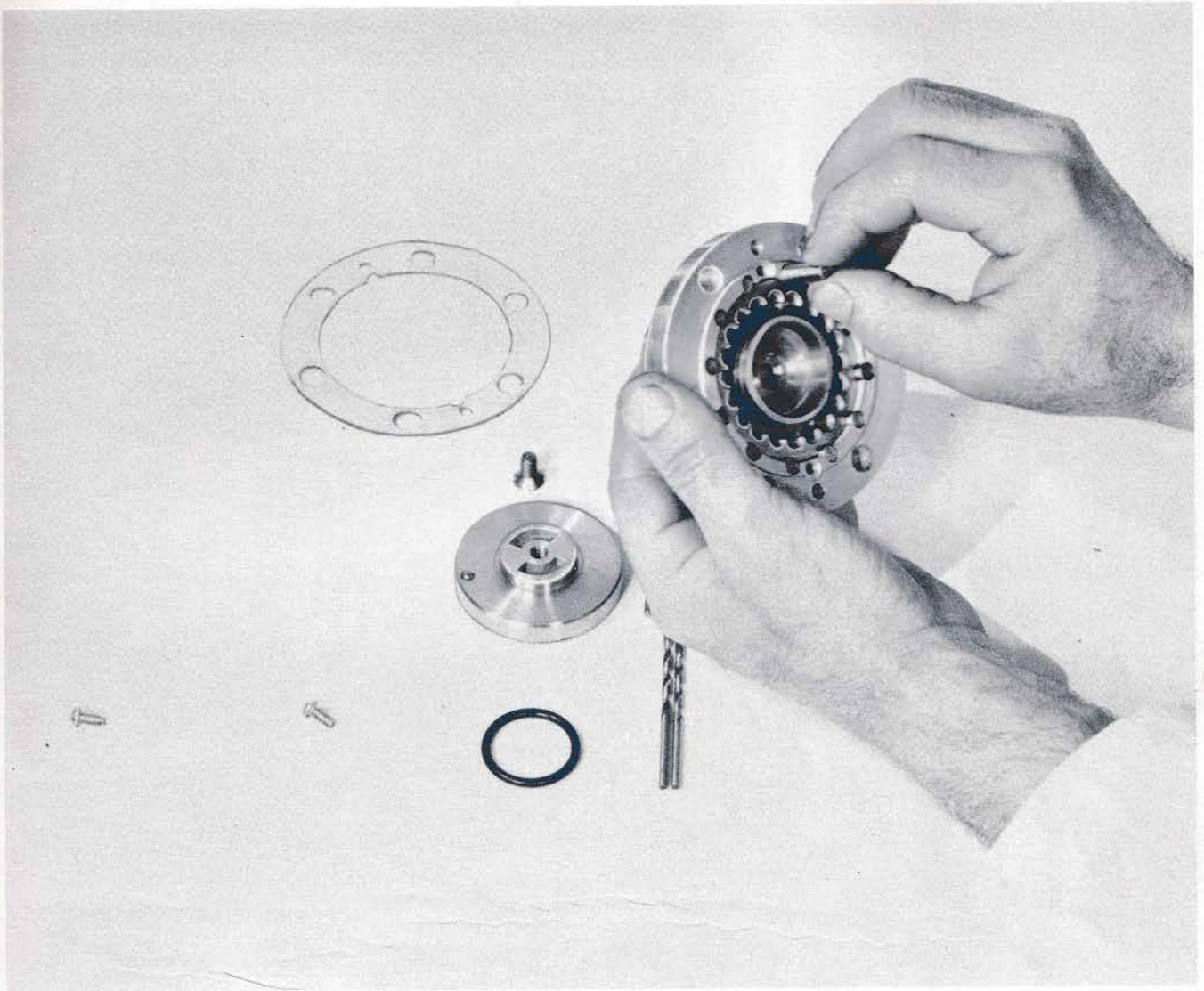
NOTE: An extra oil ring seal has been added in the bronze dial edge (part at upper left of drills shown). New dial is grooved for oil ring, and is interchangeable with dial illustrated.

CLUTCH ASSEMBLY-Figure 2



Assemble screw into clutch from back side, making sure the screw works freely. If it is sticky in any position, tap it lightly from the back side.

CLUTCH ASSEMBLY-Figure 3



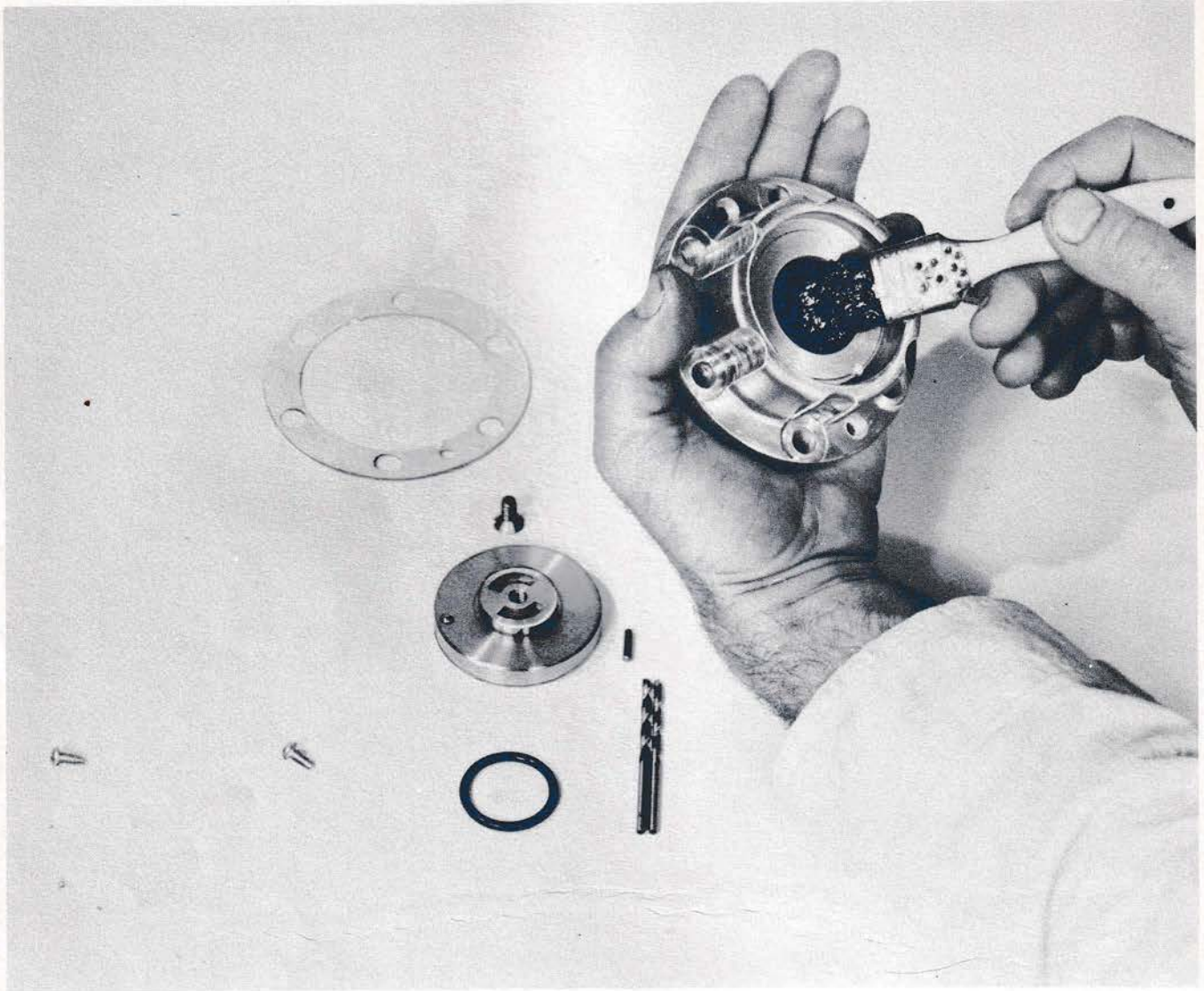
Place the thin washer on the inside of the cap (clutch side).

Drop in the clutch and screw assembly. (The screw should be flush with the back edge of the clutch.)

Insert the (12) drive pins.

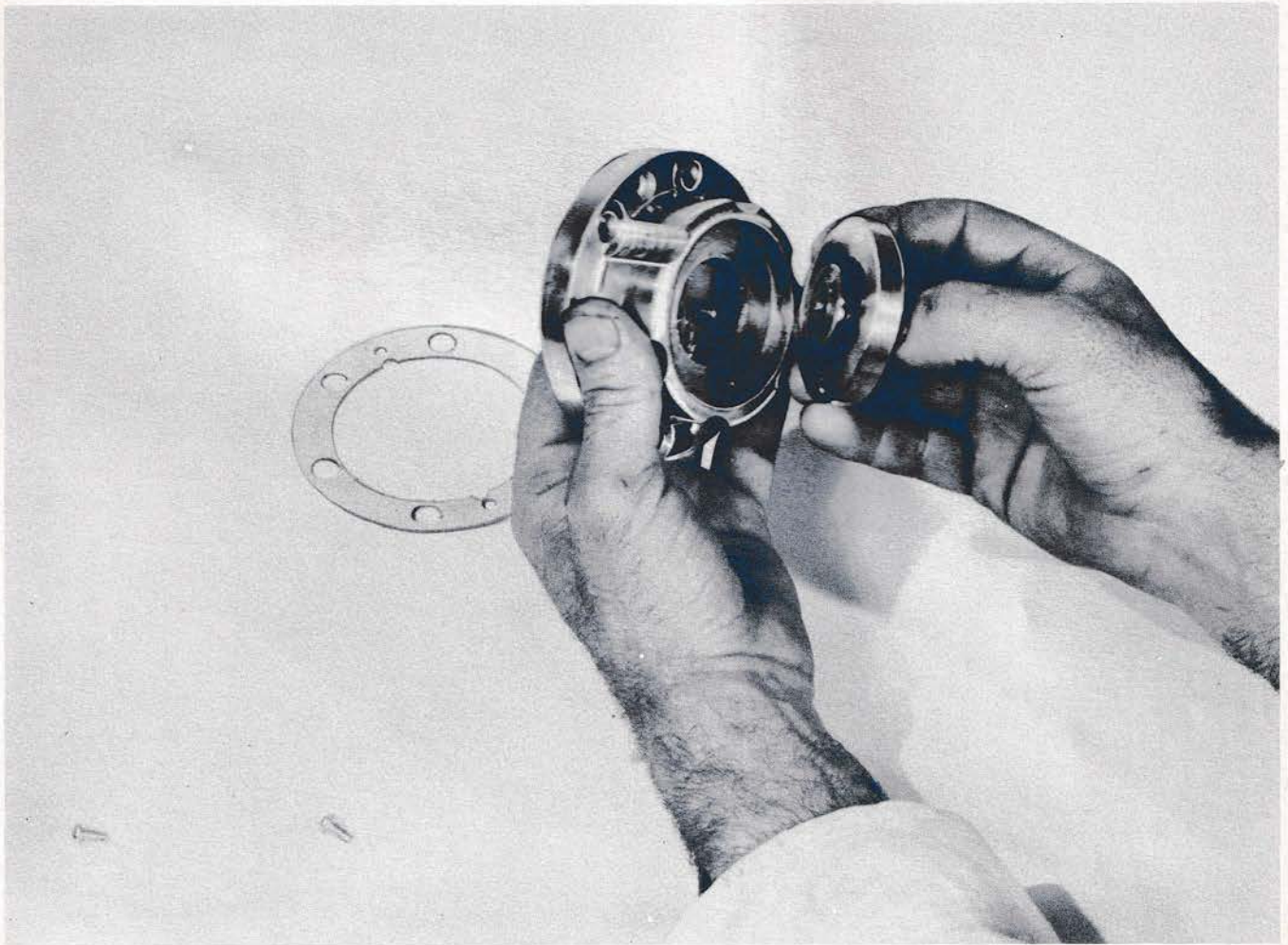
Try the clutch for free sliding fit on the pins. It must move freely from top to bottom. If it doesn't, try moving it to another position.

CLUTCH ASSEMBLY-Figure 4



Grease the inside face of the cap and thin washer from the front side of the cap. Use a light grade chassis lube--Keystone 35A or equivalent. (Hold hand over pins to prevent falling out.)

CLUTCH ASSEMBLY-Figure 5



Brush a small amount of grease on the bearing side of the bronze dial and install the oil seal.

Install oil ring seal in the groove on the edge of the bronze dial. (See footnote on page 3.)

Insert the $\frac{1}{4}$ -20 flat head screw into position after the hole in the thin washer has been lined up.

Hold the flat head screw in position and screw the bronze dial assembly onto the screw.

Screw the two parts together as far as they will go, or until the spring loaded ball drops into its seat in the cap. (Arrow point and red dot line up.)

CLUTCH ASSEMBLY-Figure 6



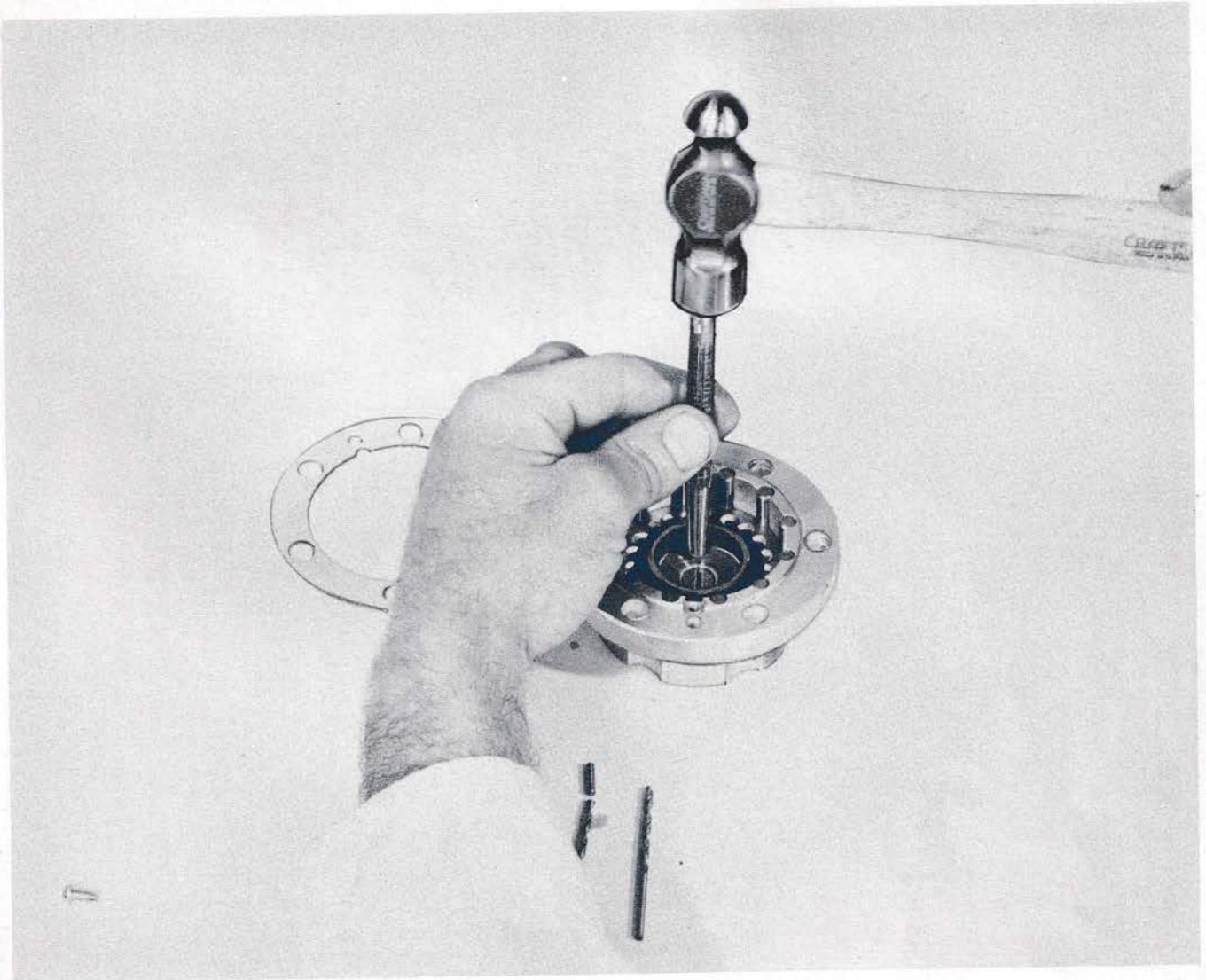
Turn the cap so that the clutch is facing up.

Tighten the flat head screw lightly with the large screwdriver, making sure the dial is still in position (spring loaded ball firmly in cap socket). (Arrow point and red dot line up.)

Back off the flat head screw just enough so that you can turn the large dial screw freely. Turn this screw clockwise until the clutch bottoms, then back it up about $1/60$ of a turn. Then lock the center screw with the large screwdriver.

To check your setting turn the dial from "lock" to "free". The clutch should bottom the same time you feel the spring loaded ball drop into its seat. (Arrow point and red dot line up.) You should not be able to dial past this point. If your setting is off either way repeat the operation until you get it right. **THIS IS VERY IMPORTANT.**

CLUTCH ASSEMBLY-Figure 7

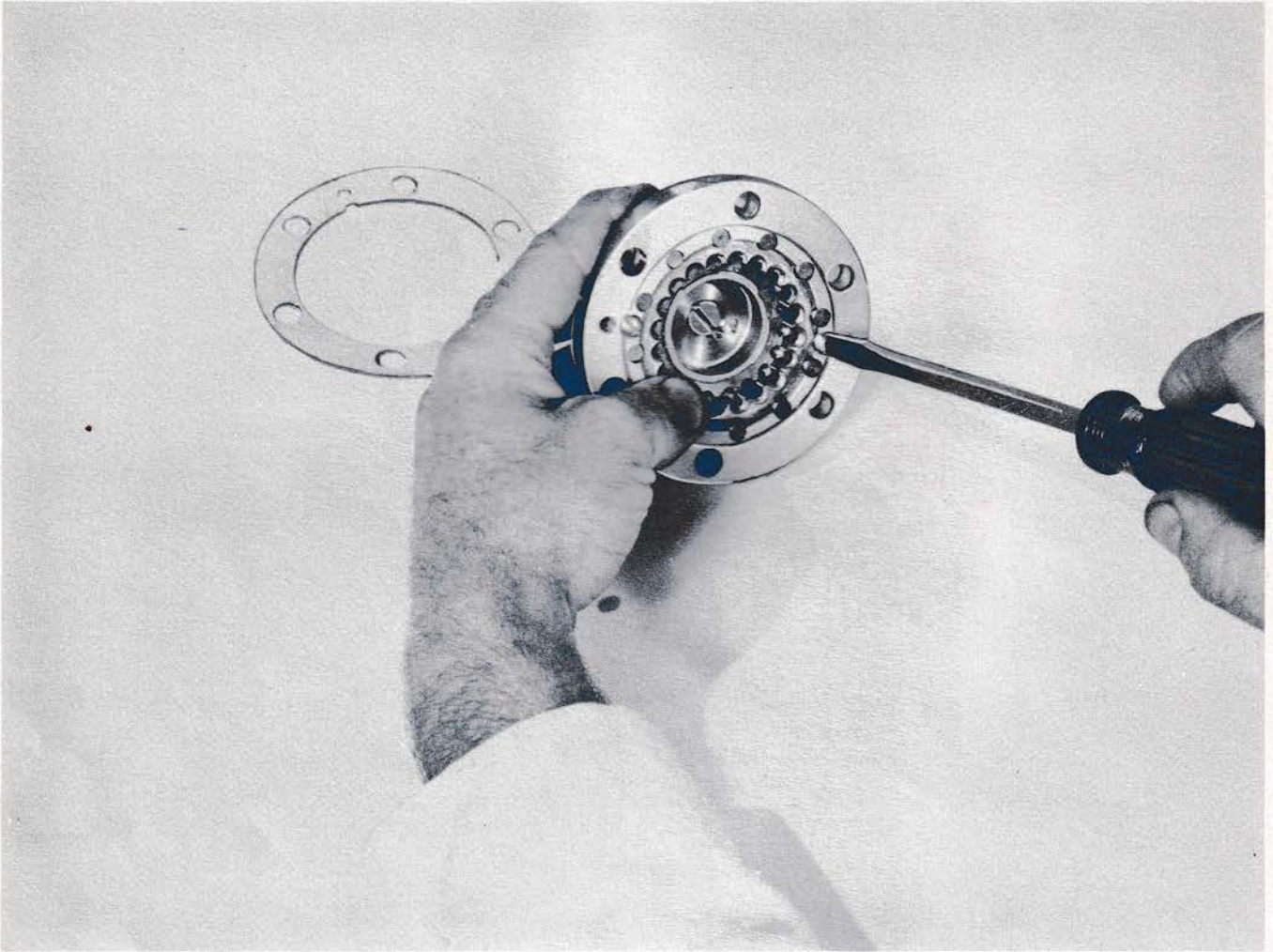


Center punch one spot half-way between the flat head screw and the inside of the dial screw. (Note: The center punch mark must be in line with the arrow head or arrow tail.) If the punch mark is lined up approx. with the stop screw holes it will come out right as shown in Figure 7.

Drill (1) #31 hole $5/8$ " deep, then ream the hole with $1/8$ " drill $5/8$ " deep.

Insert $1/8$ " x $9/16$ " dowel and stake in place with center punch, also stake flat head screws at both ends of the slot as shown in Figure 7. Do not let any of the drill chips drop into the cap. They must be cleaned out if they do get behind the clutch. A round metal guard around the screw will prevent this.

CLUTCH ASSEMBLY-Figure 8



Turn dial (1) turn to lock position until spring loaded ball drops into its socket.

Place one drop of oil in each of the stop screw holes, install the (2) 8-32 self threading screws and screw them in until the heads touch the face of the clutch.

Work the dial once or twice to make sure your setting of the screws is correct. The spring loaded ball should drop into its seat (arrow point and red dot line up) the same time the clutch bumps the stop screw heads. You should not be able to turn the dial beyond this point.

NOTE: WHEN INSTALLING WARN HUBS ON TRUCK, USE THINWALL SOCKET WRENCH. (Regular wrench forces recess wall inwards, causes binding of clutch mechanism.)

CLUTCH ASSEMBLY-Figure 9



Turn the dial to the free position and brush a generous amount of grease around the dial screw and drive pins.

The cap is now ready for use, or can be assembled with the body.

Be sure you have the proper gasket between the cap and body. This gasket has (6) large holes, two small holes and two notches in it. The base gasket between hub and wheel has only 6 large holes.

The (2) 10-32 x 3/4" screws are used to hold the cap and body assemblies together.

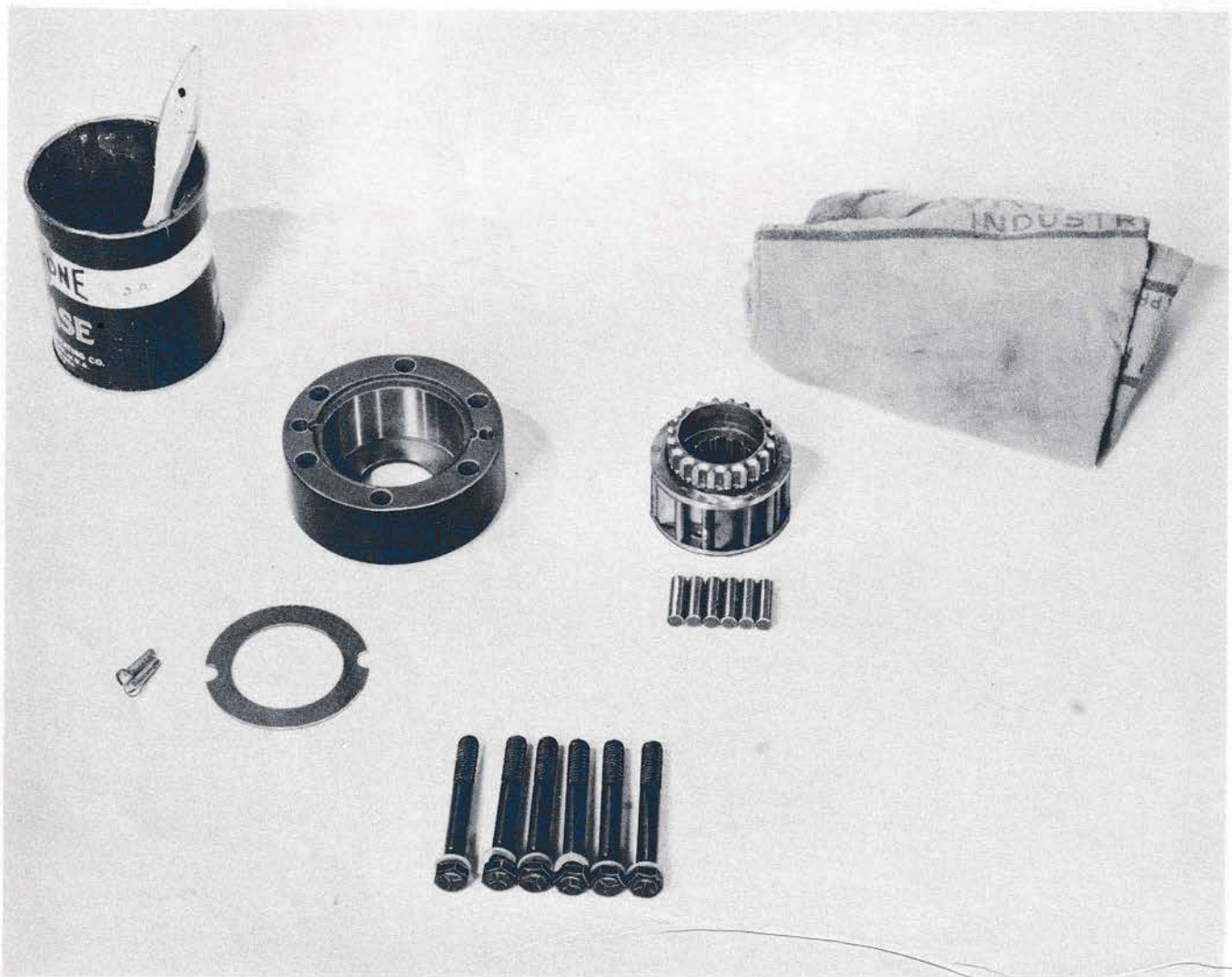
NOTE: Never operate these hubs unless the point of the arrow is lined up with the locating dot on the cap. Damage will result if this is not done.

NOTE: After assembly, Automatic Hubs should be stamped "Right" or "Left" on flange of aluminum clutch body just below red dot.

BODY ASSEMBLY-**Figure 1**

For All Automatic Models

(See pages 15-16 for locking models)



AUTOMATIC BODY PARTS

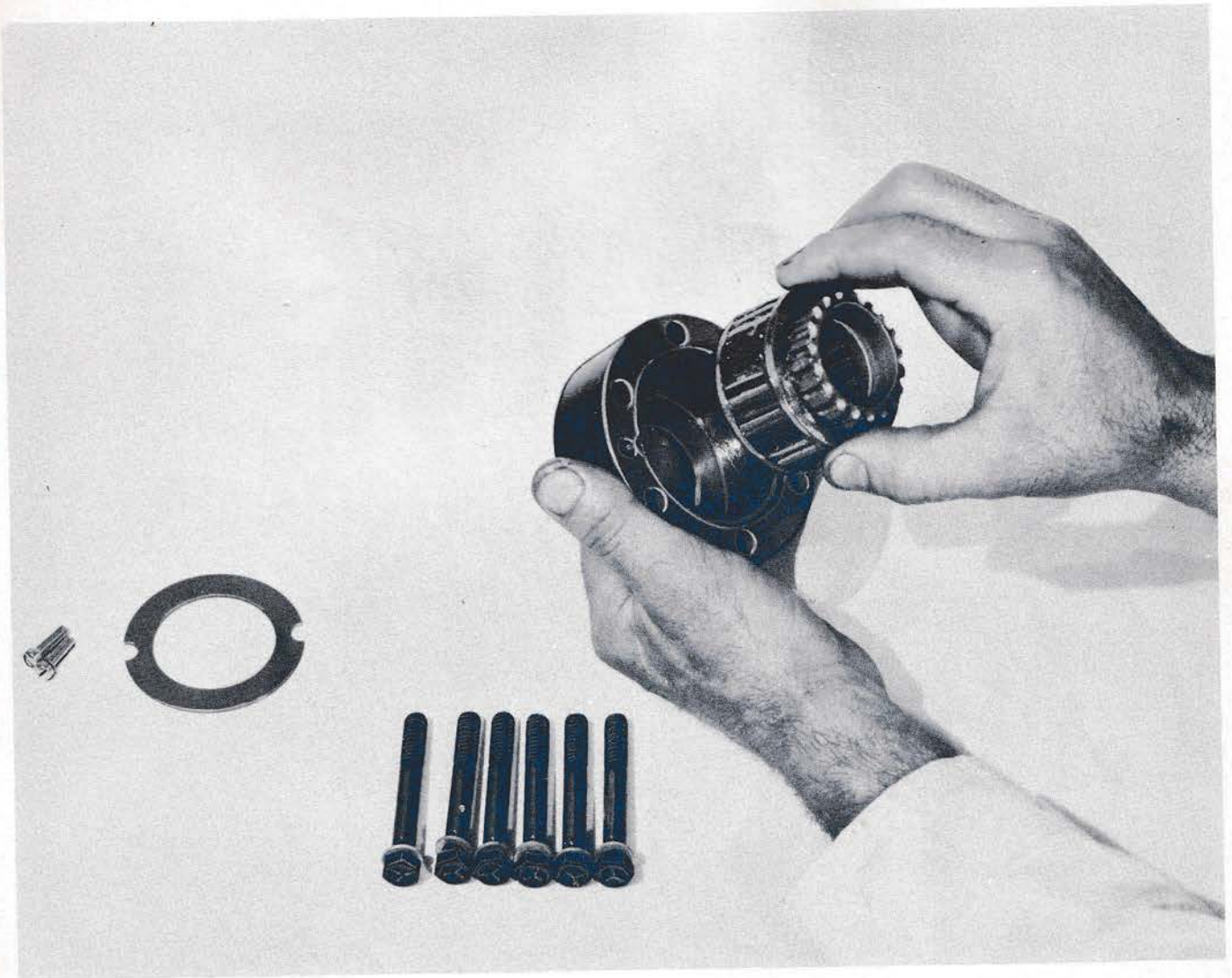
NOTE: Dodge, GMC, International models have 12 rollers instead of 6 as shown. (Willys Automatic model illustrated has 6 shown.)

NOTE: Special cadmium plated lock washers are now used in place of washers shown on bolts.

BODY ASSEMBLY-Figure 2

For All Automatic Models

(See pages 15-16 for locking models)



Brush a layer of grease inside the hub and around the ratchet.

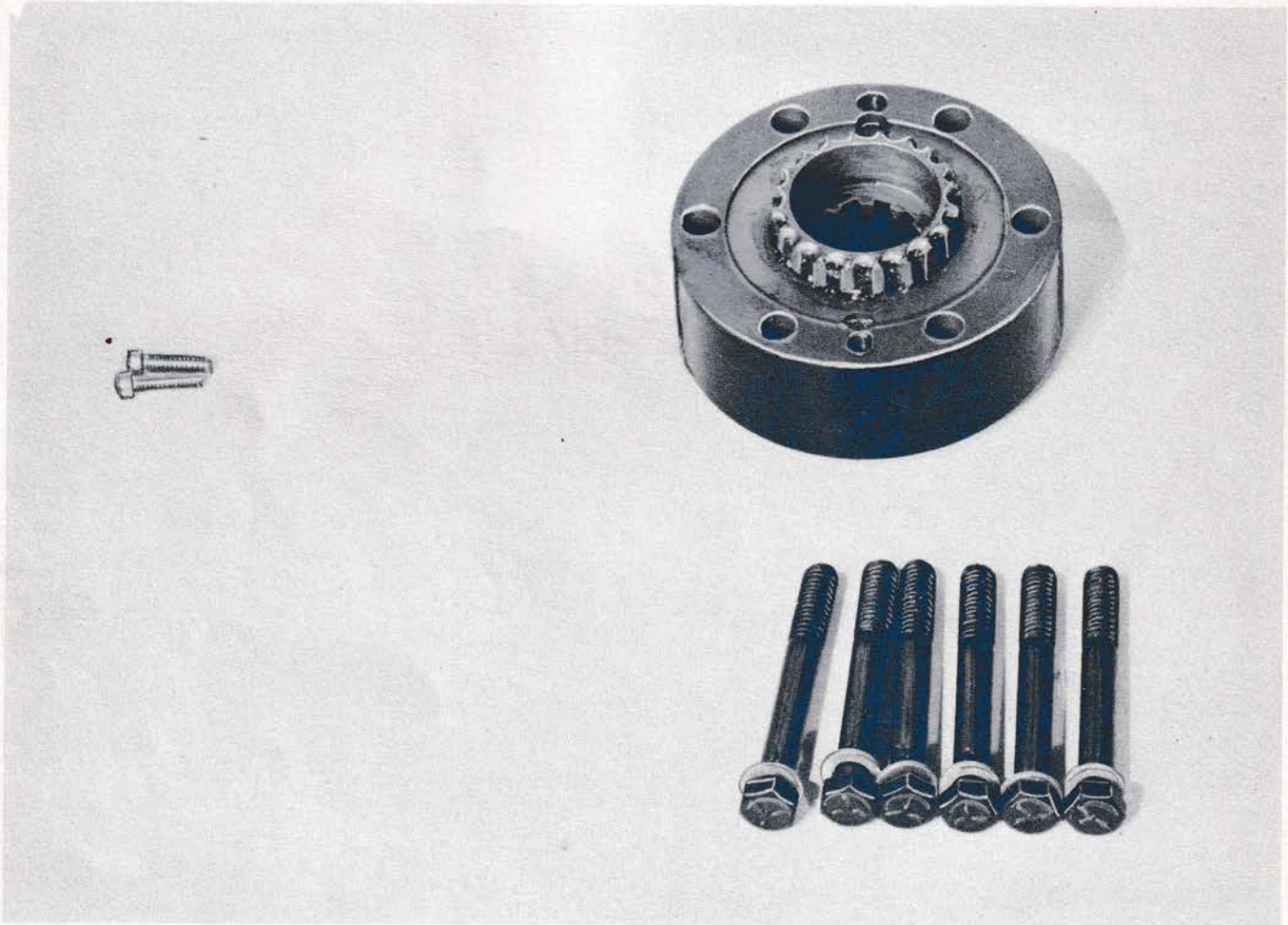
Place the (6) rollers in the retainer slots. (The rollers must go between the retainer pins as shown.)

Install the ratchet into the body. Be sure none of the pins drop out while doing this.

BODY ASSEMBLY-Figure 3

For All Automatic Models

(See pages 15-16 for other models)



Place the thrust washer in the counter-bore of the body as shown. Notches in washer must line up with notches in body.

The body is now ready for assembly with the cap.

Be sure you get the right hub on the right wheel, as they are not interchangeable.

To determine whether the hub should be placed on the left or right wheel, place your finger or an axle shaft spline in the hub spline, holding it in your left hand. Turn the hub with your right hand. If it free-wheels to the right, it is for the right wheel. If it free-wheels to the left, it is for the left wheel.

NOTE: Never operate these hubs unless the point of the arrow is lined up with the locating dot on the cap. Damage will result if this is not done.

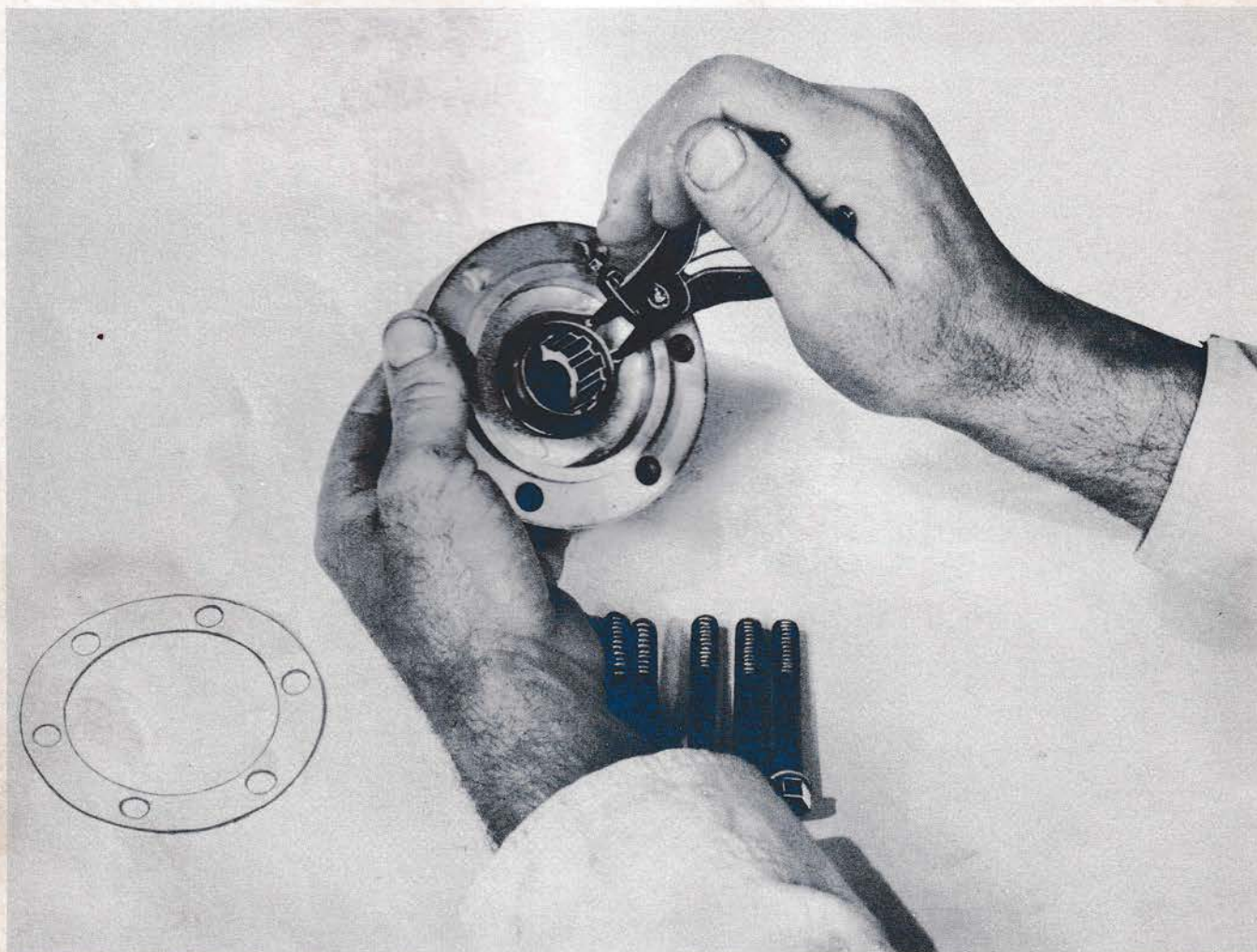
atic WA-1)



BODY ASSEMBLY-Figure 2

For All Locking Models

(See pages 12-14 for Automatic Models)



Install the lock ring using a Waldes Truarc plier No. 4.

The Hub is now ready for use, or can be assembled with the cap.

Be sure you have the proper gasket between cap and body. This gasket has (6) large holes, two small holes and two notches in it. The base gasket between hub and wheel has only 6 large holes.

The (2) 10-32 x 3/4" screws are used to hold the cap and body assemblies together.

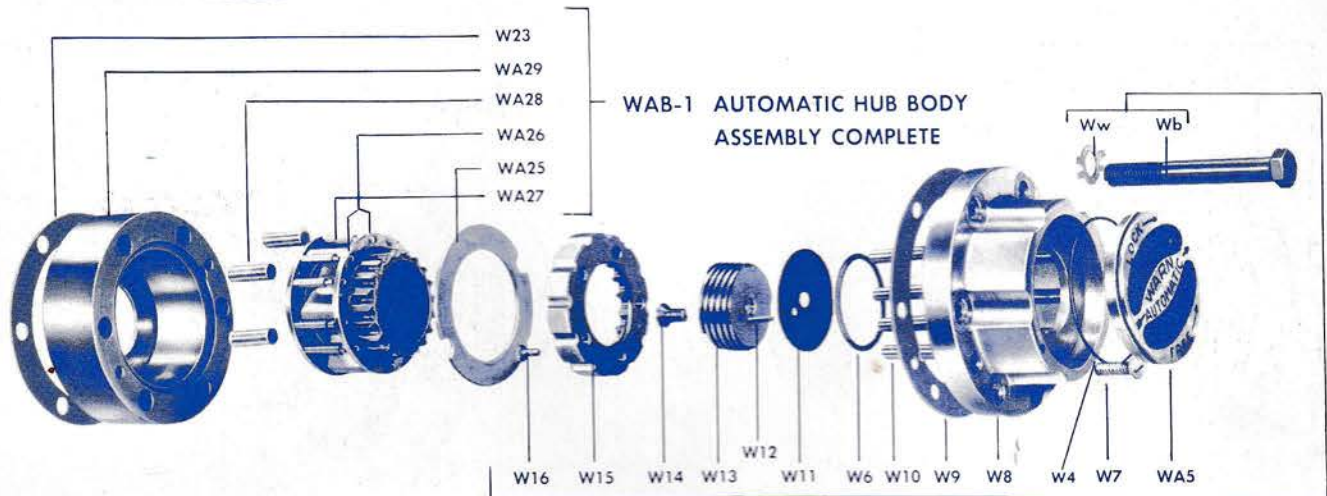
NOTE: Never operate these hubs unless the point of the arrow is lined up with the locating dot on the cap. Damage will result if this is not done.

NOTE: WHEN INSTALLING WARN HUBS ON TRUCK, USE THINWALL SOCKET WRENCH. (Regular wrench forces recess wall inwards, causes binding of clutch mechanism.)



WARN HUBS

PARTS CATALOG and PRICE LIST



WAC-1 AUTOMATIC CLUTCH ASSEMBLY COMPLETE

WA-1 WILLYS AUTOMATIC HUB

Part No.	Description	No. used	LIST ea.
CLUTCH PARTS:			
W4	Outer oil seal ring	1	.28
WA5	Brass control with spring and ball	1	4.00
W6	O-Ring oil seal	1	.32
W7	Cadmium plated 10/32x3/4 screw	2	.10
W8	Alloy clutch body	1	12.80
W9	Clutch gasket	1	.10
W10	Drive pin	12	.08
W11	1-3/4 Disk	1	.14
W12	1/8x9/16 Dowel pin	1	.10
W13	Clutch screw	1	2.40
W14	1/4-20 Steel flat head screw	1	.06
W15	Clutch Ring	1	6.40
W16	8/32 Self threading screw	2	.04
WAC-1	AUTOMATIC CLUTCH ASSEMBLY COMPLETE		27.84
HUB BODY PARTS:			
WA25	Thrust washer	1	.60
WA26R*	Cage and axle shaft hub, right	1	19.20
WA26L*	Cage and axle shaft hub, left	1	19.20
WA27*	Cage assembly	1	4.30
WA28	Roller, 5/16x1	6	.15
WA29	Hub body only	1	19.20
W23	Hub gasket	1	.10
Wb**	3/8x2-3/4 Heat treated cap screw	6	.10
Ww	Cadmium plated special lock washer	1	.03
WAB-1	AUTOMATIC BODY ASSEMBLY COMPLETE		44.93

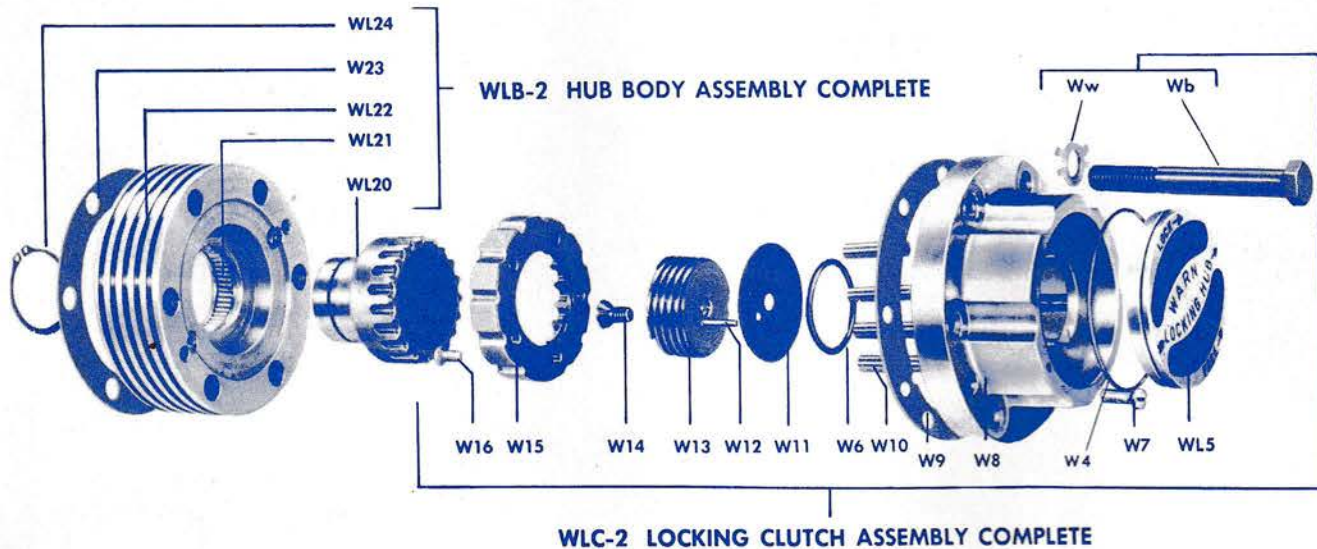
* NOTE: WA27 has (12) 3/16" cage pins and 1/8" cage side walls which are used on all models using thrust washer WA25. Early models have light cage with (12) 1/8" cage pins and 1/6" side walls and no thrust washers. When ordering replacement parts for roller cage WA27 or axle shaft WA26 (L or R), if hub does not have ring No. WA25, return entire hub and roller assembly WAB-1. We will replace the entire assembly at an exchange price of \$15.80.

** Part No. Wb - .020 oversize bolt body is available for replacement on earlier models which had larger holes through clutch and hub body. Lock washer Ww is also provided.



WARN HUBS

PARTS CATALOG and PRICE LIST



WL-2 WILLYS LOCKING HUB

Part No.	Description	No. used	LIST ea.
CLUTCH PARTS:			
W4	Outer oil seal ring	1	.28
WL5	Brass control with spring and ball	1	4.00
W6	O-Ring oil seal	1	.32
W7	Cadmium plated 10/32x3/4 screw	2	.10
W8	Alloy clutch body	1	12.80
W9	Clutch gasket	1	.10
W10	Drive pin	12	.08
W11	1-3/4 Disk	1	.14
W12	1/8x9/16 Dowel pin	1	.10
W13	Clutch screw	1	2.40
W14	1/4-20 Heat treated flat head screw	1	.06
W15	Clutch ring	1	6.40
W16	8/32 Self threading screw	2	.04
WLC-2	LOCKING CLUTCH ASSEMBLY COMPLETE		27.84
HUB BODY PARTS:			
WL20	Axle shaft hub	1	6.50
WL21	Needle bearing	1	1.45
WL22	Hub body	1	8.00
W23	Hub gasket	1	.10
WL24	Snap ring	1	.20
Wb*	3/8x2-3/4 Heat treated cap screw	6	.10
Ww	Cadmium plated special lock washer . . .	6	.03
WLB-2	LOCKING BODY ASSEMBLY COMPLETE		17.03

* Part No. Wb - .020 oversize bolt body is available for replacement on earlier models which had larger holes through clutch and hub body. Lock washer Ww is also provided.