

IGARRETA

Certificado de Garantía

Estimado propietario:

Las informaciones aquí contenidas incorporan las condiciones esenciales de Garantía necesarias para una operación adecuada y segura de su equipo; así como también para su conservación. Es por ello que recomendamos con suma importancia conservar el presente certificado.

Quedamos a vuestra disposición por cualquier duda ó consulta acerca de la operación y/o mantenimiento de su equipo.

Datos del Equipo:

Equipo: Conversión 4x4 de camión Ford Cargo C1722
N° de Serie: 1204-CO44-1396 – Modelo R1100
Operando en:
Fecha de entrega: 05 de Octubre de 2012

Datos del Propietario:

Cliente: COARCO S.A.
Dirección:
Tel/Fax:
e-mail (en caso de tener):

Datos del Fabricante:

IGARRETA S.A.C.I.
Dirección: Av. Amancio Alcorta 2260 - C.A.B.A. - Buenos Aires, Argentina.
Código Postal: C1283AAU
Tel: (54-11) 4303-0291/96 - Fax: (54-11) 4303-0305
e-mail: igarreta@igarreta.com.ar

Fecha: 05-10-2012

Sello y Firma de **IGARRETA S.A.C.I.**:

CERTIFICADO DE GARANTÍA

IGARRETA S.A.C.I. garantiza al comprador que cada elemento del equipo, fabricado por IGARRETA S.A.C.I., vendido por la firma al comprador, bajo uso y servicios normales, está libre de desperfectos en material o en mano de obra por un período de un (1) año desde la fecha de entrega de tal producto al comprador original o hasta que tal producto haya sido manejado, usado y operado por una distancia de sesenta mil (60.000) kilómetros, lo que ocurra primero.

ALCANCE DE LA GARANTÍA:

Esta garantía no cubrirá ningún producto de IGARRETA S.A.C.I. que haya sido sometido a maltrato, negligencia o accidente, que hubiese sido usado en eventos deportivos formales o informales*, que no hubiese recibido oportunamente los servicios de mantenimiento preventivo recomendados, o en los cuales se hayan usado piezas que no son hechas ni suministradas por IGARRETA S.A.C.I., si en la determinación de la firma tal uso ha afectado su funcionamiento, estabilidad o confiabilidad, o que haya sido alterado o reparado fuera del lugar de negocios de la firma, de manera que en la determinación de la firma esto haya afectado su funcionamiento, estabilidad o confiabilidad. Tampoco cubrirá el reemplazo de aquellos componentes cuyo cambio se encuentre previsto en los planes de mantenimiento preventivo normal.

La duración del equipo es calculada en base a un trabajo normal de ocho horas por día. Si el equipo se utiliza en turnos dobles o triples el término de la garantía será proporcionalmente reducido.

IGARRETA S.A.C.I. se compromete a sustituir sin cargo para el cliente aquellas piezas o conjuntos que a juicio de IGARRETA S.A.C.I. presenten defecto de fábrica, excluyendo la prestación de mano de obra para el montaje y desmontaje, salvo que el recambio se haga en su domicilio.

La responsabilidad de IGARRETA S.A.C.I. está estrechamente limitada al cambio o reparación de piezas o grupos defectuosos con exclusión de cualquier otra responsabilidad y obligación de su parte por pérdidas o daños cualesquiera estos sean derivadas del uso o de la imposibilidad de uso del equipo sea total o parcial. Serán a cargo de cliente los gastos de transporte de las piezas enviadas para su reparación o sustitución.

La mano de obra de terceros para el montaje y desmontaje no está cubierta en nuestra garantía.

Arreglos que IGARRETA S.A.C.I. pueda hacer sin cargo, por supuestos defectos no cubiertos por esta garantía no constituyen ninguna admisión de cobertura o novación de garantía, ni imponen ninguna obligación de hacer otros arreglos similares.

Están excluidos de la garantía:

1. Los equipos sobre los que se hayan variado los parámetros de regulación de las válvulas correspondientes a la puesta en marcha (violación de precintos).
2. Las partes sujetas a desgaste natural.
3. Los inconvenientes ocasionados por la atención de la estructura, circuitos hidráulicos, neumáticos o eléctricos por parte de un taller no autorizado.
4. La rotura causada por sobre cargas y/o elementos soldados al chasis, errores de maniobra, falta de mantenimiento de filtros de combustible o reemplazo de filtros, falta de lubricación, uso de aceite no idóneo o sucio. La inclusión en el circuito hidráulico de partes metálicas, escoria de soldadura, arenas, etc.
5. Para las plataformas: está expresamente excluido de la garantía el caso de cilindro inflado, vástago doblado, brazos quebrados o bielas dobladas, puesto que la experiencia nos indica que en todos los casos este inconveniente no es imputable a defectos de construcción sino a sobrecargas o mal uso.
6. El retiro de las placas de identificación e instrucciones de uso y calcomanías de seguridad de toda índole.

Todo reclamo deberá ser comunicado a IGARRETA S.A.C.I. dentro de los siete (7) días del momento en que se verifica el defecto y adjuntando fotos digitales para facilitar la interpretación.

Aun en casos de reclamos debidamente probados, el comprador no podrá suspender el pago del equipamiento.

Esta garantía explícitamente anula y sustituye toda otra garantía, expresa o implícita y toda otra obligación por parte de IGARRETA S.A.C.I., cualquier modificación no tendrá valor alguno si no es expresamente expuesta por escrito sobre un documento de IGARRETA S.A.C.I.

* Se define como evento deportivo formal o informal las pruebas de tiempo, competición con otro vehículo ó cualquier aplicación anormal de esfuerzo.

PLAZOS DE LA GARANTÍA

El plazo de la garantía de su equipo es de un (1) año ó 60.000 km, lo que ocurra primero, contados a partir de la fecha de entrega del mismo.

(copia del cliente)

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(original)

IGARRETA

4x4

CAMION FORD CARGO

4x4

MANUAL DE OPERACIÓN Y MANTENIMIENTO



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SISTEMA DE TRACCION 4 X 4**INTRODUCCION**

Usted dispone de un vehículo capaz de transitar por caminos no convencionales, y de esta manera permitirle llegar a lugares inaccesibles para otros vehículos. Basta con recibir algunos consejos y observar varias precauciones para poder obtener con seguridad y confiabilidad el máximo rendimiento de su vehículo. Las diferencias originadas en la transformación de 4x2 a 4x4, hacen que la forma de conducir sea algo diferente a la de un vehículo convencional. Tómese su tiempo para familiarizarse con las nuevas características de manejo: conduzca primero en zonas poco transitadas, practique virajes a distintas velocidades y en diferentes direcciones. Aprenda a identificar las diferencias de manejo. Evite los virajes cerrados, ya que todas las características que favorecen la marcha fuera de carretera, disminuyen el desempeño de su 4x4 en carretera.

La unidad cuenta con neumáticos de dibujo apto para tracción en terrenos difíciles, este dibujo ocasiona un aumento en la rumorosidad de marcha sobre pavimentos firmes.

Sistema 4x4

El sistema 4x4 aplica tracción a las 4 ruedas para impulsar el vehículo, pudiendo hacerlo en dos formas: 4x4 alta ó 4x4 baja. Esta tracción es permanente, como se explica mas adelante. De esta forma se reparte y aumenta la adherencia al suelo, debido a la tracción adicional de las ruedas delanteras las cuales direccionan la fuerza de tracción en el sentido de la dirección, esto le permite avanzar en caminos que normalmente son inaccesibles para un vehículo 4x2 común. El sistema dispone de una caja de divisora de potencia denominada caja de transferencia montada a la salida de la caja de velocidad, y un eje delantero motriz direccional de relación similar al trasero. Esta caja de transferencia reparte la potencia del motor en forma simultánea entre trasero y delantero, posee para ello un sistema

de reparto de potencia a través de un **interdiferencial** que posibilita distribuir la misma en forma diferenciada entre el eje delantero y trasero (30%/70% aprox), para condiciones de patinamiento extremo es posible bloquear este interdiferencial aumentando la capacidad tractiva a partir de un reparto simétrico de potencia a todos los ejes, este bloqueo debe ser utilizado en manera transitoria hasta salir del trance. Además es posible seleccionar dos variantes, una normal denominada alta donde el vehículo mantiene su velocidad nominal y una con reducción adicional denominada baja que se utiliza de manera transitoria en trayectos con elevadas pendientes.

CONDUCCIÓN EN CARRETERA

⇒ Evite las maniobras bruscas y los virajes cerrados. Este vehículo no está diseñado para tomar una curva a la misma velocidad que un camión normal 4x2 ya que posee un centro de gravedad mas alto.

⇒ Evite las velocidades excesivas.

⇒ Fuertes vientos laterales pueden hacer que el vehículo se vuelva inestable. Ante esta situación conduzca lentamente.

⇒ Conduzca con extremo cuidado sobre pavimento resbaloso por arena, ripio suelto, agua, nieve, hielo o lluvia torrencial. En estas situaciones es mejor hacerlo en 4x4 alta, lo que mejora la tracción y control sobre el vehículo.

Si se sale pavimento:

⇒ Disminuya la velocidad, evite frenar o doblar bruscamente. Vuelva al pavimento sólo cuando haya reducido la velocidad y sin girar demasiado el volante. Bajo ninguna circunstancia circule sobre pavimentos ó caminos firmes con el bloqueo del interdiferencial conectado.

⇒ A menudo puede ser menos riesgoso pasar por encima de pequeños objetos como

piedras ó arbustos, que intentar volver al pavimento en forma repentina, ya que esto puede provocar que el vehículo resbale hacia los costados, perdiendo el control.

Cuidado del vehículo

- ⇒ Bajo ninguna circunstancia circule sobre pavimentos ó caminos firmes con el bloqueo del diferencial conectado.
- ⇒ Esto puede producir severos daños la caja de transferencia, los ejes u otros componentes de la transmisión. También causa desgaste innecesario de los neumáticos.
- ⇒ Opere los comandos de la caja de transferencia (bloqueo de interferencia y baja) **únicamente** con el vehículo detenido, ej: colocar la baja en movimiento puede ocasionar una rotura generalizada de los componentes de la transmisión.
- ⇒ Las teclas selectoras tienen un seguro que evita la colocación en forma accidental.

CONDUCCIÓN FUERA DE CARRETERA

- ⇒ Recuerde usar siempre el cinturón de seguridad
- ⇒ Al conducir especialmente en terrenos desaparejos tome el volante manteniendo los pulgares fuera del aro del mismo. Así podrá evitar lesiones si el volante retorna violentamente ante un fuerte golpe en las ruedas delanteras.
- ⇒ Antes de emprender una travesía fuera de carretera, aun siendo breve, es recomendable mantener el nivel de combustible por encima de la mitad del tanque, para asegurar el suministro al motor en caso inclinaciones elevadas. Por otra parte las incursiones fuera de ruta conllevan a un mayor consumo de combustible.
- ⇒ No es recomendable incursionar en terreno desconocido sin otro vehículo que le pueda brindar apoyo en caso de emergencia.

CONDUCCIÓN EN TERRENOS DIVERSOS

Agua

- ⇒ Determine antes la profundidad a vadear.

- ⇒ Conduzca lentamente a velocidad constante.
- ⇒ No circule por profundidad mayor que el borde inferior de maza de rueda.
- ⇒ Antes de ingresar ponga el mando en 4x4 baja.

- ⇒ Al salir del agua los frenos estarán mojados siendo así menos efectivos. Séquelos durante la marcha aplicando una leve presión sobre el pedal de freno.

Arena.

- ⇒ Trate de mantener las 4 ruedas en la superficie más sólida posible.
- ⇒ Conduzca lentamente a velocidad constante.
- ⇒ Acelere lentamente para evitar que las ruedas patinan.
- ⇒ Si tiene que reducir la presión de neumáticos, asegúrese de inflarlos lo antes posible.
- ⇒ En playa marítima, circule por arena húmeda alejado del agua. Ésta puede dañar todo el vehículo.
- ⇒ En caso de quedarse enterrado no intente salir acelerando. Detenga la marcha, baje y retire la mayor cantidad de arena de adelante de las ruedas delanteras (o de las traseras si cree mejor salir hacia atrás). Coloque el mando en 4x4 baja e intente salir lentamente.

Barro

- ⇒ Mantenga el acelerador ligeramente apretado y no gire bruscamente.
- ⇒ Revise el nivel del líquido limpia parabrisas, puede necesitarlo.
- ⇒ Si el vehículo empieza a patinar, mueva el volante en la dirección de patinaje hasta recuperar el control. No pise repentinamente el freno.
- ⇒ Si las ruedas patinan no las haga girar a mas de 40Km/h. Los neumáticos pueden desbandarse y lastimar a un tercero.
- ⇒ Después de salir del barro limpie todo el vehículo, especialmente quite el barro atascado en las partes rotativas, zona del radiador y aire acondicionado.
- ⇒ Si se produce una condición de estancamiento con patinamiento de ambos

ejes, se deberá parar la unidad y colocar la traba de interdiferencial. Una vez salido del trance se procederá al desbloqueo.

Nieve y hielo

- ⇒ Ponga el mando en 4x4 baja si hace falta.
- ⇒ Mantenga una velocidad constante para evitar que las ruedas patinen.
- ⇒ Se recomienda el uso de cadenas para nieve. No se deben poner cadenas en las ruedas delanteras.
- ⇒ Si el vehículo empieza a patinar, mueva el volante en la dirección de patinaje hasta recuperar el control. No pise repentinamente el freno.
- ⇒ Para partir después de una detención completa, pise el acelerador en forma lenta y uniforme.
- ⇒ Si tiene que detenerse asegúrese de contar con suficiente espacio ante otro vehículo u obstáculo. Maneje mas lento de lo normal y considere el uso de velocidades inferiores.
- ⇒ Si habría un patinamiento excesivo de ambos ejes, se deberá parar la unidad y colocar la traba de interdiferencial. Una vez salido del trance se procederá al desbloqueo

Ripio, grava, rutas poco transitadas.

- ⇒ Especialmente en la Patagonia y otras regiones de América es común recorrer grandes distancias sin encontrar áreas de servicio o descanso. Considere esto y en caso necesano, una detención y breve caminata lo ayudarán
- ⇒ Mantenga una velocidad constante y evite los movimientos repentinos de dirección.
- ⇒ Infle los neumáticos a la máxima presión recomendada.
- ⇒ Inicie el viaje con el tanque lleno, ya que no se encuentran abastecimientos cercanos. Familiarícese con el consumo de combustible, tenga en cuenta que en zonas abruptas y con viento en contra el consumo es mucho mayor.
- ⇒ Conduzca en lo posible por el centro del camino evitando los costados con ripio

suelto, donde el vehículo se comportará en forma inestable.

- ⇒ Si el ripio está muy flojo ponga el mando en 4x4 alta para una tracción más controlada.

Pendientes.

- ⇒ Evite manejar transversalmente o virar en pendientes o terrenos montañosos, conduzca en forma perpendicular a la pendiente. Determine de antemano la ruta a seguir, vea cuales son las condiciones del otro lado de una cima antes de intentar bajarla. Para manejar marcha atrás en una colina ayúdese con alguien que lo guíe.
- ⇒ Al subir una colina empiece con una velocidad baja en lugar de efectuar luego un cambio descendente desde una velocidad alta. Esto reduce el esfuerzo del motor y la posibilidad que se detenga.
- ⇒ Si el vehículo tiene una repentina inclinación lateral, no intente apuntar la dirección hacia la cima porque podría volcar. Lévelo con la dirección hacia abajo, lentamente, hasta que se enderece y pueda maniobrar con seguridad.
- ⇒ Descienda una cuesta en la misma velocidad que usó para subirlo. No descienda en neutral y evite el frenado brusco en descenso por que podría volcar.
- ⇒ En pendientes pronunciadas tanto en ascenso como descenso, utilice el mando en 4x4 baja para aprovechar el torque multiplicador de la caja de transferencia.

SI SU VEHÍCULO QUEDA ATASCADO.

- ⇒ Si su vehículo queda atascado sobre nieve, barro, o arena, ponga el mando en 4x4 baja, si es que no estaba ya.
- ⇒ Efectúe sucesivos cambios de marcha en primera y marcha atrás para conseguir que el vehículo se balancee y de este modo liberarlo. Haga esto sin modular con el pedal de embrague y pisando levemente el acelerador. No prolongue demasiado esta maniobra. Si no logra resolver el atascado en unos pocos intentos, pida ayuda. No acelere el motor ya que sólo logrará

escarbar debajo de las ruedas y empeorar la situación de forma que deberá ser remolcado.

Uso de eslingas, malacates y otros accesorios off-road.

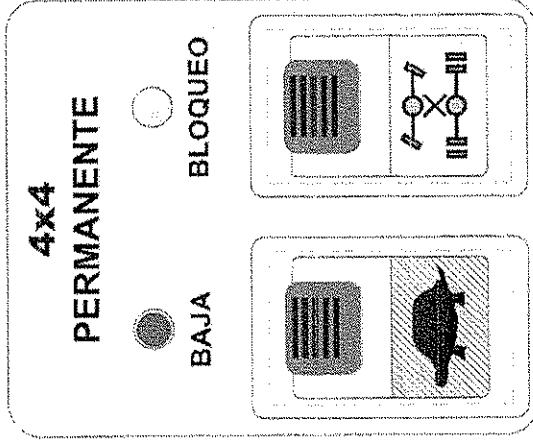
⇒ En caso de recurrir a estos elementos de rescate o presenciar el uso de los mismos, ponga especial atención al tema

SEGURIDAD. Las fuerzas involucradas en estas maniobras alcanzan valores muy importantes, y en caso de sobrevenir la rotura de un cable o elementos vinculados a ellos, pueden surgir lesiones para el operador u espectador. Deje que los expertos hagan esta maniobra y es prudente colocarse a una distancia mayor que el largo de cable.

IGARRETA

4x4

SISTEMA DE TRACCION MANDOS



⇒ El mando se realiza por medio de dos teclas ubicadas sobre la parte derecha del tablero de instrumentos. La mismas cuentan con un seguro contra manejo accidental y luz de señalización.

⇒ Recordamos que estas teclas deben ser accionadas únicamente con el vehículo detenido. El uso de ambas teclas es independiente entre sí.

POSICION NORMAL(4x4 ALTA):

⇒ Es la condición habitual de marcha y muy aconsejada para uso en terrenos resbaladizos debido a agua, arena, ripio, nieve o hielo. El vehículo se moviliza por tracción en las ruedas de ambos ejes, la potencia del motor se reparte entre los mismos, no hay reducción adicional de velocidad.

POSICION 4x4 BAJA

⇒ Es aconsejada para uso fuera de ruta en terrenos abruptos como médanos, barroso o con fuerte pendiente de subida. El vehículo se moviliza por tracción en las ruedas de

ambos ejes. La potencia del motor se reparte entre los mismos, con una reducción adicional de velocidad y consecuente aumento del par en la relación en un 30 aproximadamente.

El cambio de marcha de alta a baja y de baja a alta, se debe hacer con el vehículo totalmente parado.

⇒ Para cambiar a 4 x 4 baja, se deberá detener la unidad, colocar en punto muerto la caja de velocidades y accionar la tecla respectiva (señalizada con una tortuga) levantando el seguro de la tecla, se encenderá una luz roja indicadora.

⇒ Estas dos maniobras se revierten haciendo los movimientos en sentido contrario. Tener en cuenta las mismas consideraciones y maniobras explicadas mas arriba.

BLOQUEO DE INTERDIFERENCIAL:

⇒ Es la condición habitual de marcha y muy aconsejada cuando hay un excesivo patinamiento de ambos eje, podrá utilizarse para alta ó baja. Para accionarla, se deberá detener la unidad, colocar en punto muerto la caja de velocidades y accionar la tecla respectiva (señalizada con una tortuga) levantando el seguro de la tecla, se encenderá una luz roja indicadora.

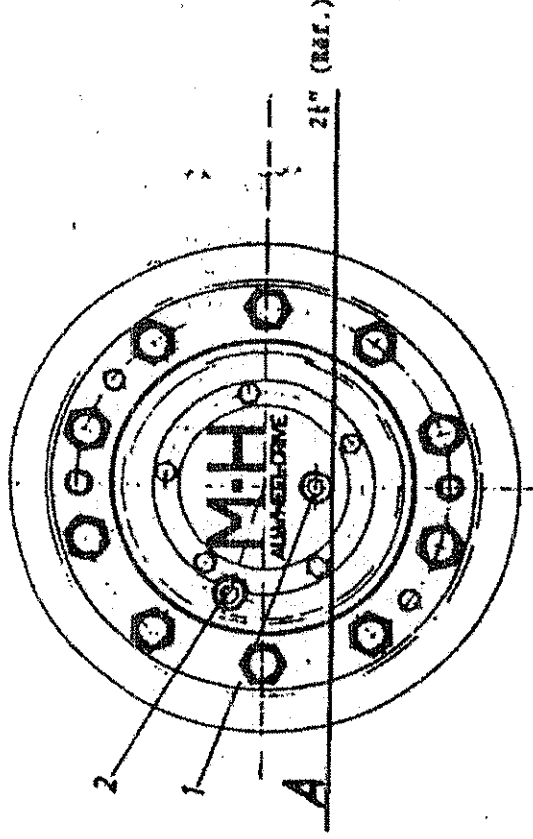
⇒ Estas dos maniobras se revierten haciendo los movimientos en sentido contrario. Tener en cuenta las mismas consideraciones y maniobras explicadas mas arriba.

TRACCION 4x4 PERMANENTE
- NO CAMBIAR SELECTORES
CON VEHICULO EN MOVIMIENTO
- NO CIRCULAR EN CAMINOS FIRMES
CON INTERDIFERENCIAL BLOQUEADO.
SEVEROS DAÑOS

GUIA DE LUBRICACIÓN

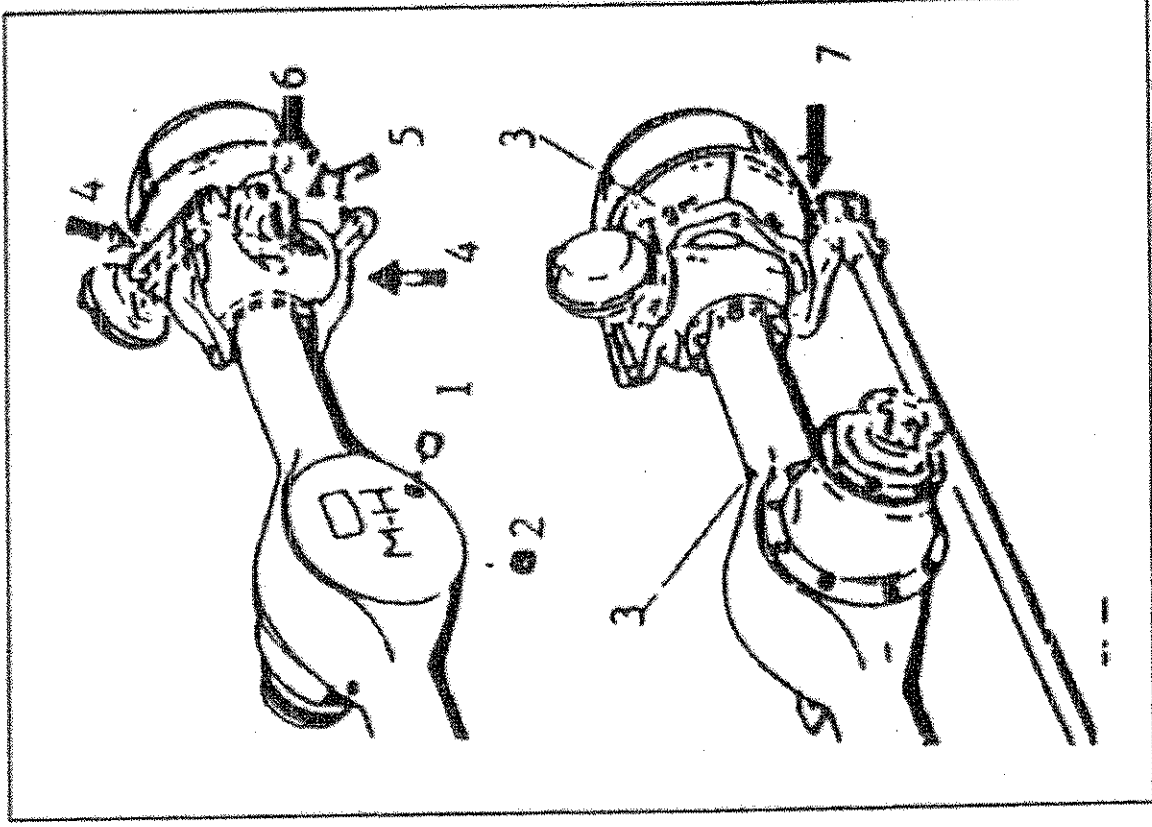
COMPONENTE	TIPO	Lts	FRECUENCIA
Diferencial delantero	SAE 85-140EP	8	Primer cambio a los 1600 Km, (no exceder los 4800 Km). Luego cada 16.000 Km ó anualmente. Drenar con el aceite caliente. Reposición según necesidad
Reducción de cubos	SAE 85-140EP	1	Verificación nivel cada 1.600 Km. Cambio cada 16.000 Km ó anualmente.
Juntas homocinéticas	NLGI-2EP Litio	-	Reponer cada 16.000 Km ó anualmente
Caja transferencia	SAE 85-140EP	8.2	Reponer fluido según tapa de nivel. Cambio anual.
Crucetas de palieres	Grasa de litio	-	Injectar según necesidad Seguir el mismo mantenimiento que las crucetas de cardanes.

Cubos de Rueda:



Posición para medición
 1: Tapón para llenado
 2: Tapón para drenaje
 A: Línea de nivel

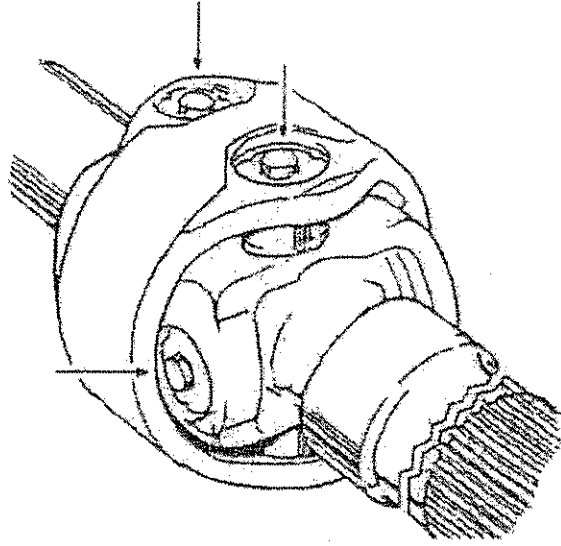
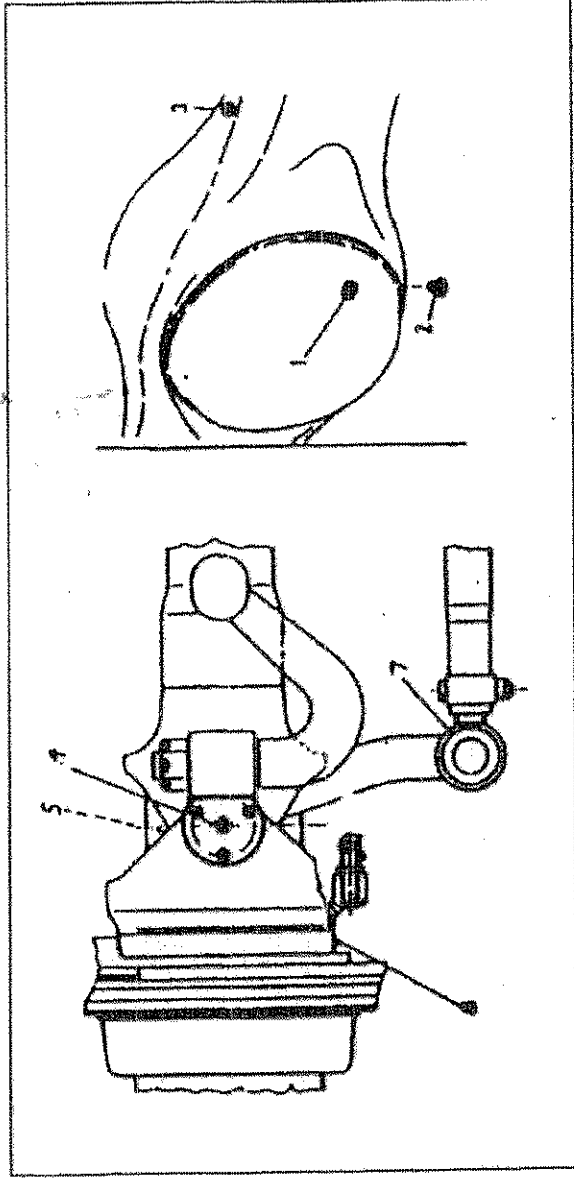
NOTA: Para mas información ver Información de servicio Marmon Herrington

Puntos de Lubricación:

- 1- Nivel de carga de aceite.
- 2- Tapón de drenaje de aceite
- 3- Válvula de venteo.
- 4- Rodamientos de superiores de dirección
- 5- Junta cardánica
- 6- Rodamientos de leva de freno
- 7- Rotula de dirección

IGARRETA

4x4



NOTA: Para mas información ver Información de servicio Marmón Herrington

ICARRETA

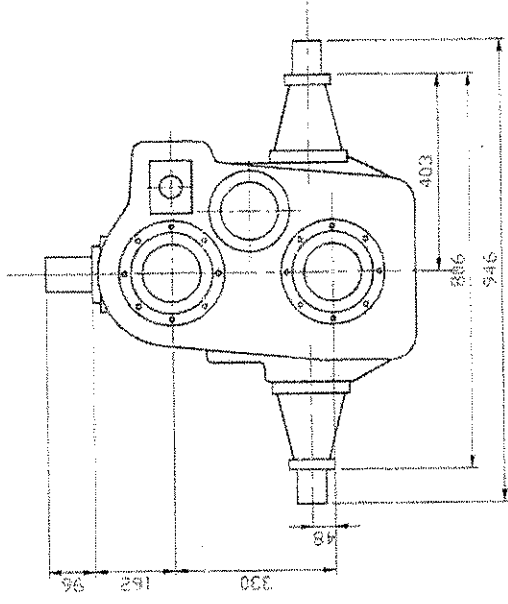
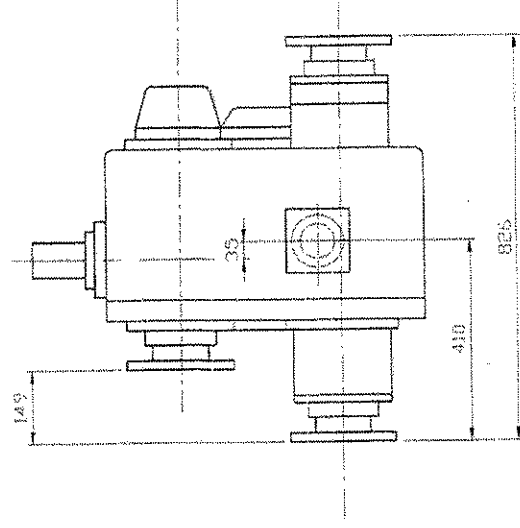
TRANSFER BOX 10-360

TIPO: 2 ejes con alta y baja e inter-diferencial.
USO: 4x4 permanente con bloqueo manual de inter-diferencial.
APLICACIÓN: militar, forestal, vehículos de rescate.

CARACTERÍSTICAS:

Torque máx. de entrada: 10.000 Nm (1.020 Kgm)
Potencia máx.: 360 HP
Peso Bruto máx.: 20.000 Kg
Comando de selectora: neumático/electroneumático
Ratio alta: 0.95/1
Ratio baja: 1.31/1
Repartición de tracción: 1/3 delantera y 2/3 trasera
Lubricación: forzada por bomba de aceite.
Capacidad y tipo de aceite: 8,2 lts – SAE 90 API GL4
Toma de fuerza: opcional.
Montaje: 3 puntos suspendidos mediante bujes de goma
Peso seco: 360 Kg.

DIMENSIONES:



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TRANSFER BOX 10-360 Part List (Fig. 1)

- 1 - Main drive shaft
- 2 - Transfer box drive flange
- 3 - Main drive shaft front bearing cover
- 4 - Casing cover
- 5 - Transfer box casing
- 6 - Low speed gear
- 7 - Sliding splined clutch
- 8 - High speed gear
- 9 - Roller bearing
- 10 - Ball bearing
- 11 - Spacer bushing
- 12, 15, 46 - Washers
- 13 - Primary shaft rear bearing cover
- 14 - Oil delivery pipe
- 16 - Countershaft
- 17 - Countershaft rear bearing cover
- 18 - Countershaft driven gear
- 19 - Power take-off gear
- 20 - Clutch with spacer bushing
- 21 - Forward rear axle drive shaft
- 22 - Forward rear axle drive shaft
- 23 - Forward rear axle drive shaft bearing cover
- 24 - Electric speedometer driving gear
- 25 - Electric speedometer driven gear
- 26 - Spacer sleeve
- 27 - Crown gear
- 28 - Differential case
- 29 - Sun gear
- 30 - Carrier
- 31 - Axle drive driven gear
- 32 - Differential carrier hold-down nut
- 33 - Front axle drive shaft
- 34 - Differential lock engagement clutch
- 35 - Front axle drive housing
- 36 - Bearing cover
- 37 - Front axle drive flange
- 38 - Flange hold-down nut
- 39 - Locking ring
- 40 - Pinion
- 41 - Axle drive driving gear
- 42 - Oil pump driven gear
- 43 - Oil pump
- 44 - Oil pump driving shaft
- 45 - Nut
- 47 - Sealing cup
- 48, 52, 64, 65 - Clutch shift forks
- 49 - Power take-off shaft
- 50 - Power take-off driven gear
- 51, 66, 74 - Access covers
- 53 - Differential lock switch

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- 54 – Power take-off engagement pneumatic chamber
- 55 – Primary shaft disengagement bolt
- 56, 57 – Locknuts
- 58 – Rod nut
- 59 – Washer
- 60 – Diaphragm
- 61 – Pneumatic chamber cover
- 62 – Pneumatic chamber casing
- 63 – Sealing ring
- 67 – Transfer box attachment bracket
- 68 – Driving axles disengagement pneumatic chamber
- 69 – Pneumatic chamber rod
- 70 – Drain plug
- 71 – Oil intake cover
- 72 – Locking strap
- 73 – Pipe to supply oil to primary shaft gear bushing
- 75 – Interaxle differential locking pneumatic chamber.

Note: position 49, 50, 52, 54 and 68 are not mounted in the transfer box.

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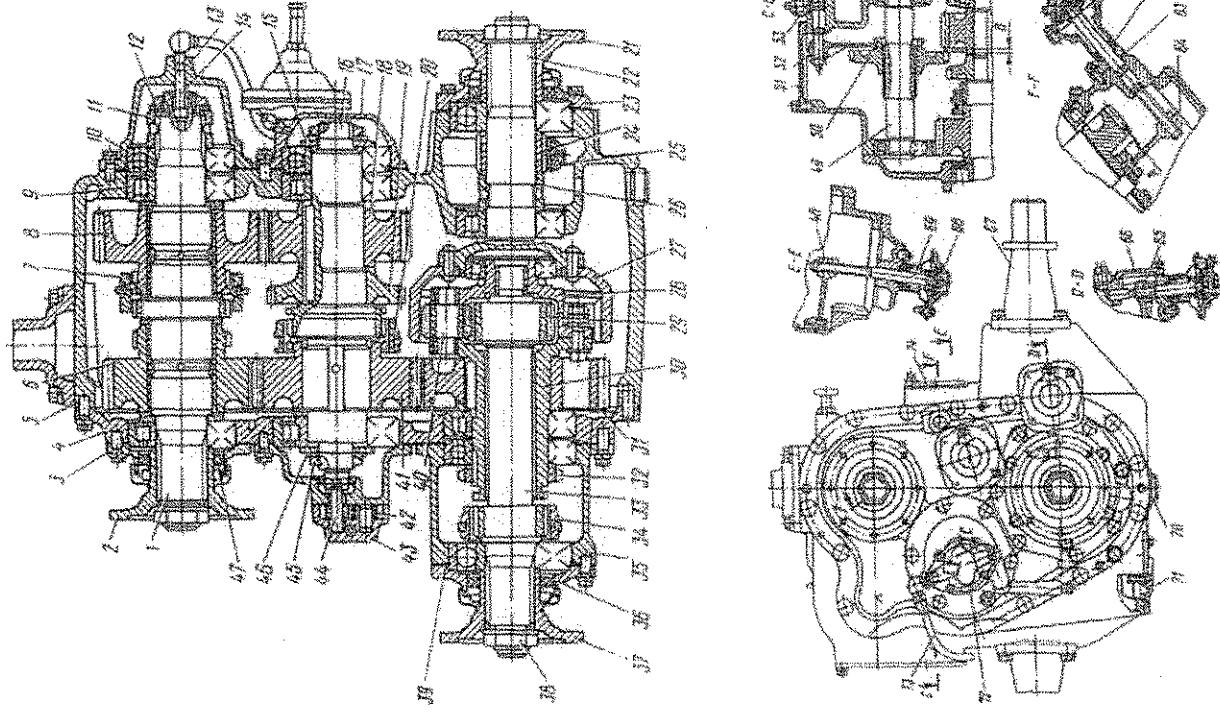


Figure 1

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SPARE PARTS LIST RECOMMEND:

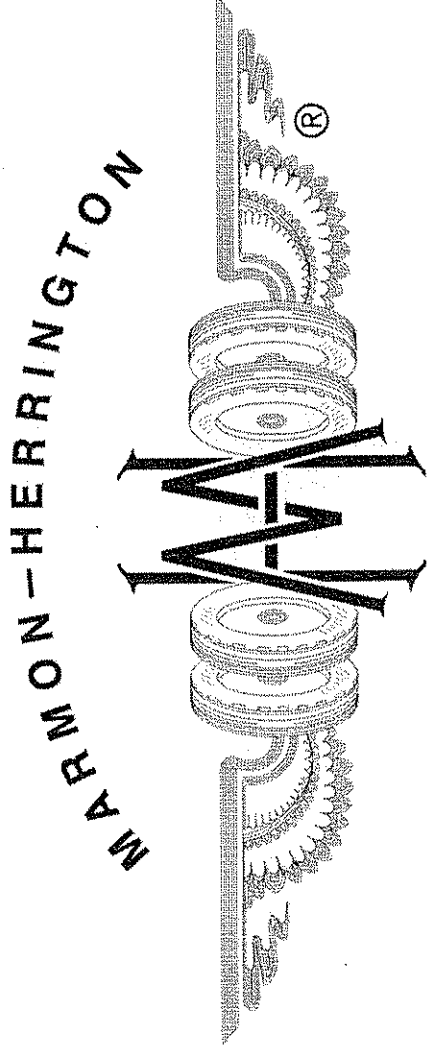
Nº	Part number		Description	Qty.
1	260	1801030	PAD	3
2	260	1802025	SHAFT	1
3	6443	1802034	GEAR	1
4	260	1802038	GEAR	1
5	260	1802041	WASHER	2
6	260	1802042	BUSHING	2
7	6443	1802088	GEAR	1
8	260	1802095	GEAR	1
9	260	1802099	GASKET	2
10	260	1802110	DRIVE SHAFT	1
11	260	1802114	GEAR	1
12	260	1802119	WASHER	2
13	260	1802121	WASHER	1
14	260	1802124	WASHER	1
15	260	1802177	BUSHING	2
16	2565	1802191	COLLAR	5
17	260	1803018	COUPLING	1
18	260	1803024	20 ROD	2
19	260	1804080	CASING	3
20	260	1804081	GASKET	3
21	260	1804082	SPRING	2
22	260	1804083	GASKET	3
23	210	2402052	A2 COLLAR	5
24	2550	2732028	DIAFRAGM	5
25	BK418	3716000	ALARM SWITCH	2
26	6443	3802033	GEAR	2
27	6443	3802034	GEAR	2
28	250	3802126	COLLAR ASSY	4
29		50218	BEARING	1
30		50312	BEARING	1
31		12212KM	BEARING	1
32		12218KM	BEARING	1
33		12312KM	BEARING	1
34		102314M	BEARING	1

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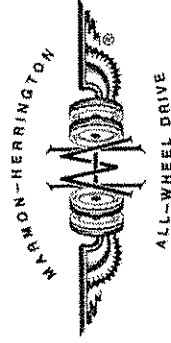


PARTS MANUAL FOR MT17 SERIES

MARMON-HERRINGTON ALL-WHEEL DRIVE
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(502) 253-0277 • (800) 227-0727 • Fax (502) 253-0317
E-mail: info@marmon-herrington.com

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REPLACEMENT PARTS

When ordering replacement parts for **MARMON-HERRINGTON LOW FLOOR** conversions, the following information should be given:

1. **FACTORY ORDER NUMBER** (found on I.D. Plate or small plate affixed to axle housing). This will be a six (6) digit number. (See illustrations this page.)
2. Component for which parts are required, i.e. front drive axle or transfer case/drop box.
3. Model of axle and/or transfer case/drop box, i.e. MT10, MVG 750, MDB500.
4. Give quantity and part number required.
NOTE: Drivelines, shift linkage, etc., can be found on the computer printout of Bill of Material, which is included in the Service Manual.
5. Give complete billing and shipping address.

WARRANTY CLAIM PROCEDURE

Before proceeding with repairs or ordering parts that you feel may be covered under warranty, you must first contact Marmon-Herrington Customer Service Department and obtain a Repair Authorization Number.

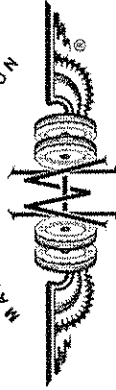
Please be prepared to supply all of the following information:

- **Factory Order Number** – This is located on an ID plate fixed to either the driver's door panel or the component (axle or transfer case) itself.
- **Model and Serial Number** (required) – Again located on the ID plate fixed to either the driver's door panel or the component itself.
- **Vehicle Year, Make and Model**
- **Vehicle Identification Number**
- Mileage
- In Service Date

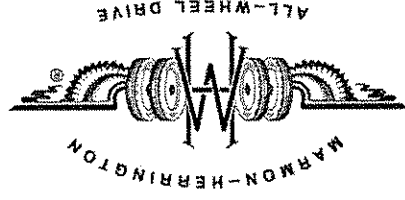
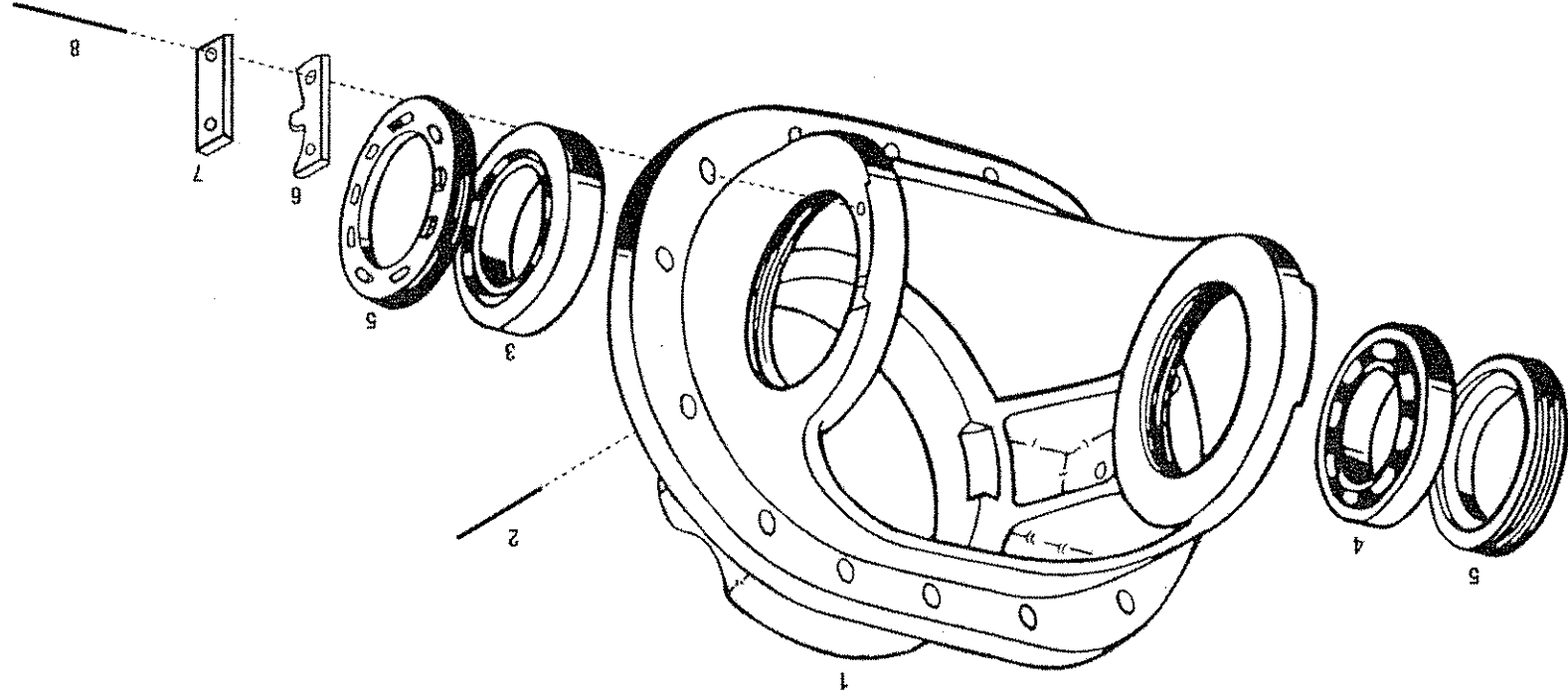
The information necessary for replacement parts and/or warranty claim procedures will be found on either plate design.

MARMON-HERRINGTON			
SALES ORDER	0000-00	RATIO	
S/N		TYPE	
CUST P/N			

MARMON-HERRINGTON			
SALES ORDER	0000-00		
S/N		TYPE	
CUST P/N			
COVERED BY ONE OR MORE OF THE FOLLOWING PATENTS: U.S. PATENTS 4,878,691; 4,934,733; 5,016,912; 5,275,430; 5,839,750; AND 6,398,251; AND CA PATENT 1,316,185. OTHER U.S. AND FOREIGN PATENTS PENDING.			

	
ALL-WHEEL DRIVE LOUISVILLE, KENTUCKY U.S.A.	
FACTORY ORDER NO.	0000-00
INSTALLED BY	
FRONT DRIVING AXLE	
MODEL	
CAPACITY	
SERIAL NO.	
RATIO	
TRANSFER CASE	
MODEL	
SERIAL NO.	

DIFFERENTIAL CARRIER HOUSING MT17/R/N/H



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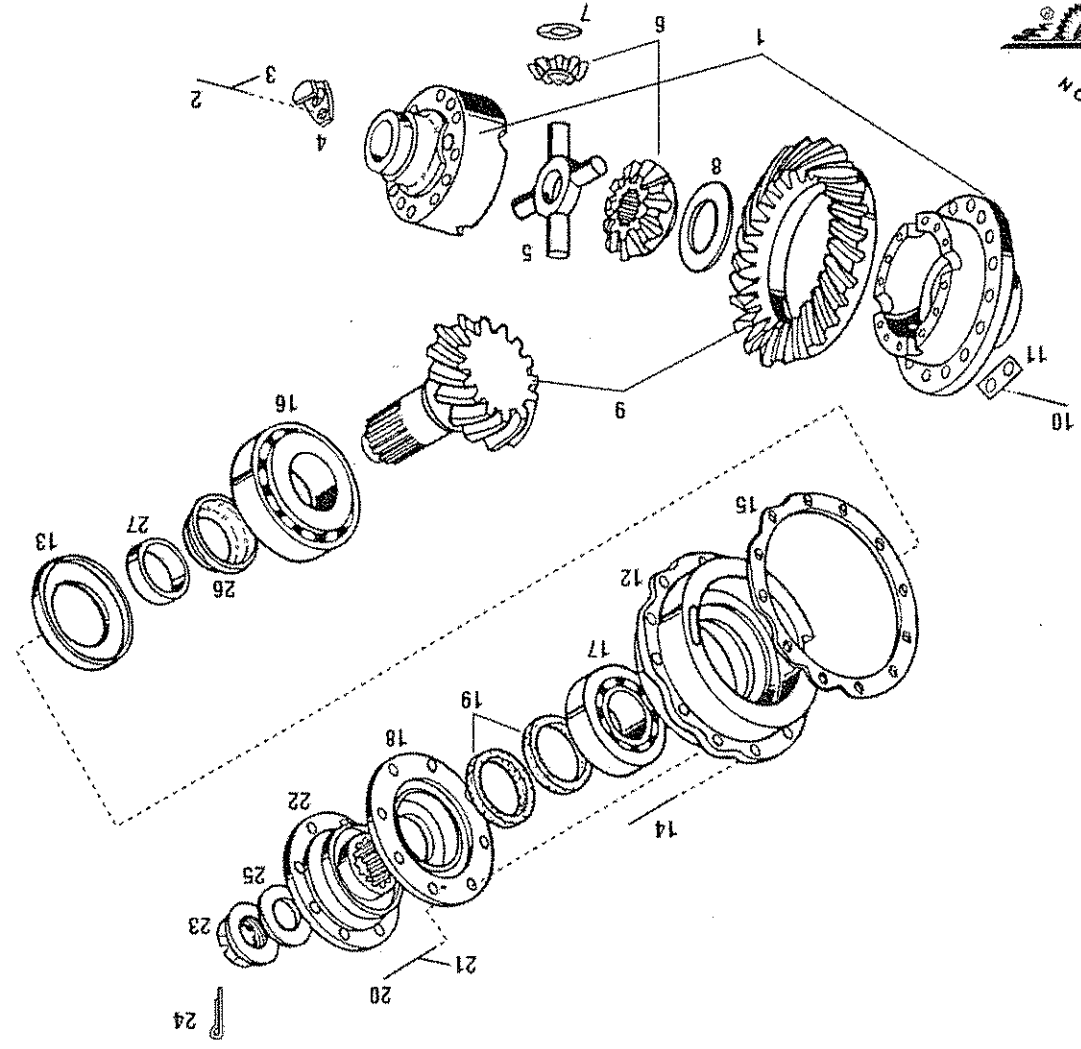
MT17/R/N/H



PM12/04

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DIFFERENTIAL MT17/R/N/H



COMPLETE CARRIER ASSEMBLY				ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.
---------------------------	--	--	--	----------	-------------	-------------	-----------

CARRIER P/N	PINION & RING GEAR RATIO	FINAL RATIO	DIFFERENTIAL CASE	ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.
MT22-1001	1.227	4.25	MT22-1051	10	MT22-1050	Hex Bolt, Special	16
MT22-1002	1.318	4.56	MT22-1051	11	MT22-1224	Lock Plate	8
MT22-1003	1.422	4.92	MT22-1052	12	MT22-1068	Bearing Cage Assy.	1
MT22-1004	1.526	5.29	MT22-1052	13	MT14-1078	Oil Baffle Plate	1
MT22-1005	1.632	5.65	MT22-1052	14	MT22-1077	Flanged Bolt, Special	12
MT22-1010	1.553	5.38	MT22-1052	15	MT22-1067A	Shim, 1.0 MM	AR
MT22-1013	1.765	6.11	MT22-1052		MT22-1067B	Shim, .50 MM	AR
MT22-1014	1.684	5.83	MT22-1052		MT22-1067C	Shim, .30 MM	AR
MT22-1006	1.812	6.27	MT22-1052		MT22-1067D	Shim, .25 MM	AR
MT22-1007	1.929	6.68	MT22-1052		MT22-1067E	Shim, .20 MM	AR
MT22-1008	2.077	7.14	MT22-1445	16	MT14-1075	Pinion Bearing, Inner	1
MT22-1009	2.231	7.72	MT22-1445	17	MT14-1079	Pinion Bearing, Outer	1
MT22-1011	2.415	8.36	MT22-1445	18	MT22-1070	Cover	1
MT22-1012	2.462	8.52	MT22-1445	19	MT22-1069	Oil Seal Kit, Pinion	1
QTY. REQ.				20	11500713	Hex Bolt, M8x22	8
				21	11500191	Flat Lock Washer, M8	8
				22	MT17-1050	Companion Flange, 1610 Series	1
				23	MT22-1075	Pinion Lock Nut	1
				24	103422	Cotter Pin	1
				25	MT22-1074	Washer, Special	1
				26	MT14-1076	Distance Sleeve	1

ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.	ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.
1	MT22-1051	Diff. Case Halves, Assy. (4.25-4.56)	1	27*	MT14-1077A	Bearing Distance Ring, 6.90 MM	AR
	MT22-1052	Diff. Case Halves, Assy. (4.92-6.68)	1		MT14-1077B	Bearing Distance Ring, 7.00 MM	AR
	MT22-1445	Diff. Case Halves, Assy. (7.14-8.52)	1		MT14-1077C	Bearing Distance Ring, 7.02 MM	AR
2	MT22-1066	Hex Bolt, Special	12		MT14-1077D	Bearing Distance Ring, 7.04 MM	AR
3	MT22-1065	Washer, Special	2		MT14-1077E	Bearing Distance Ring, 7.06 MM	AR
4	MT22-1064	Oil Baffle Plate	2		MT14-1077F	Bearing Distance Ring, 7.08 MM	AR
5	MT22-1061	Differential Cross	1		MT14-1077G	Bearing Distance Ring, 7.10 MM	AR
6	MT22-1193	Nest Set	1		MT14-1077H	Bearing Distance Ring, 7.20 MM	AR
7	MT22-1063	Washer, Differential Pinion Gear	4		MT14-1077I	Bearing Distance Ring, 7.32 MM	AR
8	MT22-1059	Washer, Differential Side Gear	2		MT14-1077J	Bearing Distance Ring, 7.44 MM	AR
					MT14-1077K	Bearing Distance Ring, 7.56 MM	AR
					MT14-1077L	Bearing Distance Ring, 7.68 MM	AR
					MT14-1077M	Bearing Distance Ring, 7.80 MM	AR
					MT14-1077N	Bearing Distance Ring, 7.92 MM	AR
9	MT22-1054	Ring Gear and Pinion (1.227) 4.25	1	*Note: Choose 2 to produce proper bearing preload.			
	MT22-1053	Ring Gear and Pinion (1.318) 4.56	1	AR = As Required			
	MT22-1056	Ring Gear and Pinion (1.422) 4.92	1				
	MT22-1057	Ring Gear and Pinion (1.526) 5.29	1				
	MT22-1043	Ring Gear and Pinion (1.553) 5.38	1				
	MT22-1055	Ring Gear and Pinion (1.632) 5.65	1				
	MT22-1047	Ring Gear and Pinion (1.684) 5.83	1				
	MT22-1046	Ring Gear and Pinion (1.765) 6.11	1				
	MT22-1058	Ring Gear and Pinion (1.812) 6.27	1				
	MT22-1040	Ring Gear and Pinion (1.929) 6.68	1				
	MT22-1041	Ring Gear and Pinion (2.077) 7.14	1				
	MT22-1042	Ring Gear and Pinion (2.231) 7.72	1				
	MT22-1044	Ring Gear and Pinion (2.415) 8.36	1				
	MT22-1045	Ring Gear and Pinion (2.462) 8.52	1				

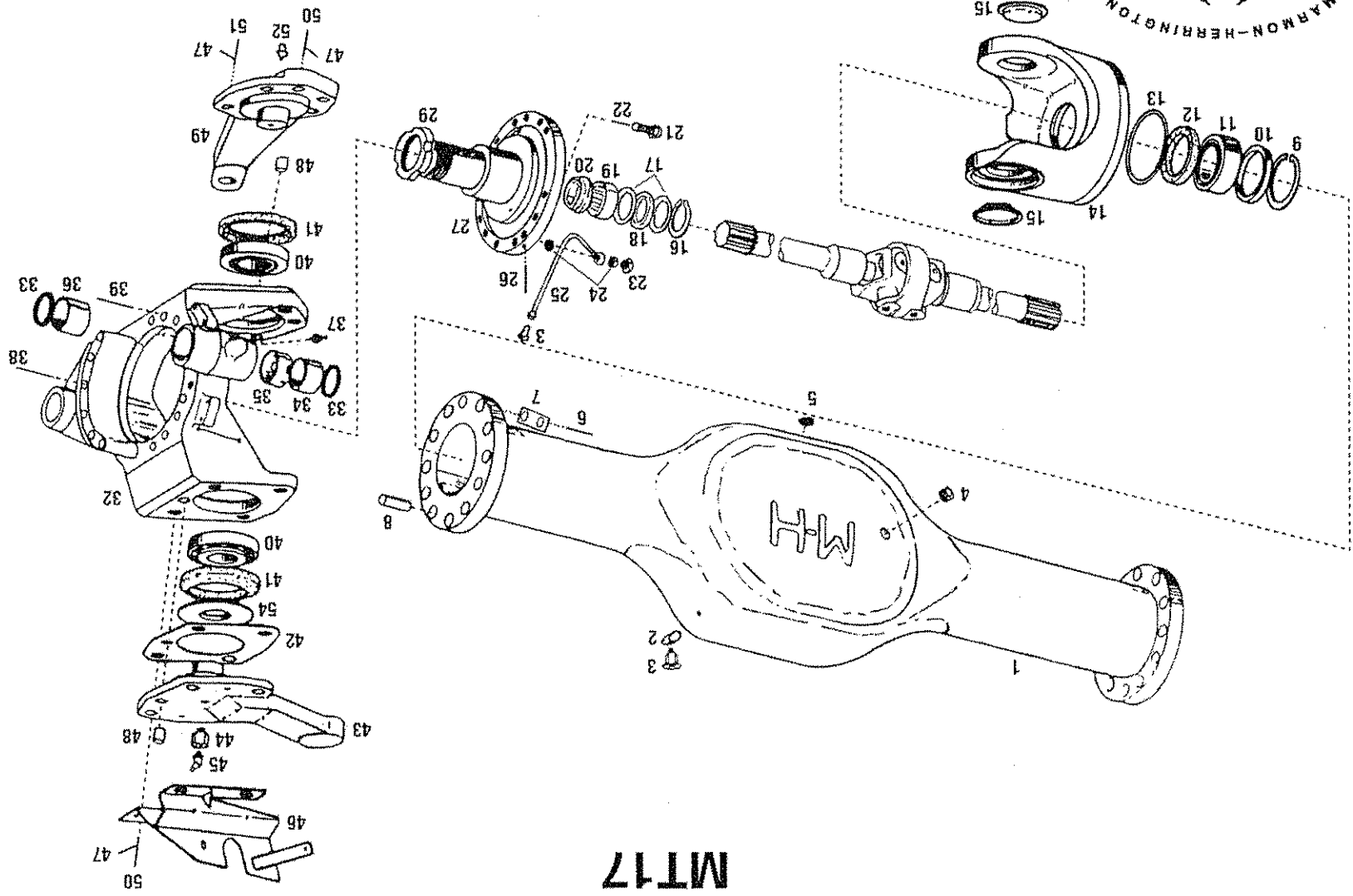
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DIFFERENTIAL MT17/R/N/H



AXLE HOUSING MT17



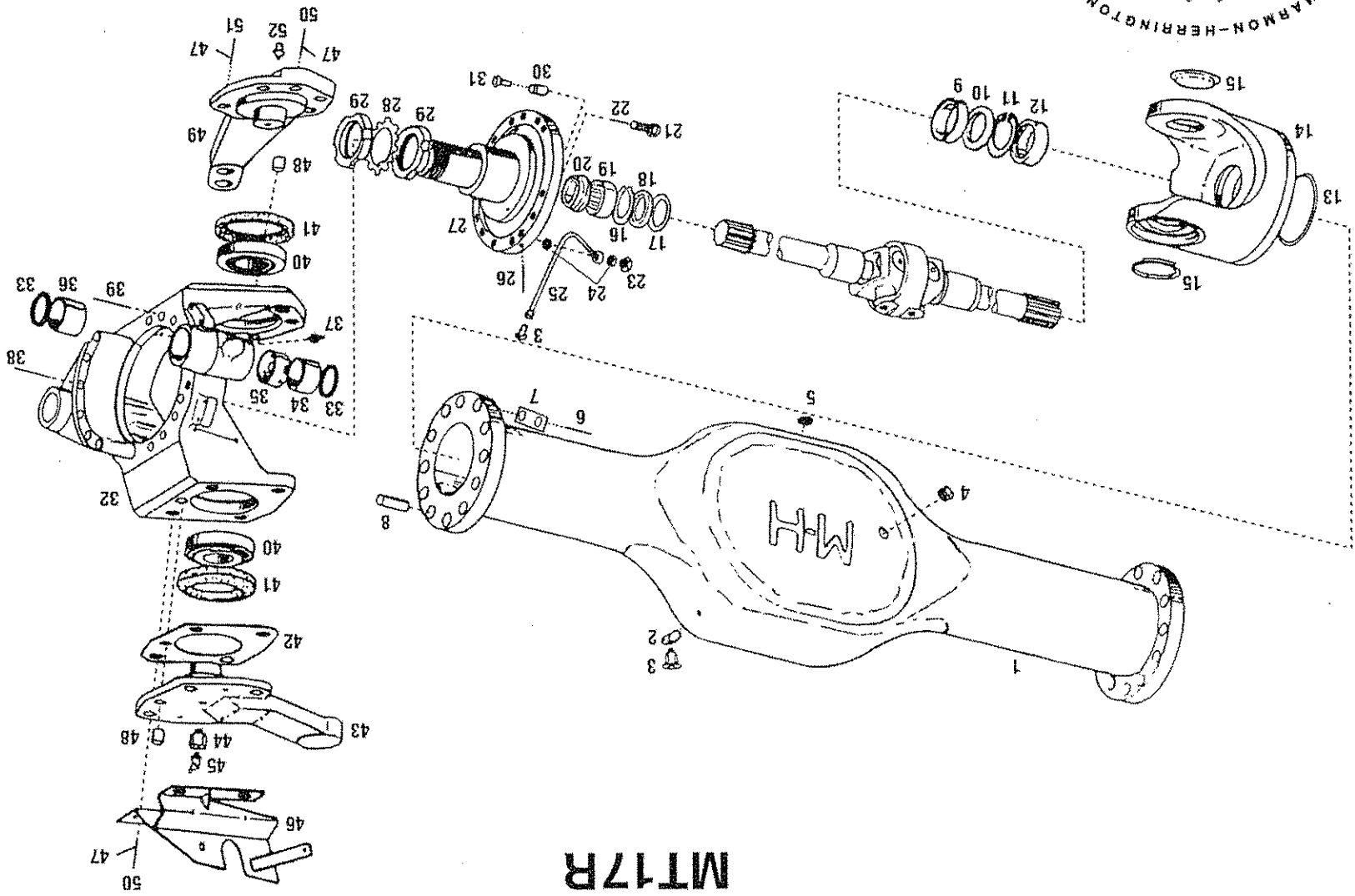
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AXLE HOUSING MT17



ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.	ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.
1	MT17-1049	Axle Housing	1	33	MT14-1109	Sealing Ring	4
2	MT22-1214	Threaded Extension	1	34	MT14-1110	Brake Spanner Bushing	2
3	MT14-1068	Vent	3	35	MT14-1111	Distance Ring	2
4	MT14-1070	Fill Plug, Carrier	1	36	MT14-1112	Brake Spanner Bushing	2
5	MT14-1071	Drain Plug, Carrier	1	37	191758	Grease Fitting	4
6	MT14-1072	Hex Bolt, M20x1.5x60	20	38	MT14-1105	Hex Bolt, M14x1.5x102	12
7	MT14-1073	Locking Plate	10	39	MT14-1106	Hex Bolt, M14x1.5x55	16
8	MT14-1222	Dowel Pin	4	40	MT14-1114	Trunnion Bearing Assy, 050/110x29.25	4
9	MT14-1084	Snap Ring	2	41	MT14-1115	Gasket	4
10	MT14-1085	Retainer Ring	2	42	MT14-1117A	Shim, Trunnion, 2.05 MM	AR
11	MT14-1086	Angular Contact Ball Bearing, 049.5x80x23	2		MT14-1117B	Shim, Trunnion, 2.00 MM	AR
12	MT14-1087	Oil Seal, Axle Shaft, Inner	2		MT14-1117C	Shim, Trunnion, 0.50 MM	AR
13	MT14-1088	Sealing Ring, Housing to Yoke, 119x5	2		MT14-1117D	Shim, Trunnion, 0.30 MM	AR
14	MT14-1022	Yoke Housing, L.H.	1		MT14-1117E	Shim, Trunnion, 0.20 MM	AR
15	MT14-1089	Lock Cap	4	43	MT17-1009	Steering Arm, L.H.	1
16	MT14-1090	Snap Ring	2	44	MT14-1118	Extension, Fitting	2
17	MT14-1091	Retainer Ring	4	45	271285	Grease Fitting	2
18	MT14-1092	Oil Seal, Axle Shaft, Outer	2	46	MT14-1120	Brake Chamber Brk., L.H.	1
19	MT14-1093	Needle Roller Bearing, 50x65x22	2	47	85T-23	Lockwire	AR
20	MT14-1094	Distance Sleeve	2	48	MT-14-1124	Dowel Pin, 20m6x20-10.9	4
21	MT14-1095	Turn Stop Bolt	2	49	MT14-1020	Tie-Rod Arm, L.H.	1
22	MT14-1096	Jam Nut	2	MT14-1021	Tie-Rod Arm, R.H.	1	
23	MT14-1098	Hollow Screw	2	50	MT14-1125	Hex Bolt, M22x1.5x50	16
24	MT14-1099	Bushing	4	51	MT14-1126	Hex Bolt, M22x1.5x32	4
25	MT14-1100	Vent Tube	2	52	191758	Grease Fitting	2
26	MT14-1101	Screw	2	54	MT14-1116	Washer	4
27	MT14-1018	Spindle, L.H.	1				
29	MT14-1103	Spindle Nut	2				
32	MT14-1010	Knuckle Hsg. Assy, L.H.	1			AR = As Required	
	MT14-1011	Knuckle Hsg. Assy, R.H. (Not Shown)	1				

AXLE HOUSING MT17R



ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.	ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.
1	MT17R-1049	Axle Housing	1	31	MT17-1113	Anti-dust Plug	2
2	MT22-1214	Threaded Extension	1	32	MT14-1010	Knuckle Hsg. Assy., L.H.	1
3	MT14-1068	Vent	3	MT14-1011	Knuckle Hsg. Assy., R.H. (Not Shown)	1	1
4	MT14-1070	Fill Plug, Carrier	1	MT14-1109	Sealing Ring	4	4
5	MT14-1071	Drain Plug, Carrier	1	MT14-1110	Brake Spanner Bushing	2	2
6	MT14-1072	Hex Bolt, M20x1.5x60	20	MT14-1111	Distance Ring	2	2
7	MT14-1073	Locking Plate	10	MT14-1112	Brake Spanner Bushing	2	2
8	MT14-1222	Dowel Pin	4	191758	Grease Fitting	4	4
9	MT10-1079	Oil Seal Support Assy.	2	MT14-1105	Hex Bolt, M14x1.5x102	12	12
10	MT22-1116	Oil Seal, Axle Shaft, Inner	2	MT14-1106	Hex Bolt, M14x1.5x55	16	16
11	MT22-1115	Snap Ring	2	MT14-1114	Trunnion Bearing Assy., 050/110x29.25	4	4
12	MT22-1114	Bearing, Axle Shaft, Inner	2	MT14-1115	Gasket	4	4
13	MT14-1088	Sealing Ring, Housing to Yoke, 119x5	2	MT14-1117A	Shim, Trunnion, 2.05 MM	AR	AR
14	MT17-1024	Yoke Housing, L.H.	1	MT14-1117B	Shim, Trunnion, 2.00 MM	AR	AR
15	MT17-1025	Yoke Housing, R.H. (Not Shown)	1	MT14-1117C	Shim, Trunnion, 0.50 MM	AR	AR
16	MT14-1090	Snap Ring	2	MT14-1117D	Shim, Trunnion, 0.30 MM	AR	AR
17	MT10-1080	Felt Wiper	2	MT14-1117E	Shim, Trunnion, 0.20 MM	AR	AR
18	MT14-1092	Oil Seal, Axle Shaft, Outer	2	MT17-1009	Steering Arm, L.H.	1	1
19	MT14-1093	Needle Roller Bearing, 50x65x22	2	MT17-1008	Cover for Right Steering Support Housing	1	1
20	MT14-1094	Distance Sleeve	2	MT14-1118	Extension, Fitting	2	2
21	MT14-1095	Turn Stop Bolt	2	271285	Grease Fitting	2	2
22	MT14-1096	Jam Nut	2	MT14-1120	Brake Chamber Brk., L.H.	1	1
23	MT14-1098	Hollow Screw	2	MT14-1121	Brake Chamber Brk., R.H. (Not Shown)	1	1
24	MT14-1099	Bushing	4	85T-23	Lockwire	AR	AR
25	MT14-1100	Vent Tube	2	MT-14-1124	Dowel Pin, 20mx20-10.9	4	4
26	MT14-1101	Screw	2	MT17-1022	Tie-Rod Arm, L.H.	1	1
27	MT17-1018	Spindle, L.H.	1	MT17-1023	Tie-Rod Arm, R.H.	1	1
28	MT17-1133	Locking Plate	2	MT14-1125	Hex Bolt, M22x1.5x50	16	16
29	MT17-1132	Spindle Nut, M70x2	4	MT14-1126	Hex Bolt, M22x1.5x32	4	4
30	MT17-1112	Bushing	2	191758	Grease Fitting	2	2

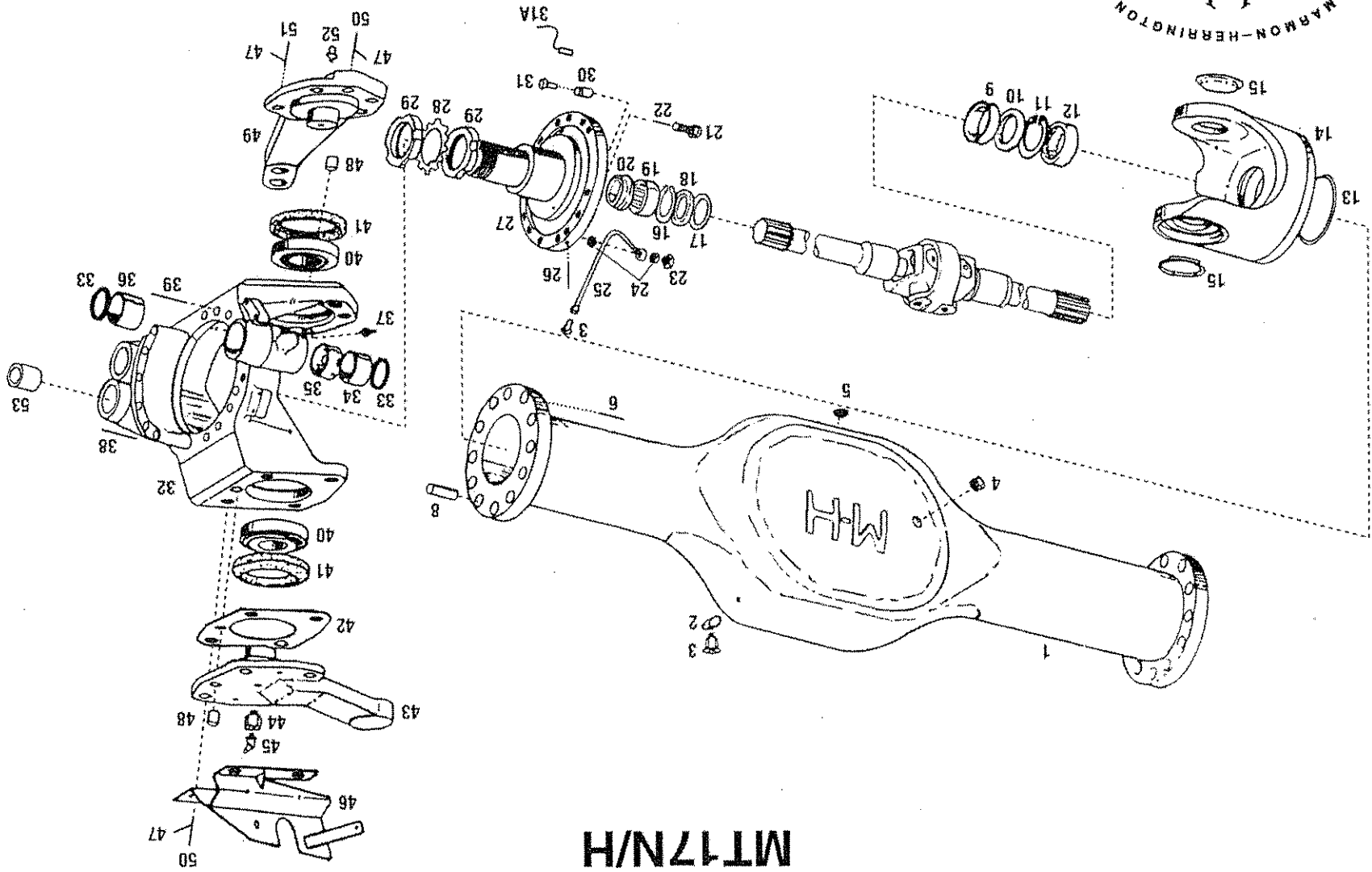
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AXLE HOUSING MT17R



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AXLE HOUSING MT17N/H



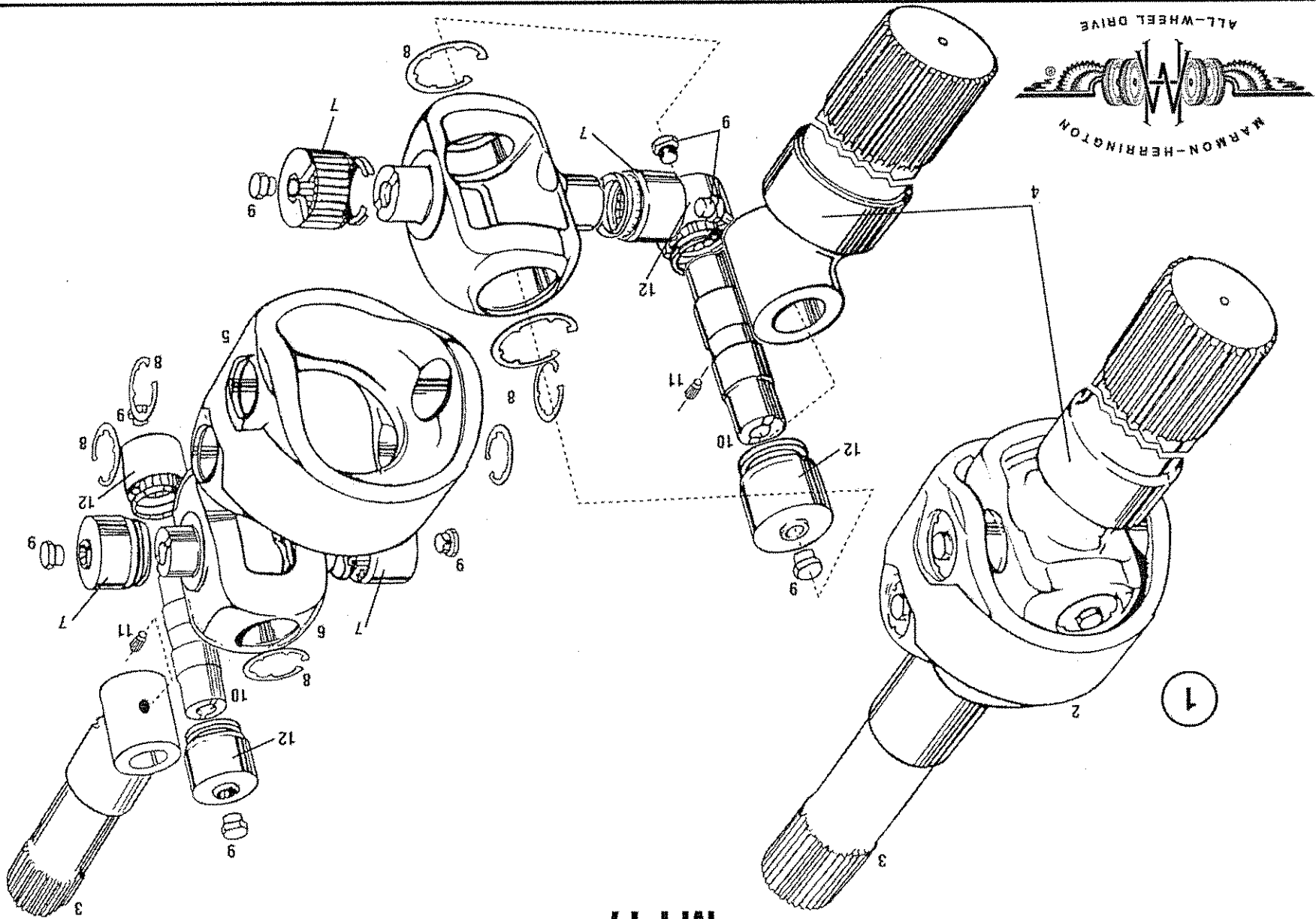
ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.	ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.
1	MT17R-1049	Axle Housing	1	31A	MT93-1282	ABS Sensor (Vabco)	2
2	MT22-1214	Threaded Extension	1		MT93-2035	ABS Sensor (Bendix)	2
3	MT14-1068	Vent	3		MT93-1283	ABS Sensor Spring Clip	2
4	MT14-1070	Fill Plug, Carrier	1	32	MT17-1110	Knuckle Hsg. Assy, L.H.	1
5	MT14-1071	Drain Plug, Carrier	1		MT17-1111	Knuckle Hsg. Assy, R.H. (Not Shown)	1
6	MT14-1072	Hex Bolt, M20x1.5x60	20	33	MT14-1109	Sealing Ring	4
8	MT14-1222	Dowel Pin	4	34	MT14-1110	Brake Spanner Bushing	2
		Overize Dowel Pin, 021m6x50-6.6	4	35	MT14-1111	Distance Ring	2
9	MT10-1079	Oil Seal Support Assy.	2	36	MT14-1112	Brake Spanner Bushing	2
		Felt Wiper	2	37	191758	Grease Fitting	4
10	MT22-1116	Oil Seal, Axle Shaft, Inner	2	38	MT17-1105	Hex Bolt, M14x1.5x102	12
11	MT22-1115	Snap Ring	2	39	MT17-1106	Hex Bolt, M14x1.5x55	16
12	MT22-1114	Bearing, Axle Shaft, Inner	2	40	MT14-1114	Trunnion Bearing Assy, 050/110x29.25	4
13	MT14-1088	Sealing Ring, Housing to Yoke, 119x5	2	41	MT14-1115	Gasket	4
14	MT17-1024	Yoke Housing, L.H.	1	42	MT14-1117A	Shim, Trunnion, 2.05 MM	AR
	MT17-1025	Yoke Housing, R.H. (Not Shown)	1		MT14-1117B	Shim, Trunnion, 2.00 MM	AR
15	MT14-1089	Lock Cap	4		MT14-1117C	Shim, Trunnion, 0.50 MM	AR
16	MT14-1090	Snap Ring	2		MT14-1117D	Shim, Trunnion, 0.30 MM	AR
17	MT10-1080	Felt Wiper	2		MT14-1117E	Shim, Trunnion, 0.20 MM	AR
18	MT14-1092	Oil Seal, Axle Shaft, Outer	2	43	MT17-1009	Steering Arm, L.H.	1
19	MT14-1093	Needle Roller Bearing, 50x65x22	2		MT17-1008	Cover for Right Steering Support Housing	1
20	MT14-1094	Distance Sleeve	2	44	MT14-1118	Extension, Fitting	2
21	MT14-1095	Turn Stop Bolt	2	45	271285	Grease Fitting	2
22	MT14-1096	Jam Nut	2	46	MT14-1120	Brake Chamber Brk., L.H.	1
23	MT14-1098	Hollow Screw	2		MT14-1121	Brake Chamber Brk., R.H. (Not Shown)	1
24	MT14-1099	Bushing	4	47	85T-23	Lockwire	AR
25	MT14-1100	Vent Tube	2	48	MT-14-1124	Dowel Pin, 20m6x20-10.9	4
26	MT14-1101	Screw	2	49	MT17-1022	Tie-Rod Arm, L.H.	1
27	MT17-1018	Spindle, L.H.	1		MT17-1023	Tie-Rod Arm, R.H.	1
28	MT17-1019	Spindle, R.H. (Not Shown)	1	50	MT14-1125	Hex Bolt, M22x1.5x50	16
	MT17-1133	Locking Plate	2	51	MT14-1126	Hex Bolt, M22x1.5x32	4
29	MT17-1132	Spindle Nut, M70x2	4	52	191758	Grease Fitting	2
30	MT17-1112	Bushing	2	53	MT22-1241	Bushing	4
31	MT17-1113	Anti-dust Plug	2			AR = As Required	

AXLE HOUSING MT17N/H



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AXLE SHAFT ASSEMBLY MT17



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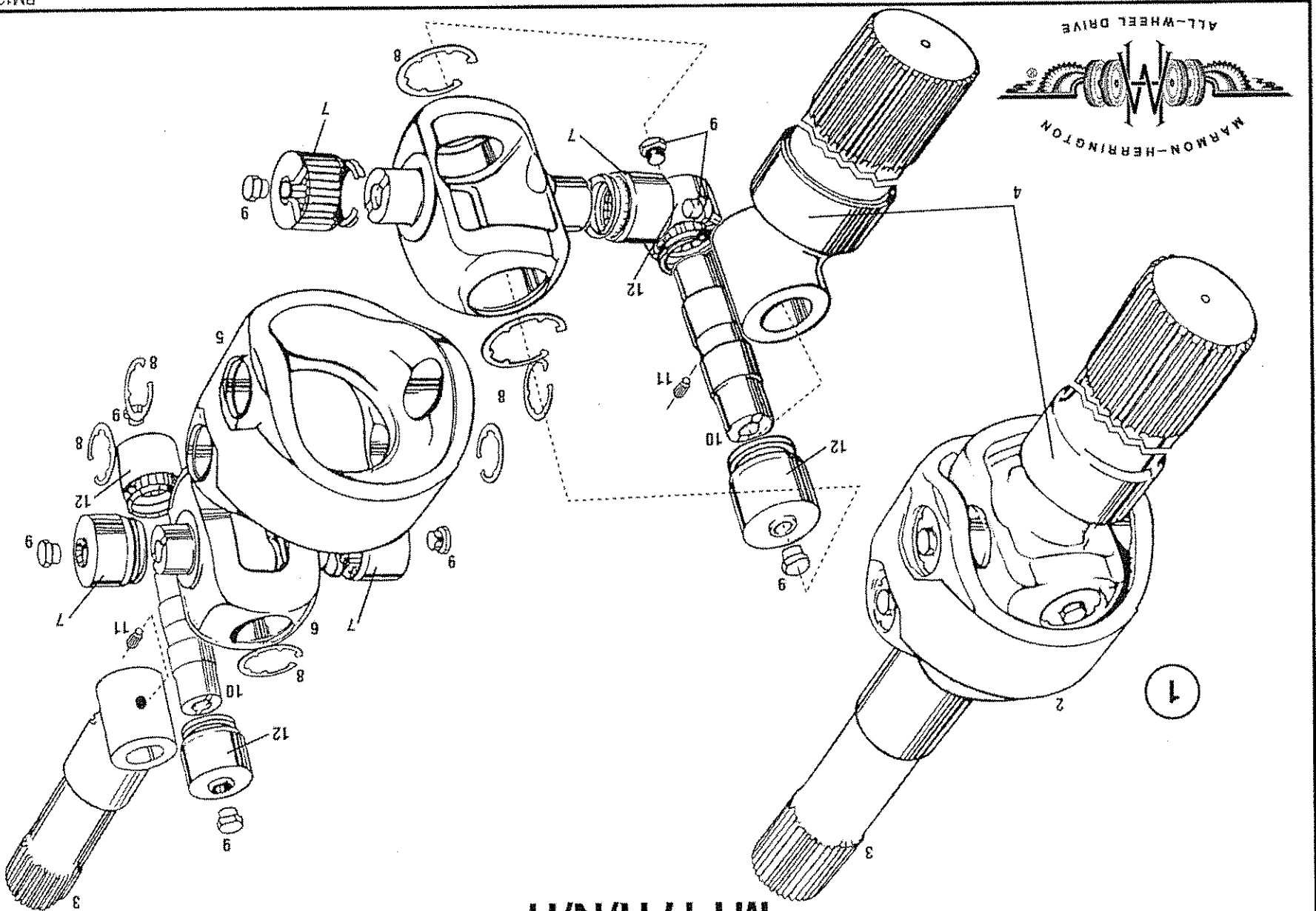
AXLE SHAFT ASSEMBLY
MT17



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AXLE SHAFT ASSEMBLY MT17R/N/H



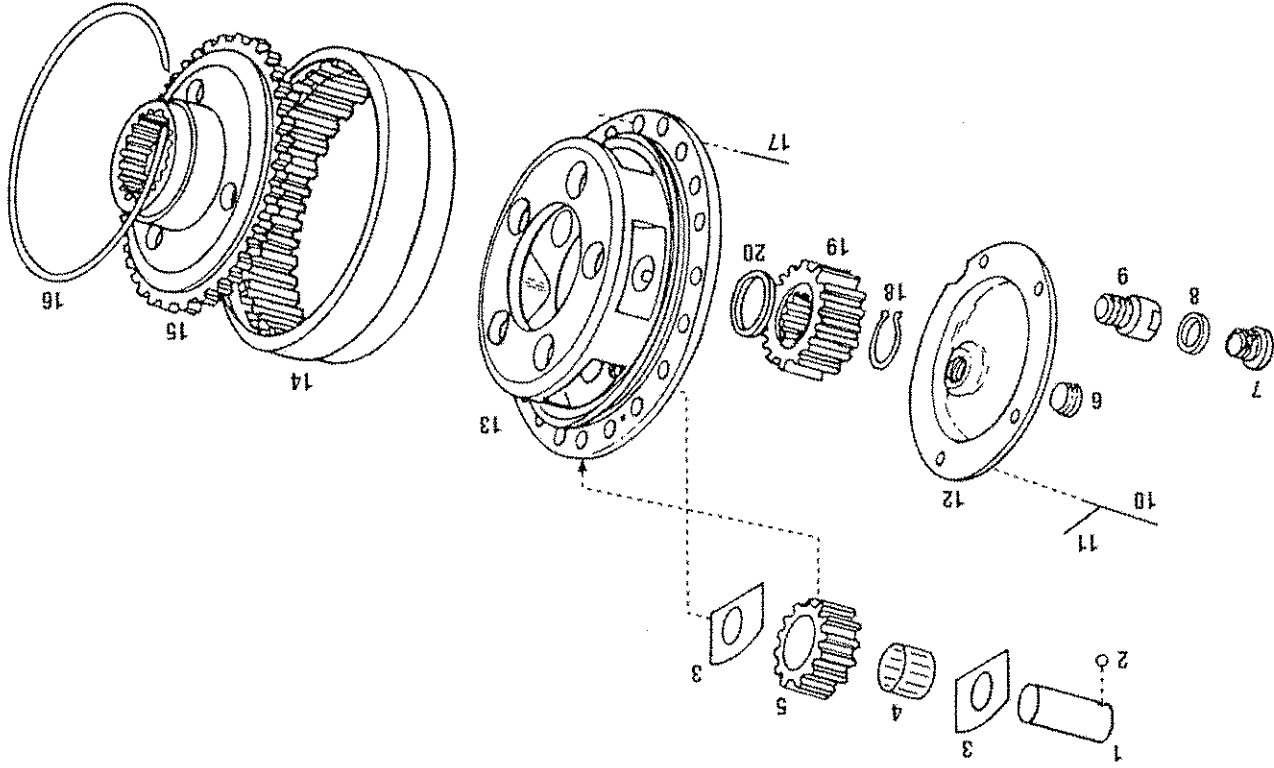


AXLE SHAFT ASSEMBLY
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ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.
1	MT17-1151	Axle Shaft Assembly, L.H.	1
	MT17-1152	Axle Shaft Assembly, R.H.	1
2	MT22-1147	Double Joint Assembly	2
3	MT17-1153	Outer Axle Shaft	2
4	MT17-1154	Inner Axle Shaft, Left, Short Shaft	1
	MT17-1155	Inner Axle Shaft, Right, Long Shaft	1
5	MT22-1225	Joint Hub	2
6	MT22-1226	Spider	NSS
7	MT22-1227	Needle Roller Bushing Assembly	NSS
8	MT22-1228	Lock Ring	16
9	MT22-1229	Taper Screw Plug, M12x1.5	16
10	MT22-1230	Joint Pin	4
11	MT22-1231	Threaded Pin	4
12	MT22-1232	Needle Roller Bushing Assembly	NSS
		NSS = Not Sold Separately	

PLANETARY MT17



ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.	ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.
1	MT14-1217	Planet Gear Pin	10				
2	MT14-1218	Steel Ball	10				
3	MT14-1219	Distance Plate	20				
4	MT14-1220	Roller Bearing Assembly	20				
5	MT14-1028	Planet Gear	10				
6	MT14-1071	Fill Plug, Planetary Hub	2				
7	MT14-1213	Drain Plug, Planetary Hub	2				
8	MT14-1212	Sealing Ring	2				
9	MT14-1211	Threaded Stud	2				
10	11500773	Hex Bolt, M8x16-10.9	10				
11	11500191	Lockwasher, M8	10				
12	MT14-1029	End Cover	2				
13	MT14-1027	Planetary Gear Carrier	2				
14	MT14-1025	Planetary Ring Gear	2				
15	MT14-1026	Ring Gear Support Hub	2				
16	MT14-1207	Retaining Ring	2				
17	MT14-1225	Sunken Head Screw	8				
18	MT14-1200	Snap Ring	2				
19	MT14-1024	Sun Gear	2				
20	MT17-1156	Distance Ring	2				

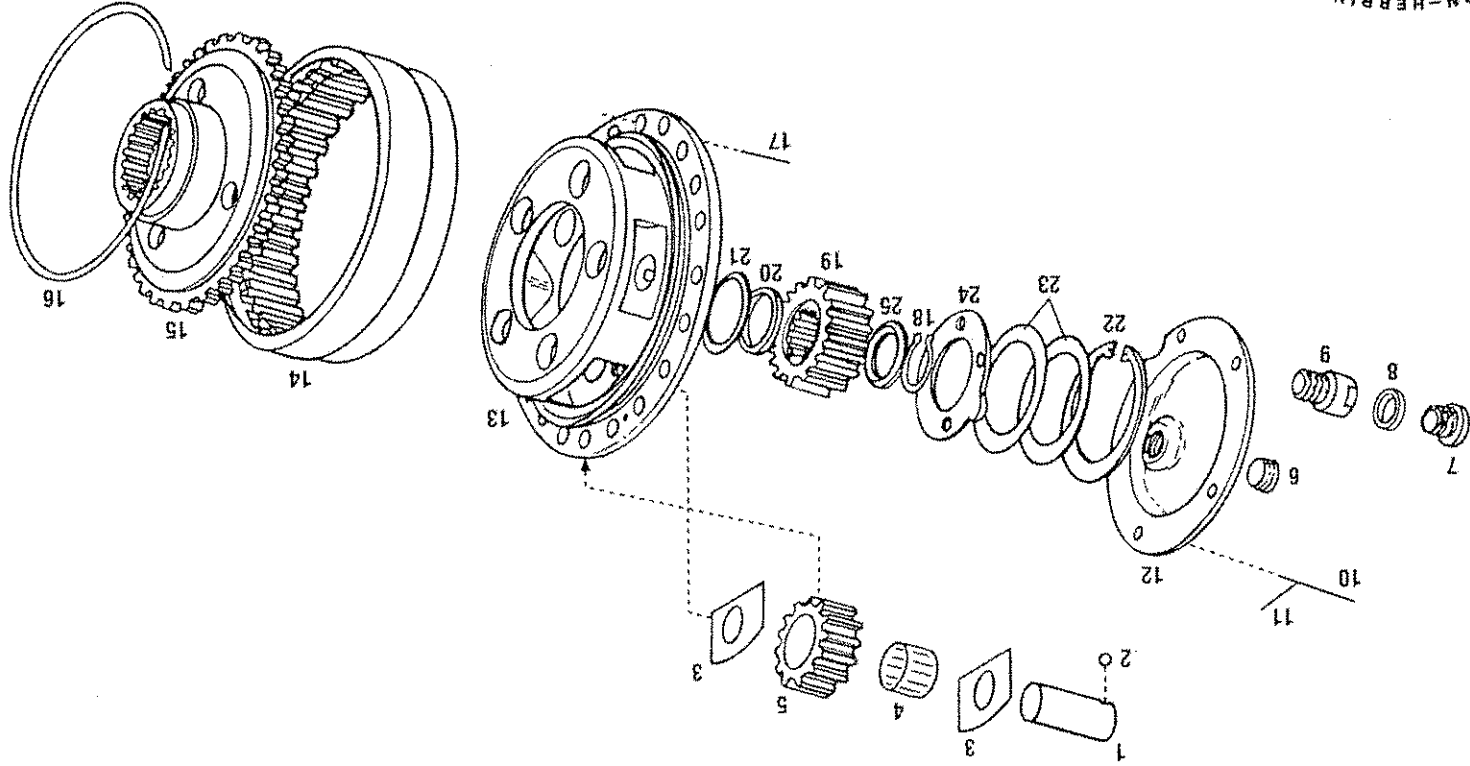
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PLANETARY MT17



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PLANETARY MT17R/N/H



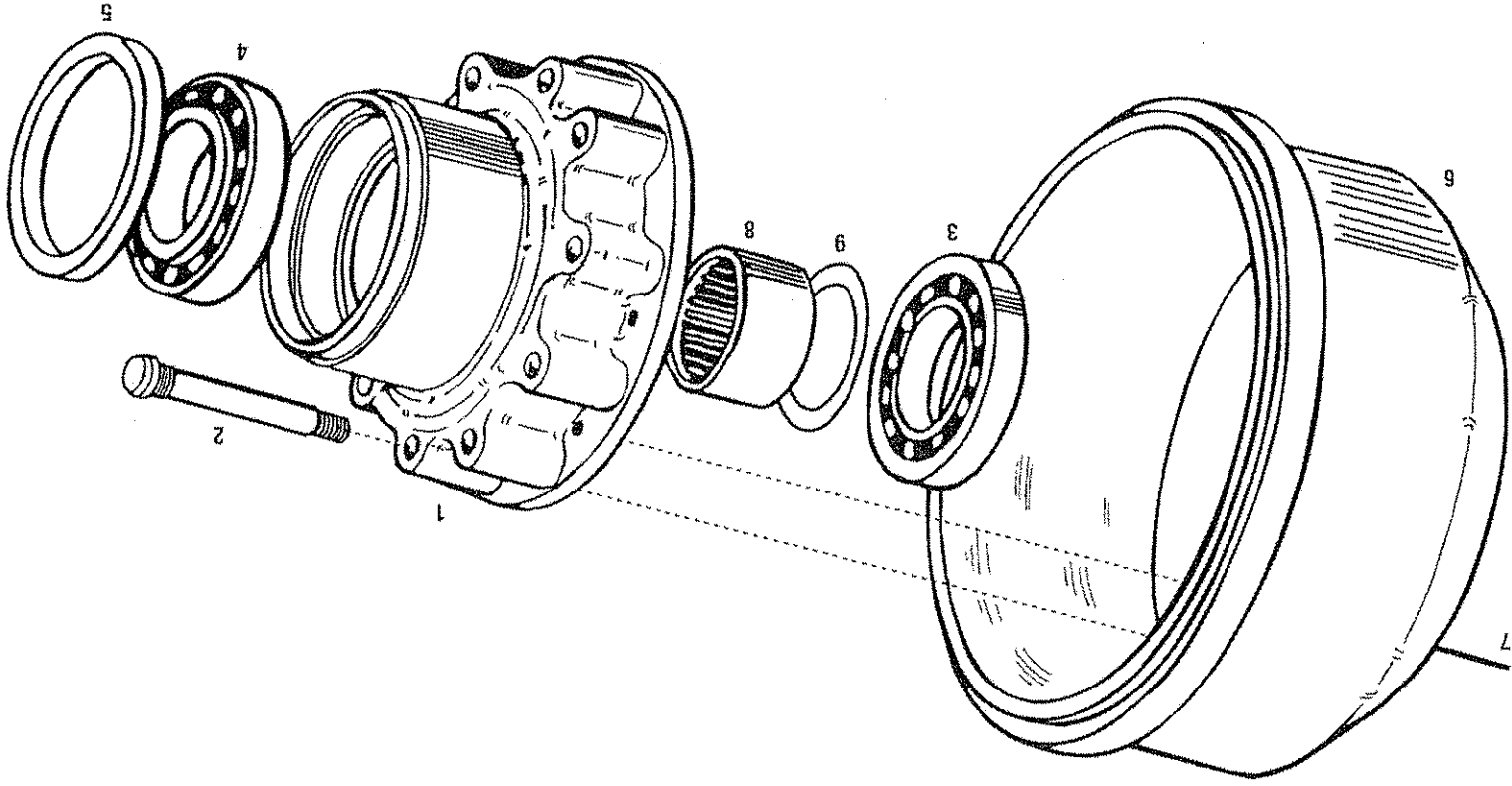
ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.	ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.
1	MT14-1217	Planet Gear Pin	10				
2	MT14-1218	Steel Ball	10				
3	MT14-1219	Distance Plate	20				
4	MT14-1220	Roller Bearing Assembly	20				
5	MT14-1028	Planet Gear	10				
6	MT14-1071	Fill Plug, Planetary Hub	2				
7	MT17-1213	Drain Plug, Planetary Hub	2				
8	MT14-1212	Sealing Ring	2				
9	MT14-1211	Threaded Stud	2				
10	11500773	Hex Bolt, M8x16-10.9	10				
11	11500191	Lockwasher, M8	10				
12	MT14-1029	End Cover	2				
13	MT17-1128	Planetary Gear Carrier (MT17N/H Only)	2				
	MT17-1127	Planetary Gear Carrier (MT17R Only)	2				
14	MT14-1025	Planetary Ring Gear	2				
15	MT14-1026	Ring Gear Support Hub	2				
16	MT14-1207	Retaining Ring	2				
17	11500722	Hex Bolt, M10x25-1.5	8				
18	MT22-1154	Snap Ring	2				
19	MT14-1024	Sun Gear	2				
20	MT17-1156	Distance Ring	2				
21	MT17-1157	Friction Disc	2				
22	MT22-1157	Snap Ring	2				
23	MT22-1158A	Shim, .25 MM	AR				
	MT22-1158B	Shim, .50 MM					
	MT22-1158C	Shim, 2.00 MM					
24	MT22-1159	Friction Disc	2				
25	MT22-1153	Spacer	2				
		AR = As Required					

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PLANETARY
 MT17R/N/H



WHEEL HUB, BRAKE DRUM MT117/R



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MARMON-HERRINGTON ALL-WHEEL DRIVE

MT17/R

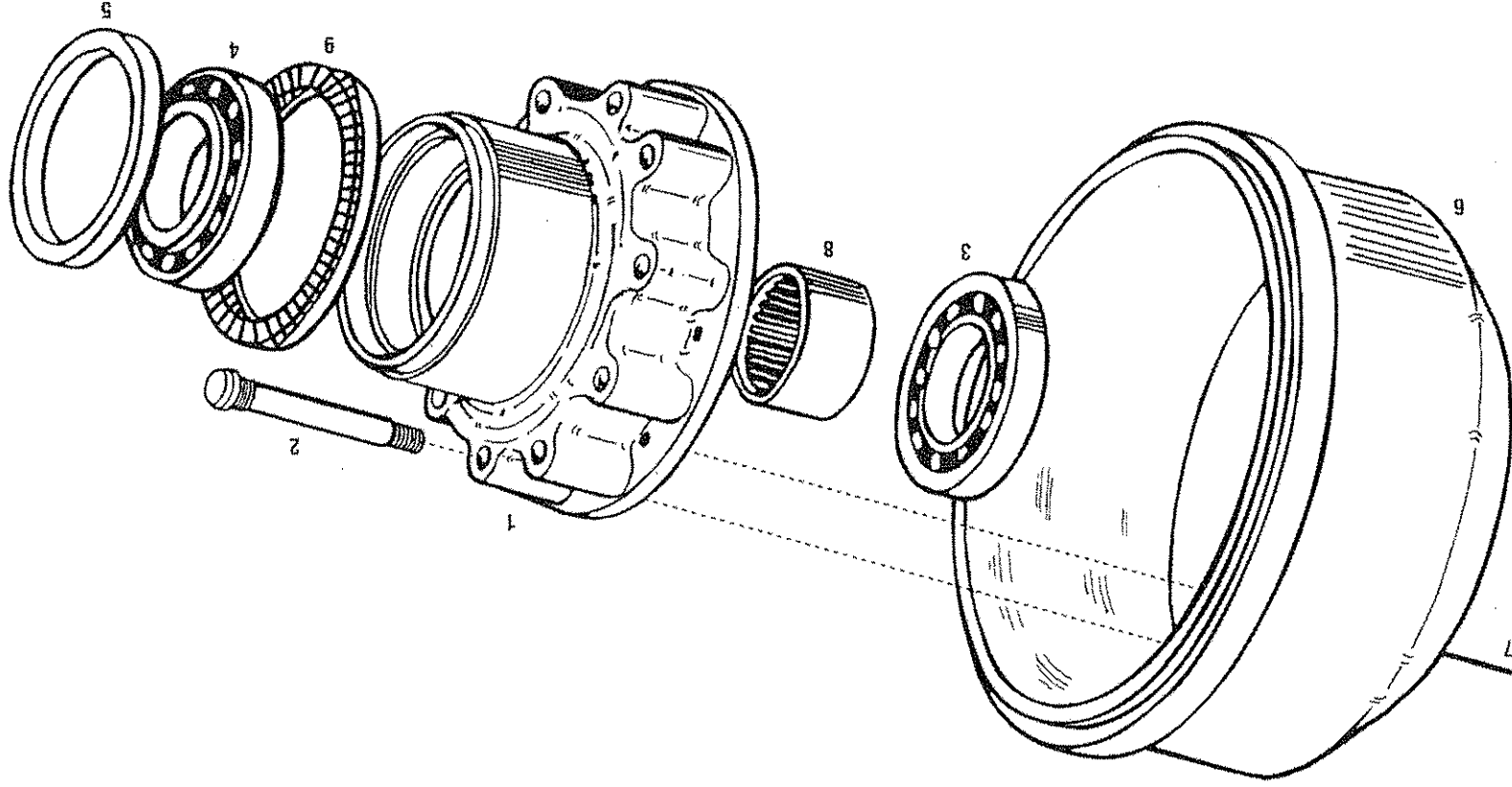
WHEEL HUB, BRAKE DRUM



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WHEEL HUB, BRAKE DRUM MT17N/H



MARMON-HERRINGTON ALL-WHEEL DRIVE

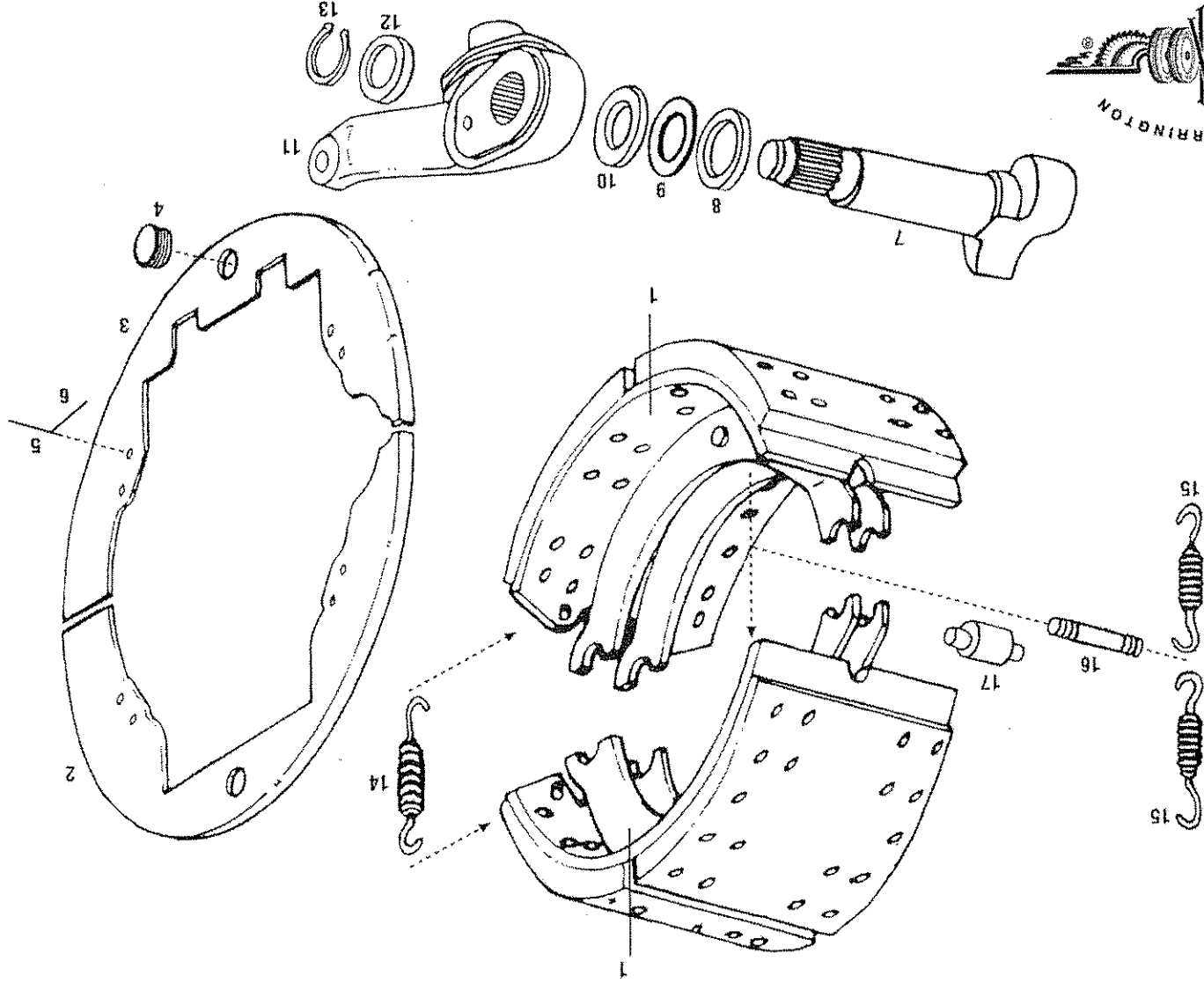
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BRAKE MT17/R



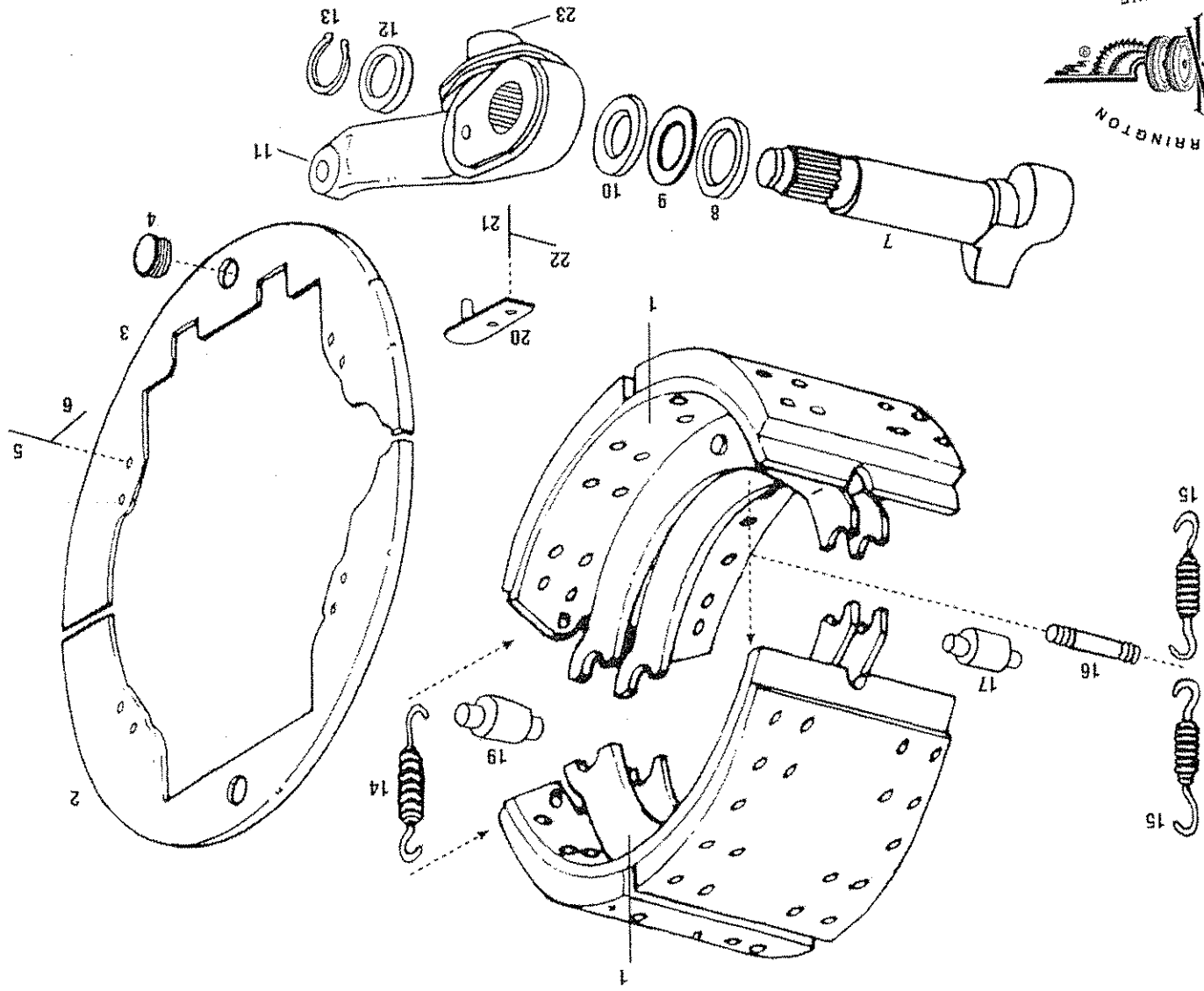
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BRAKE
MT17/R

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BRAKE MT17N/H



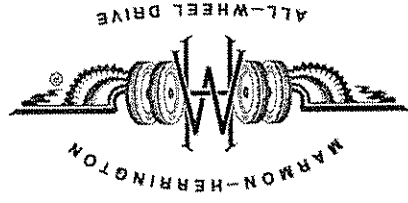
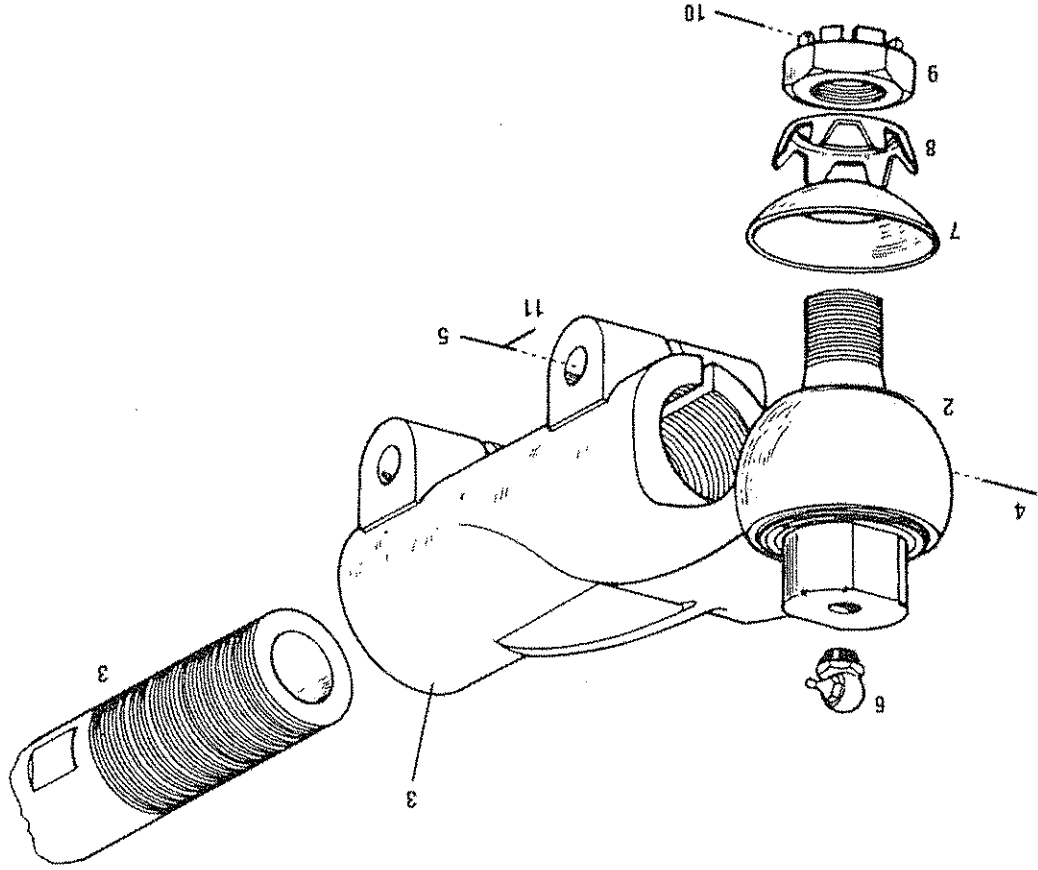
ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.	ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.
1	MT22-1164	Brake Shoe Assembly	4				
2	MT22-1244	Brake Lining Kit	1				
	MT14-1151	Dust Cover, Upper Left	1				
	MT14-1152	Dust Cover, Upper Right (Not Shown)	1				
3	MT14-1153	Dust Cover, Lower Left	1				
	MT14-1154	Dust Cover, Lower Right (Not Shown)	1				
4	MT14-1150	Rubber Plug	4				
5	11500777	Hex Bolt, M10x15-5.6	16				
6	11500192	Flat Lock Washer	16				
7	MT17-1146	Brake Spanner, Left	1				
	MT17-1147	Brake Spanner, Right (Not Shown)	1				
8	MT14-1145	Spacer	2				
9	MT14-1143	Washer	2				
10	MT22-1199	Shim, 0.5 mm	AR				
11	MT22-1237	Slack Adj., Left	1				
	MT22-1238	Slack Adj., Right (Not Shown)	1				
12	MT17-1142	Washer	4				
13	MT17-1141	Snap Ring	2				
14	MT22-1177	Brake Shoe Spring, Long	4				
15	MT14-1157	Brake Shoe Return Spring, Short	2				
16	MT14-1158	Spring Support Pin	4				
17	MT22-1178	Brake Shoe Roller	4				
19	MT22-1243	Brake Shoe Pin	4				
20	MT17-1143	Stop, Left	1				
	MT17-1144	Stop, Right	1				
21	11500773	Hex Bolt, M8x16-1.25	4				
22	11500191	Flat Lock Washer	4				
23	MT22-1246	Adjusting Cap, L.H.	1				
	MT22-1247	Adjusting Cap, R.H.	1				
		AR = As Required					

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BRAKE MT17N/H



TIE-ROD MT17

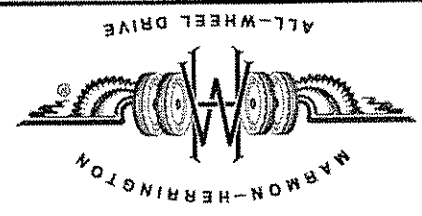
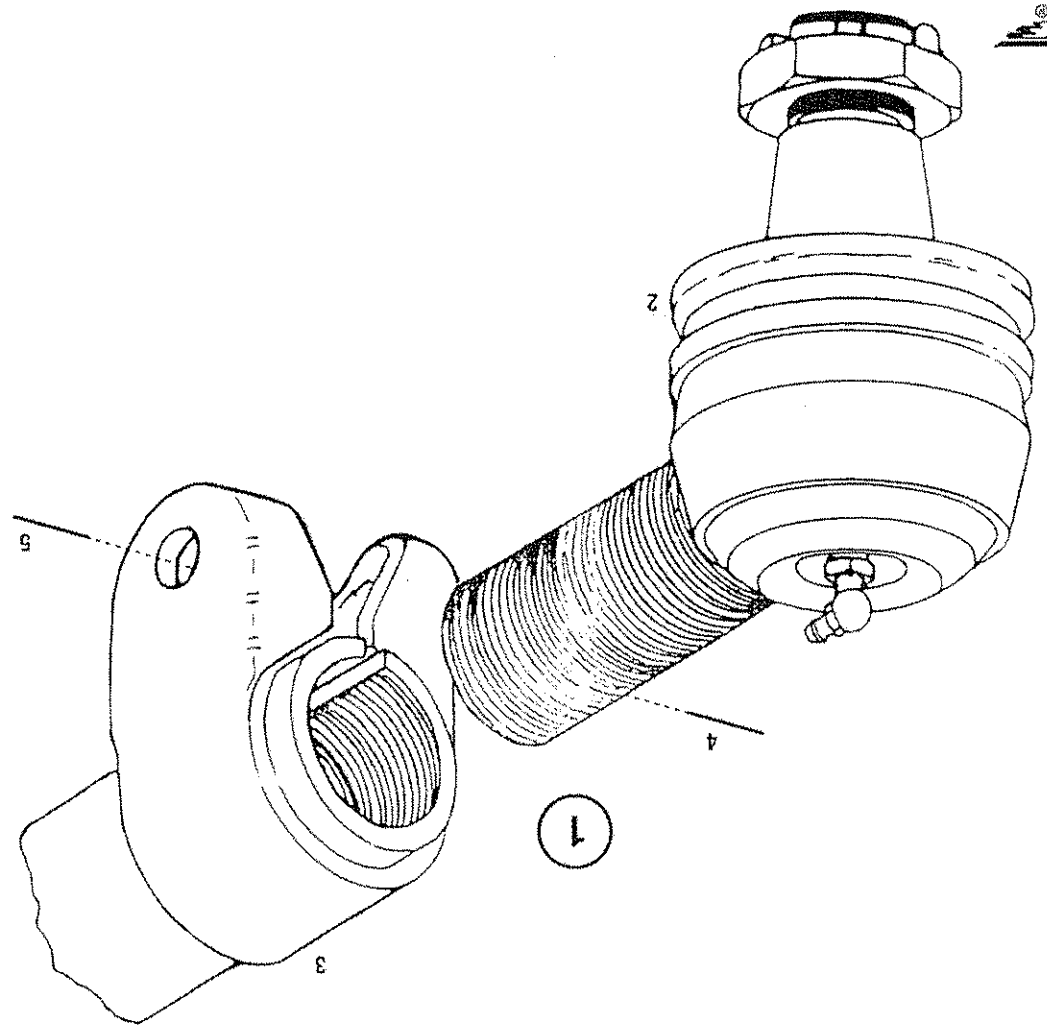


TIE-ROD
MT17



ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.	ITEM NO.	MH PART NO.	DESCRIPTION	QTY. REQ.
2	MT14-1250	Ball Joint Head, Left	1				
3	MT14-1159	Tie-Rod, with Clamps	1				
4	MT14-1165	Hex Bolt, M12X1.25X65-10.9	2				
5	MT14-1160	Flanged Self-locking Nut, M12X1.25	2				
6	MT14-1174	Grease Fitting	2				
7	MT14-1164	Dust Cap	2				
8	MT14-1163	Belleville Spring	2				
9	MT14-1162	Castle Nut, M24X1.5	2				
10	103410	Cotter Pin	2				
11	10386	Cotter Pin	4				

TIE-ROD MT17R/N/H



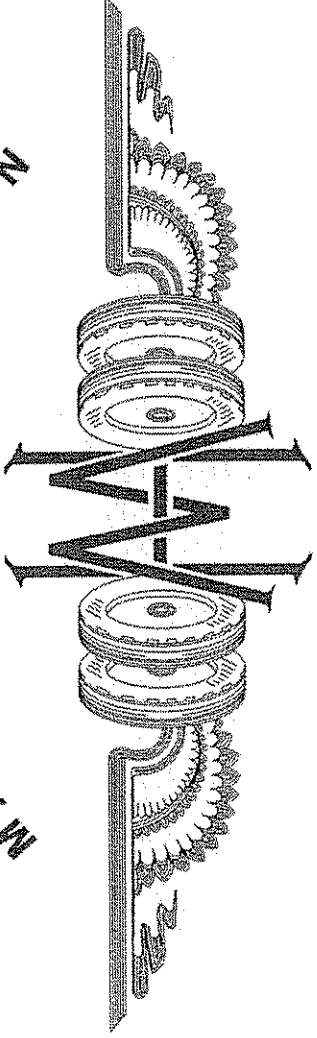
TIE-ROD
MT17R/N/H

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MARMON-HERRINGTON



ALL-WHEEL DRIVE

REPAIR MANUAL
DRIVEN FRONT AXLE
MT14/MT17 SERIES

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FOREWORD

This publication "GENERAL REPAIR INSTRUCTIONS" was prepared for workshops and contains all the necessary assembly instructions as well as data to be checked and adjusted during repair, with the knowledge of which repair and adjustment of the MARMON-HERRINGTON MT14/MT17 type driven front axles.

For technical data on the specific type versions of the M-H MT14/MT17 type driven front axles refer to the publication "TECHNICAL DATA"; while for the spare parts of that "PARTS CATALOG" grouped according to the Type.

The "GENERAL REPAIR INSTRUCTIONS" contain sections divided into the technical data and the service instructions of the axle. The sections of the service instructions contain the disassembly and re-assembly operations of the individual assembly unit, stating the special tools to be used.

The serial numbers of the figures are started from the beginning in each section. The item

numbers of the figures for an assembly unit are referred to in each section dealing with the assembly procedures.

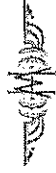
The manufacturer shall not be liable for warranty claims on damages resulting from negligence of the general service practice required for normal service operations but not contained in this Manual.

For replacing assembly units or individual parts use ONLY genuine M-H MT14/MT17 made products.

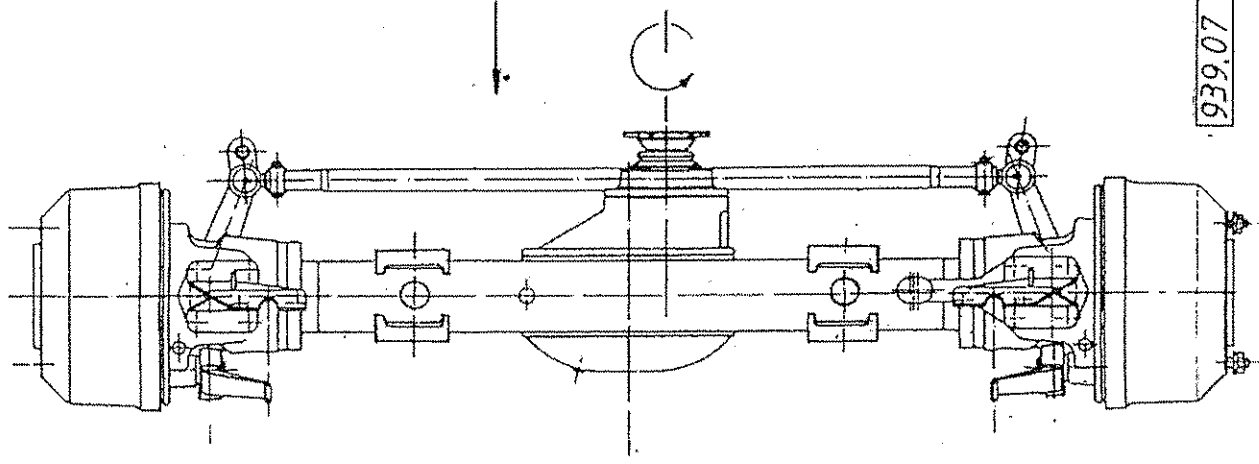
RIGHTS FOR ALTERATIONS RESERVED!

MARMON-HERRINGTON COMPANY
13001 MAGISTERIAL DRIVE
LOUISVILLE, KY 40245

TEL.: 502-253-0277 FAX: 502-253-0317

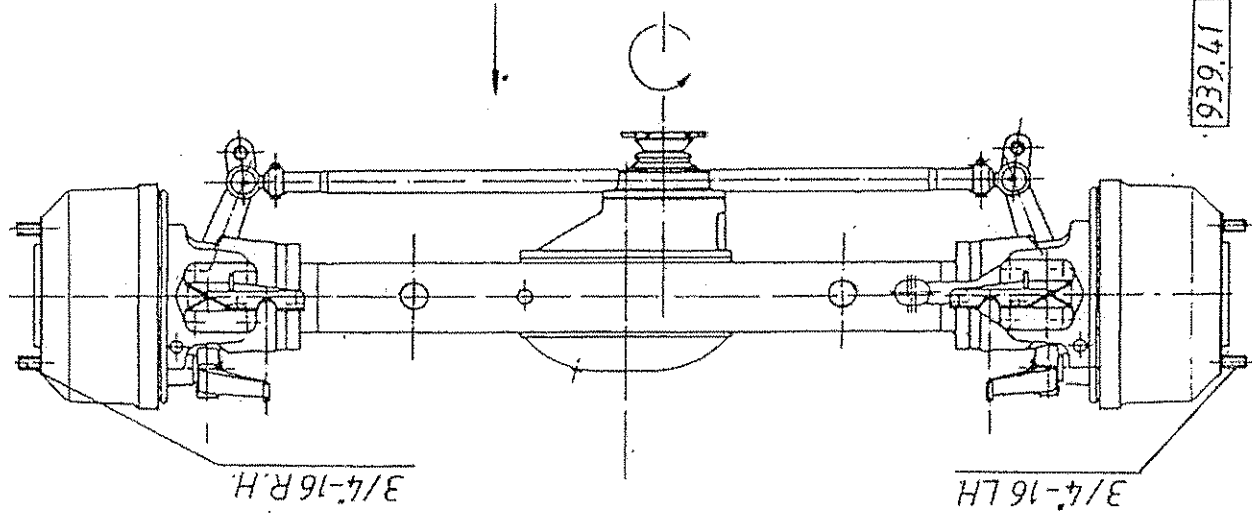


DRAWINGS OF AXLES



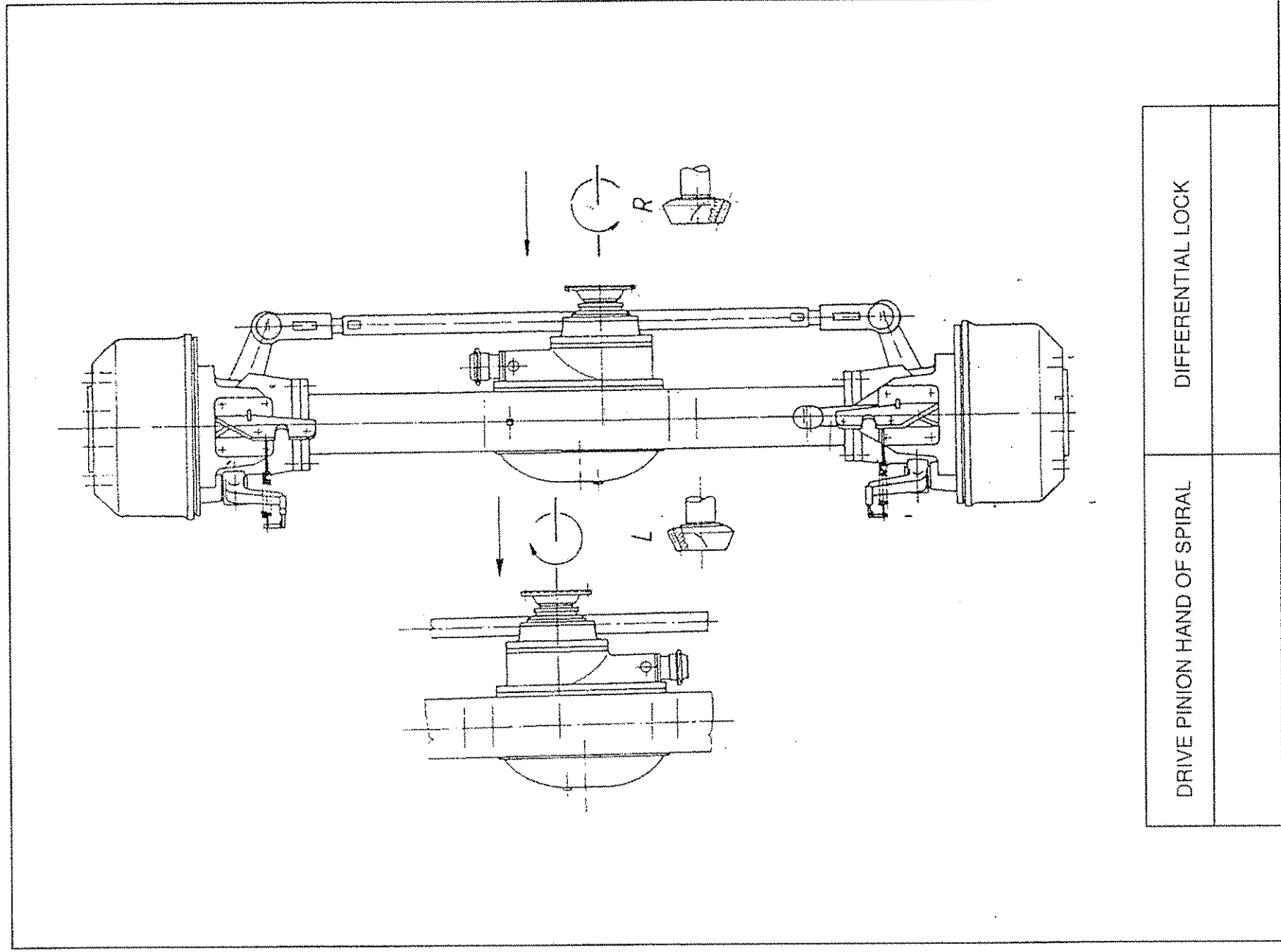
DRIVE PINION HAND OF SPIRAL	HUB PIOTED WHEEL
R (bal-right-links)	





DRIVE PINION HAND OF SPIRAL	BALL SEAT WHEEL
R (bal-right-links)	

17666



SECTION 205

TECHNICAL DATA

DESCRIPTION	UNITS	TYPE
		MT14/MT17
SYSTEM: The reduction of the driven and steered front axle is of two-stage design. The reduction is accomplished by a pinion and ring gear set in the carrier and by spur planetary gearing in the wheel hub.		
DIMENSIONS:		
WHEEL TRACK	mm	2035*
a./ Rubber tire		16.5 x 22.5*
b./ Rolling radius	mm	540
c./ Sinking depth	mm	168.1*
Max. Width	mm	2480*
For detailed technical data marked by asterisk (*) at the type versions required by one orderer refer to publication "TECHNICAL DATA" related to the type versions.		



TECHNICAL DATA

205

DESCRIPTION	UNITS	TYPE	
		MT14/MT17	
RATIOS:		27/22 - 29/13 *	
Ring gear/pinion		64/26 + 1 = 3.461	
Planetary gear		4.248 - 7.720 *	
Total ratio			
Differential lock *			
GENERAL DATA:			
Camber		1°	
Knuckle pin inclination		7°	
Inner wheel turn angle		max. 40°	
Rated axle load	kg	7200*	
Max. input torque	Nm	3750 - 7370*	
Max. input speed	1/sec r.p.s.	50	
Mass of axle without oil fill	kg	710 - 721 *	
WHEEL HUB EXECUTION			
"A" Bolt centering, for installing wheel disk	mm	Flange diameter: 280 h 11 Wheel nut hex. distance: 30	
"C" Hub centering, for installing wheel disk	mm	Flange diameter: 280, 8 -32 Wheel nut hex. distance: 32	
"D" Hub centering, for installing wheel disk	mm	Flange diameter: 221 -0.290 Wheel nut hex. distance: 3/4" -16	
Constructional elements of ABS can be mounted into axle		*	
Impulse ring installed		*	



TECHNICAL DATA

205

DESCRIPTION	UNITS	TYPE
MT14/MT17		
WHEEL BRAKE System: The wheel brake is out of simplex system internally acting drum brake. Brake drum diameter mm Max. trued-up brake drum diameter mm Brake lining width mm Brake shoe clearance (at adjustment) mm Min. Brake lining thickness measured at brake shoe center (marked by upper edge of recess on side of brake lining) mm		420 423 420x180 0.3 - 0.6 7
SLACK ADJUSTER Slack adjuster installation radius, "C" mm Distance of slack adjuster bushing bore center from seating plane of the chamber bracket mm		Automatic slack adjuster 165 233
ANTI-FRICTION BEARINGS IN WHEEL HUB Outer: Taper Roller Bearing Inner: Taper Roller Bearing		30218 A MGM 32218 A MGM
IN WHEEL HUB PLANETARY GEAR: Cylindric Roller Bearing		K 30x42x30 MGM
ON DRIVE PINION: Outer: Taper Roller Bearing Inner: Taper Roller Bearing		32312 B X7JU MGM 32314 B X7JU MGM
ON DIFFERENTIAL: On Half Case: On Flanged Case Half:	Taper Roller Bearing Taper Roller Bearing	30215 A MGM 32215 A MGM



TECHNICAL DATA

205

DESCRIPTION	UNITS	TYPE	
		MT14/MT17	
IN THE STEERING KNUCKLE CARRIER: Cylindric Roller Bearing Taper Roller Bearing IN THE SPINDLE: Cylindric Roller Bearing IN THE DOUBLE JOINT: Needle Roller Bearing Bushing Assy. SEALS: In Wheel Hub: In Differential Carrier: In Camshaft Bushing Bracket In Spindle In Steering Knuckle Carrier "O" Ring Oil Seal		RNU 2209 EC 31310 SKF NKS 50 INA GWB 6.369.37.006.00.020 1HH1 145x175x17 NB STEFA SYSTEM 500 AS 75x95x10 FP SIMMERWERKE 42x52x5 NB-AFIT ASL 50x65x8-NB SIMMERWERKE 012.0-3340-018 A49. 5x80x8-NB SIMMERWERKE	



TORQUE RATINGS

DESIGNATION	SECTION/FIGURE ITEM No.	TYPE
NOTE: Nm to ftlb = Nm ÷ 1.3558 (Ex. 600 Nm ÷ 1.3558 = 443 ftlb)		
WHEEL HUB, AXLE HOUSING		
Wheel nuts	210/1	Nm
With lock washer Hex. distance 30 mm "A"	81	360 - 400
Sole nut Hex. distance 32 mm "C"	41	540 - 670
Wheel nuts	43	"D" - As specified by the orderer 30 - 40 *
Wheel hub cover mounting bolts		Mounted with thread locker 40 - 50 *
Planetary carrier counting bolts	56	196
Spindle nut (inner) Per section 223	36	450 - 490
Spindle nut (outer)	34	40 - 50
Brake drum mounting bolts	53	75 - 90
Tie-rod arm clamp self lock nuts	242/1/5	230 - 320
Tie-rod ball stud castle nuts	242/1/2	412 - 451
Steering arms and tie-rod arms mounting bolts	10	160 - 180 Mounted with thread locker
Spindle mounting bolts	7	
Steering knuckle carrier mounting bolts	16	334 - 353 Mounted with thread locker
Stop bolts jamnut	241/3/2	60 - 80
WHEEL BRAKE		
Nuts of brake support mounting hex. bolts	260/1	Nm
Dust shield mounting bolts	25	160 - 180 Mounted with thread locker
Hex. bolts mounting stop of the automatic slack adjuster	-	10 - 12
DIFFERENTIAL CARRIER HEAD		
	310/1	20 - 25 Nm
Differential carrier housing to axle housing mounting bolts	-	88 - 98 Mounted with thread locker



TORQUE RATINGS

DESIGNATION	SECTION/FIGURE ITEM No.	TYPE	
		MT14/MT17	
Drive pinion castle nut	1	540 - 590	
Differential carrier cover mounting bolts	6	20 - 30	
Bearing cage mounting bolts	14	88 - 98	
Adjuster lock plate mounting bolts	22	15 - 20	
Differential case halves clamp bolts	25	49 - 59	
Ring gear mounting bolts	39	98 - 118 Mounted with thread locker	
Nuts of clamps for diff lock actuating air chamber	-	2 - 5	
Bolts mounting the actuating air chamber	-	29 - 39	



ADJUSTMENT DATA

DESIGNATION	UNITS	TYPE	
		MT14/MT17	
NOTE: mm to inch = mm ÷ 25.4 (Ex. 0.15 mm ÷ 25.4 = .006 inch)			
WHEEL HUB, AXLE HOUSING	210/1	Nm	
WHEEL HUB: Axial play of wheel hub bearings (adjusted by the spindle nuts)	mm	0.01 - 0.04	
STEERING KNUCKLE: Thickness of shims necessary for adjusting the preload of the 31310 SKF bearing	mm	0.2; 0.3; 0.5; 2.0; 2.05	
Rotating torque of knuckle housing (in checking, no seal is installed)	Nm	17.6 - 25.5	
Toe-in (measured at brake drum flange)	mm	1.5 + 1.5 40°	
Max. Inner wheel turn angle			
WHEEL BRAKE: Shoe clearance (during adjustment)	mm	0.3 - 0.6	
Axial play of camshaft	mm	0.1 - 0.5	
DIFFERENTIAL CARRIER HEAD			
Drive pinion to drive gear backlash	mm	0.15 - 0.25	
Drive pinion rolling torque after preloading the bearings (the oil seal is not installed. adjustment by the distance rings)	Nm	1.0 - 1.7	
Size of distance rings	mm	- 34 spacers of 13.89 to 14.715 mm in 0.025 mm thickness steps	
Theoretical distance between the drive pinion face and the drive gear centerline	mm	88.00	
("AXIS DISTANCE") Shim thickness			
Clearance between clutch gear and toothed hub (as engaged)	mm	0.20; 0.25; 0.30; 0.50; 1.0 0.5 - 2.0	



GENERAL SERVICE INSTRUCTIONS

This section summarizes the service operations and adjustment data considered by us to be most important and which should thoroughly be observed and followed during assembling the axle.

WHEEL DRIVE, WHEEL HUB

After tightening the spindle-end nuts obtain 0.01 - 0.04 mm axial play at the wheel bearings.

For adjustment refer to the Section 223.

Install ONLY identical code, same tolerance class bearings supplied in one package to one wheel hub planetary gear.

KNUCKLE HOUSING

Install the taper roller bearings into the knuckle housing without clearance, then assure preload by reducing the shims (by 0.25 - 0.35). Measure the preload with torque spanner. The knuckle housing may turn on torque 17.6 - 25.5 Nm.

For adjustment refer to Section 245.

WHEEL BRAKE

If the brake linings are worn to the permitted limit (as indicated by the upper edge of the recess on side of the brake lining) replace the linings according to the instructions.

Check the brake shoe surface in contact with the shoe anchor pin and the camshaft rollers.

Adjust the specified shoe clearance (0.3 - 0.6 mm) by means of the brake lever.

After adjustment the brake lining may not interfere with the brake drum.

From the sealing rings of the brake camshafts only that at the brake cam head may not pass over the surplus lubricant during greasing. The sealing ring at the brake cam head protects the brake drum against the grease.

Make sure to install the sealing rings in proper position.

True up the brake drum ONLY to the permitted maximum diameter.

DIFFERENTIAL CARRIER HEAD

Install the taper roller bearings of the drive pinion with preload. Assure such a preload the bearings shall roll on torque of 1 - 1.7 Nm for new bearings and on torque of 0.5 - 0.85 Nm for bearings that have run (half of the

rolling torque of the new bearings).

For adjustment refer to the Section 317.

The differential gears should be rotatable without jamming.

Install the taper roller bearings of the differential without clearance.

For adjustment of the proper contact pattern and the specified 0.15 - 0.25 mm backlash refer to the Section 314.

When assembling the diff. lock assure a clearance of 0.5 - 2.0 mm between the clutch sleeve and the engaged hub. For adjustment refer to Section 318.

GENERAL INSTRUCTIONS

For purpose of safety during service operations performed on the axle removing the individual assembly units make sure to assure safe backing, fixing or suspension.

Install only clean and sound parts free of burrs and dents. Before installation wipe the mating surfaces of the parts clean and apply thin coat of oil.

For assembly operations use ONLY plastic or lead-in-ert hammer.

Before installing the oil seals make sure to check if the sealing lip is sound and apply specified grease between the sealing lip and the dust protection edge. Install the O-rings also with grease.

When installing the taper roller bearings take care of the pairing according to the original packing or to the manufacturer's specification.

The following thread adhesive, locking and surface sealing material are used at the axle, e.g.:

Thread adhesive	LOCTITE 277
Thread locker	LOCTITE 242
Surface Sealant	LOCTITE 515

Before installation apply the LOCTITE 242 and 277 concentrically to approx. 4-5 threads on the threaded surface of the bolt.

Clean and degrease the surfaces before applying the air-curing oil-resistant sealant type LOCTITE 515. Apply a continuous strip of min. 3 mm diameter to the specified surface. The time between applying the sealant and assembling the parts together may not exceed 10 mins.

Instead of the above adhesive locking and sealing material other equivalent grade ones may also be used.



SECTION 210

WHEEL DRIVE, WHEEL HUB

WHEEL DRIVE, WHEEL HUB SECTIONAL VIEW

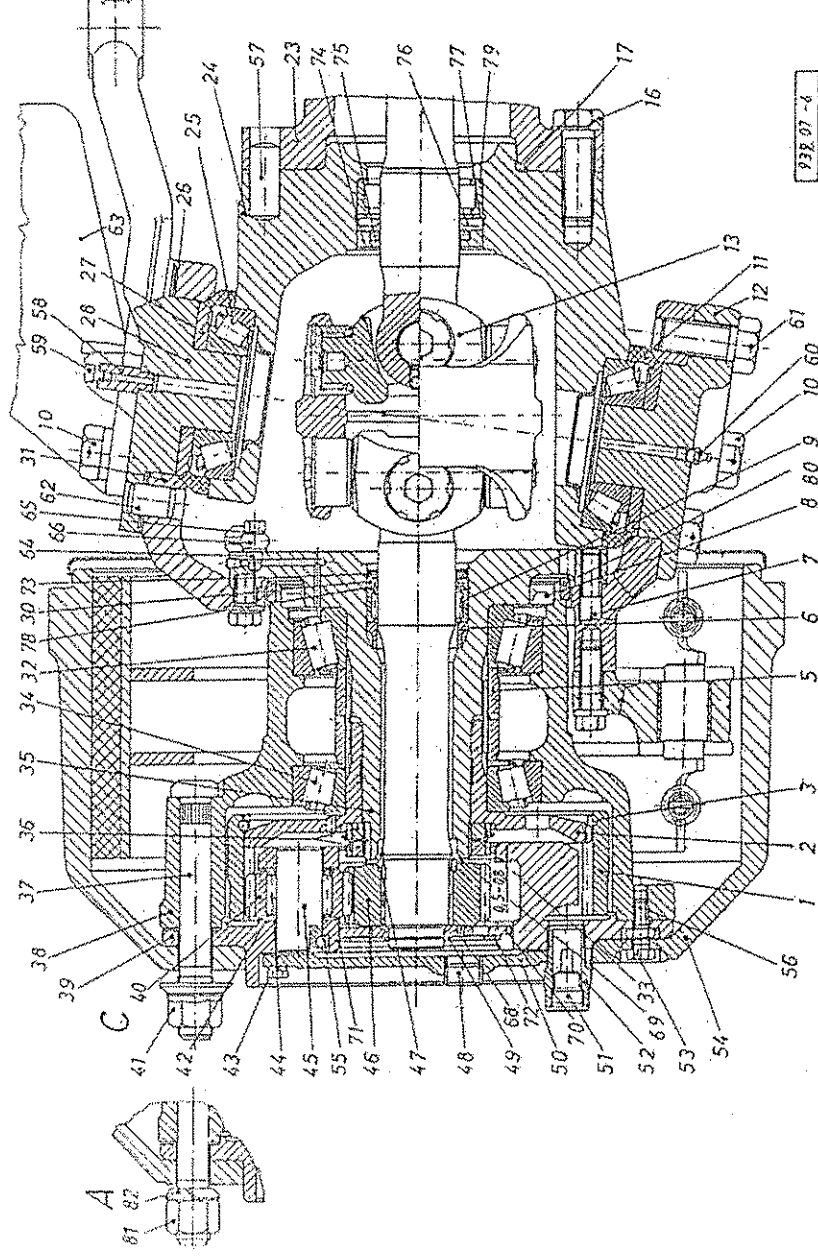


Fig. 1.: WHEEL DRIVE, WHEEL HUB SECTIONAL VIEW

SECTION 211

PARTS OF THE WHEEL DRIVE, WHEEL HUB

1 — Ring gear	47 — Spacer ring
2 — Ring gear Support	48 — Taper screw plug
3 — Circlip	49 — Snap ring
5 — Spacer sleeve (toothed)	50 — End — cover with seal ring
6 — Spacer sleeve	51 — Oil drain plug
7 — Hex. bolt	52 — Threaded stub
8 — Sealing ring	53 — Hex. bolt
9 — Needle roller bearing	54 — Brake drum
10 — Hex. bolt	55 — Steel ball
11 — Gasket	56 — Hex. bolt
12 — Tie-rod arm	57 — Dowel pin
13 — Double-joint shaft	58 — Extension
16 — Hex. bolt with lock plate	59 — 45 grease fitting
17 — O-ring	60 — Grease fitting
23 — Axle housing	61 — Lock wire
24 — Knuckle support (trunnion)	62 — Dowel pin
25 — Taper roller bearing	63 — Air chamber bracket
26 — Shims	64 — Hollow screw
27 — Washer	65 — Seal rings
28 — Steering arm (cover)	66 — Vent tube
30 — Sealing ring	— Breather
31 — Knuckle housing	68 — Distance ring
32 — Taper roller bearing	69 — Friction disk
33 — Lock plate	70 — Friction disk
34 — Taper roller bearing	71 — Spoon pin
35 — Spindle	72 — Shim
36 — Spindle-end nuts	73 — Sealing ring
37 — Wheel bolt	74 — Seal retainer
38 — Wheel hub	75 — Sealing ring
39 — Planetary carrier	76 — Sealing ring
40 — Planetary pinion	77 — Snap ring
41 — Wheel nut	78 — Snap ring
42 — Spacer plate	79 — Cylindric roller bearing
43 — Hex. bolt with spring washer	80 — Impulse ring
44 — Cylindric roller bearing	81 — Wheel nut
45 — Planetary pin	82 — Lock washer
46 — Sun gear	



SECTION 212

REMOVING AND REINSTALLING THE WHEEL DISK

REMOVING THE WHEEL DISK

With wheels in loaded condition loosen the wheel nuts by means of a wheel nut spanner. Then after jacking up the axle, remove the nuts and the wheel.

REINSTALLING THE WHEEL DISK

After positioning the wheel disk, tighten the wheel nuts as specified.

SECTION 213

REMOVING AND REINSTALLING THE BRAKE DRUM

REMOVING THE BRAKE DRUM

After removing the wheel disk back out the 4 hex. bolts attaching the brake drum to the wheel hub, then by 2 M12 bolts of at least 40 mm thread length driven into the threaded bores for this purpose in the brake drum flange pull the brake drum off and remove.

REINSTALLING THE BRAKE DRUM

Aligning the bores position the brake drum to the wheel hub. Install the hex. bolts attaching the brake drum and tighten to **39 - 49 Nm** torque.

SECTION 214

REMOVING AND REINSTALLING THE END-COVER

REMOVING THE END-COVER

— Drain the oil.

— Remove the hex. bolts (43) attaching the end-cover (50) to the planetary carrier and separate the end-cover. With a bolt driven into M8 hole in the cover flange.

REINSTALLING THE END-COVER

As described in the "GENERAL SERVICE INSTRUCTIONS" apply oil-resistant sealant to the seating surface of the end-cover. On the planetary carrier, outside the planetary pin holes but inside the cover locking threaded holes.

Aligning the bores and the oil drain bore position the end-cover to the planetary carrier then secure by lock washers and hex. bolts tightened to **18.6 - 24.5 Nm** torque.

Apply thread adhesive to the threaded stub (52) and screw into the planetary carrier.



SECTION 220

REMOVING AND REINSTALLING THE PINION CARRIER, ADJUSTING THE AXLE-SHAFT CLEARANCE

REMOVING THE PINION CARRIER

After removing the end-cover (50) by means of snap ring pliers remove the snap ring (71), then the shims (27) and the friction disk (70) from the pinion carrier.

Following this remove the hex. bolts (33) from the flange of the pinion carrier (8), then by means of M8 bolts of at least 35 mm thread length driven into the two threaded bores for this purpose in the pinion carrier flange pull the pinion carrier out of the wheel hub.

REINSTALLING THE PINION CARRIER

As described in the "GENERAL SERVICE INSTRUCTIONS" apply oil-proof sealant to seating flange of the pinion carrier (avoiding the bores from inside).

Position the pinion carrier into the wheel hub aligning the bores and the gear teeth. Secure by means of hex. bolts tightened to **39 - 49 Nm** torque.

ADJUSTING THE AXLE-SHAFT CLEARANCE

Insert the friction disk (70) into the installed pinion carrier and secure by the snap ring (71). Push the friction disk to bottom out against the bull gear (46) and by means of feeler gage measure the clearance between the friction disk and the snap ring.

From the shims (72) select such a pack the thickness of which is **0.4 - 1.6 mm** less than the measured value.

By means of snap ring pliers remove the snap ring (71) again, then insert the selected shim pack and finally install the snap ring.

DISASSEMBLING AND REASSEMBLING THE PLANETARY GEAR

By means of the service mandrel shown drive the planet pins out toward direction the steel ball (see Fig. 1.).

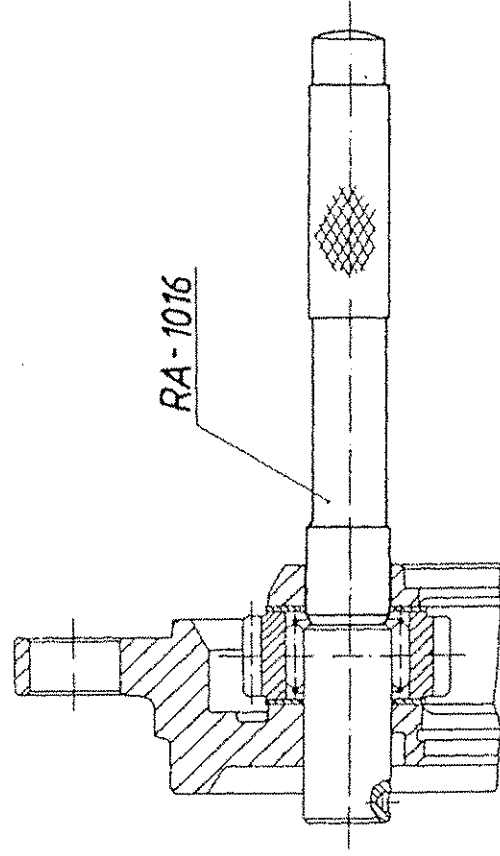


Fig. 1.: PRESSING OUT THE PLANET PINS

Stack the sound or replaced parts one by one over the pilot mandrel put thru the planetary carrier bore as shown in Fig. 2.

By means of the service mandrel shown tap in the planet pins (see Fig. 2.).

When pressing in the planet pins (45) make sure to check if the groove machined in the planetary carrier (39) for the steel ball and the seat in the planet pin align so, to be able to insert the steel ball before completely pressing in the planet pin.

When replacing the cylindric roller bearings (44) make sure to use ONLY identical color code, same tolerance class bearings supplied in one package for a planetary gear.

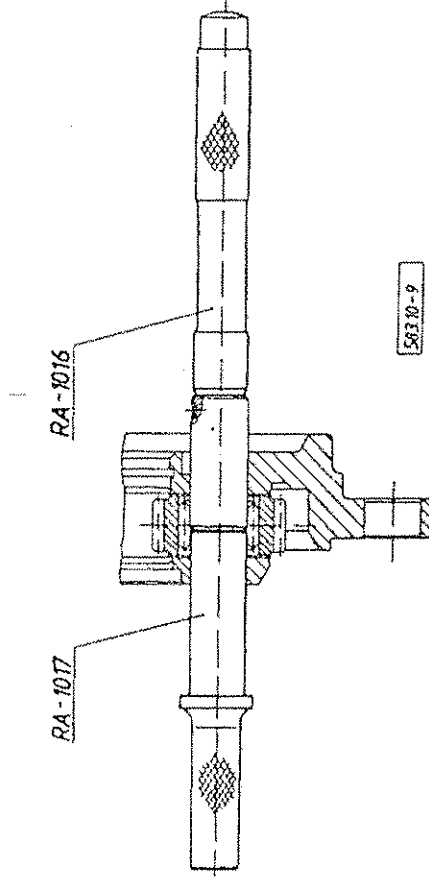


Fig 2.: PRESSING IN THE PLANET PINS

REMOVING AND REINSTALLING THE SUN GEAR

REMOVING THE SUN GEAR

After removing the pinion carrier remove the snap ring (49) and the distance ring (68).

Following this pull the sun gear (46) from the axle-shaft together with the spacer ring (47) and remove the friction disk (69).

REINSTALLING THE SUN GEAR

Reinstall the sun gear in reverse order of removal. Make sure to check if the friction disk (69) is on the spacer ring (47), as well as the chamfered side of the distance ring (68) faces inward.

REMOVING AND REINSTALLING THE WHEEL HUB

REMOVING THE WHEEL HUB

Before removing the spindle-end nuts safely suspend the wheel hub (38).

After removing the planetary carrier and the sun gear release the spindle-end nut (36).

With the clamping elements shown, clamp the wheel hub elements together and remove the spindle end nut with the nut spanner shown (Fig. 1.).

Remove the suspended wheel hub from the knuckle. The wheel hub parts (inner part of the inner taper roller bearing (32) and toothed spacer sleeve (5) clamped together with the locking elements are removed from the knuckle by the seal ring (8) struck with surface sealant.

Application of the locking elements assures central positioning of the seal ring pressed in the wheel hub, when removing and reinstalling the assembled wheel hub.

REINSTALLING THE WHEEL HUB

Reinstall the wheel hub pre-assembled and clamped together by means of the clamping elements, on the spindle according to Section 224.

Adjust the axial play of the wheel hub bearing support to **0.01 - 0.04 mm**.

By means of the wrench Drw. No. 4983-00455 tighten the inner shaft-end nut (36) — while continually rotating and axially moving the wheel hub — so, the wheel hub shall turn hard. By this means proper connection of the bearings is assured.

Back out the shaft-end nut and tighten again to **196 Nm** torque, then turn back by approx. **35° to 45°**.

Position the lock plate, install the outer shaft-end nut and tighten to **450 - 490 Nm** torque.

By means of dial indicator check if the specified **0.01 - 0.04 mm** axial play is obtained.

In case of improper bearing clearance repeat the adjustment by properly turning back the shaft-end nut and check procedures.

If the **0.01 - 0.04 mm** axial play is adjusted secure the shaft-end nuts by the lock plate (33).

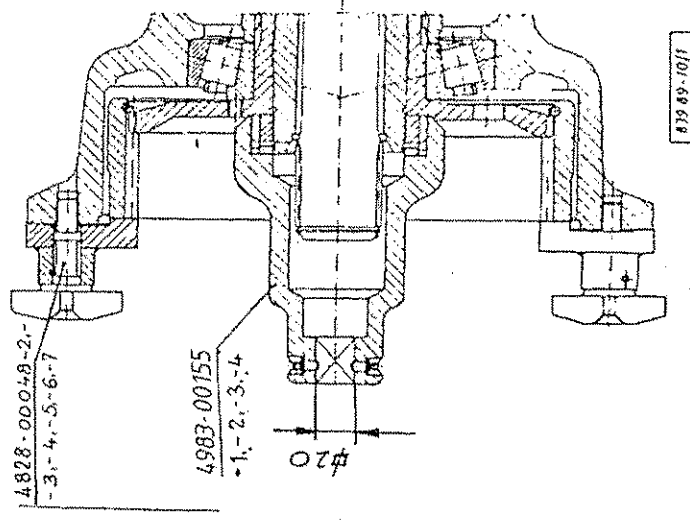


Fig. 1.: REMOVING THE SPINDLE END NUT

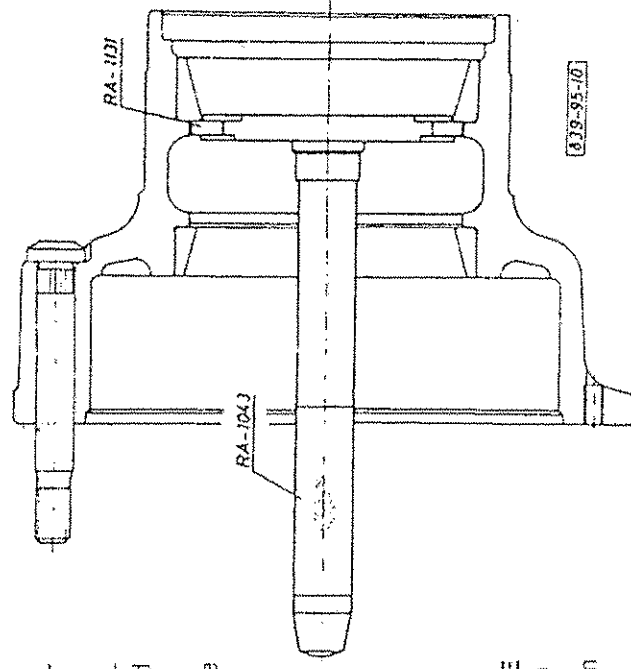


Fig. 1.: DRIVING OUT THE CUP OF THE OUTER TAPER ROLLER BEARINGS

SECTION 224

DISASSEMBLING AND REASSEMBLING THE WHEEL HUB

ADJUSTING THE AXIAL PLAY (REPLACING THE BEARING INNER RACES AND THE SEALING RING)

By means of simple pry remove the sealing ring (8) from the removed wheel hub.

Press out the cups of the taper roller bearings. For both bearing cups use the tool shown in Fig. 1.



REASSEMBLING THE WHEEL HUB

By means of the tools shown in Fig. 2, press the cup of the outer taper roller bearing (34) into the wheel hub. Turn the wheel hub over and by means of the same tools press in the cup of the inner taper roller bearing (32), as well.

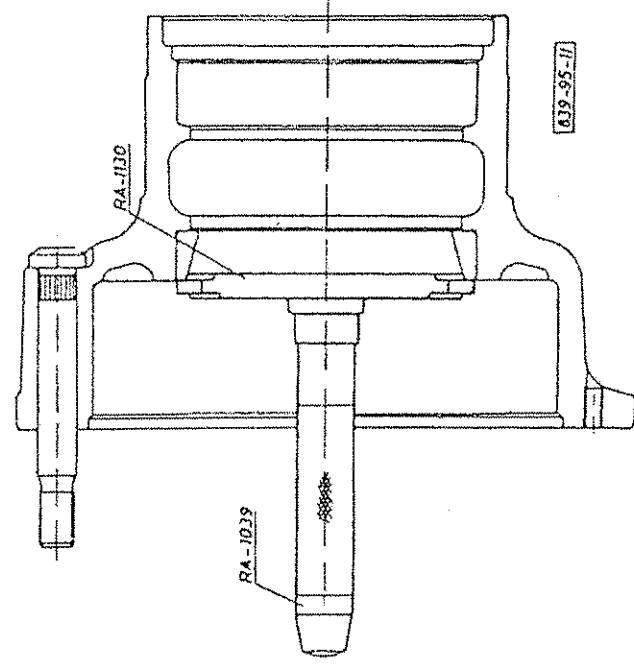


Fig. 2: PRESSING IN THE CUPS OF THE TAPER ROLLER BEARINGS

Position the inner part of the inner taper roller bearing (32) into the cup race. Apply thin coat of oil-resistant surface sealant to the sealing ring seat, then by means of the tools shown in Fig. 3, press the sealing ring (8) into the wheel hub.

WARNING!

On axles mountable with ABS, toothed surface of impulse ring shall be protected from shocking during installation of seal ring!

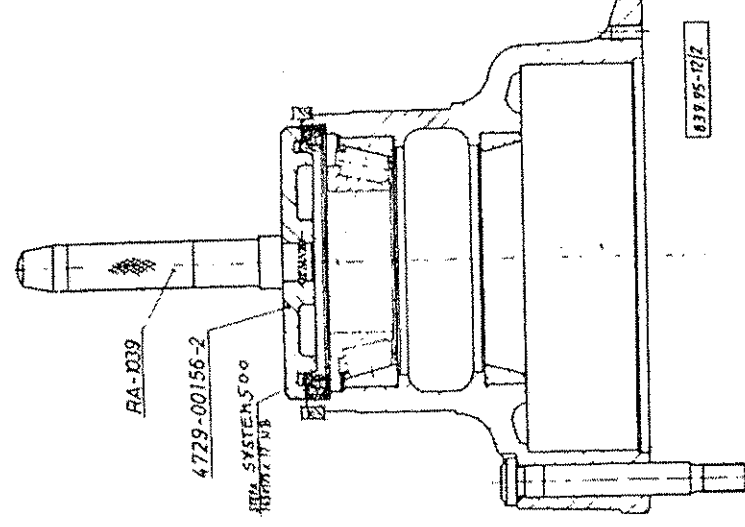


Fig. 3: PRESSING IN THE SEALING RING



THE WHEEL HUB PRE-ASSEMBLING

Pre-assembling is made on the master shaft shown in Fig. 4.

Place on the master shaft the wheel hub assembled with taper roller bearing cups, inner part of the inner taper roller bearing and the seal ring. Place in the engaged spacer sleeve (5).

Position on it the ring gear support (2) assembled with the inner part of tapered roller bearing and ring gear, take care of bearing parts.

Clamp the installed parts together with the clamping elements shown in Fig. 1. of Section 223.

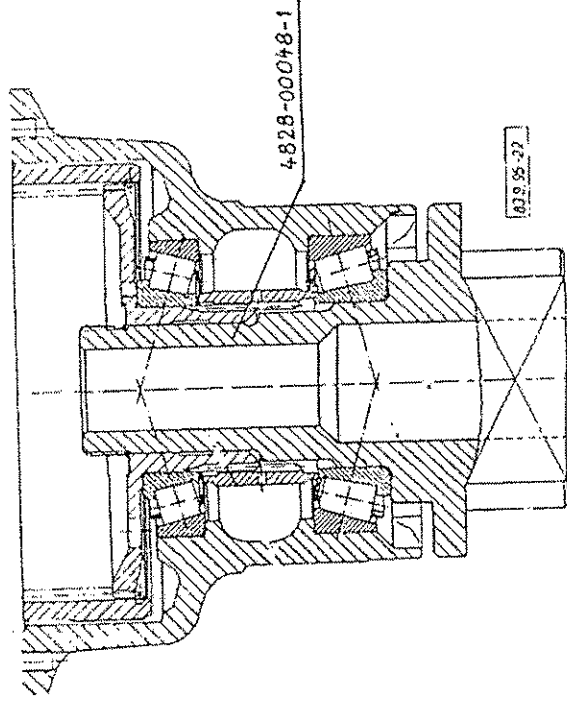


Fig. 4.: THE WHEEL HUB PRE-ASSEMBLING OF

SECTION 225

DISASSEMBLING AND REASSEMBLING THE RING GEAR SUPPORT

DISASSEMBLING THE RING GEAR SUPPORT

After removing the circlip (3) pull the ring gear (1) off the ring gear support.

By 2 M8 bolts of at least 40 mm thread length driven into the thru bore in the ring gear support flange press off the taper roller bearing inner race (see Fig. 1.).

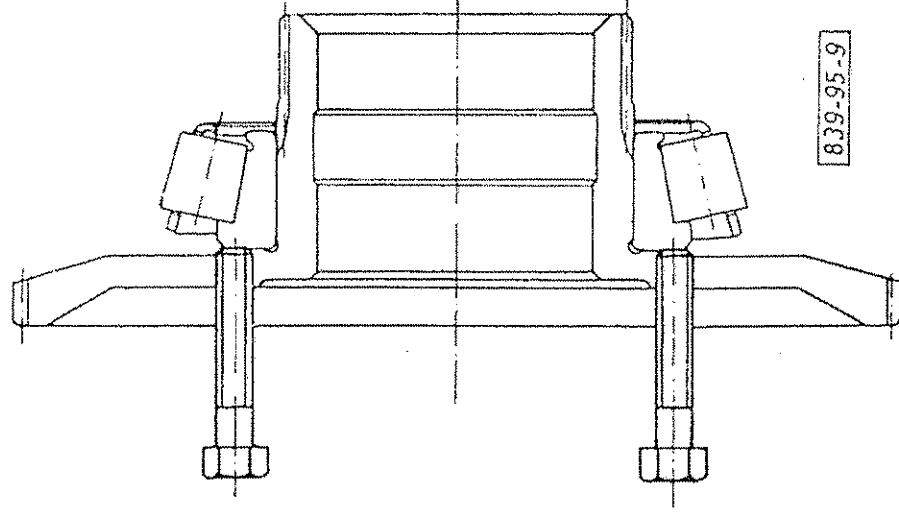


Fig. 1.: PRESSING OFF THE TAPER ROLLER BEARING INNER RACE

REASSEMBLING THE RING GEAR SUPPORT

As shown in the figure press the taper roller bearing race to the ring gear support to bottom out (see Fig. 2.).

Aligning the toothing of the ring gear support and the ring gear push them together and install the circlip (3) into its groove.

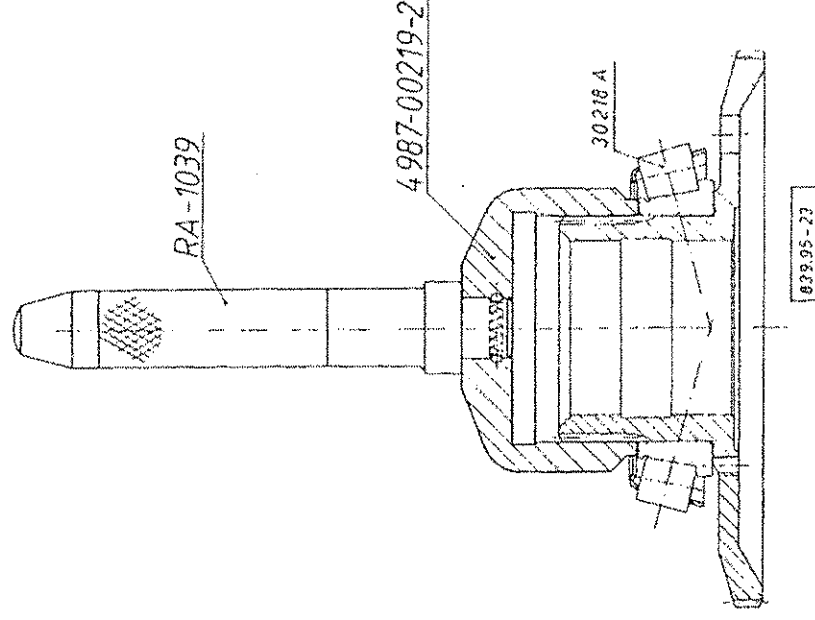


Fig. 2.: PRESSING ON THE TAPER ROLLER BEARING INNER RACE

SECTION 229

INSTALLATION INSTRUCTIONS FOR THE PARTS OF ANTILOCKING SYSTEM

This section contains the constructional elements of the antilocking and anti-skid systems (ABS and ASR), that can be installed by the customer into each axle type as well as the installation instructions.

The models given "TECHNICAL DATA" contain the items (A,C) necessary at the installation of the anti-lock and anti-skid systems (1).

1. INSTALLABLE ELEMENTS OF THE ANTI-LOCK AND ANTI-SKID SYSTEMS

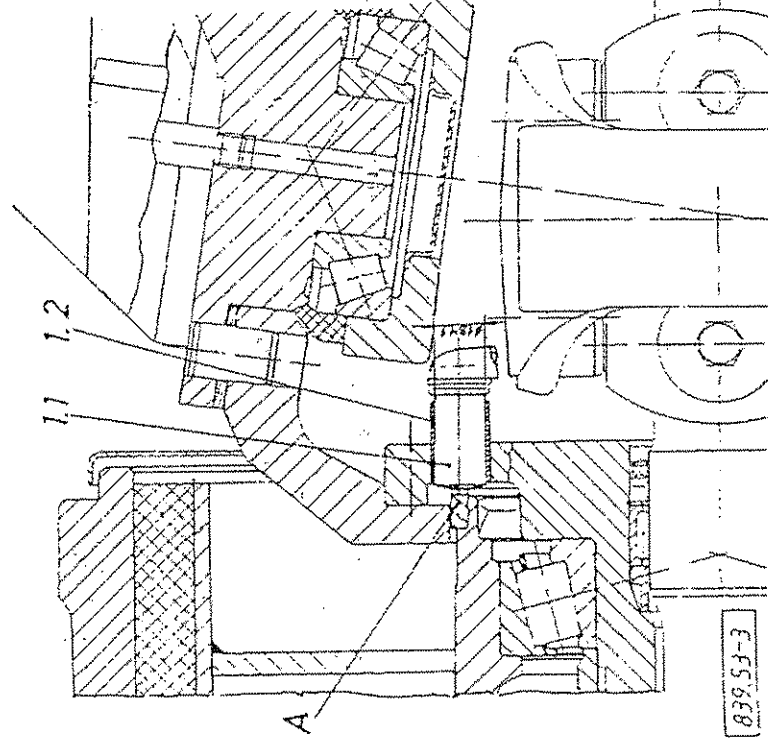
1.1 Revolution sensor:

A 335545231 Robert Bosch GmbH
or WABCO 441 032:001 0
or ZB 9010-1/83315 KNORR-BREMSE

1.2 Spring bushing:

C 335 002-431 A Robert Bosch GmbH
or WABCO 899 760 510 4
or 4B 69698 KNORR-BREMSE

NOTE: The revolution sensor and the spring bushing must be of the same make.



A. TOOTHED PULSE GENERATING RING



2. INSTALLATION INSTRUCTION

Before installing the spring bushing coat the 18H9 bore of the revolution sensor holder with copper paste or silicone grease (e.g. Molykote FP 186, Unirew N3) in order to prevent corrosion.

Insert the spring bushing from the middle of axle into the 18H9 bore until stop (1.2).

Put the revolution sensor (1.1) into the spring bushing and push it until it reaches the generator ring and the wheel hub. This setting has to be performed every time the hub will be disassembled.

During operation maximum clearance between the revolution sensor and the generator ring may be 0.8 mm.

When leading the wire of the revolution sensor out of the axle brake mechanism be sure not to bend it with a ra-

dius less than R50 mm. Fasten the wire at distances of 50 mm exposed to heat load inside the brake mechanism.

Check the runout of the toothed pulse generating ring on the wheel hub. Maximum permissible runout of toothing in direction of revolution sensor shaft is 0.2 mm.

NOTE: Tachometer to be built in only with spring bushing of the same manufacturing. Besides Bosch and Knorr tachometer, a tachometer of other production, interchangeable with the above is allowed to be built in. If the impulse ring is changed, before pressing the new impulse ring is to be headed uniformly to 150 C° and pushed up to stop on the wheel hub.

TOOTHING CAN NOT GET DAMAGED!

SECTION 241

FRONT AXLE HOUSING

REMOVING AND REINSTALLING THE TIE-ROD, ADJUSTING THE TOE-IN AND THE WHEEL TURN ANGLES

REMOVING THE TIE-ROD

Remove the cotters and back out the castle nuts, then remove the linkages from the taper bore of the tie-rod arms by pressing out the ball stud with the tool shown (Fig. 1.).

REINSTALLING THE TIE-ROD

Reinstall the tie-rod in reverse order of removal.

After reinstalling the tie-rod adjust the steering geometry of the axle.

1. ADJUSTING TOE-IN

Toe-in (Fig. 2.) means the difference between the dimensions "A" and "B" measured at the height of the wheel center in front and rear of the brake drum flange. The value "B" measured in front is smaller.

TOE-IN = A - B = 1.5 ± 1.5 mm.

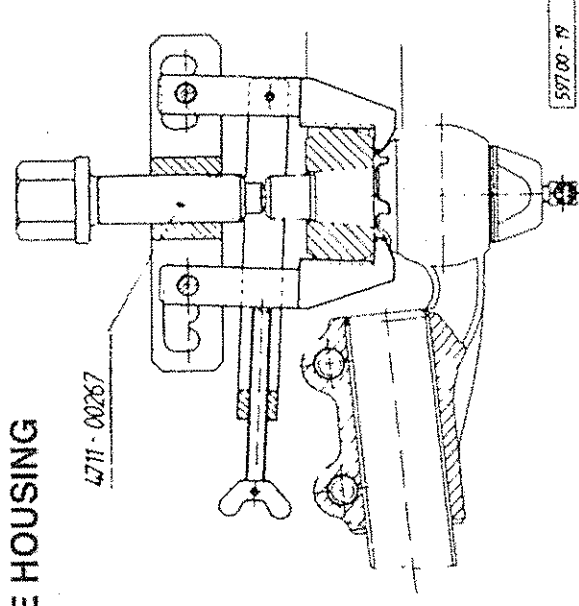


Fig. 1: PRESSING OUT THE BALL STUDS

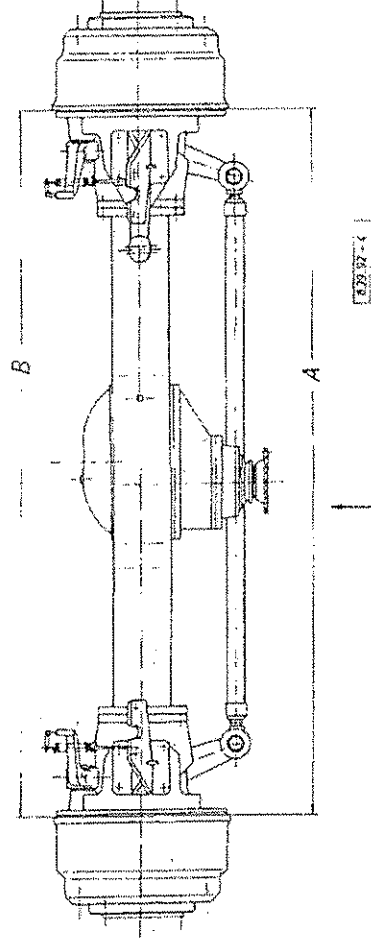


Fig. 2: TOE-IN



ATTENTION!

Measure toe-in with axle installed to the vehicle and in condition not hoisted up!

Perform adjustment of toe-in after loosening the tie-rod clamp self lock nuts by turning the tie-rod to proper direction.

After proper adjustment tighten the castle nuts of the ball studs to **230 - 320 Nm** and the tie-rod clamps castle nuts to the torque specified in Section 242, then cotter secure the self lock nuts and check the toe-in again.

2. ADJUSTING MAX. INNER WHEEL TURN ANGLE

- 1 — Stopbolt
- 2 — Jamnut
- a — Wheel turn angle

Upon reaching the max. inner wheel turn angle (a) specified in the “**TECHNICAL DATA**”, adjust the stop bolt so, to bottom out against the axle body (Fig. 3.).

WARNING!

By means of the pressure relief valve adjust the power steering gear so, the servo effect shall terminate **2.0 - 3.0 mm** before the stop bolts bottom out against the axle body.

Secure the stop bolt by tightening the hex. jamnut to **60 - 80 Nm** torque.

Perform adjustment of the max. inner wheel turn angle on both sides.

When adjusting the inner wheel turn angles the double joint may not interfere with the knuckle carrier and the steering knuckle.

The outer wheel turn angle is a resultant value.

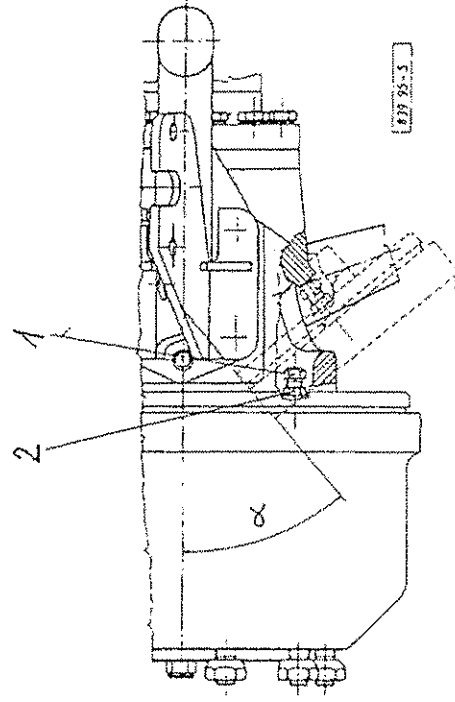


Fig. 3.: ADJUSTING THE MAX. INNER WHEEL TURN ANGLE

SECTION 242

REPAIRING THE TIE-ROD

DISASSEMBLING THE TIE-ROD

Loosen the self-lock nut (4). Screw the ball joint head out of the tie-rod end.

The ball joint head may be replaced as a unit only.

When reassembling the tie-rod make sure to check if the distance (X) between the tie-rod end and the ball stud centerline is nearly identical on both sides.

After installing the tie-rod to the tie-rod arms and adjusting the specified toe-in tighten the self-lock nuts of the shackles to **75 - 90 Nm** torque.

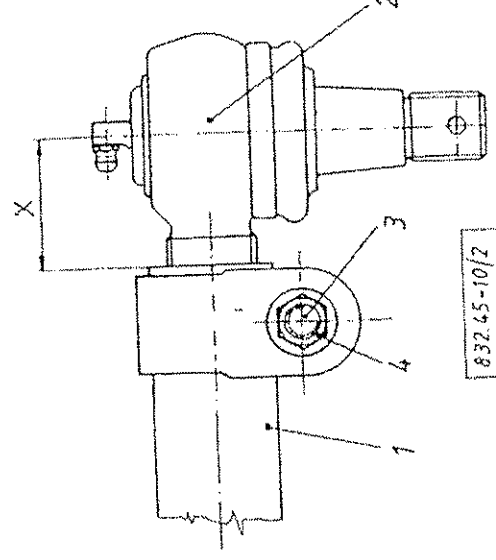


Fig. 1.: THE TIE-ROD



REMOVING AND REINSTALLING THE STEERING KNUCKLE

HOUSING THE SPINDLE

After the wheel hub is dismounted (Section 223) remove the steer arms (28) and the tie-rod arms (12) as described in the Section 245.

Then pull the spindle (35) together with the steering knuckle housing (31) of the knuckle carrier (24) and the outer axle-shaft.

After removing the vent tube (66), by screwing the hex. bolts (7) out, the knuckle can be separated from the knuckle housing.

REINSTALLING THE STEERING KNUCKLE HOUSING AND THE KNUCKLE

The spindle with the knuckle housing are fixed to each other with hex. bolts assembled with **LOCTITE 242**. Take care of that on the spindle the breather be positioned on top. Tightening torque of the hex. bolts is **160 - 180 Nm**.

The vent tube (66) put thru the hole of the knuckle housing is to be fixed with the hollow bolt (64) to the spindle.

For installing the inner seals of the spindle over the splines of the outer axle-shaft pull the service sleeve of Drw. No. 4746-00100 over the end of the outer axle shaft.

Carefully push the spindle mounted with knuckle housing, subassembled with inner seals over the service sleeve on the outer axle-shaft, taking care not to damage the sealing rings, then pull the service sleeve of the axle-shaft end.

Assemble the steering and tie rod arms on to the knuckle support (24) as given in Section 245.

REMOVING AND REINSTALLING THE DOUBLE-JOINT THE KNUCKLE SUPPORT

REMOVING THE DOUBLE-JOINT

After removing the steering knuckle carefully pull the double joint out of the differential gear splines and the pinion carrier seals.

REMOVING THE KNUCKLE SUPPORT

Remove the hex. bolts (16) attaching the knuckle support (24) to the axle housing (23).

Separate the properly suspended knuckle support (24) from the axle housing flange with 2 bolts of **M12** driven in the axle housing flange.

REINSTALLING THE KNUCKLE SUPPORT

Position the sound "O"-ring to shoulder of the knuckle support.

The knuckle support subassembled with double-joint into the axle housing as piloted by the dowel pin (57). Install the hex. bolts (16) with lock plates.

Tighten the bolts to **334 - 353 Nm** torque and fold the marked corners of the locking plates on the bolt head plane.

REINSTALLING THE DOUBLE-JOINT AND THE STEERING KNUCKLE

Carefully push the inner longer axle-shaft of the double joint thru the sealing ring of the knuckle carrier and the bore of its cylindric roller bearing (79), then aligning the splines with those of the differential gear push the axle-shaft further to bottom out against the differential, making sure not to damage the sealing ring (75 and 76).

REMOVING AND REINSTALLING AND ADJUSTING THE STEERING ARMS, THE CHAMBER BRACKET AND THE TIE-ROD ARMS.

REMOVING THE STEERING AND TIE-ROD ARMS

Remove the securing wire from the bolts attaching the chamber bracket and steering arm, then back out the hex. bolts (10).

Remove the chamber bracket (63).

By 2 M10 bolts driven into the threaded bores of the steering arm remove the steering arm from the steering knuckle housing. Remove the tie-rod arms (12) in the same way.

REPLACING THE TAPER ROLLER BEARING INNER RACE

The taper roller bearing inner race remained on the removed tie-rod arm and steering arm can be pulled off by means of bearing puller (Fig. 1.).

Position the washer (27) to the cover (28) and tie-rod arms (28 and 12). By means of the press sleeve shown in Fig. 2. press on the taper roller bearing inner race to bottom out.

ADJUSTING THE BEARING PRELOAD, REINSTALLING THE STEERING ARMS AND THE TIE-ROD ARMS

In assembling the steering arm (or cover) (28) and the tie rod arms (12), first the taper roller bearings (25) No. 31310 must be mounted free of clearance by installing shims (26) of proper thickness, without seal (11), then the knuckle bearings must be preloaded by reducing thickness of the shims by 0.25 - 0.35 mm.

Preloading is proper, if in this pre-assembled condition the rotating torque of the knuckle housing is 17.6 - 25.5 Nm. Torque is measured with a torque spanner placed on hex. bolt locking the cover.

If adjustment is proper, make the final assembling.

Take care of that the parts used in the adjustment be installed.

Install the seals (11) too.

Locating with the dowel pin (62), mount the cover or the steering arm and the tie-rod arms. Position the chamber bracket (63) on the cover and steering arm. Screw in the drilled-head bolts (10) and tighten them to a torque of 412 - 451 Nm, then secure with locking wire (61).

Screw in the grease fittings (59) and (60) with the extension (58) and fill the pins or the taper roller bearings with the grease specified.

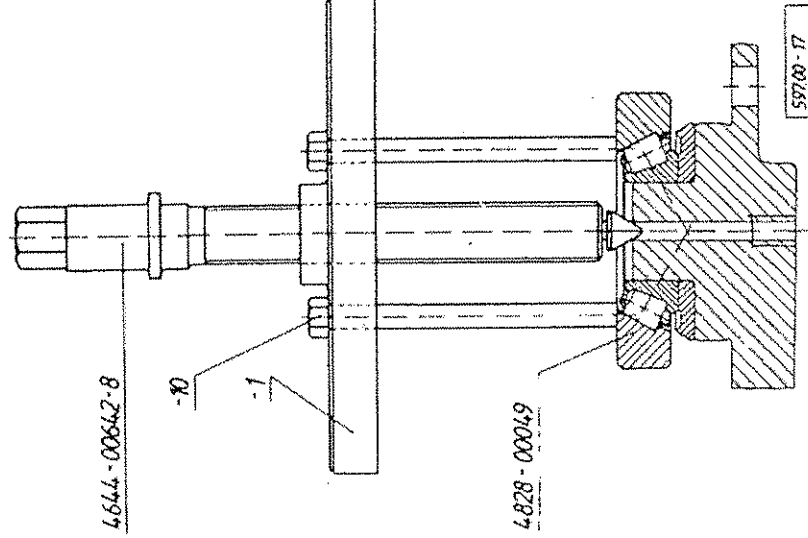


Fig. 1.: PULLING OUT THE INNER PORT OF THE
TAPER ROLLER BEARING

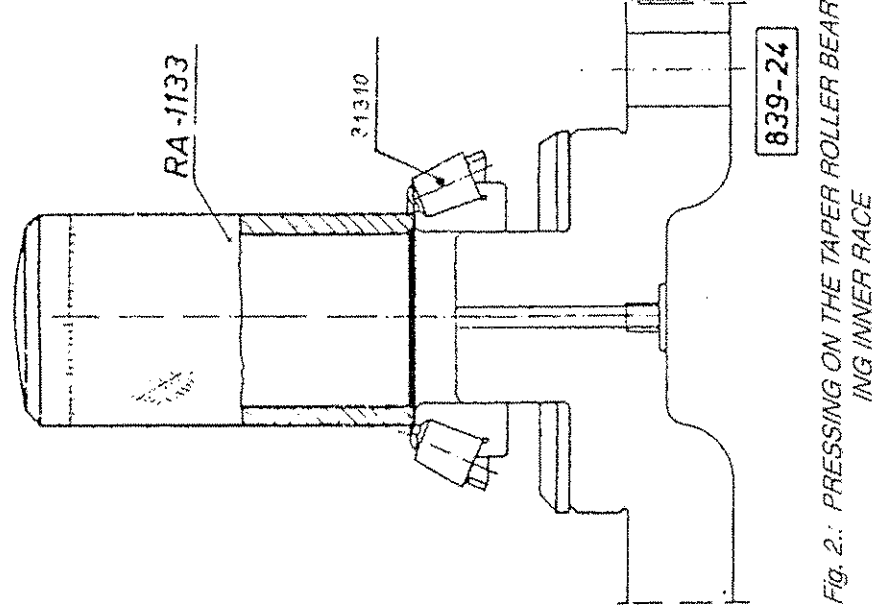


Fig. 2.: PRESSING ON THE TAPER ROLLER BEAR-
ING INNER RACE

ASSEMBLING THE DOUBLE-JOINT (AXLE-SHAFT REPLACEMENT)

REMOVING THE AXLE-SHAFTS FROM THE DOUBLE-JOINT

Remove the screw plug from the bearing cap and remove the snap ring before the bearing cap.

- 1 — Bearing cap
- 2 — Carrying ring
- 3 — Screw plug
- 4 — Snap ring
- 5 — Spider
- 6 — Pivot pin
- 7 — Threaded dowel

By means of the puller shown remove the bearing caps from the carrying ring on both the sides, by screwing the bolt of the puller to place of the screw plug (see Fig. 1.).

Mark the removed parts to assure reinstallation to their original place.

After removing the bearing caps remove the axle-shaft together with outer spider from the carrying ring.

Pull the bearing cap out of the outer spider by proper adapter of the puller, then unscrew the dowel pins, from the spider.

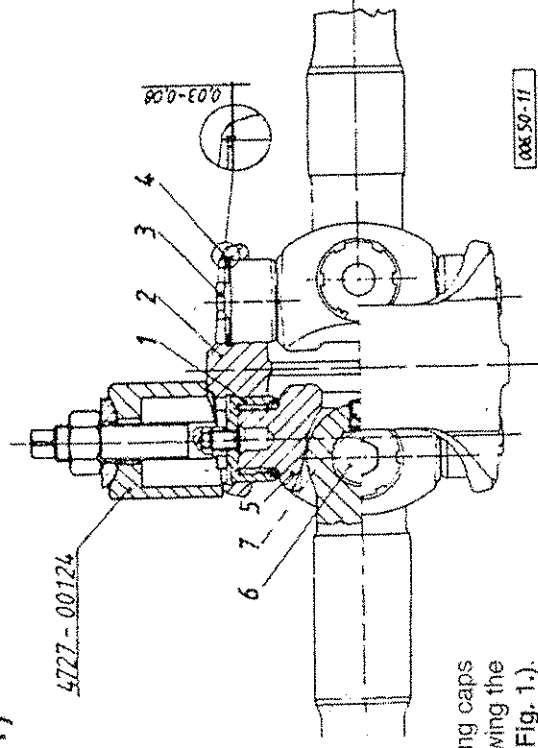


Fig. 1.: PULLING OUT THE BEARING BUSH

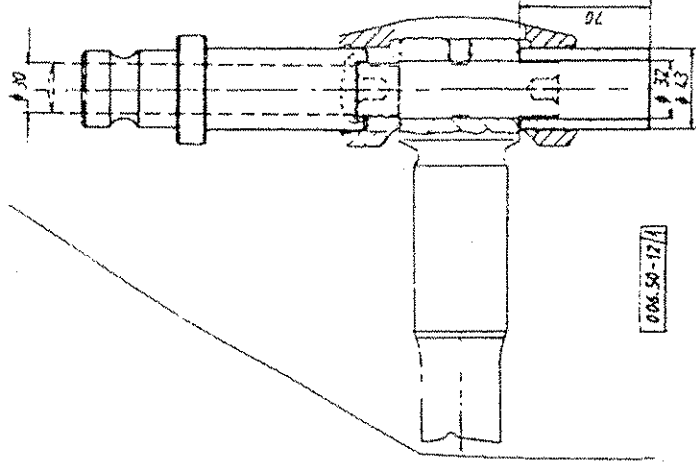


Fig. 2.: DRIVING OUT THE KNUCKLE PINS

Properly backing up the axle-shaft, start the knuckle pin out of the axle-shaft by means of the thrust pin of the tool shown in Fig. 3., then drive out by a mandrel of diameter less than 30 mm (Fig. 2.).

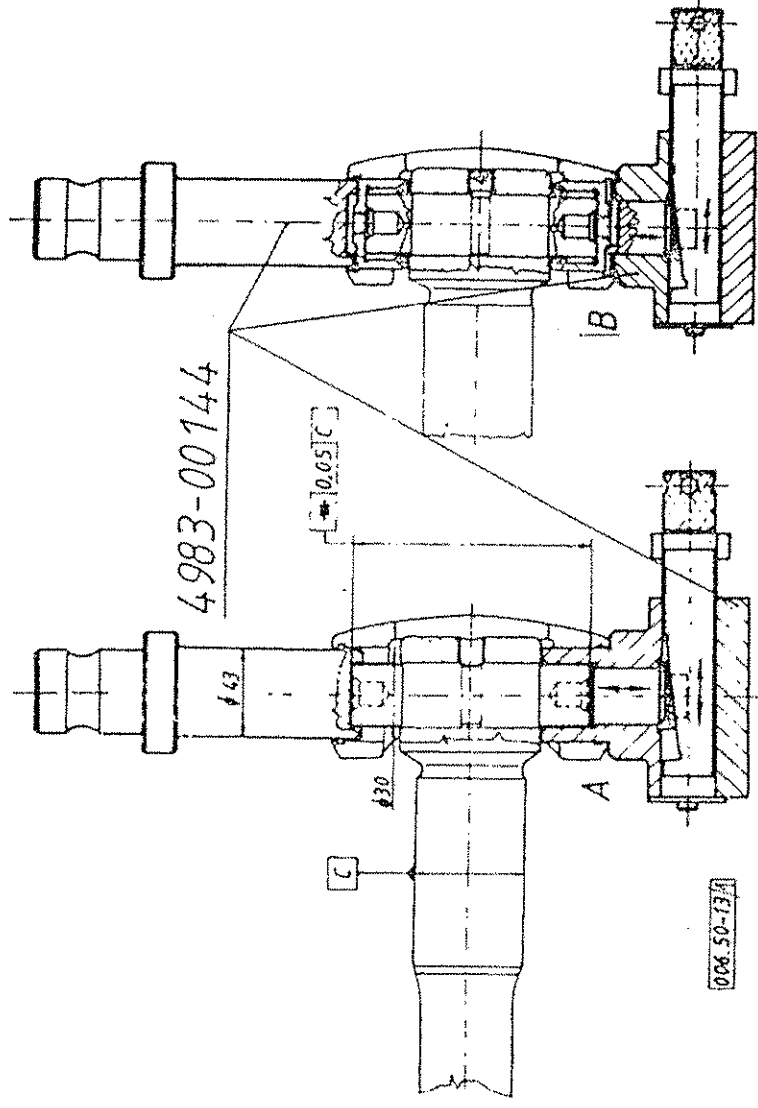


Fig. 3: INSTALLING THE KNUCKLE PINS AND THE BEARING CAPS

REASSEMBLING THE DOUBLE JOINT

Reassemble the new axle-shaft in reverse order of removal.

Install the proper axle-shaft into the spider and press in the knuckle pin to center position as shown by "A" in Fig. 3.

WARNING!

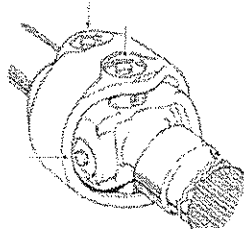
The symmetry tolerance of the face of the knuckle pin pressed into the axle-shaft relative to the ground bearing journal of the axle-shaft is ± 0.05 mm. Perform check between centers by dial indicator.

Adjustment of the mean position can be performed by rotating the adjusting spindle of the device and by adjusting the movable wedge or its support pin (Fig. 3.).

After adjusting the knuckle pins to mean position, secure the threaded dowel (7). Apply **LOCTITE** thread locker to the dowel.

DOUBLE-JOINT SERVICE

The Cardan-Joint caps are fitted with plugged threaded ports that are used for disassembly/assembly. While these ports will accept a standard zerk fitting, we recommend that only a needle attachment be used to flow lube into these joints. Adding lube under pressure may result in the failure of the cup seal.



Fill up the roller spaces of the bearing bushes equipped with oil seal, as well as the bores of the knuckle pins and the end of the spider with specified grease.

Adjust the axial play of the knuckle pin and the spider to $0.03 - 0.08$ mm, by installing identical thickness snap rings or using ones different with one size step.

According to detail "A" of Fig. 3, use proper backing and press the bearing cap assembly to one side, then install a "standard" 2.075 mm thickness blue colored snap ring into the groove. By backing up as shown in detail "B" of Fig. 3., press the bearing cap assembly to the other side and install here also the "standard" 2.075 mm thickness blue colored snap ring into the groove.

If the joint assembly can be turned easily, the axial play is excessive, so first install the next higher thickness step snap ring instead of the "standard" thickness one. If the joint in spite of this still can be rotated easily, replace the snap ring on the other side also to the next higher thickness step one.

When the joint assembly turns excessively hard, the axial play is too low, so replace the "standard" thickness snap rings to a lower thickness step one, as described above.

Insert the spider subassembled with axle-shaft into the carrying ring and backing up properly press in the bearing caps assembled with oil seal and packed with grease using the thrust pin of the press set No. 4983-00144. Install the snap rings as above.

Install the screw plugs into the bearing caps filled with grease.



REMOVING AND INSTALLATION OF THE INNER BEARING AND FASTENERS OF THE SPINDLE TRUNNION

REMOVAL FROM THE SPINDLE

By means of the puller shown in Fig. 1, pull out the seal retainer (73), the sealing ring (30).

Remove the snap ring (78) in front of the cylindric roller bearing (9), then using the puller pull out the bearing (Fig. 4727-00152-10).

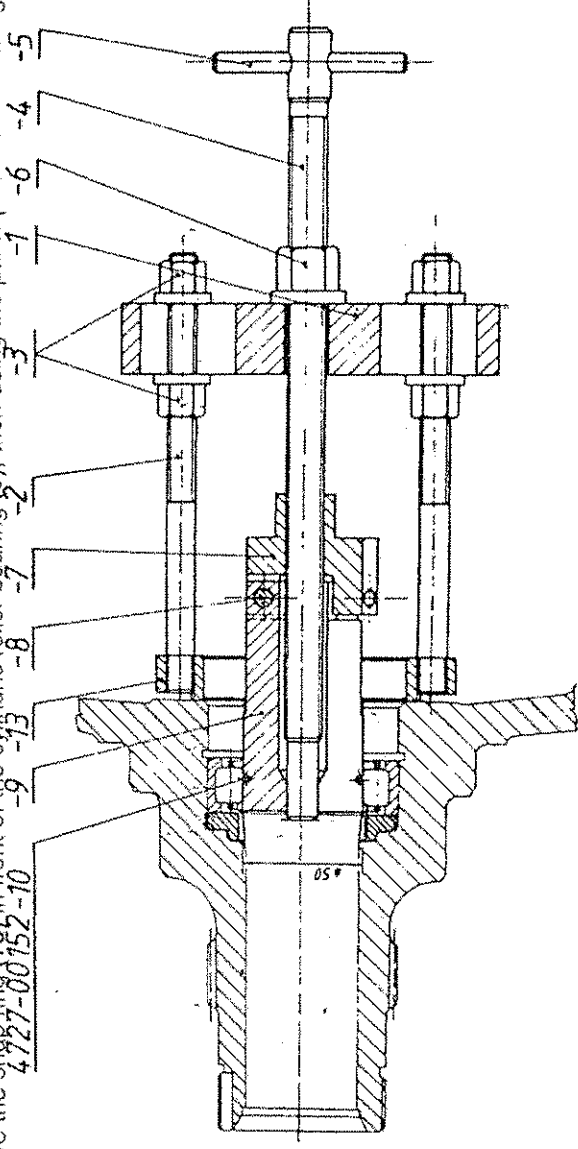


Fig. 1: PULLING OUT THE CYLINDRIC ROLLER BEARING FROM THE SPINDLE

1.).

REMOVING THE KNUCKLE SUPPORT BEARING

By means of the device shown in Fig. 2, pull out the seal retainer (74), the seal ring (76) from the knuckle support.

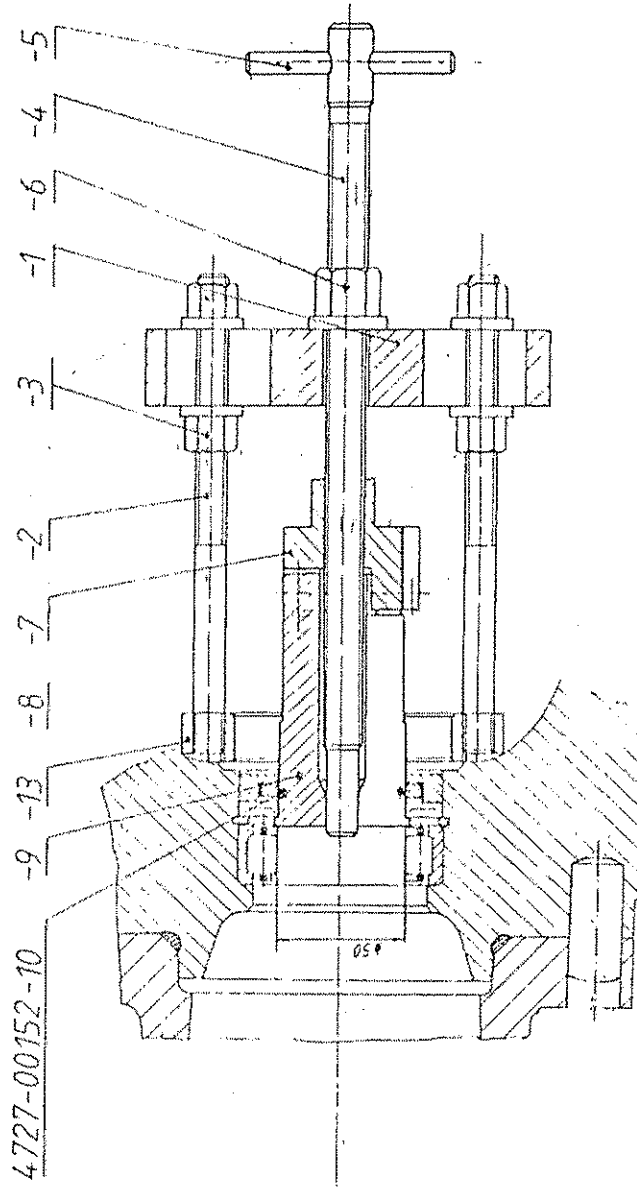


Fig. 2: REMOVAL OF KNUCKLE SUPPORT BEARING



Remove the lock ring (77) and pull out the cylindrical roller bearing (79) with the tool shown in Fig. 2.

INSTALLATION

Place the spacer sleeve (6) in the spindle (35). By means of the tools shown drive in the cylindrical roller bearing (Fig. 3.).

When assembling the knuckle support.

Before the cylindrical roller bearing drive in the snap ring and sealing ring (76), then by the same tool

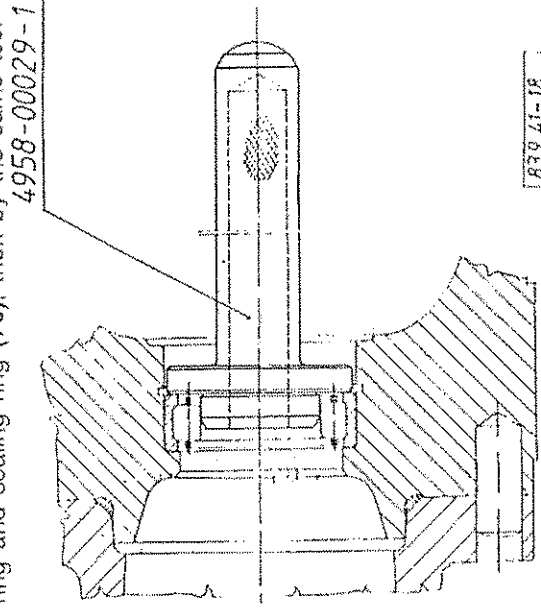


Fig. 3.: DRIVING IN THE CYLINDRIC ROLLER BEARINGS

the taper roller bearings 31310 out of the knuckle support.

Fig. 4.: DRIVING IN THE CYLINDRIC ROLLER BEARINGS INTO THE KNUCKLE SUPPORT

drive in the seal retainer (74) together with the seal (75) so, the seal shall be on the inner side.

REMOVING AND REINSTALLING CUPS OF TAPER ROLLER BEARING

By means of the device shown in Fig. 5. pull the cup of

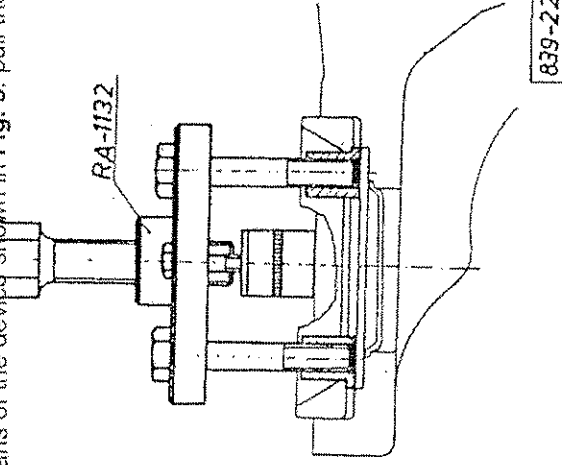


Fig. 5.: PULLING OUT THE TAPER ROLLER BEARING CUPS

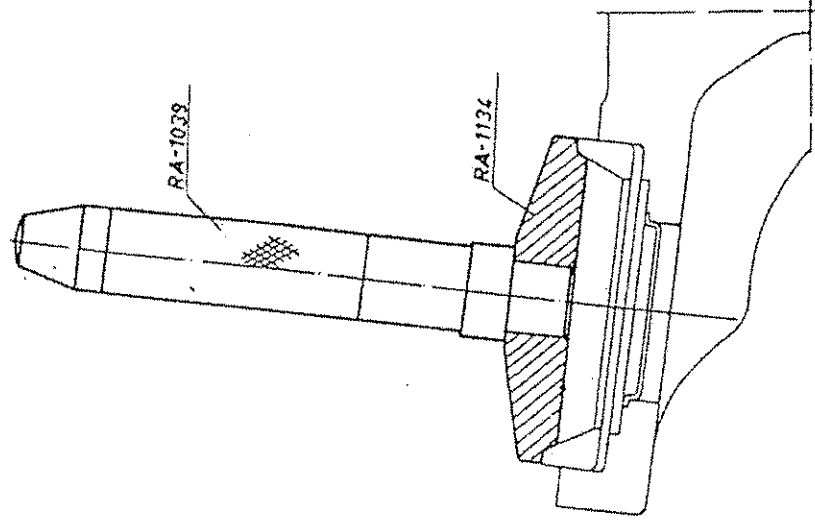


Fig. 6.: PRESSING IN THE TAPER ROLLER BEARING CUP

Press in of the taper roller bearings 31310 as shown in Fig. 6.

FRONT WHEEL BRAKE

SECTION 260

DRAWING OF THE FRONT WHEEL BRAKE

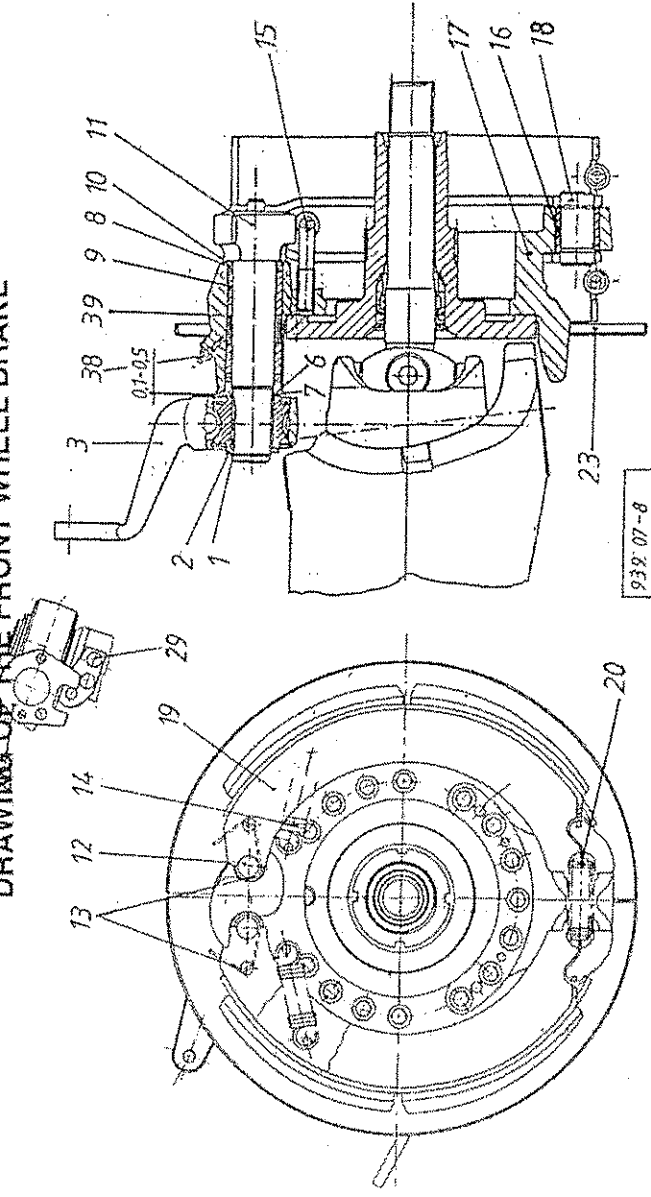


Fig. 1.: DRAWING OF THE WHEEL BRAKE

SECTION 261

PARTS OF THE FRONT WHEEL BRAKE

- | | |
|--------------------|---|
| 1 - Snap ring | 13 - Roller locking spring |
| 2 - Washer | 14 - Brake shoe return spring, long |
| 3 - Brake lever | 15 - Spring support pin |
| 6 - Shimms | 16 - Bushing |
| 7 - Spacer | 17 - Brake Bracket (steering knuckle housing) |
| 8 - Sealing ring | 18 - Brake shoe anchor pin |
| 9 - Bearing bush | 19 - Brake shoes |
| 10 - Spacer washer | 20 - Brake shoe return spring, short |
| 11 - Camshaft | 23 - Dustshield |
| 12 - Roller | 28 - Stop |
| | 29 - Hex. bolt, Flat lock washer |



38 - Ball grease fitting

39 - Spacer

SECTION 262

REMOVING AND REINSTALLING THE BRAKE SHOES

REMOVING THE BRAKE SHOES

Remove the brake drum (54 in Fig. 1. of Section 210).

Pry the brake shoes (19) away. Remove the rollers (12) together with the lock springs (13).

Unhook the shoe return springs by means of a spring hooking device, then remove the brake shoes.

REINSTALLING THE BRAKE SHOES

Position the brake shoes to the placed in shoe anchor pin (18) and the brake camshaft head. Hook the return springs (14 and 20) to the brake shoes. Use the spring hooking device.

SECTION 263

REPAIRING THE BRAKE SHOES AND THE BRAKE DRUM

DO NOT operate the axle with brake drum trued-up exceeding the permitted max. diameter and brake lining worn below the permitted limit. Exceeding the permitted limits the brake camshaft may turn over making the brake application impossible.

The permitted minimum brake lining thickness is indicated by the upper edge of the recess in the brake lining side. (This value is $v_{min} = 7 \text{ mm}$ as measured at center of the brake shoe)

In case of damage or wear to the permitted limit replace the brake linings.

Replacement of the brake lining or true-up of the brake shoe may be performed only in brake shoe pairs.

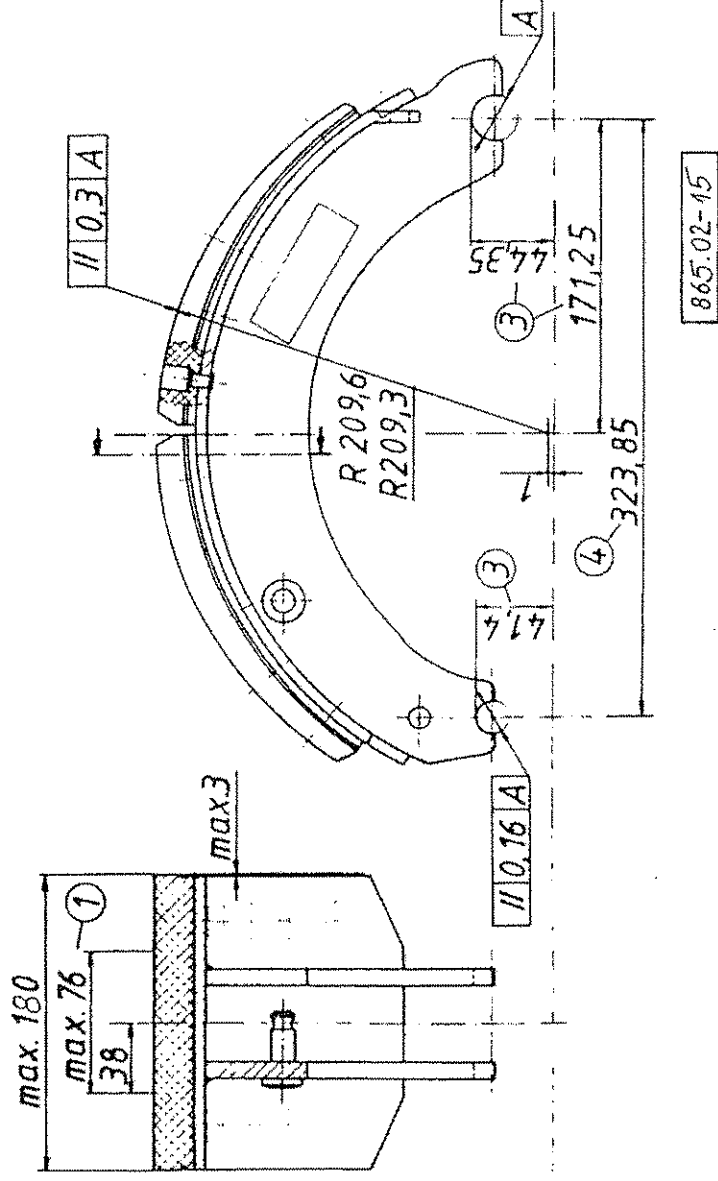


Fig. 1.: DATA FOR TRUEING UP THE BRAKE SHOES WITH NEW LININGS.

The brake shoes equipped with new linings should be in compliance with the dimension specifications and technical requirements shown in Fig. 1.



1 - Max. Zed-area

3 - Dimension data

4 - Check dimension

For riveting use ONLY the rivets corresponding to Fig. 2

TECHNICAL REQUIREMENTS:

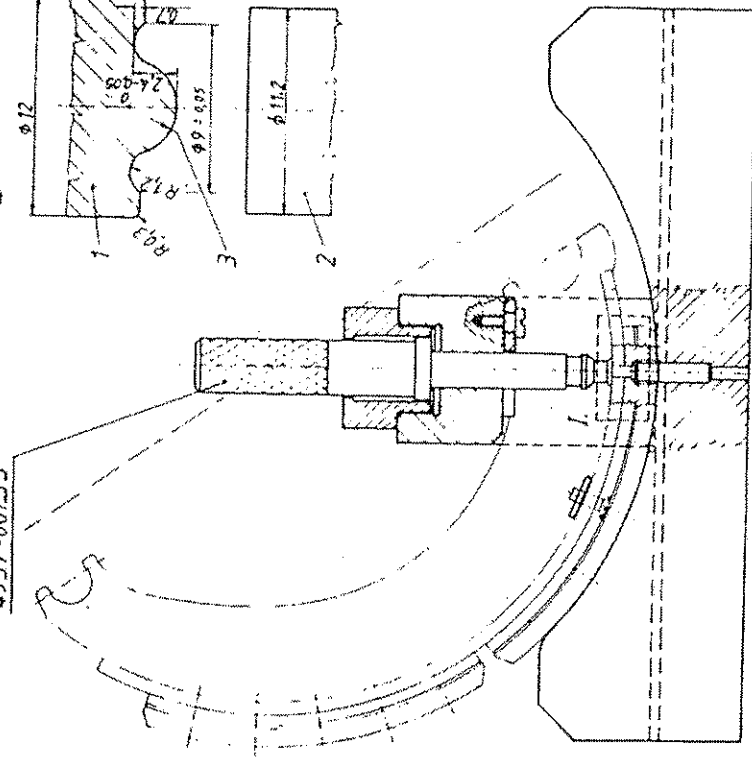
1 - Material: C10 MSZ 31

2 - Copper plated

3 - Tolerance of the untolerated dimensions is ± 0.254

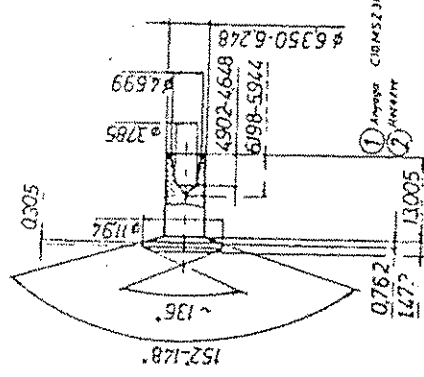
4 - Tolerance of the untolerated angles is $\pm 1^\circ$

For riveting use the device equipped with tool I



832.81-15/4

Fig. 3.: RIVETING TOOLS



- ③ Orientation marked with 9.75mm
- ④ Tolerance angle rivet $\pm 1^\circ$

832.81-17/3

Fig. 2.: DIMENSIONS OF THE RIVETS

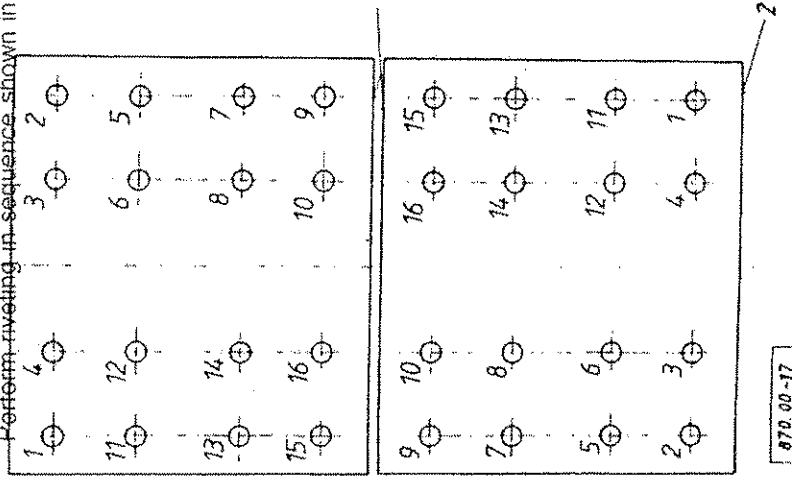
developed according to Fig. 3.

1 - Rivet set, upper

2 - Rivet set, lower

3 - Globe R 2.4 mm

Perform riveting in sequence shown in



879.00-17

Fig. 4.: RIVETING SEQUENCE



Fig. 4.

1 - Center of the brake shoe

2 - Brake camshaft end of the brake shoe

The brake lining should seat so, the feeler gage of thickness 0.15 mm could not be inserted between the lining and the brake shoe along the full length except the Zed-area (see Fig. 1.).

At the both webs check the brake lining surface for parallel.

That to the dimension "A" so, the dimension "A" by a ϕ 22.5 mm pin be positioned as shown (see Fig. 1.).

During checking the 32 rivets should endure the 5340 N test load, applied to bottom of the ϕ 3.784 mm bore, without loosening.

On each lining 2 rivet flanges may crack in Vee-shape, provided the test load was endured.

CHECKING THE BRAKE DRUM

Check the inside surface of the brake drum.

If depth of the hair-cracks experienced on the brake drum surface does not exceed 1 mm the brake drum can be repaired by true-up.

The maximum of the brake drum diameter after true-up ϕ 423 mm

Out of this diameter the brake drum should be replaced.

When trueing up the brake drum the brake shoes should be trueed up taking the brake drum diameter into account.

E.g.: If diameter of the trueed up brake drum is 422 mm, true up the brake shoe to R210.6 - R210.3 mm as shown in Fig. 1.

SECTION 264

REMOVING AND REINSTALLING THE BRAKE SUPPORT BRACKET, ASSEMBLING THE SPRING SUPPORTING PIN

In case of damage to the brake bracket, the steering knuckle housing machined also as the brake bracket should be replaced as described in the Section 243.

ASSEMBLING THE SPRING SUPPORTING PINS

Install the spring supporting pins (15) with thread adhesive.

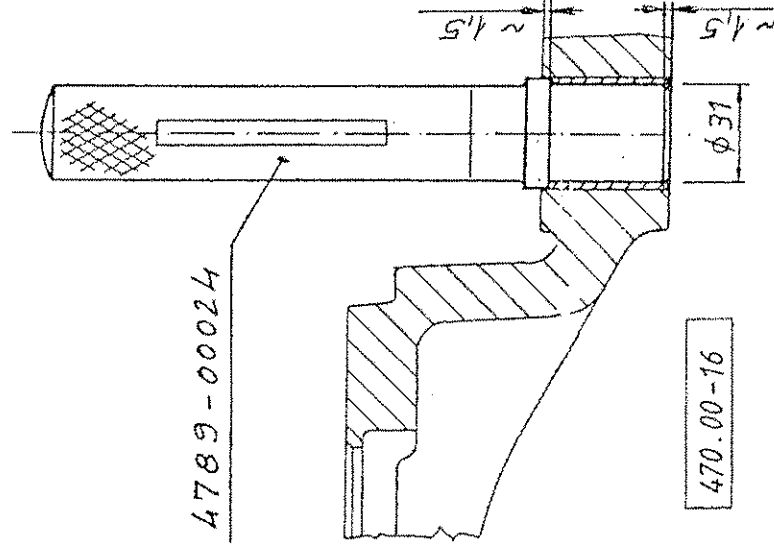


Fig. 1.: PRESSING THE BUSHINGS IN AND OUT



If the anchor pin bushing (16) are to be replaced, use the tool shown. Fig. 1.

SECTION 265

REMOVING AND REINSTALLING THE BRAKE LEVER AND THE CAM- SHAFT

REMOVING THE CAMSHAFT

Removal of the camshaft can be performed after removing the brake shoes.

Remove the snap ring (1) and the washer (2)

Pull the brake lever (3), the shims (6) and the spacer (7) off the brake camshaft (11) end.

Pull the brake camshaft out (4) and remove the spacer washer (10) below the brake cam head.

REINSTALLING THE BRAKE CAMSHAFT AND THE BRAKE LEVER

Apply grease to the camshaft support bushings (9).

Position the spacer washer (10) to the brake camshaft

and push the relevant brake camshaft (RH - LH) into the bearing bushing.

Pull the spacer (7) and the shim pack (6) necessary for adjusting 0.1 - 0.5 mm axial clearance over the brake camshaft.

Install the brake lever to the brake camshaft so, the bore center of the brake lever bushing shall be in distance "A" specified in the "TECHNICAL DATA" from the upper plane of the chamber bracket.

Beside the brake lever install the washer (2) and secure by snap ring (1).

Check axial play of the brake camshaft to be 0.1 - 0.5 mm. If required adjust by shims (6).

Fill up the camshaft bearings with specified grease.

WARNING!

After installing the RH, LH camshaft make sure to check for installed properly. When actuating the brake lever, the brake shoes should open.

INSTALLING THE STOPS (AT AUTOMATIC SLACK ADJUSTER)

Attach the relevant (RH-LH) brake lever stops (28) to the chamber bracket by 2 off M8x14 hex. bolts (29) with lock washers for each. Tighten the hex. bolts 20 - 25 Nm torque.

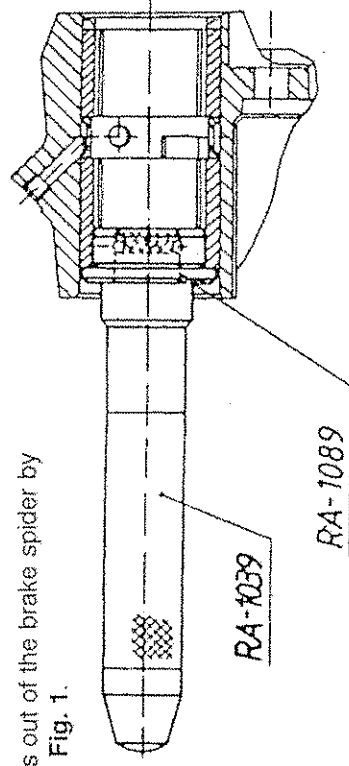
SECTION 266

REPAIRING THE CAMSHAFT BEAR- ING SUPPORT

REMOVING THE BEARING BUSHINGS AND THE SEALING RINGS

From one side remove the sealing ring by a simple pry.

Press the bearing bushings out of the brake spider by means of the tools shown in Fig. 1.



59700-10

Fig. 1.: PRESSING OUT THE BEARING BUSHINGS



Pressing out the bearing bushing (9) will push out the spacer ring (39), the other bushing and the sealing ring ahead.

REINSTALLING THE BEARING BUSHINGS

Press in the shorter bearing bushing with the tool shown, to the specified value then install the spacer and press in the bearing bushing to the other side. When pressing in, take care of that the bushing corners rounded to R 1.5 be on the side shown (Fig. 2.).

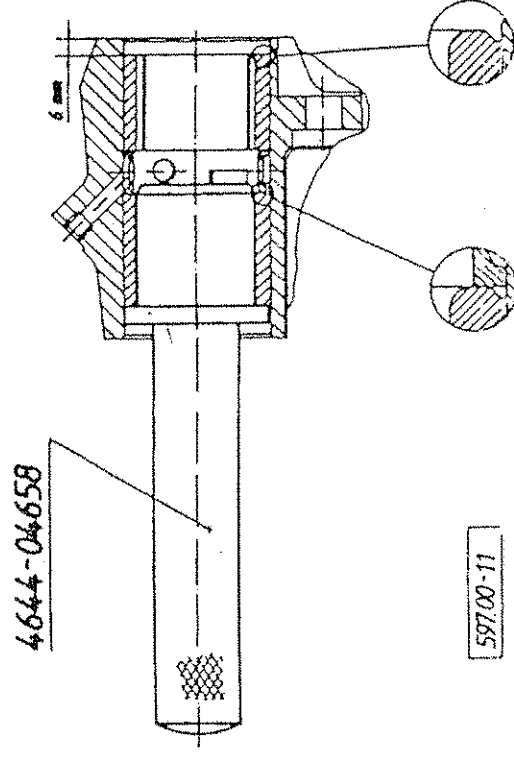


Fig. 2.: DRIVING IN THE BEARING BUSHINGS

REINSTALLING THE SEALING RINGS

When reinstalling the sealing rings make sure to check if the sealing lips of the rings both near the brake cam head and on the brake lever side face toward the axle housing center and the brake lever.

By this means leak-tightness at the brake cam head is assured.

During lubrication with grease the sealing ring near the brake lever should pass the surplus lubricant toward the brake lever.

By means of the tools shown press the seal-

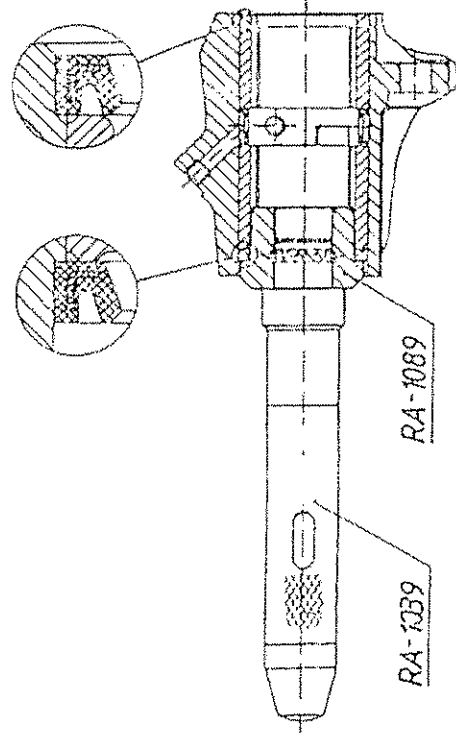


Fig. 3.: PRESSING IN THE SEALING RING

ing rings before the bushings (see Fig. 3.).

SECTION 267

MANUAL SLACK ADJUSTER

DISASSEMBLING THE MANUAL SLACK ADJUSTER

Remove the snap ring (6) and the shims (5). Back out the grub screw (12), then remove the spring (11) and the steel ball (10). Fixing the worm gear (at the brake spanner stem) unscrew the worm (3) from the brake lever. The worm will push out the backing disk (4) ahead.

On both sides remove the snap rings (9) before the worm gear and remove the worm gear (8) as well.

Drive the bushing (1) out of the brake lever also, if required, and drive in the new bush to the same side sur-

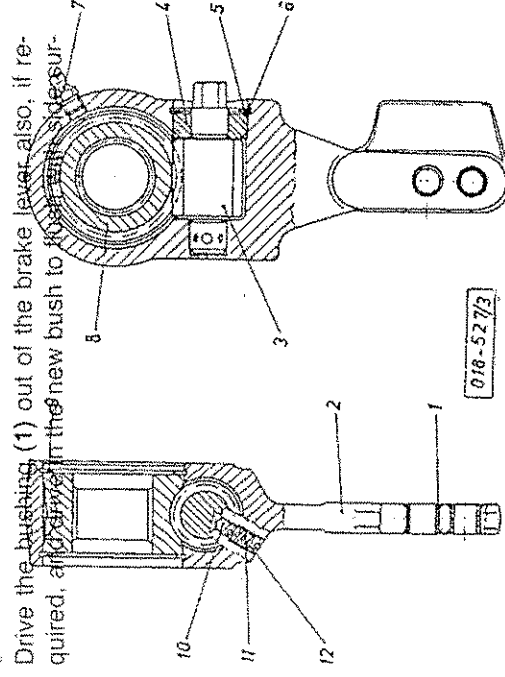


Fig. 1.: MANUAL SLACK ADJUSTER

- face of the brake lever.
ver.
- 1 - Bushing
 - 2 - Brake lever
 - 3 - Worm
 - 4 - Backing disk
 - 5 - Shim
 - 6 - Snap ring
 - 7 - Ball lube fitting
 - 8 - Worm gear

- 9 - Snap ring
- 10 - Steel ball
- 11 - Spring
- 12 - Grub screw

REASSEMBLING THE MANUAL SLACK ADJUSTER

In case of damage to the teeth replace the worm-worm gear pair. Position the worm (3) and the worm gear (8) into the brake lever. Secure the worm gear by snap rings (9) on both sides.

The worm and the worm gear should be rotatable without jamming and jerk.

Insert the steel ball (10) and the spring (11) into the seat and secure by grub screw (12).

Before the worm, drive in the backing disk (4) to bottom

out, position the required shim pack so, to be able to insert the snap ring without clearance. Finally install the snap ring.

Fill up the worm gear with specified grease.

SECTION 268

AUTOMATIC SLACK ADJUSTER

The slack adjuster requires no maintenance, since it is automatically readjusted according to the brake lining wear.

In case of replacing the brake linings of after repairing the axle perform adjustment of the shoe clearance and the automatic slack adjuster as follows:

ITEMS:

- 1 - Adjusting plate
- 2 - Setscrew (hex. distance 13)
- 3 - Setscrew (hex. distance 10)
- 4 - Plastic protection cup

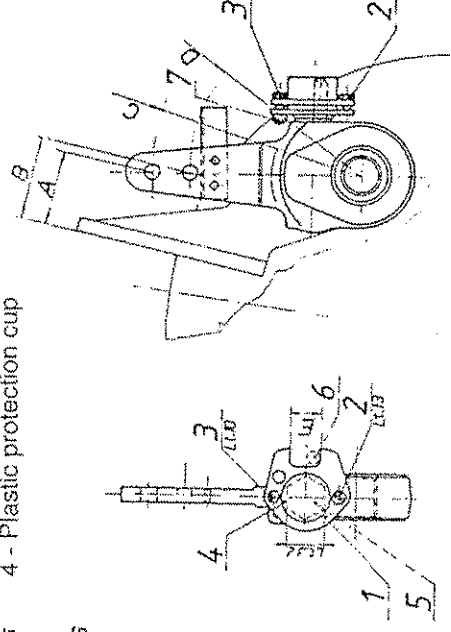


Fig. 1.: AUTOMATIC SLACK ADJUSTER

- 5 - Hex. adjusting ring (hex. distance 32)
- 6 - Stop pin
- 7 - Plastic thread protector

ADJUSTMENT DATA:

A = Distance between the chamber holder plane and the brake lever bore

B = " "

C = Brake lever installation radius



D = " -

For dimensions A - C and B - D refer to "TECHNICAL DATA".

A/ ADJUSTING POSITION OF THE BRAKE LEVER AND THE SHOE CLEARANCE:

- Remove setscrews (2, 3).
- Take care of the plastic thread protector (7).
- Remove the adjusting plate (1) and the plastic protection cap (4).
- By turning the hex. adjusting ring (5) to proper direction adjust the specified distance between the seating surface and the brake lever bore. (Start adjustment from a distance higher than specified.

If required, also adjust the push rod clevis.)

- After the above operation adjust the shoe clearance to 0.3 - 0.6 mm.

B/ ADJUSTING AND FIXING THE ADJUSTING PLATE:

- Secure the stop fork "E" of the adjusting plate (1) in bottom position relative to stop pin (6) as shown in Fig. 1.

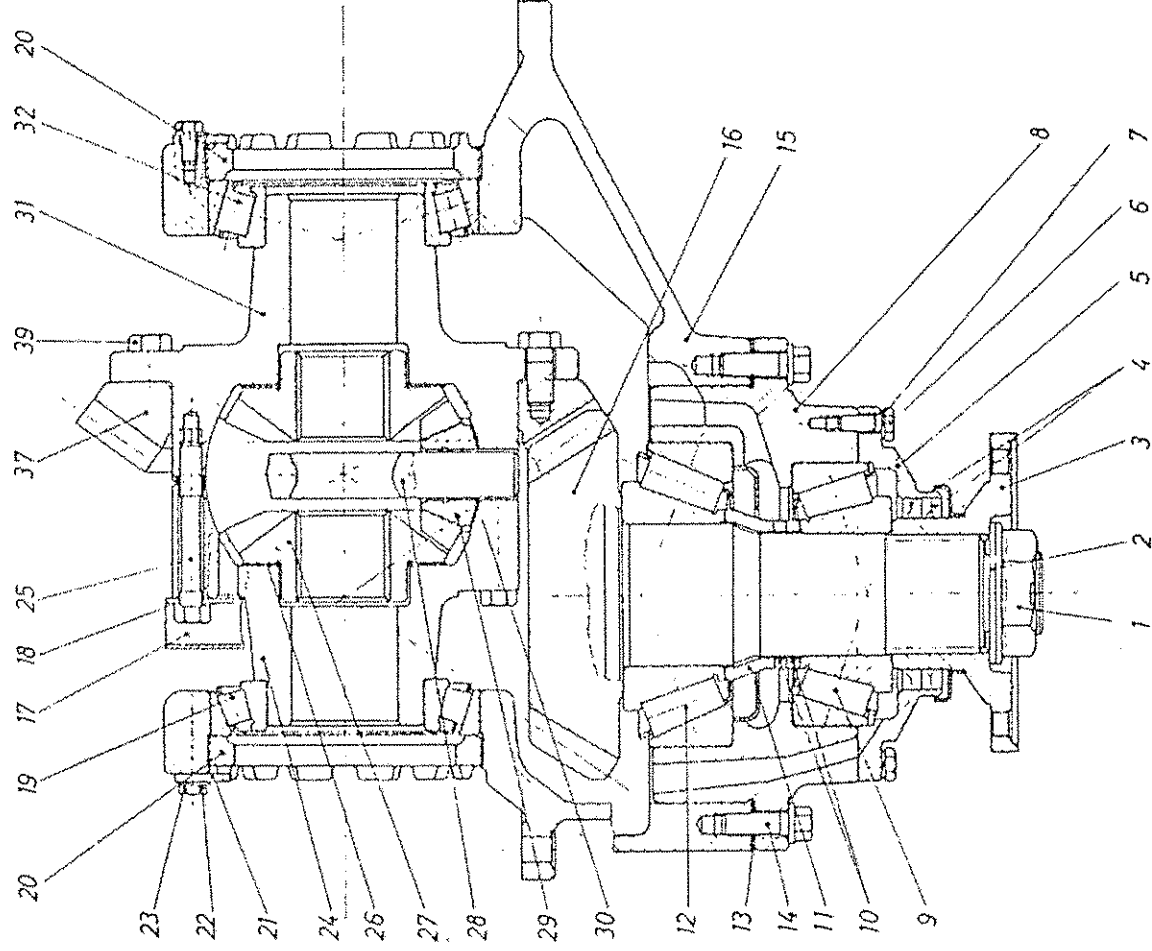
- Complete adjustment by reinstalling the protection cap (4) and the adjusting plate (1) as well as installing and securing the setscrews (2, 3) and screwing on the plastic thread protector (7).



SECTION 310

DIFFERENTIAL CARRIER ASSEMBLY

DIFFERENTIAL CARRIER ASSEMBLY SECTIONAL VIEW



5330-7/1

Fig. 1: DIFFERENTIAL CARRIER ASSEMBLY SECTIONAL VIEW



LIMITED SLIP DIFFERENTIAL CARRIER ASSEMBLY SECTIONAL VIEW

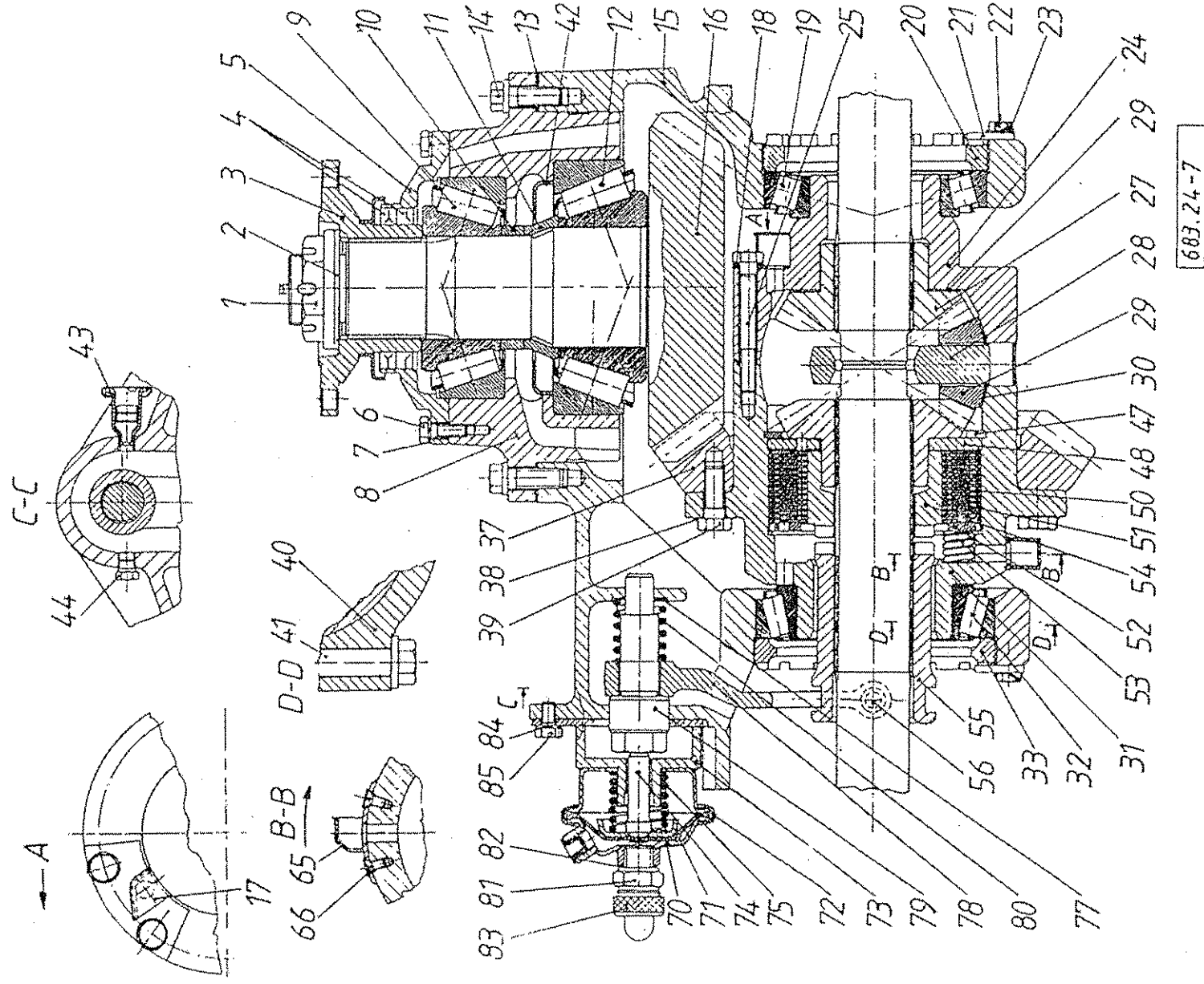


Fig. 2.: LIMITED SLIP DIFFERENTIAL CARRIER ASSEMBLY SECTIONAL VIEW

SECTION 311

PARTS OF THE DIFFERENTIAL CARRIER ASSEMBLY

- 1 – Flanged castle nut with cotter pin
- 2 – Washer
- 3 – Companion flange I.
- 4 – Sealing rings
- 5 – Cover
- 6 – Hex. bolt
- 7 – Lock washer
- 8 – Bearing cage
- 9 – Taper roller bearing (32312 B X7 JU MGM)
- 10 – Distance ring
- 11 – Distance sleeve
- 12 – Taper roller bearing (32314 B X7 JU MGM)
- 13 – Shims
- 14 – Hex. flanged bolts
- 15 – Differential carrier
- 16 – Drive pinion
- 17 – Oil catch plate
- 18 – Washer
- 19 – Taper roller bearing (30215 A MGM)
- 20 – Bearing adjuster
- 21 – Tab lock plate
- 22 – Hex. bolt

- 23 – Lock plate
- 24 – Differential case half
- 25 – Clamp bolt
- 26 – Spacer
- 27 – Differential gear
- 28 – Spider
- 29 – Differential pinion
- 30 – Shim
- 31 – Differential case half (flanged)
- 32 – Taper roller bearing (32215 A or 32018 X MGM)
- 33 – Bearing adjuster
- 37 – Drive gear
- 38 – Lock plate
- 39 – Hex. bolt
- 40 – Bearing cage
- 41 – Hex. flanged bolt
- 42 – Oil baffle plate
- 43 – Vent valve
- 44 – Screw plug
- 47 – Snap ring
- 48 – Insert disk
- 50 – Inner disks

- 51 – Outer disks
- 52 – Backing disk
- 53 – Thrust springs
- 54 – Toothed hub
- 55 – Clutch sleeve
- 56 – Thrust pad
- 65 – Oil scoop
- 66 – Sunk. head screw
- 70 – Pneumatic chamber cover
- 71 – Diaphragm
- 72 – Clamp
- 73 – Pneumatic chamberhousing
- 74 – Spring retainer
- 75 – Spring
- 77 – Stop insert
- 78 – Shift yoke
- 79 – Shift bar
- 80 – Spring
- 81 – Reporting switch
- 82 – Washer
- 83 – Connecting
- 84 – Lock washer
- 85 – Hex. bolt

SECTION 312

REMOVING AND REINSTALLING THE DIFFERENTIAL CARRIER ASSEMBLY

Before removing the differential carrier assembly from the axle drain the oil.

For removing the differential carrier pull the inner axle-shafts of the double-joint out of the differential. This can be performed in two ways:

- 1./ After removing the wheel hub and the steering knuckle, remove the double joints as described in Section 243.
- 2./ Assembly can be performed in case of removing the knuckle carrier, as well. Perform removal and reinstallation of the knuckle carrier as described in Section 248.

Remove the hex. flanged bolts attaching the differential carrier assembly to the axle housing and lift out the carrier.

REINSTALLING THE DIFFERENTIAL

CARRIER ASSEMBLY

As described in the "GENERAL SERVICE INSTRUCTIONS" apply oil-proof surface sealant to flange of the axle body and to connecting flange of the differential carrier.

Install one M12 stud bolt to two opposite bores in the axle body, then fit the differential carrier into the axle housing and secure by hex. flanged bolts coated with thread locker.

Tighten the bolts diagonally to 88 - 98 Nm torque.

Install the double joints as described in Section 243.

SECTION 313

REMOVING AND REINSTALLING THE COMPANION FLANGE AND THE COVER, REPLACING THE SEALS IN THE COVER

REMOVING THE COMPANION FLANGE

For assembling the self-lock nut (1) use the tools shown (Fig. 1.).

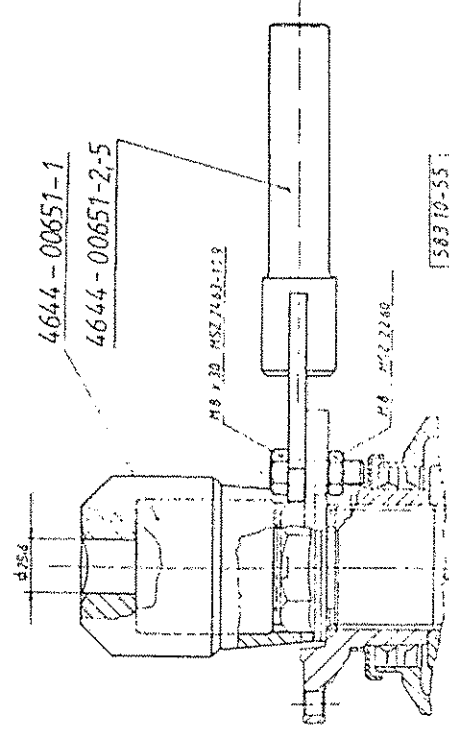
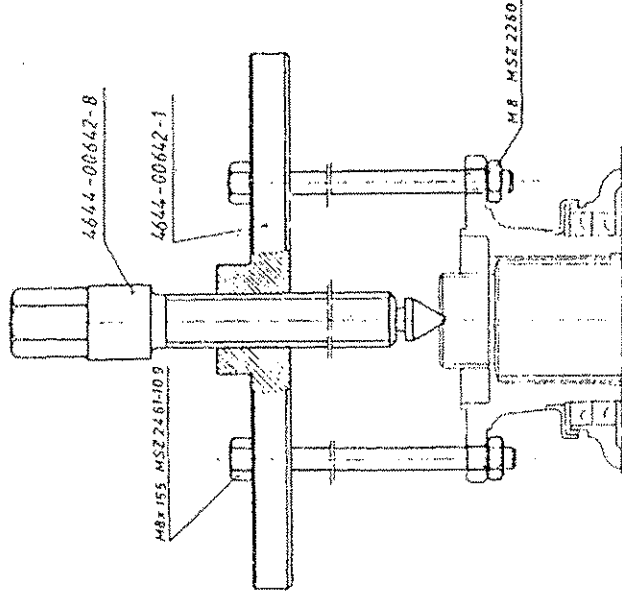


Fig. 1.: ASSEMBLING THE SELF-LOCK NUT



For the pitch diameter 184.15 mm companion flanges use the shown counter-support No. 4644-00651-2, -5 while for those of pitch diameter 155.5 mm the counter-support No. 4644-00651-4, -5.

For pulling off the companion flange use the device arranged from the shown parts (Fig. 2.).



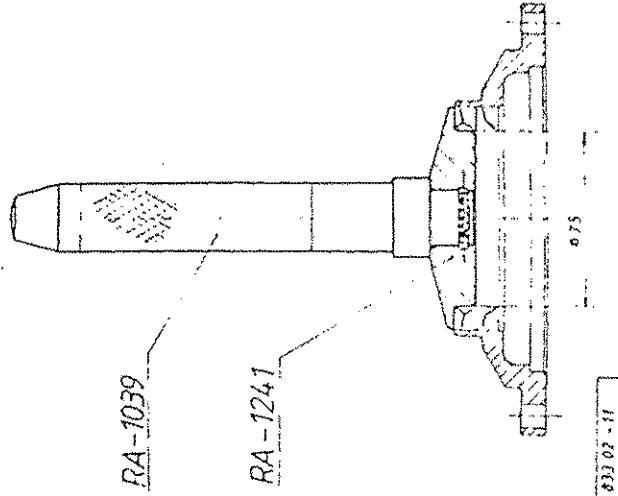
58310-56

Fig. 2.: PULLING OF THE COMPANION FLANGE

REPLACING THE SEALING RINGS IN THE COVER

Back out the hex. bolts (6) and remove the cover (5).

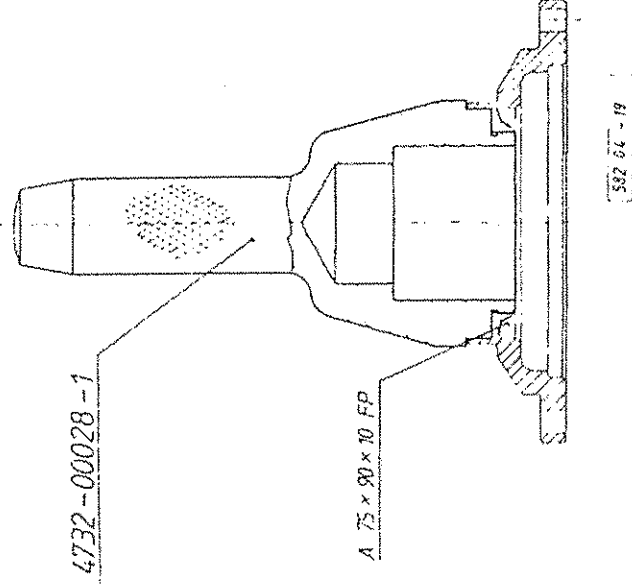
By means of the tools shown remove the used sealing rings (4) from the cover (see Fig. 3.).



58302-11

Fig. 3.: DRIVING OUT THE SEALING RINGS

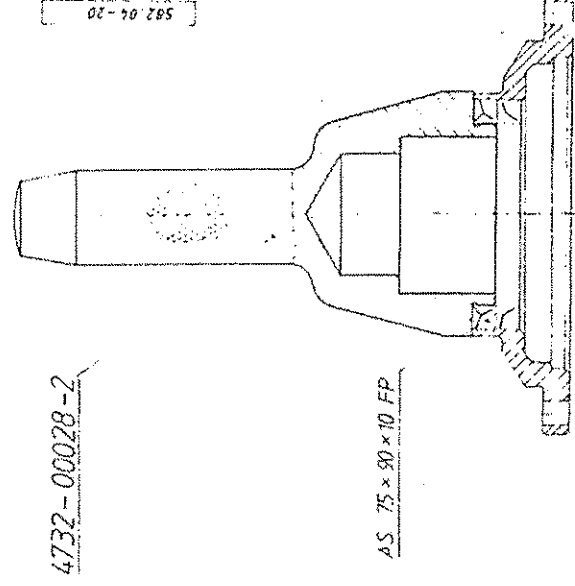
Drive in the inner sealing ring (see Fig. 4.).



58264-19

Fig. 4.: DRIVING IN THE INNER SEALING RING

Drive in the outer sealing ring, as well, by means of the tool shown (see Fig. 5.)



58264-20

Fig. 5.: DRIVING IN THE OUTER SEALING RING

Apply specified grease between the sealing lip and the dust protection edge of the outer sealing ring and apply thin coat grease to the inner one.

REINSTALLING THE COVER

As described in the "GENERAL SERVICE INSTRUCTIONS" apply oil-proof surface sealant to inner flange of the cover (5) subassembled with sealing rings (4), then



aligning the bores attach the cover to the bearing cage by means of lock washers (7) and hex. bolts (6). Diagonally tighten the bolts to 20 - 30 Nm torque.

REINSTALLING THE COMPANION FLANGE

By means of the tool shown press the companion flange (3) to the drive pinion splines to bottom out (Fig. 6.).

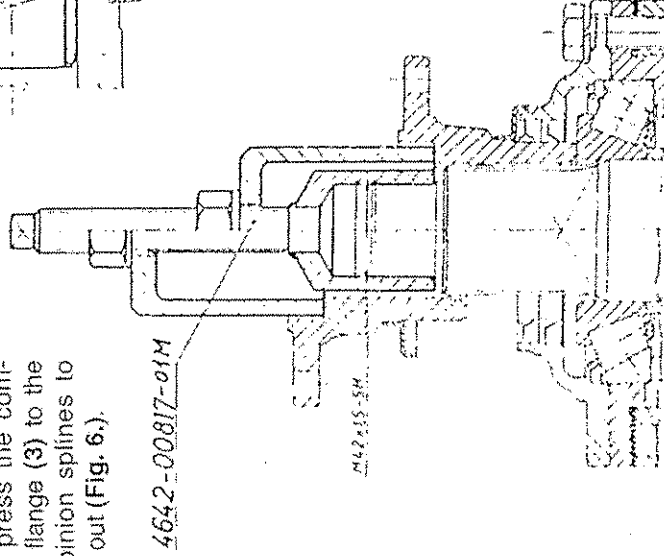


Fig. 6.: PRESSING ON THE COMPANION FLANGE

Install the washer (2), screw on the self lock nut (1) and tighten to 540 - 590 Nm torque.

SECTION 314

REMOVING AND REINSTALLING THE DIFFERENTIAL, ADJUSTING THE BACKLASH AND THE CONTACT PATTERN

Back out the hex. bolts (22) and remove the lock plates (23) and the tab lock plates (21).

By means of the tool shown remove the bearing adjusters (20) from both sides (see Fig. 1.).

By means of the tool shown in Fig. 2. tap the differential toward the flanged differential case half (31) so, the outer race of the taper roller bearing (19) shall fall out.

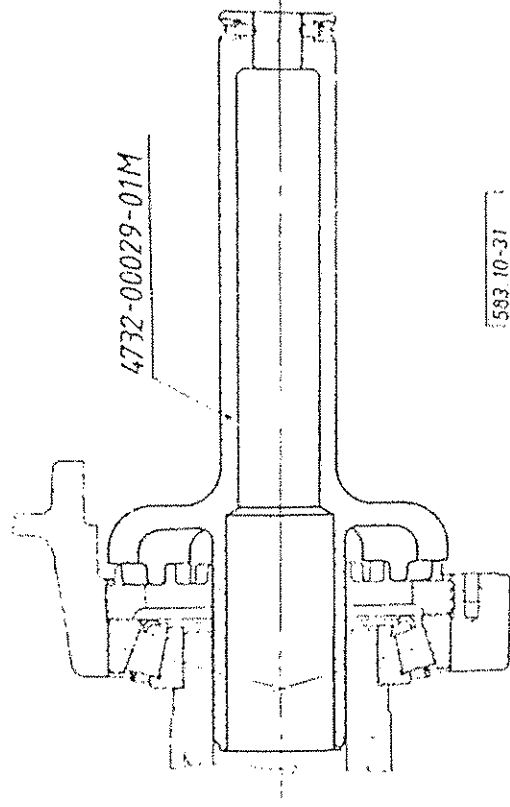


Fig. 1.: ASSEMBLING THE BEARING ADJUSTERS

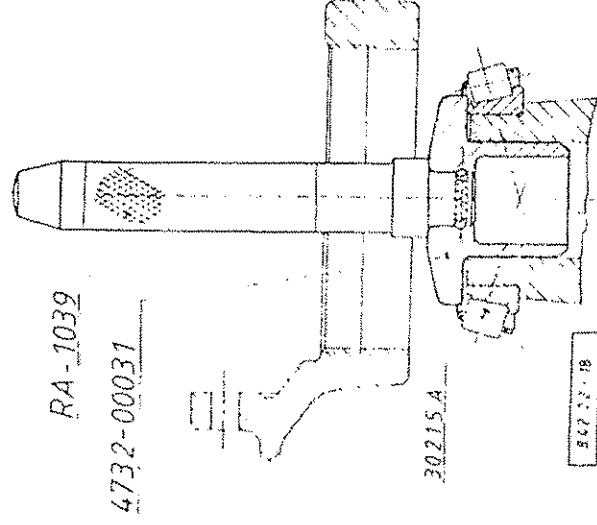


Fig. 2.: DRIVING ON THE TAPER ROLLER BEARING CONE

Due to the taper roller bearing cones the differential can be removed only if disassembled.

Back out the differential case halves clamp bolts (25), then remove the separated case halves and the other parts from the carrier.

Drive the outer race of the other taper roller bearing out of the leg bore in the differential carrier by means of the tool shown in Fig. 3.

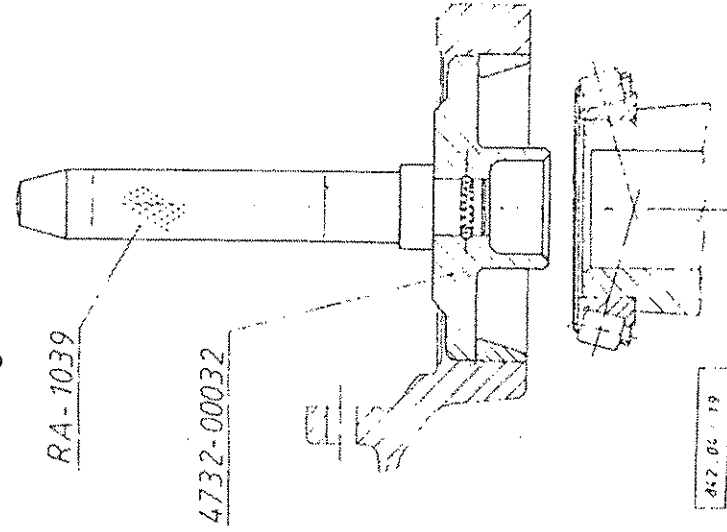


Fig. 3.: DRIVING IN THE TAPER ROLLER BEARING CUP

REINSTALLING THE DIFFERENTIAL

Reinstall the differential only after installing the bearing cage and adjusting the axis distance (see Section 316).

Position the assembled differential into the differential carrier. Turn the differential carrier over so, the differential shall be supported by its flanged case half.

Position the cone of the taper roller bearing (19) to the differential case half (24) and by means of the tool shown drive on to bottom out (see Fig. 2.).

Position the taper roller bearing outer race into the bearing bore in the differential carrier and drive in by means of the tool shown (see Fig. 3.).

Screw in the bearing adjusters (20).

Turn the differential carrier over and drive the taper roller bearing cone to the flanged case half (31), then by the same tool as at the other side the bearing cup. Screw in the bearing adjusters (20).

ADJUSTING THE BACKLASH AND THE BEARING PRELOAD

By means of the bearing adjusters adjust the drive pinion to gear backlash (at KLINGELNBERG toothing) to 0.15 - 0.25 mm.

Locking the drive pinion measure the backlash by dial indicator at four places diagonally on the drive gear

toothing, perpendicularly to the tooth surface by the dial indicator (Fig. 4.).

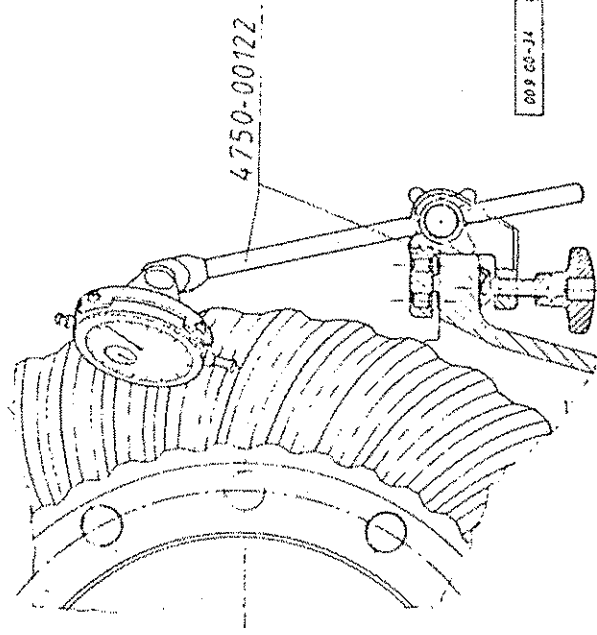


Fig. 4.: CHECKING THE BACKLASH

Maintaining the backlash install the differential taper roller bearing (19 and 32) with no clearance. Tighten the bearing adjusters (20) so, to obtain 0.000 mm axial play of the drive gear.

After adjusting the backlash and the 0.000 mm bearing clearance check the contact pattern as follows.

ADJUSTING THE CONTACT PATTERN

Apply indicator paint to 3 opposite teeth pairs of the drive gear.

Rotate the drive pinion to both directions for approx. 15 sec, while braking the drive gear by a piece of wood.

PROPER CONTACT PATTERN

If a contact pattern shown in detail 1 of Fig. 5. is obtained, the drive gear-pinion pair is installed properly.

Practically the perfect contact pattern shown in the figure cannot be obtained, but it is important that the pattern shall nowhere reach the edge of the tooth surface.

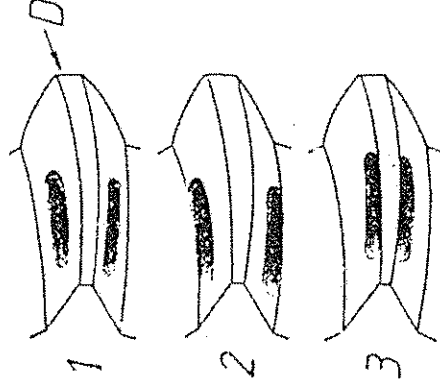
- D = Large diameter
- 1 = Proper contact pattern
- 2 = Too deep contact
- 3 = Too high contact

In case of GLEASON toothing the contact pattern along the tooth is shifted toward the small diameter of the drive gear.



TOO DEEP CONTACT

If the contact pattern is shifted to the dedendum as shown in **detail 2 of Fig. 5.**, increase the "AXIS DISTANCE" by increasing the thickness of the shim pack (13) and simultaneously reduce the increased backlash by shifting the drive gear so, to obtain the contact pattern shown in **detail 1 of Fig. 5.**



118 00-20

Fig. 5: THE CONTACT PATTERN

TOO HIGH CONTACT

If the contact pattern is shifted to the addendum as shown in **detail 3 of Fig. 5.**, reduce the "AXIS DISTANCE" by reducing the thickness of the shim pack (13) and simultaneously increase the reduced backlash by shifting the drive gear so, to obtain the contact pattern shown in **detail 1 of Fig. 5.**

After each contact pattern adjustment measure the backlash and check if the bearing clearance is 0.00 mm.

After adjusting the proper contact pattern and gear clearance tighten the bearing adjusters on both sides by 0.75 - 1.25 pitch (approx. 7.5° - 15°) to be able to secure them by one of the tab lock plates (21).

Secure the tab lock plates on both sides by means of the hex. bolts (22). Tighten the bolts to 15 - 20 Nm and secure by folding the corners of the lock plates (23) to flats of the bolts.

When the adjustment and the operation is proper, remove bearing cage assembled with drive pinion and according to the "GENERAL SERVICE INSTRUCTIONS" apply oil to proof surface sealant to the inner flange, then fit back the bearing cage and secure by hex. flanged bolts (14) coated with thread locker. Diagonally tighten the bolts to 88 - 98 Nm torque.



SECTION 315

DISASSEMBLING AND REASSEMBLING THE DIFFERENTIAL

Pull the inner race of the taper roller bearings (19 and 32) from the removed differential (see Fig. 1.).

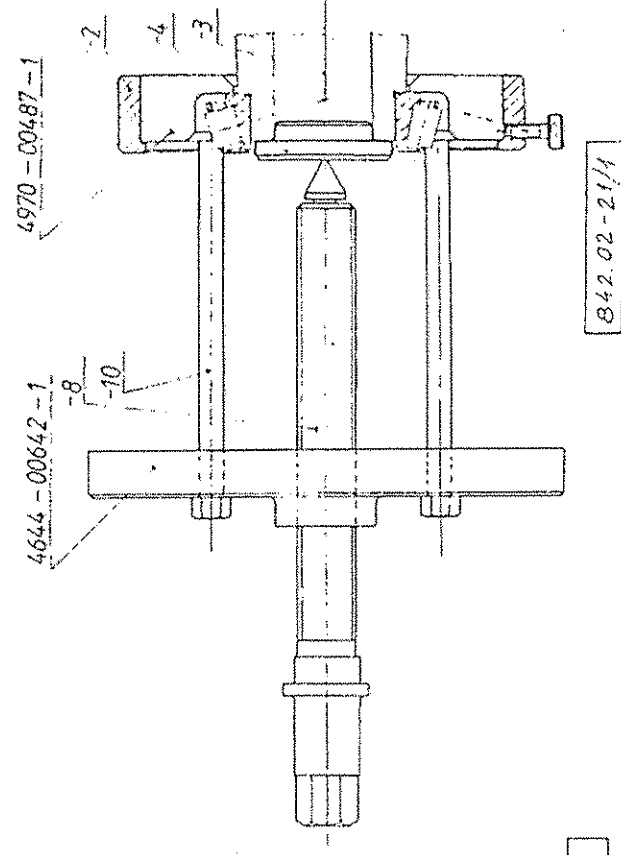


Fig. 1.: PULLING OFF THE TAPER ROLLER BEARING CONES

For disassembling the differential case remove the hex. bolts (25) clamping the case halves (24 and 31) together and separate the case halves.

Remove the spider (28) together with the differential pinions (29) and shims (30) as well as the differential gears (27) and the spacers (26).

Replace the drive gear **ONLY** together with the matched drive pinion.

The match-marks are stamped to one end of the drive pinion and to one tooth end on the outer taper surface of the drive gear.

The match-marks indicate the identification number of the matched drive gear-pinion pair and the deviation — true-to-sense — from the theoretical "AXIS DISTANCE" measured between the drive pinion face and the drive gear centerline. For example: 1250, + 0.04.

The differential case halves are match pairs, thus assemble only match-marked case halves according to the mark.

Pull the flanged differential case half (31) over the lower service mandrel (see Fig. 2.). Insert the spacer (26) and the differential gear (27) as well as the spider (28) subassembled with shims (30) and differential pinions (29). Following this insert the other differential gear and the spacer.

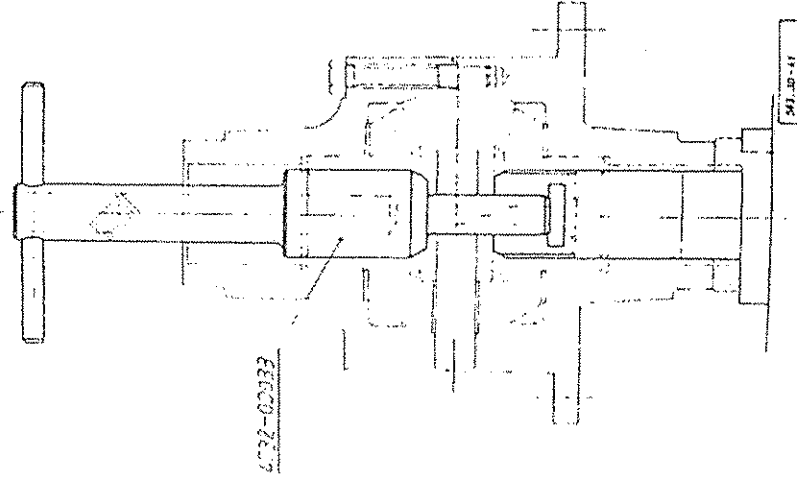


Fig. 2: ASSEMBLING AND CHECKING THE DIFFERENTIAL

According to the match-marks and aligning the bores fit the differential case halves together, then install the clamp bolts (25). By means of the upper service mandrel lock the differential and tighten the clamp bolts to 49 - 59 Nm. Remove the upper service mandrel and rotate the differential on the lower mandrel.

The differential should roll evenly and smoothly without jamming and jerks.

Apply thin coat of oil to the mating surface of the drive gear. Aligning the bores position the drive gear to the flanged differential case half. Thru the flange bore drive 4 hex. bolts with completely screwed on nut into the drive gear and gradually tightening the nuts pull the drive on to bottom out (Fig. 3.).

Secure the drive gear by means of bolts (even at the place of the puller bolts) applied with thread locker. Tighten the bolts to 98 - 118 Nm torque.

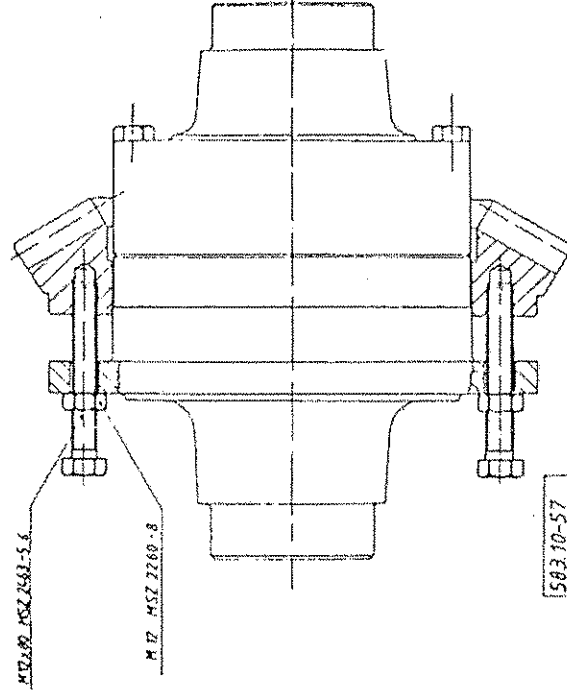


Fig. 3: PULLING ON THE DRIVE GEAR

REASSEMBLING AND DISASSEMBLING THE LIMITED SLIP MECHANISM

CAUTION!

The springs in the limited slip mechanism are under tension.

By means of the device shown, pull the disks together to bottom out securing the spring force and remove the snapping (47). (Fig. 1.).

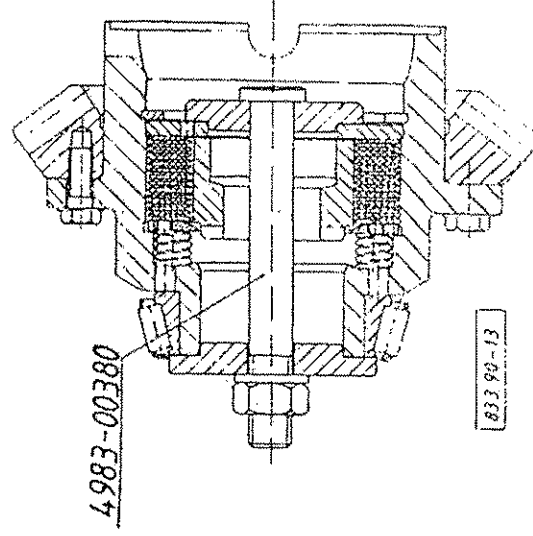


Fig. 1:

After removing the locking tool, remove the thrust disk (48), the inner and the outer disk (50 and 51), the backing disk (52), the toothed hub (54) and the thrust springs (53).



After removing the parts of the limited slip mechanism tap the inner race of the taper roller bearing (32) off the differential case thru the 4 Ø10 mm bores in the empty differential case half (31).

Spaced 4x3 position the 12 thrust springs (53) into the flanged differential case half (31) so that no spring flush with the 4 bores of 10 mm.

Above the springs position the backing disk (52) and pull the thrust disk off by means of the device shown in Fig. 3.

Following this insert the proper quantity of inner and the outer disks (50 and 51) alternately.

For the axles of 6,500 kg axle load install 8 outer and inner disks. For the axles of 10,000 kg axle load install 13 outer and inner disks.

After positioning the disks install the toothed hub (54) by means of the tool shown in Fig. 3.

After installing the toothed hub insert thrust disk (48) and finally secure by snap ring (47).

Following this remove the device installed for securing the springs.

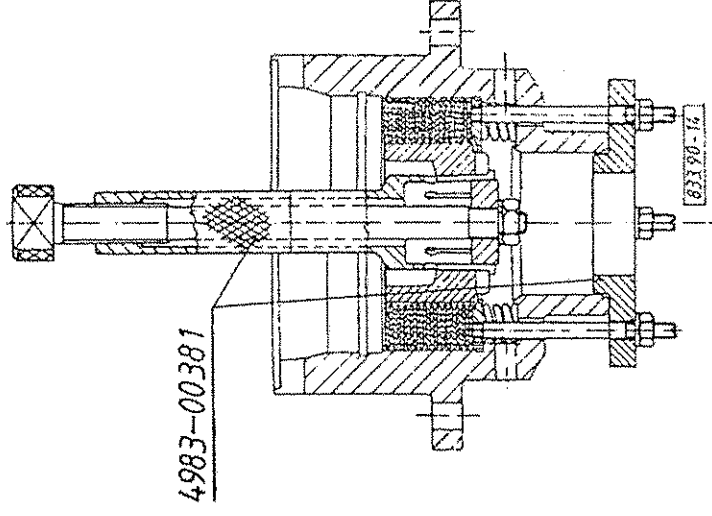


Fig. 3:

SECTION 316

DISASSEMBLING AND REASSEMBLING THE BEARING CAGE ADJUSTING THE AXIS DISTANCE

Remove the hex. flanged bolts (14) attaching the bearing cage to the differential carrier.

By means of M12 bolts of at least 65 mm thread length driven into the two threaded bores in flange of the bearing cage (8), pull the bearing cage out of the differential carrier and remove the shims from flange of the differential carrier.

REINSTALLING THE BEARING CAGE TO THE DIFFERENTIAL CARRIER

After reassembling the bearing cage and adjusting the specified bearing preload adjust the axis distance (with

differential removed from the carrier).

ADJUSTING THE AXIS DISTANCE

For purpose of piloting, screw one M12 stud bolts to two opposite bores in the differential carrier, position the shims (13) necessary for adjusting the drive pinion and gear contact pattern over these studs so, the extreme ones shall be the thicker. Aligning the bores push the bearing cage subassembled with drive pinion into the differential carrier (15) and provisionally secure by hex. flanged bolts (14) driven into two opposite bores and tightened to 88 - 98 Nm torque.



On the relevant measuring pin of the accessory "A" belonging to the measuring device shown in Fig. 1, adjust the theoretical "AXIS DISTANCE" B = 88.00 mm, by setting the dial indicator to zero.

Insert the measuring device to B = 88.00 mm to the differential carrier as shown in Fig. 1, and measure the "AXIS DISTANCE" deviation. Check if the reading is identical to the "AXIS DISTANCE" deviation stated on end of the drive pinion.

In case of identity the adjustment is proper, otherwise obtain the specified value by selecting the proper shim pack (13). The permitted deviation is ± 0.025 mm.

E.g.: If the axis distance deviation stated on the drive pinion is + 0.04, the value "B" to be adjusted is 88.04 $\pm$ 0.025 mm.

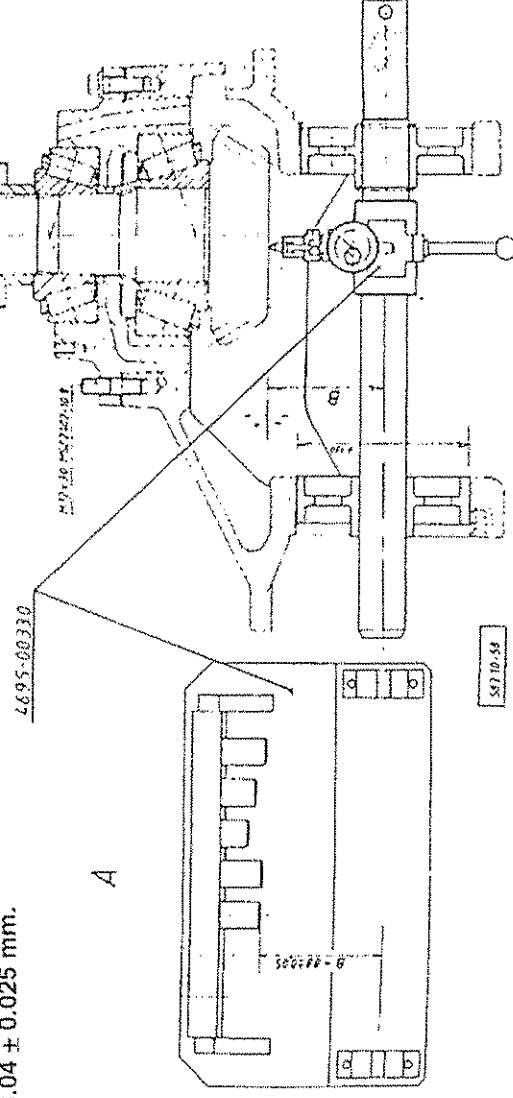


Fig. 1.: CALIBRATING THE DISTANCE

SECTION 317

DISASSEMBLING AND REASSEMBLING THE BEARING CAGE

By means of the device arranged from parts shown in the figure press the drive pinion (16) out of the removed bearing cage (8) (see Fig. 1.).

The drive pinion can also be removed by means of press, provided the flange of the bearing cage is properly backed up.

When pressing out the drive pinion (16) the inner taper roller bearing cone remains on the pinion.

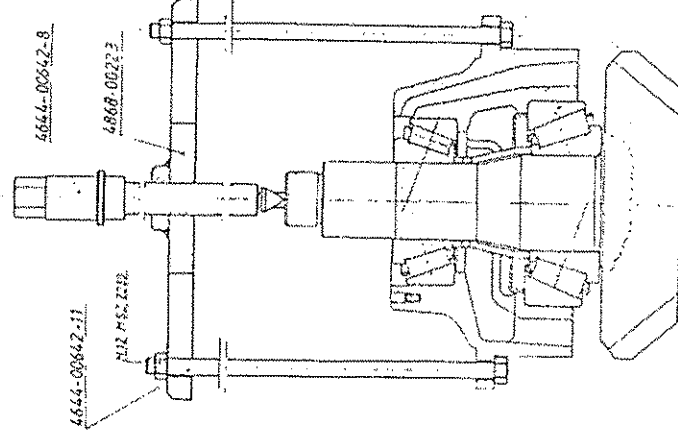
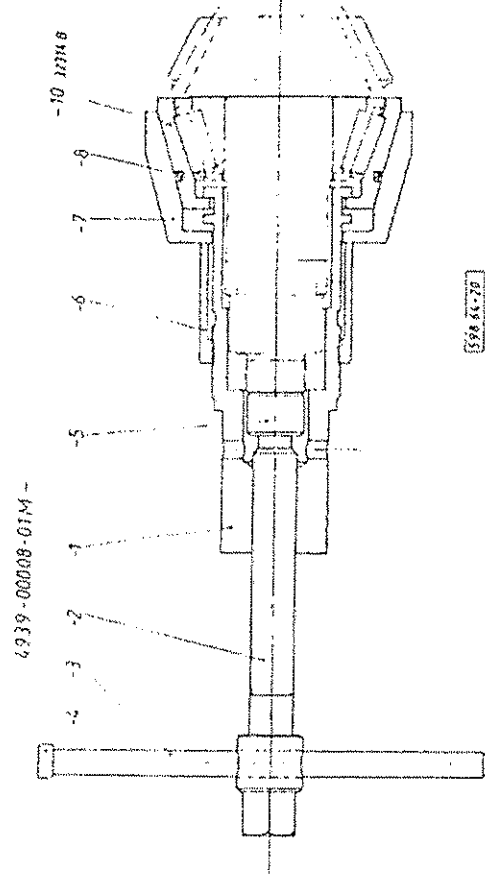


Fig. 1.: PRESSING OUT THE DRIVE PINION

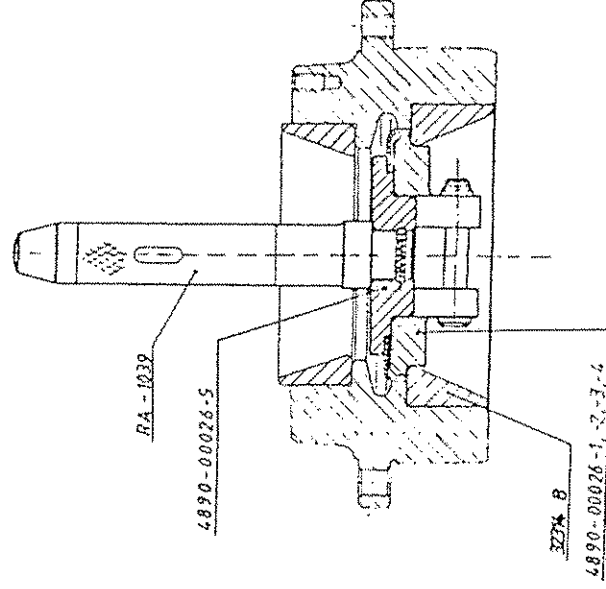
Pull off the cone of the taper roller bearing by means of the device shown (see Fig. 2.).



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Fig. 2.: PULLING OFF THE INNER RACE OF THE TAPER ROLLER BEARING

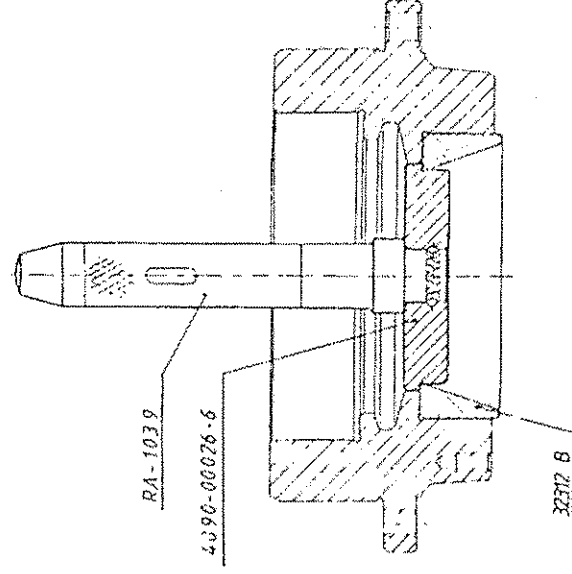
Drive the cup of the inner taper roller bearing out of the bearing cage by means of the device shown (see Fig. 3.) and properly backing the bearing cage.



811 02-13

Fig. 3.: DRIVING OUT THE CUP OF THE INNER TAPER ROLLER BEARING

Turn the bearing cage over and by means of tools shown drive out the cup of the outer taper roller bearing (see Fig. 4.).



833 02-14

Fig. 4.: DRIVING OUT THE OUTER TAPER ROLLER BEARING CUP

Position the inner taper roller bearing cup (12) into the bearing cage, then by the tools shown drive in to bottom out (Fig. 5.).

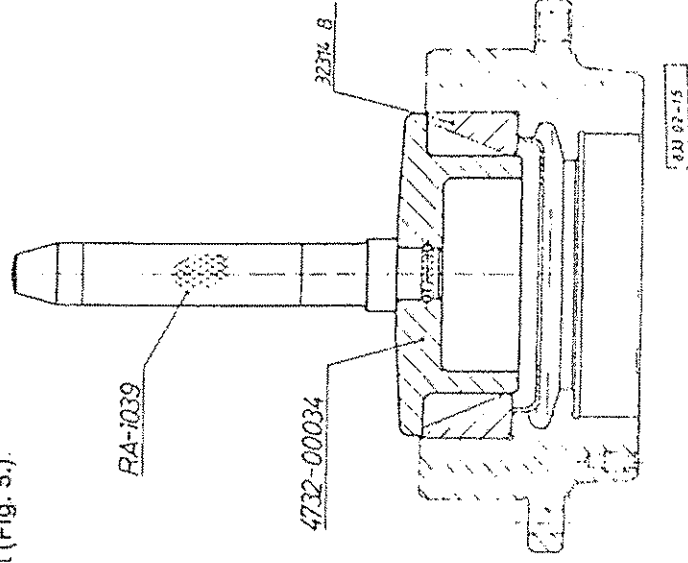


Fig. 5.: DRIVING IN THE CUP OF INNER TAPER ROLLER BEARING

Turn the bearing cage over and by means of the tools shown drive in the cup of the outer taper roller bearing to bottom out (see Fig. 6.).

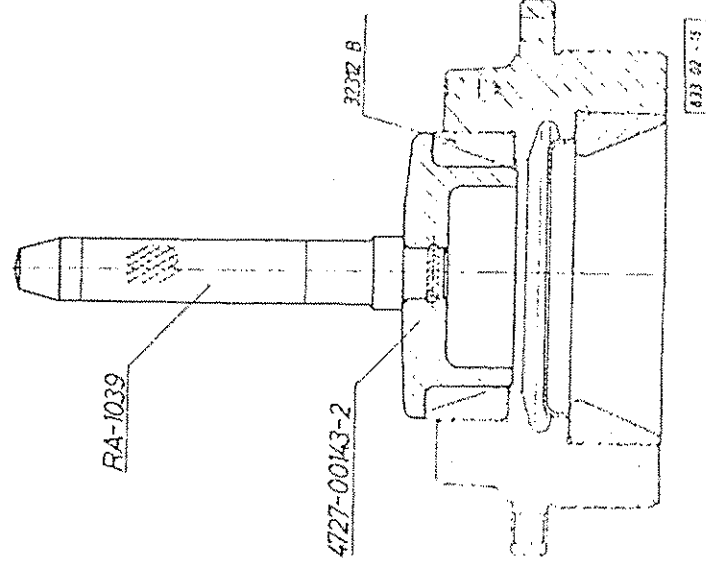


Fig. 6.: DRIVING IN THE CUP OF OUTER TAPER ROLLER BEARING

After subassembling the bearing cage with taper roller bearing cups adjust the bearing preload (see Fig. 7.).

The distance between the outer taper roller bearing cone and the distance sleeve may vary between 13.96 and 15

mm. This distance should be determined by measurement for selecting the proper distance ring pair (10).

Stack the inner taper roller bearing cone, the distance sleeve (11) and distance ring pair for filling the gap deter-

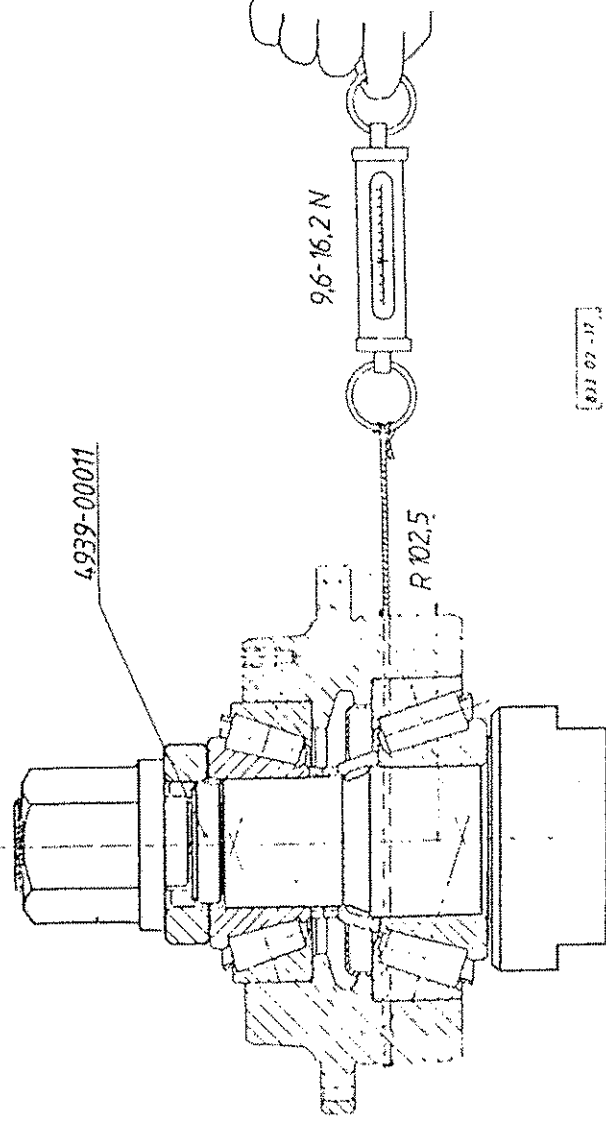


Fig. 7.: ADJUSTING THE BEARING PRELOAD

mined by measurement, then the subassembled bearing cage and the outer taper roller bearing cone to the shown master shaft.

Position the washer belonging to the master shaft to the bearing cone, screw on the flanged nut of the device and tighten to **540 - 590 Nm** torque.

Attach **approx. 2 mtrs** long cord to one bore in the bearing cage flange and wind the cord around the bearing cage. Attach fish-scale to other end of the cord and measure the rolling torque.

In case of new bearings installed the force obtained from the fish-scale at **approx. 50 rpm** should be **9.6 - 16.2 N**, which corresponds to the specified **1.0 - 1.7 Nm** rolling torque.

In case of reused bearings adjust the rolling torque to **0.5 - 0.85 Nm** (to half of the rolling torque at new bearings).

In case of deviation perform correction by replacing the distance ring. With higher rolling torque use higher distance ring, while at lower torque use lower one.

In case of proper adjustment relocate the parts from the master shaft to the drive pinion. **Make sure to install ONLY the parts used for the previous adjustment.**

By means of the tools shown drive the inner race of the inner taper roller bearing (12) onto the drive pinion (Fig. 8.).

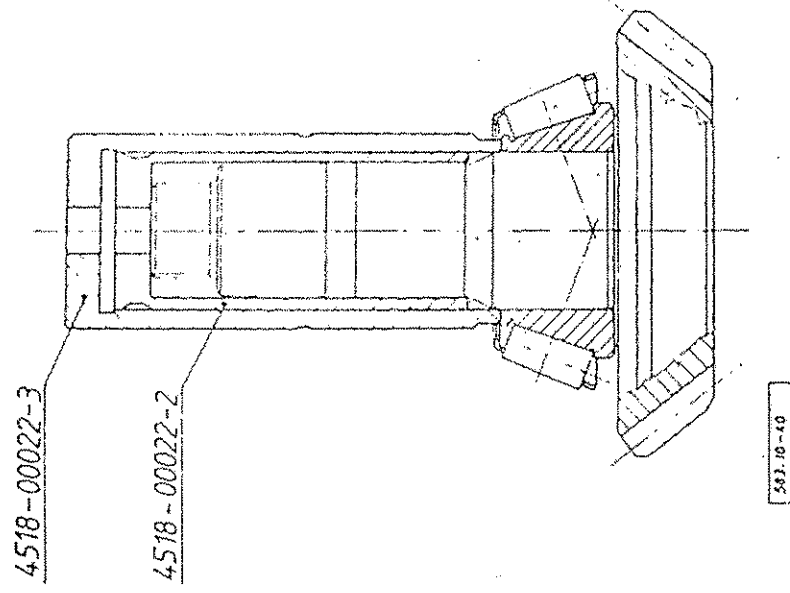
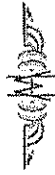


Fig. 8.: DRIVING ON THE INNER TAPER ROLLER BEARING CONE



Position the distance sleeve (11), the previously selected distance ring (10) and the bearing cage subassembled with bearing cups to the drive pinion stem, then by means of press sleeve drive on the outer taper roller bearing cone to bottom out while assuring proper connection of the bearings.

By the tool shown in Fig. 6. of Section 313 press the companion flange (3) to the drive pinion. Screw on the flanged castle nut (1) and tighten to **540 - 590 Nm** torque.

Check the rolling torque as described earlier. If deviation is experienced repeat the adjustment until obtaining the specified value.

The oil seals (4) with the cover (5) are not installed during check.

SECTION 395

OIL FILL-UP, RUN, CHECK

Thru the oil filler bores on the end-cover of the wheel hubs and on the axle housing fill up the finish assembled axle with oil of grade specified in the Operators Manual.

Fill ONLY completely clean oil to the axle.

After oil fill-up install the fill plug to be leak-tight. Following this run the axle to both directions at varying speed.

DURING RUN CHECK THE FOLLOWING:

The axle for leaks: No leaks are permitted.

The axle for operation: No excessive sound of friction or unusual noise is permitted at the rotary mechanism in the differential and the wheel hubs. The meshing gears should roll on one another smoothly without unusual noise.

The brake for operation: In initial position no friction is permitted between the brake shoes and the brake drum. During brake application the brake spanner may not jam in the brake spanner bearing and upon termination of the braking force it should return to initial position.

The axle for warming: At the end of running the maximum temperature of the wheel hub may be approx. **60° C**, while at the input section approx. **80° C**.



ALL-WHEEL DRIVE

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