



FREEWHEEL BOOK

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FREEWHEEL BOOK

*Published
July, 2000*

INTRODUCTION

The long awaited ***Freewheel Manual*** has finally arrived. ATSG has spent many long hours compiling, drawing, verifying and illustrating the proper freewheel and holding direction of virtually every freewheel device found in North America today. This manual is an absolute necessity for every serious transmission technician in todays working environment. These clear illustrations remove all possibilities of an incorrect installation, which prevents the second removal and disassembly of the unit. Even the Index has been laid out to be as user friendly as we can make it.

Special thanks go out to ***Greg Catanzaro and Allen Byington of TransOnLine®***, for providing us with some of the photographs that were used to produce the line drawings that made this manual possible.

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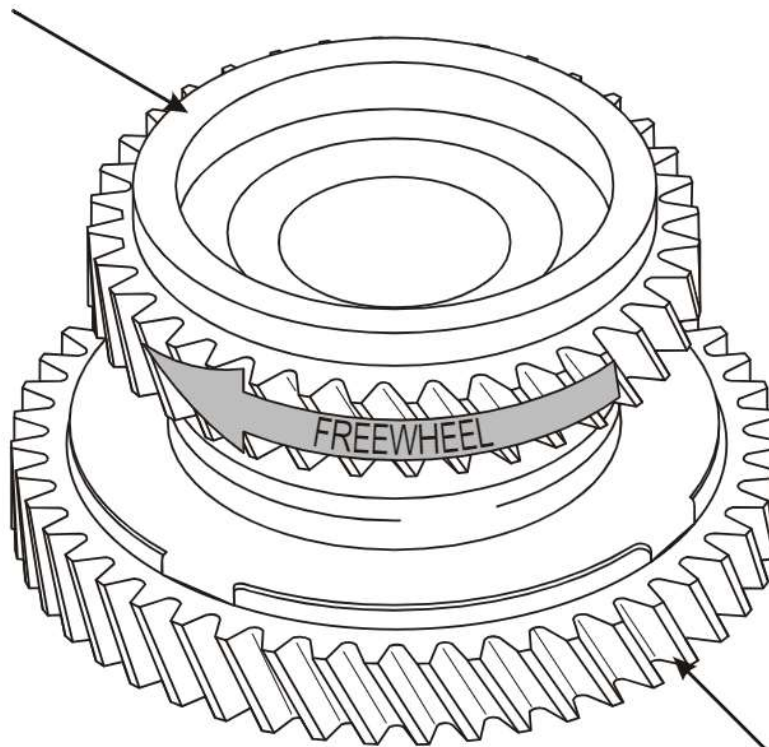
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ACURA MPYA, M5DA, M5HA 1ST GEAR ONE-WAY CLUTCH

*THE COUNTERSHAFT 2ND GEAR MUST FREEWHEEL
CLOCKWISE AND LOCK COUNTER CLOCKWISE*

**FREEWHEEL
COUNTERSHAFT
2ND GEAR**

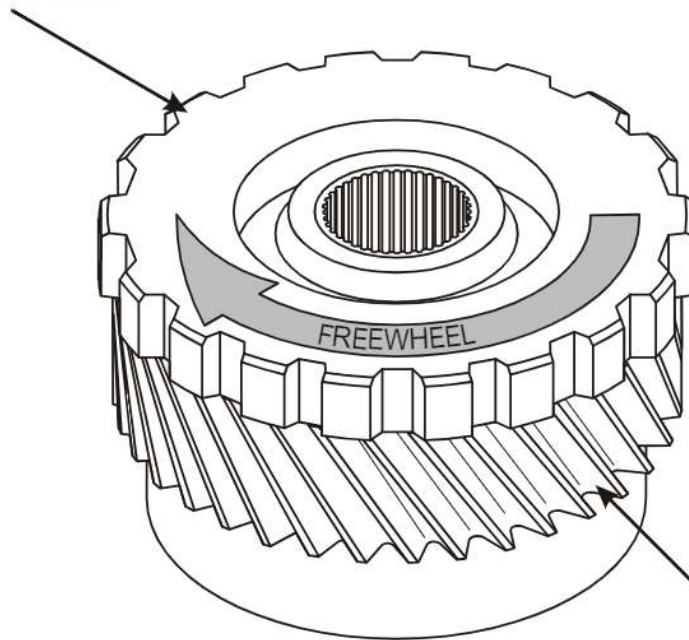


**HOLD
COUNTERSHAFT
1ST GEAR**

ACURA
MPYA, M5DA, M5HA
2ND GEAR ONE-WAY CLUTCH

*THE PARKING GEAR MUST FREEWHEEL
CLOCKWISE AND LOCK COUNTER CLOCKWISE*

FREEWHEEL
PARKING GEAR

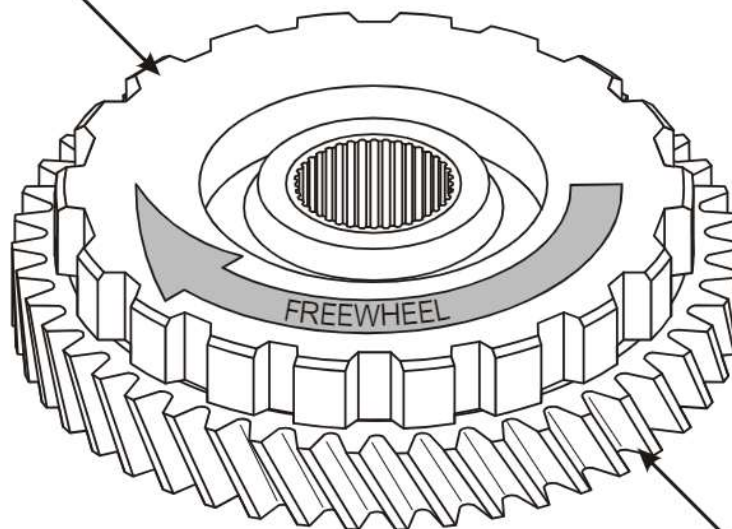


HOLD
COUNTERSHAFT
2ND GEAR

ACURA G4, L5, PL5X, MR9A LOW ONE-WAY CLUTCH

*THE PARKING GEAR MUST FREEWHEEL
CLOCKWISE AND LOCK COUNTER CLOCKWISE*

FREEWHEEL
PARKING GEAR

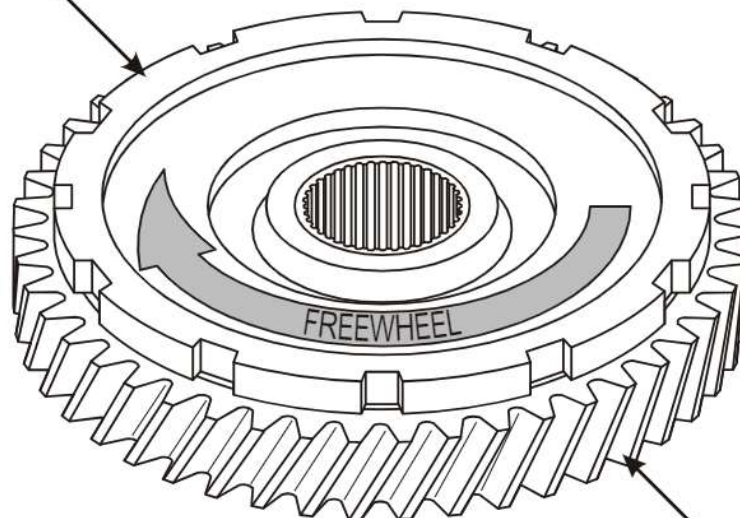


HOLD
COUNTERSHAFT
1ST GEAR

ACURA MPWA, M1WA, LOW ONE-WAY CLUTCH

*THE PARKING GEAR MUST FREEWHEEL
CLOCKWISE AND LOCK COUNTER CLOCKWISE*

**FREEWHEEL
PARKING GEAR**

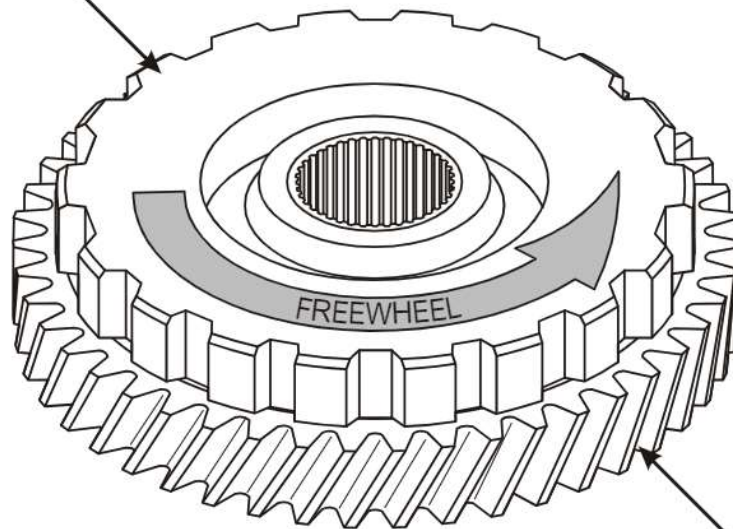


**HOLD
COUNTERSHAFT
1ST GEAR**

ACURA CA, P1, RO, MPRA, S4XA, SP7A LOW ONE-WAY CLUTCH

*THE PARKING GEAR MUST FREEWHEEL
COUNTER CLOCKWISE AND LOCK CLOCKWISE*

FREEWHEEL
PARKING GEAR

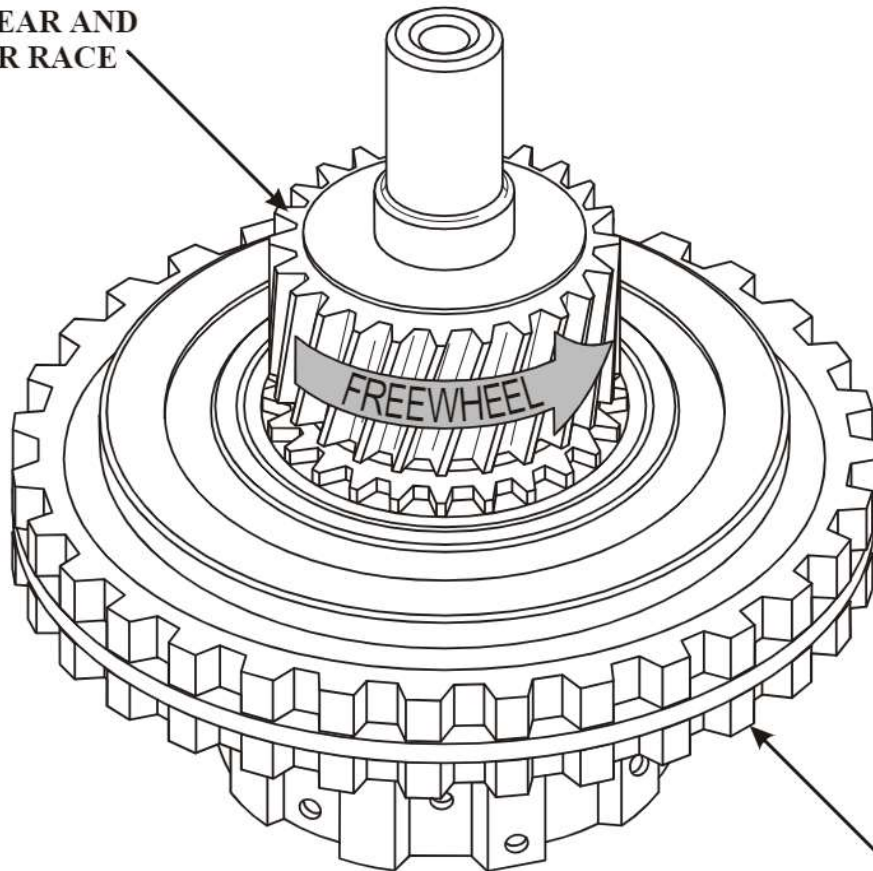


HOLD
COUNTERSHAFT
1ST GEAR

THM 180 AND 4L30-E

*THE SUN GEAR AND INNER RACE MUST FREEWHEEL
COUNTER CLOCKWISE AND LOCK CLOCKWISE*

FREEWHEEL
SUN GEAR AND
INNER RACE

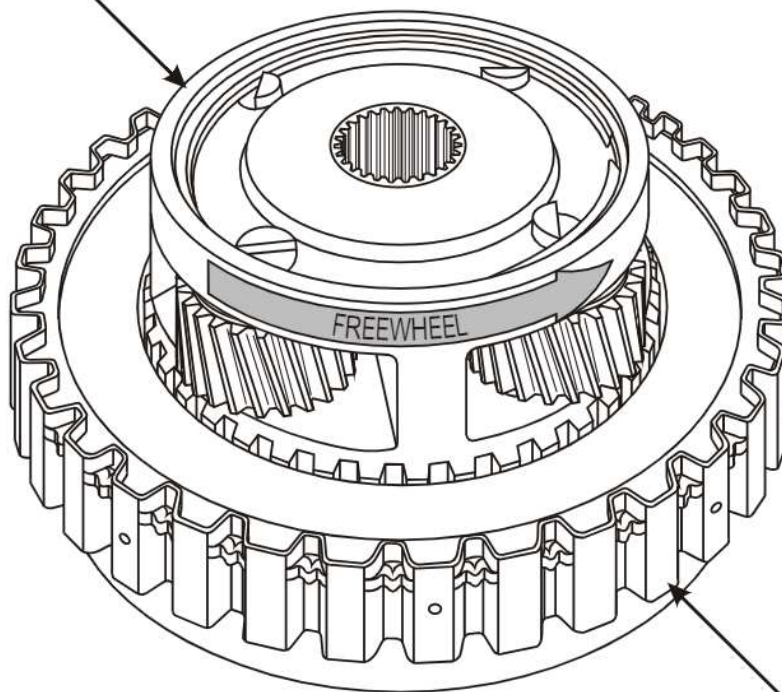


HOLD
OUTER RACE

THM 4L30-E OVERDRIVE ROLLER CLUTCH

*THE OVERDRIVE PLANETARY MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN OVERRUN CLUTCH DRUM IS HELD*

FREEWHEEL
OD CARRIER



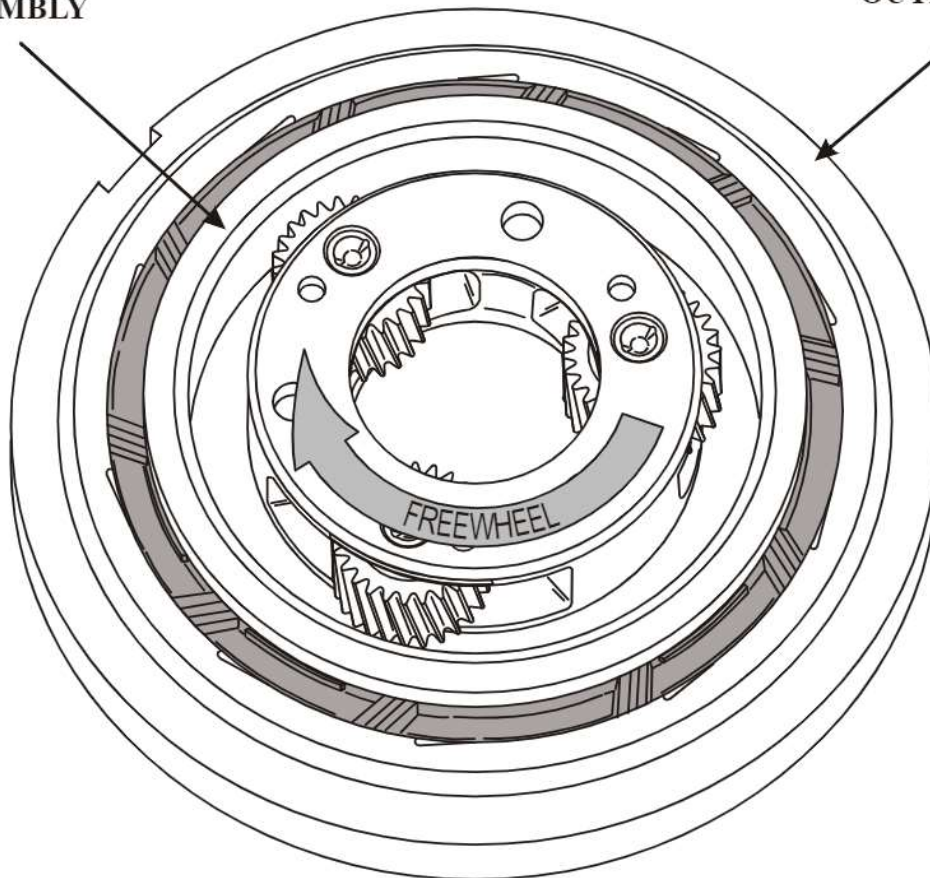
HOLD
OVERRUN CLUTCH
HOUSING

AUDI/VOLKSWAGEN 003, 010, 087, 089 LOW ONE-WAY CLUTCH

*THE PLANETARY ASSEMBLY MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN HOLDING THE OUTER RACE*

FREEWHEEL
PLANETARY
ASSEMBLY

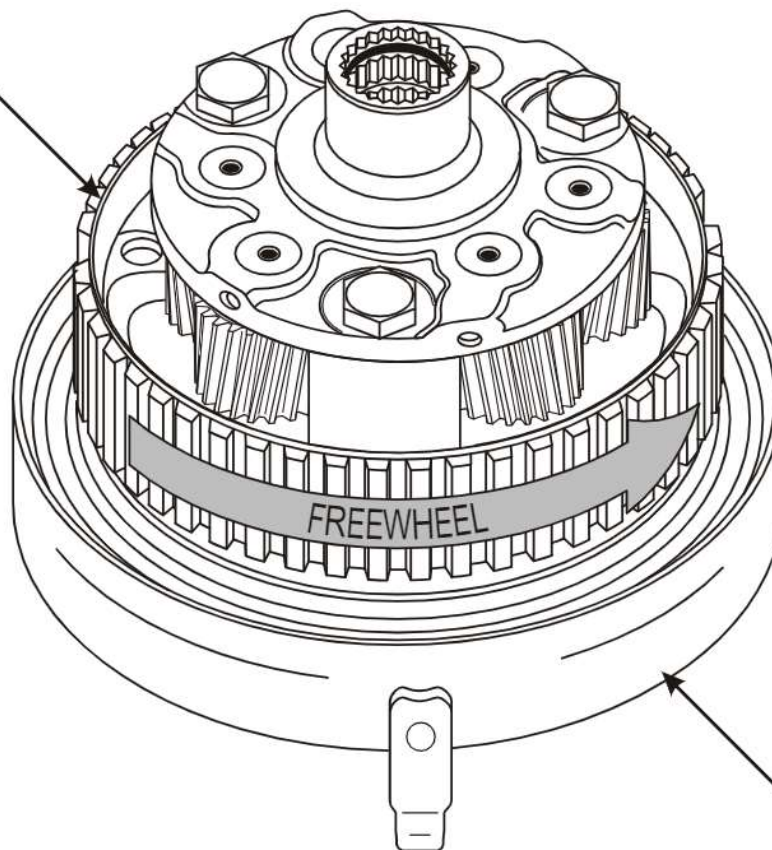
HOLD
OUTER RACE



AUDI/VOLKSWAGEN, 095, 096, 097, 098 LOW ROLLER

*THE PLANETARY ASSEMBLY MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHILE HOLDING THE B1 CLUTCH HOUSING*

FREEWHEEL
PLANETARY
ASSEMBLY

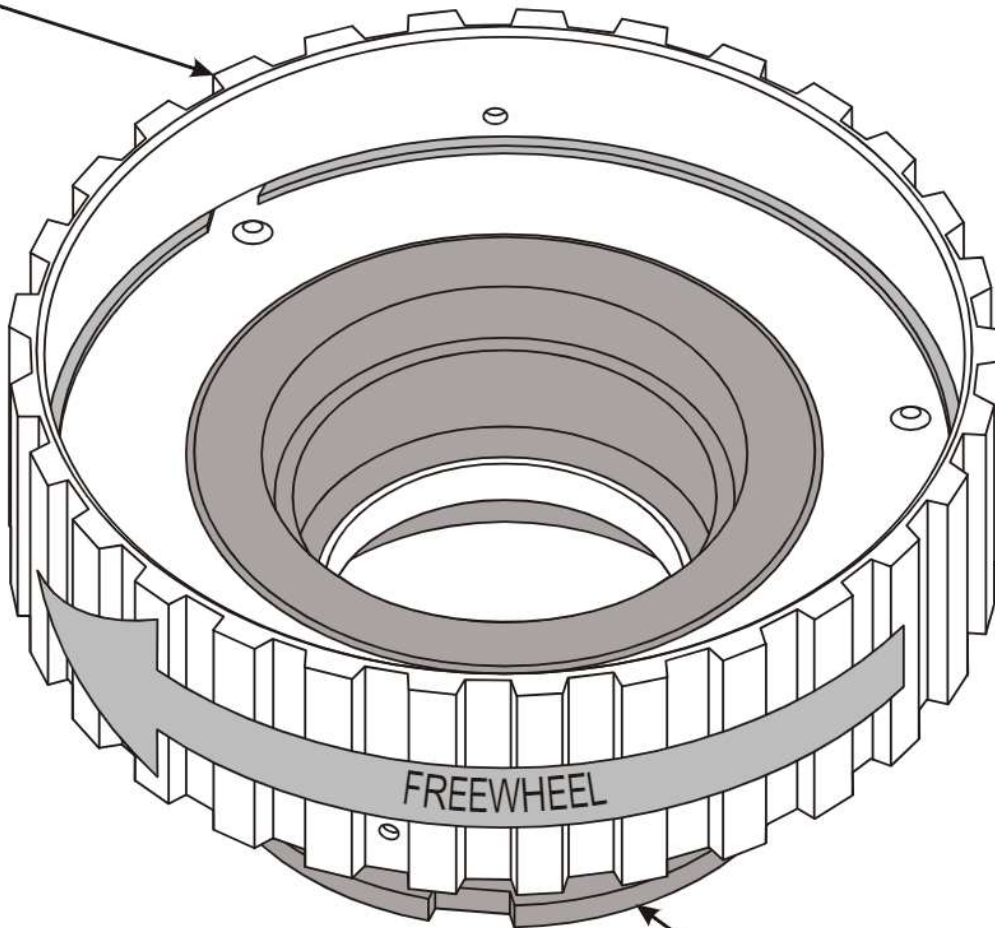


HOLD
B1 CLUTCH
HOUSING

ZF4HP-14, ZF4HP-18, ZF5HP-18 AND ZF5HP-19 LOW SPRAG

*THE LOW AND REVERSE CLUTCH HUB MUST FREEWHEEL
CLOCKWISE AND LOCK COUNTER CLOCKWISE*

**FREEWHEEL
OUTER RACE**

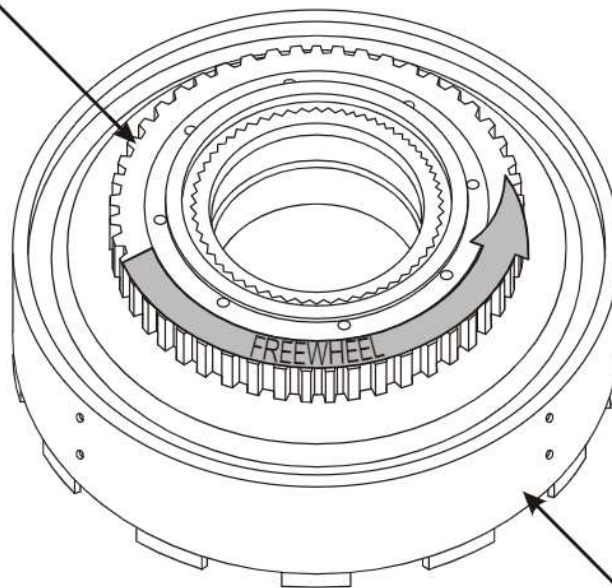


**HOLD
INNER RACE**

ZF4HP-14, ZF4HP-18 AND ZF5HP-18 INTERMEDIATE SPRAG

*THE INTERMEDIATE SPRAG OUTER RACE MUST FREEWHEEL COUNTER
CLOCKWISE AND LOCK CLOCKWISE WHEN HOLDING
THE REVERSE INPUT DRUM*

FREEWHEEL
INTERMEDIATE SPRAG
OUTER RACE

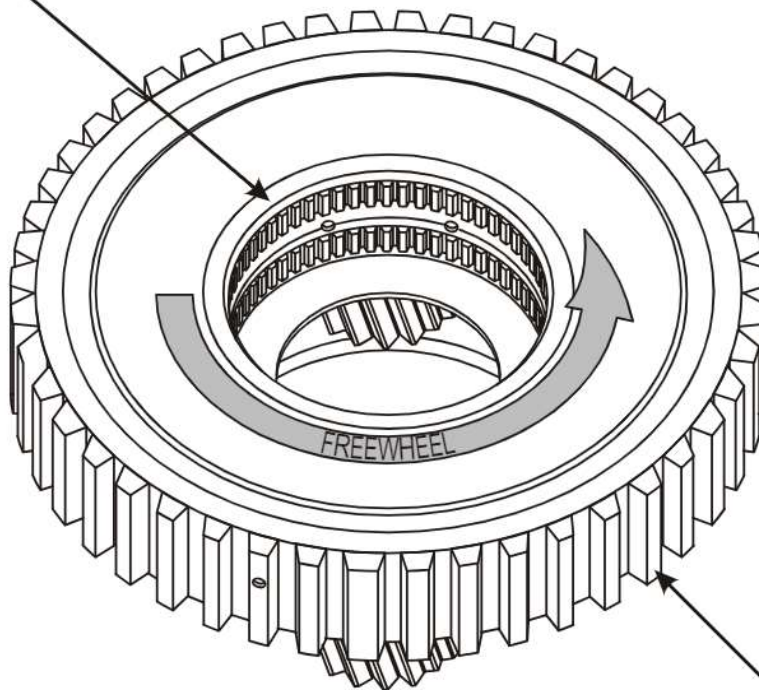


HOLD
REVERSE INPUT
CLUTCH DRUM

ZF3HP-22, ZF4HP-22/EH AND ZF4HP-24/EH LOW SPRAG

*THE INNER SPRAG RACE MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING THE PLANETARY CARRIER*

FREEWHEEL
INNER RACE



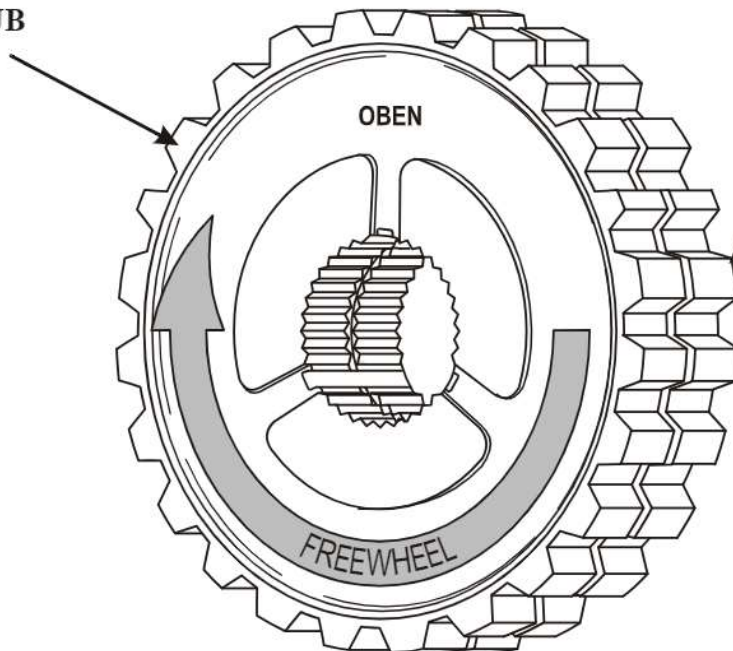
HOLD
PLANETARY
CARRIER

ZF3HP-22, ZF4HP-22/EH AND ZF4HP-24/EH INTERMEDIATE ROLLER CLUTCH

***THE FRONT CLUTCH HUB MUST FREEWHEEL CLOCKWISE AND LOCK
COUNTER CLOCKWISE WHEN HOLDING THE REAR CLUTCH HUB***

***FREEWHEEL FRONT
CLUTCH HUB***

***HOLD REAR
CLUTCH HUB***



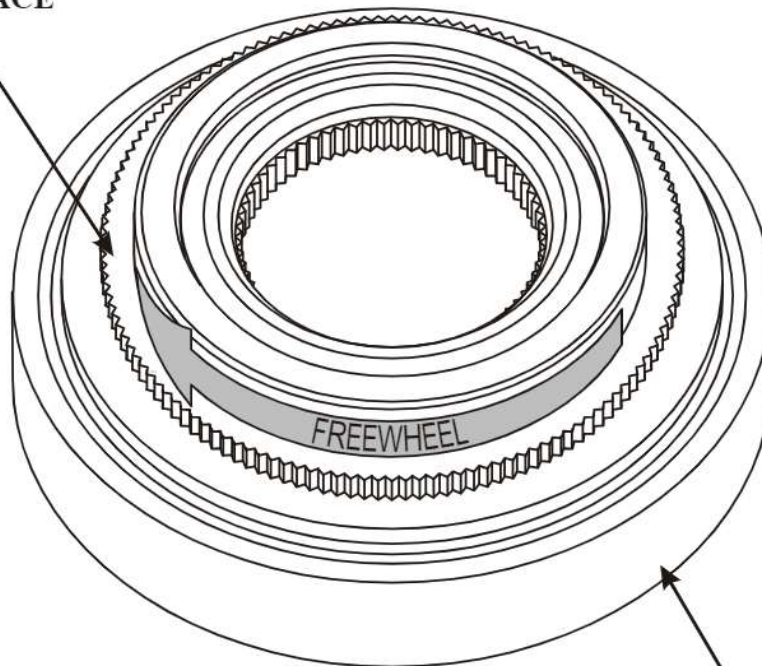
NOTE: THE WORD "OBEN" MUST FACE THE BELLHOUSING

***NOTE: SPRAG ROTATION MUST BE CHECKED IN THE VERTICAL
POSITION, AS SHOWN, OR IT WILL NOT CHECK PROPERLY***

ZF4HP-22/EH AND ZF4HP-24/EH OVERDRIVE SPRAG

*THE FREEWHEEL OUTER RACE MUST FREEWHEEL CLOCKWISE AND
LOCK COUNTER CLOCKWISE WHEN HOLDING THE RING GEAR ASSEMBLY*

GRASP TEETH
AND FREEWHEEL
OUTER RACE

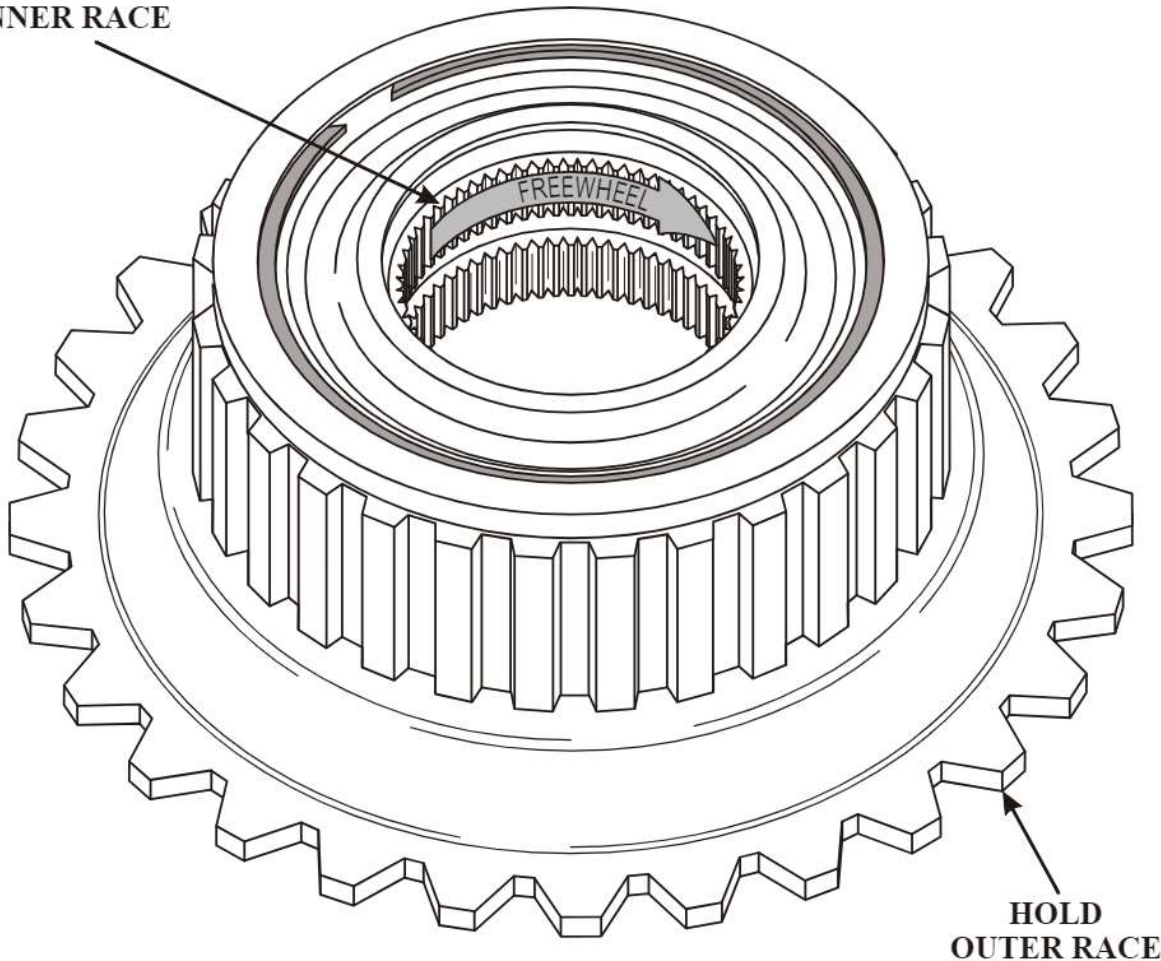


HOLD
RING GEAR
ASSEMBLY

BMW ZF5HP-24 LOW SPRAG (FrF)

*THE LOW SPRAG INNER RACE MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN INSTALLED IN OUTER RACE*

FREEWHEEL
INNER RACE





FREEWHEEL BOOK

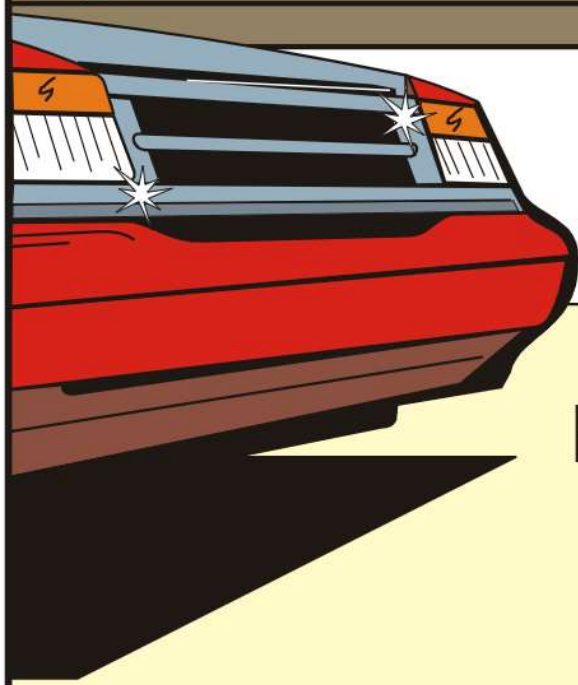


ATSG BULLETINS
AND MANUALS ON CD

THE BEST THING NEXT TO YOUR TOOL BOX
IS A COMPLETE LIBRARY OF TECH AT YOUR
FINGER TIPS...



THE TECH YOU NEED...
WHEN YOU NEED IT FAST...

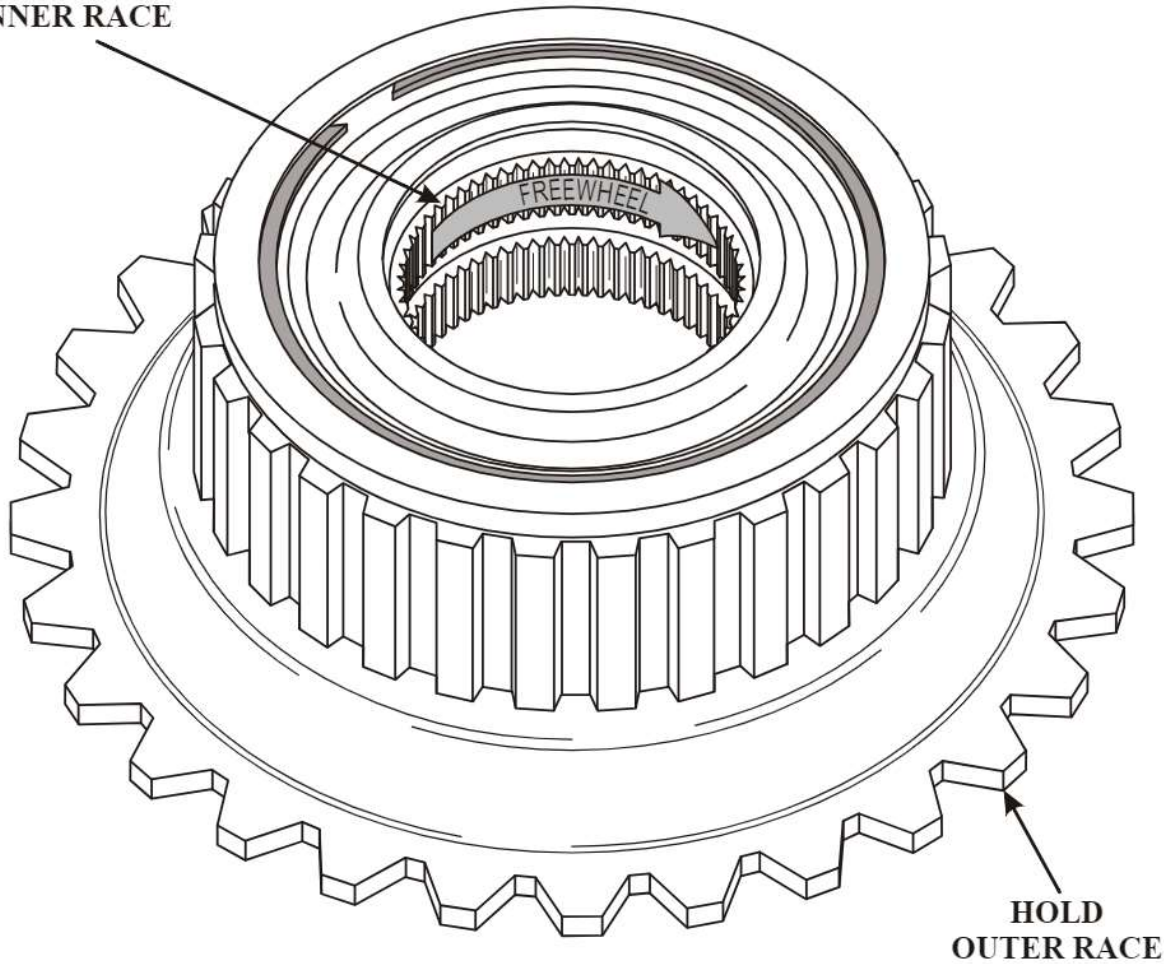


FOR MORE INFORMATION
CALL
(800) 245-7722

ZF5HP-30 LOW SPRAG (FrF)

*THE LOW SPRAG INNER RACE MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN INSTALLED IN OUTER RACE*

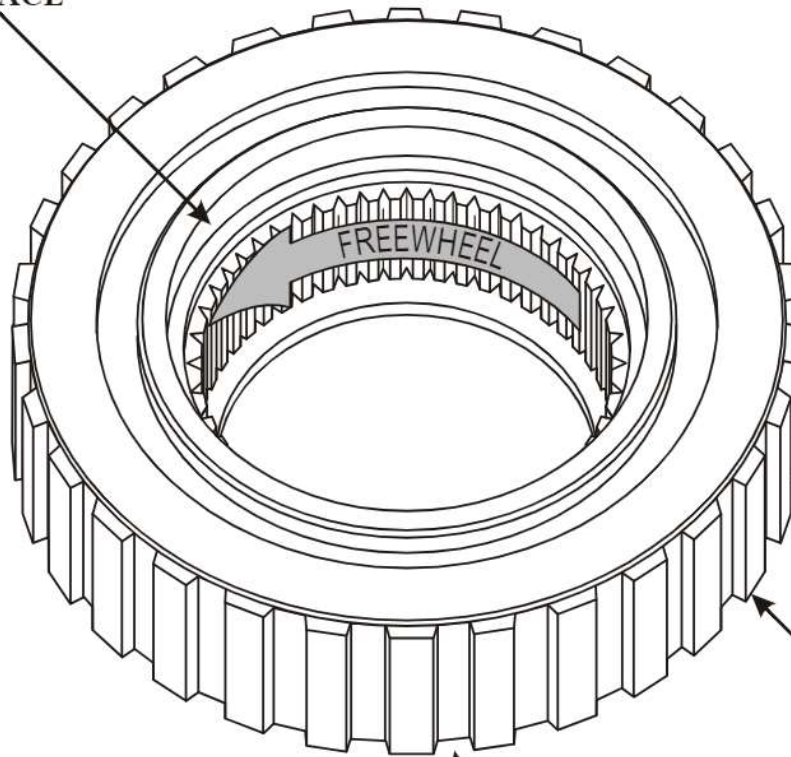
**FREEWHEEL
INNER RACE**



ZF5HP-30 2ND SPRAG (FrE)

*THE 2ND SPRAG INNER RACE MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN INSTALLED IN OUTER RACE*

FREEWHEEL
INNER RACE

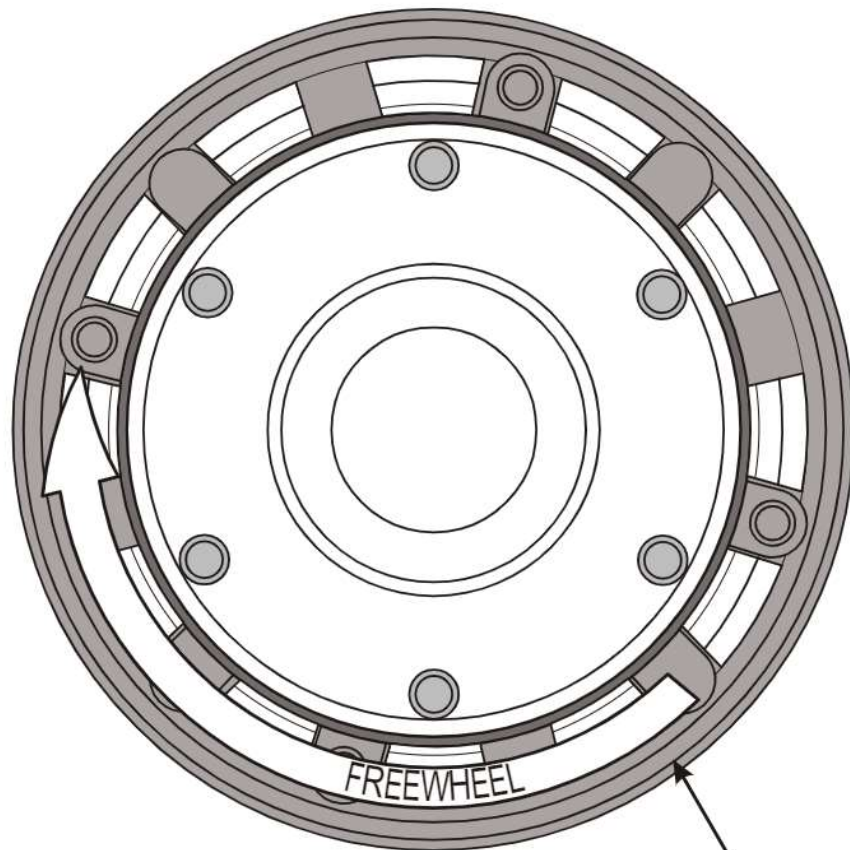


HOLD
OUTER RACE

SNAP RING SIDE
FACING DOWN

CHRYSLER 404, 413, 670 SERIES LOW ROLLER

*THE LOW AND REVERSE DRUM MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN INSTALLED IN THE CASE*

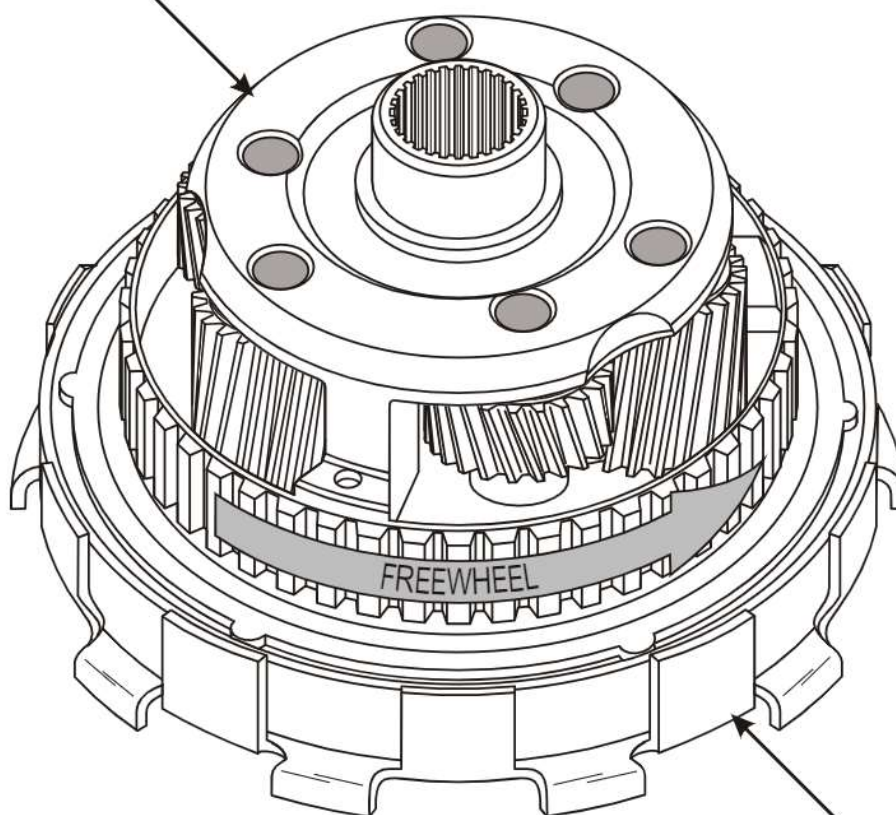


FREEWHEEL
LOW/REVERSE DRUM

**MITSUBISHI AND HYUNDAI
ALL KM FRONT WHEEL DRIVE,
F3A20, F4A20, F4A30 AND W4A30 SERIES**

***THE PLANETARY ASSEMBLY MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHILE HOLDING THE CENTER SUPPORT***

**FREEWHEEL
PLANETARY CARRIER
ASSEMBLY**



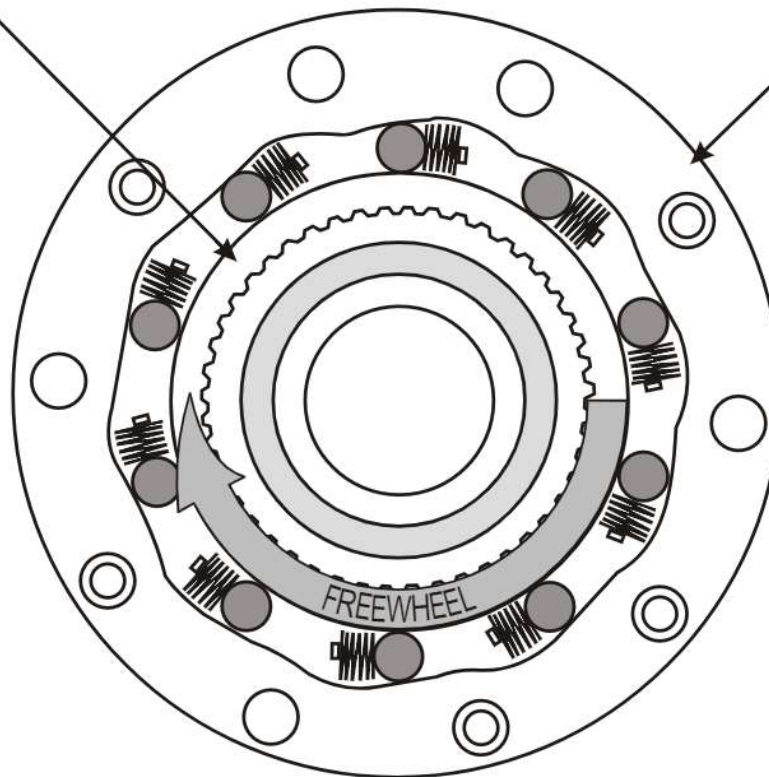
**HOLD
CENTER
SUPPORT**

TORQUEFLITE REAR WHEEL DRIVE LOW ROLLER CLUTCH

*THE LOW ROLLER CLUTCH INNER RACE MUST FREEWHEEL
CLOCKWISE AND LOCK COUNTER CLOCKWISE
WHEN INSTALLED INTO THE OUTER CAM*

FREEWHEEL
LOW ROLLER CLUTCH
INNER RACE

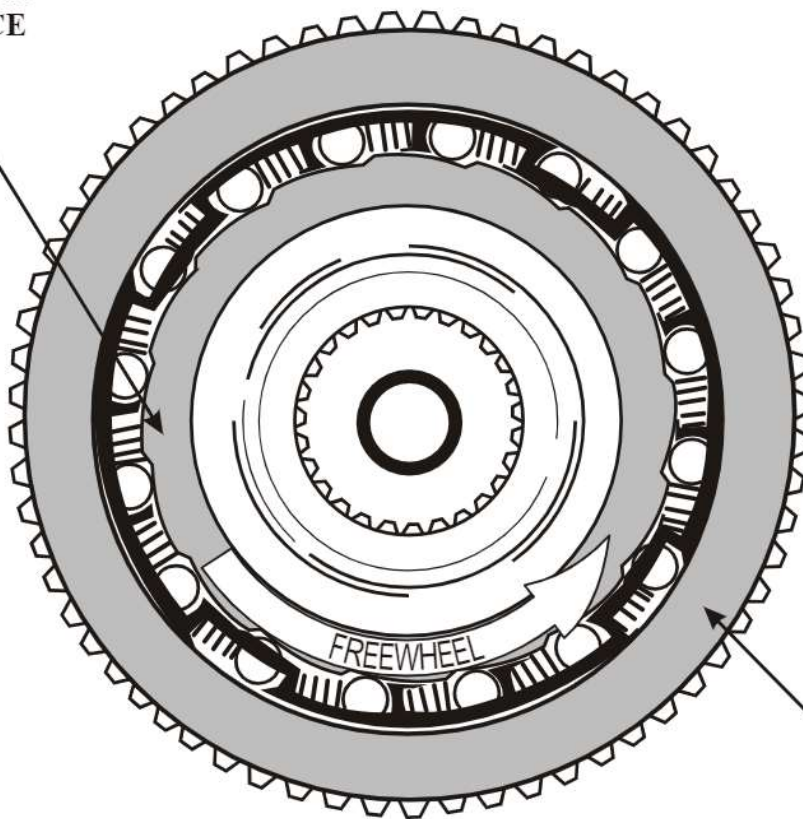
OUTER CAM
HELD IN CASE



TORQUEFLITE REAR WHEEL DRIVE OVERDRIVE ROLLER CLUTCH

*THE OVERDRIVE ROLLER CLUTCH INNER RACE MUST FREEWHEEL
COUNTER CLOCKWISE AND LOCK CLOCKWISE
WHEN HOLDING THE OUTER RACE*

FREEWHEEL
INNER RACE



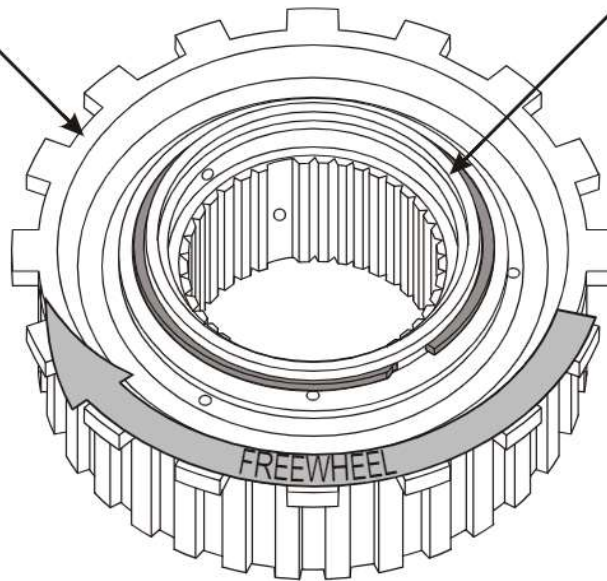
HOLD
OUTER RACE

CHRYSLER 45RFE LOW ROLLER CLUTCH

*THE LOW ROLLER OUTER RACE MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN HOLDING THE INNER RACE*

**FREEWHEEL
OUTER RACE**

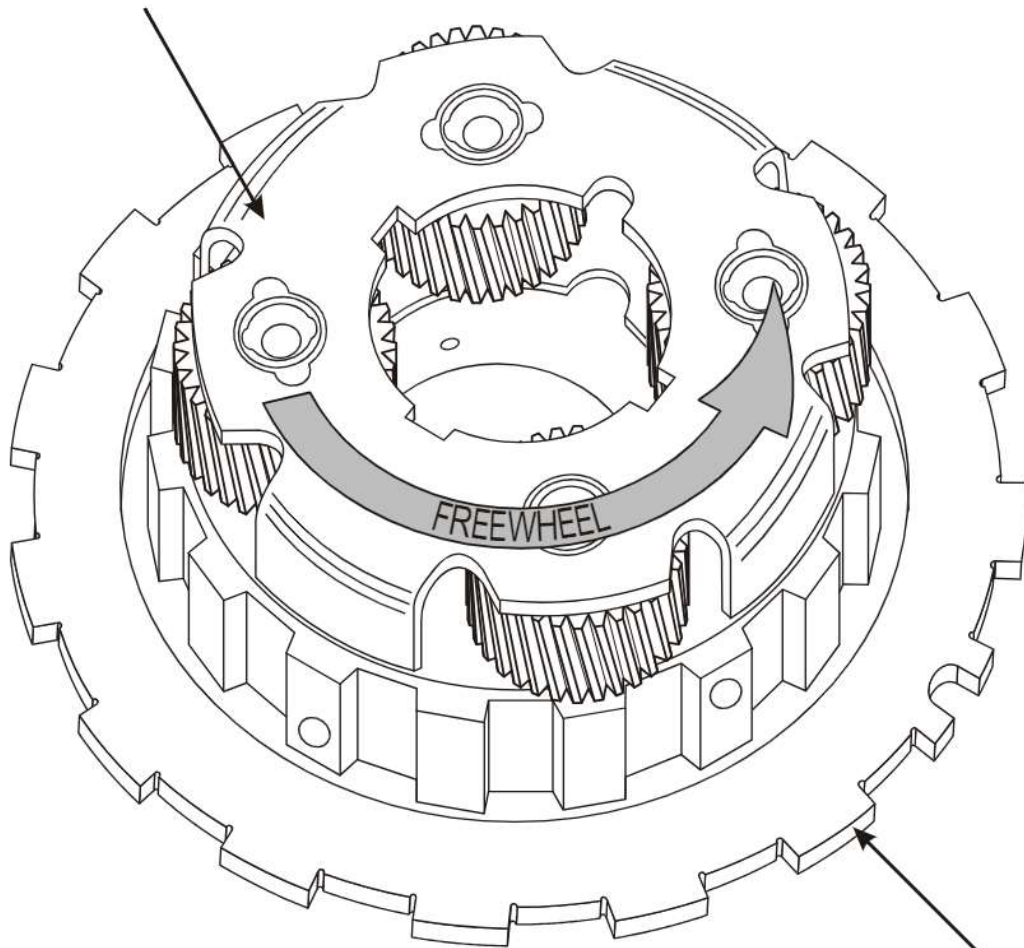
**HOLD
INNER RACE**



**AW3, A40 SERIES, A55,
LOW (NO. 2) ONE WAY CLUTCH**

*THE PLANETARY MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN THE INNER RACE IS HELD*

**FREEWHEEL
PLANETARY CARRIER**

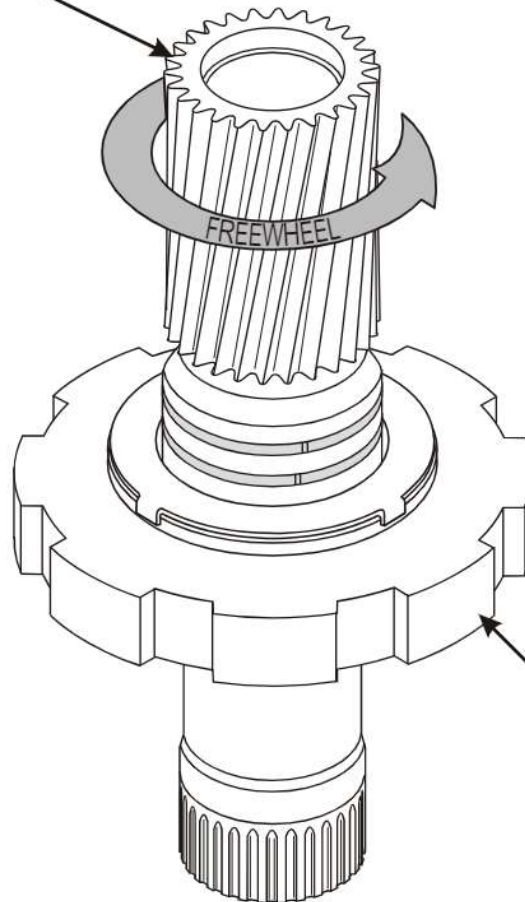


**HOLD
INNER RACE**

AW3, A40 SERIES, A55, 2ND GEAR (NO. 1) ONE WAY CLUTCH

*THE SUN GEAR MUST FREEWHEEL COUNTER CLOCKWISE AND
LOCK CLOCKWISE WHEN THE ONE-WAY CLUTCH OUTER RACE IS HELD*

FREEWHEEL
SUN GEAR

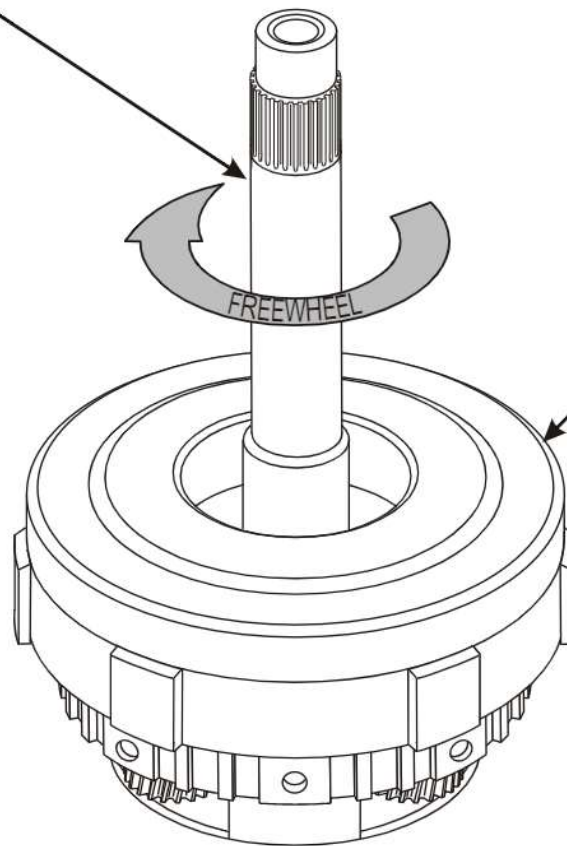


HOLD
OUTER RACE

A40 SERIES OVERDRIVE ONE WAY CLUTCH

*THE INPUT SHAFT MUST FREEWHEEL CLOCKWISE AND LOCK
COUNTER CLOCKWISE WHEN THE OVERDRIVE / DIRECT DRUM IS HELD*

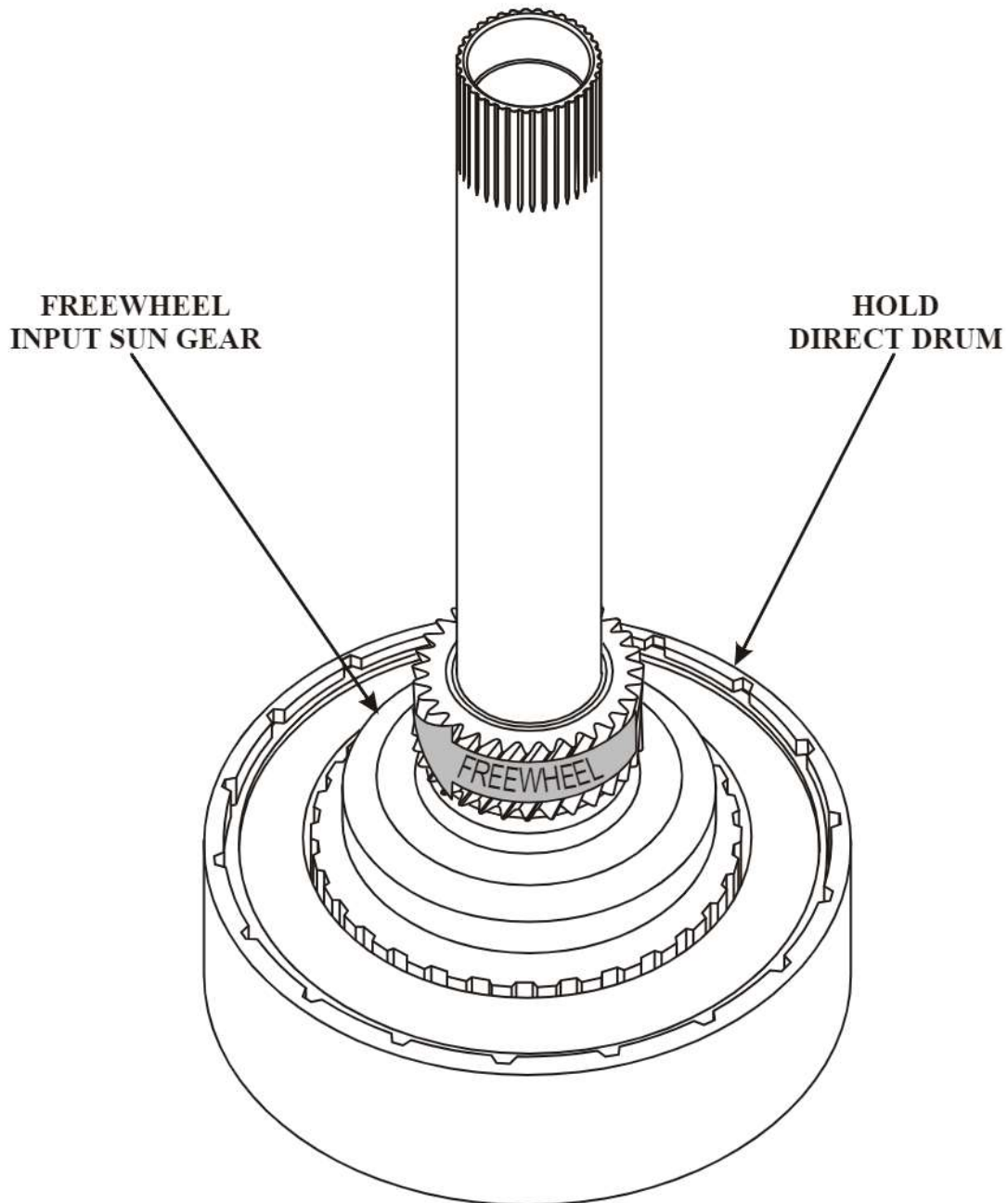
FREEWHEEL
INPUT SHAFT



HOLD
OD/DIRECT
DRUM

ATX ROLLER CLUTCH

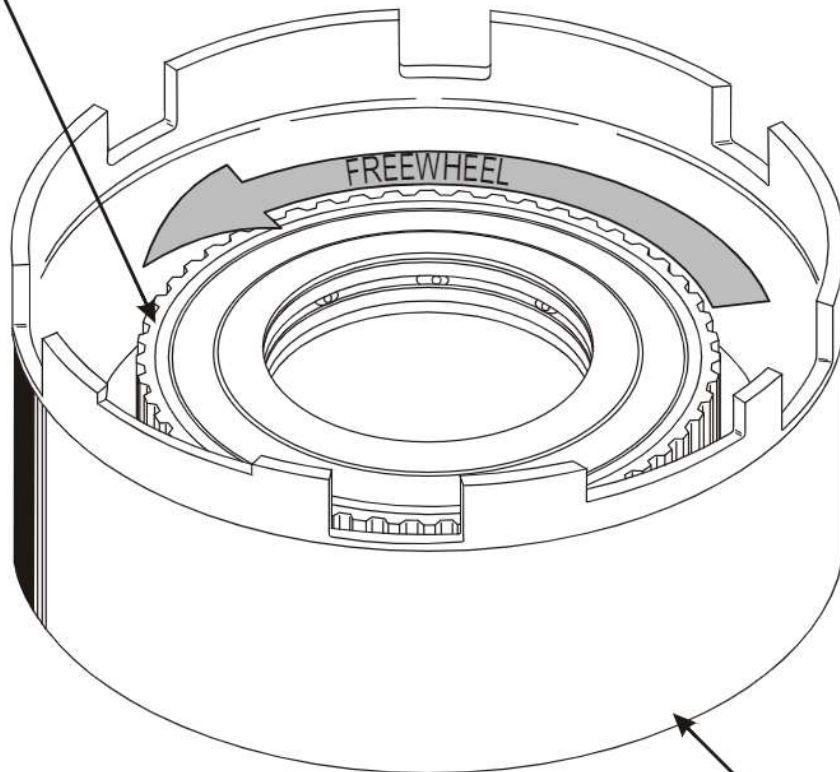
*THE INPUT SUN GEAR MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN DIRECT DRUM IS HELD*



AXOD, AXODE (AX4S), AX4N, LOW SPRAG

***THE LOW SPRAG OUTER RACE MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING THE OVERDRIVE DRUM***

**FREEWHEEL
LOW SPRAG
OUTER RACE**

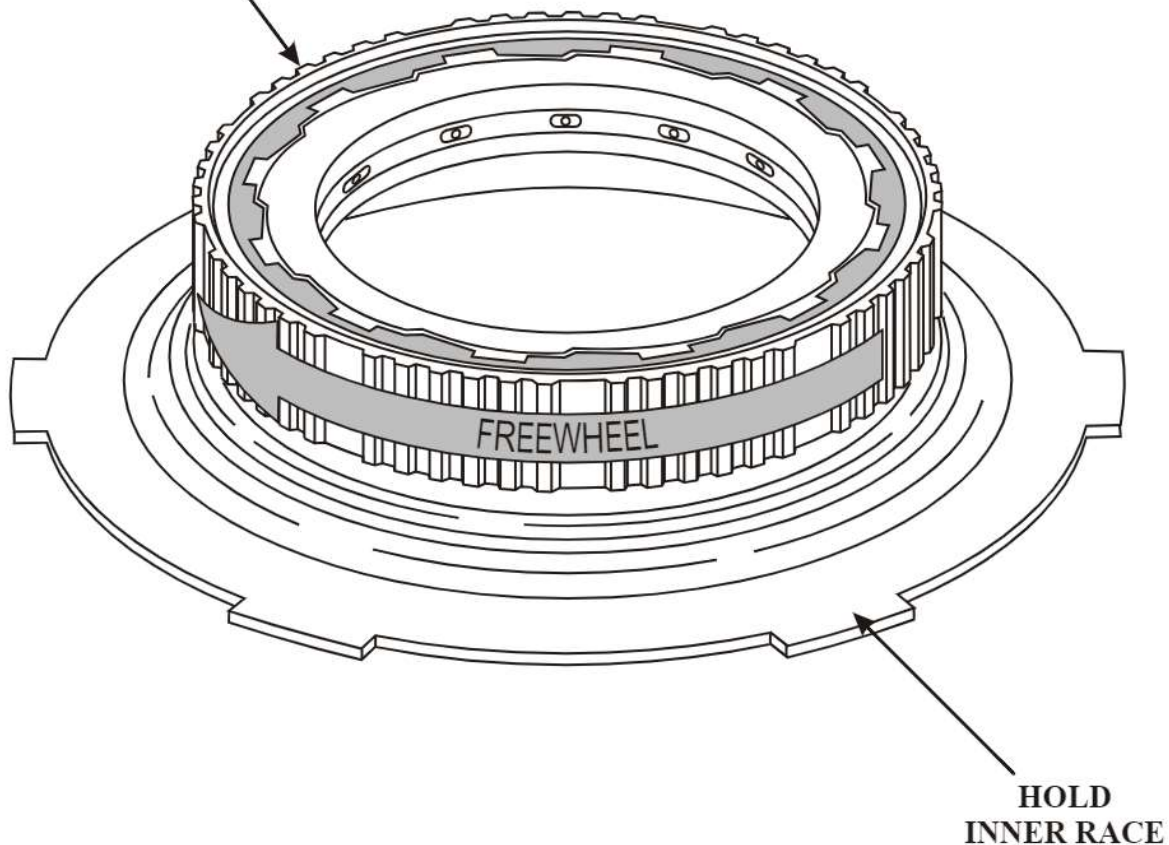


**HOLD
OVERDRIVE DRUM**

AXOD, AXODE (AX4S), AX4N 3RD ROLLER CLUTCH

*THE 3RD ROLLER CLUTCH OUTER RACE MUST FREEWHEEL
CLOCKWISE AND LOCK COUNTER CLOCKWISE WHEN THE
3RD ROLLER CLUTCH INNER RACE IS HELD*

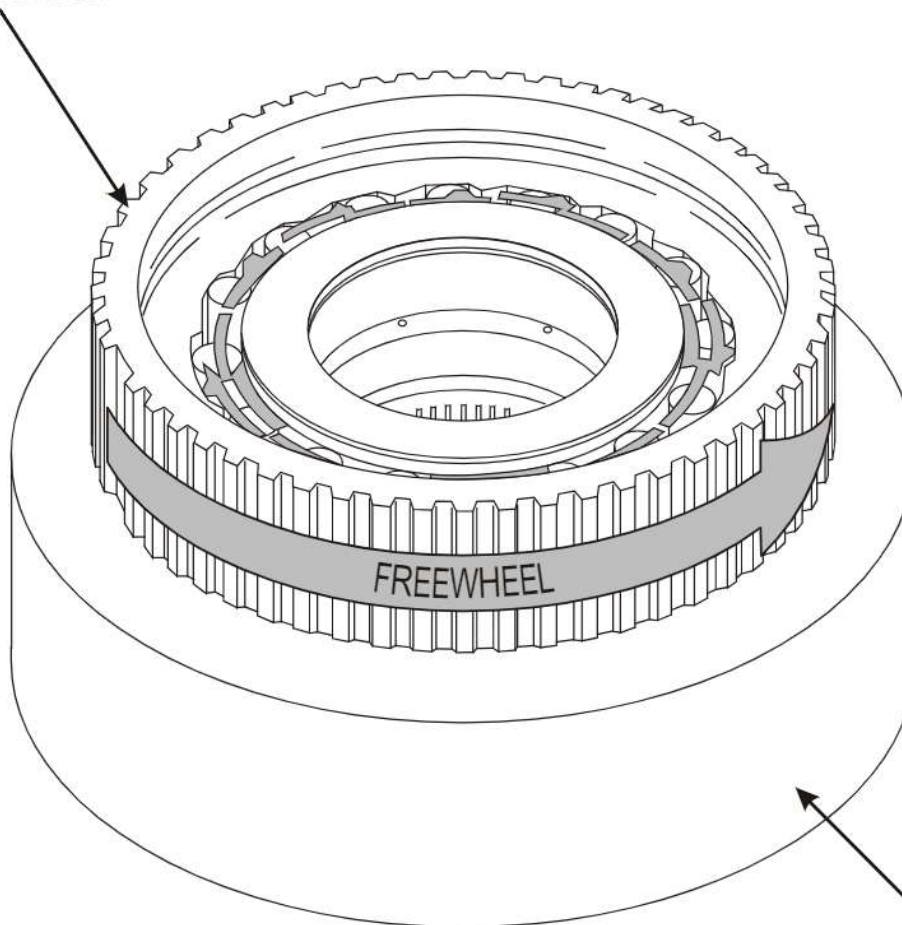
FREEWHEEL
OUTER RACE



AX4N 1-2 ROLLER CLUTCH

***THE 1-2 ROLLER CLUTCH OUTER RACE MUST FREEWHEEL COUNTER
CLOCKWISE AND LOCK CLOCKWISE WHEN HOLDING
THE REAR SUN GEAR ASSEMBLY***

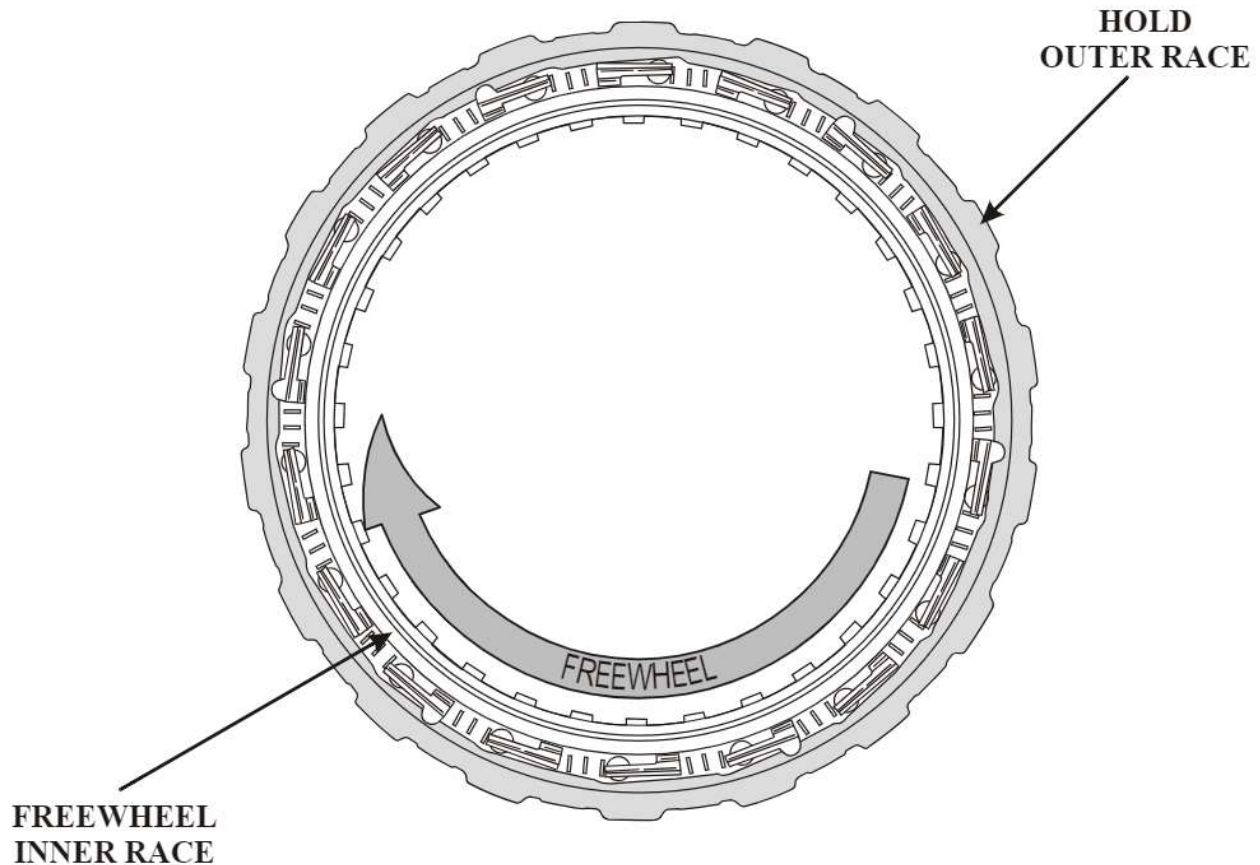
**FREEWHEEL
1-2 ROLLER CLUTCH
OUTER RACE**



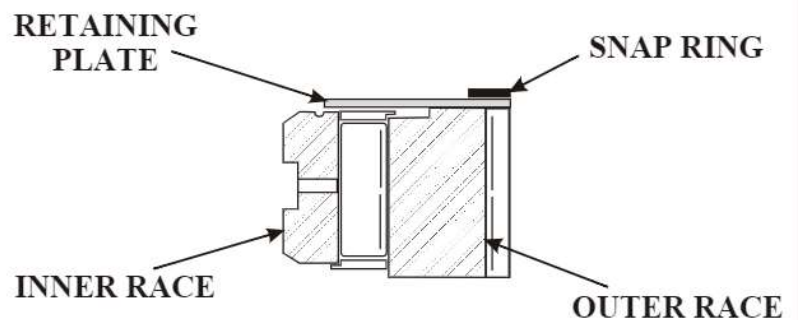
**HOLD
REAR SUN
GEAR ASSEMBLY**

FORD CD4E, MAZDA LA4A-EL LOW ROLLER CLUTCH

THE INNER RACE MUST FREEWHEEL CLOCKWISE AND LOCK COUNTER CLOCKWISE, WHEN THE OUTER RACE IS HELD STATIONARY



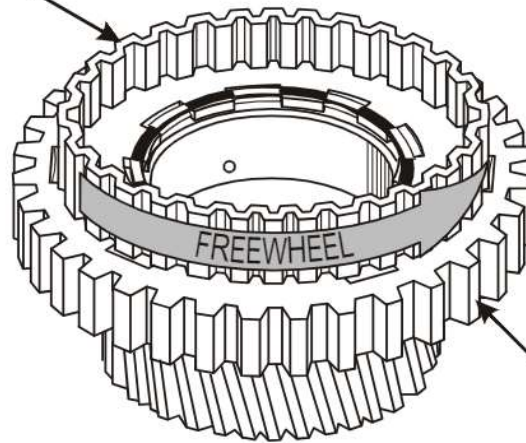
INSTALLED IN THE CASE



**FORD CD4E, MAZDA LA4A-EL
FORWARD SPRAG**

*THE OVERRUN CLUTCH HUB MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING THE FORWARD CLUTCH HUB*

**FREEWHEEL
OVERRUN
CLUTCH HUB**

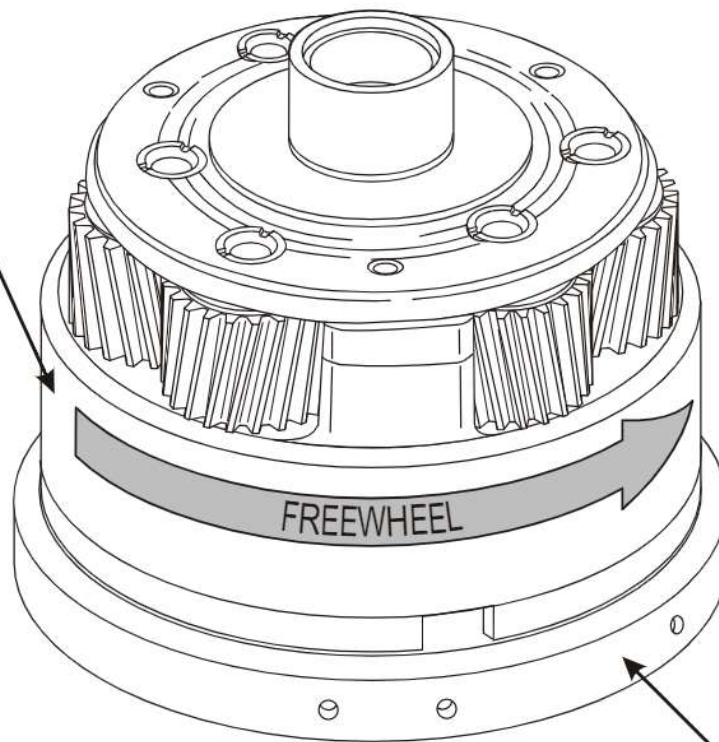


**HOLD
FORWARD
CLUTCH HUB**

CAST IRON FORD, BORG WARNER 12, FMX, LOW ROLLER CLUTCH

*THE REAR PLANETARY MUST FREEWHEEL COUNTER CLOCKWISE AND
LOCK CLOCKWISE WHEN HOLDING THE INNER RACE*

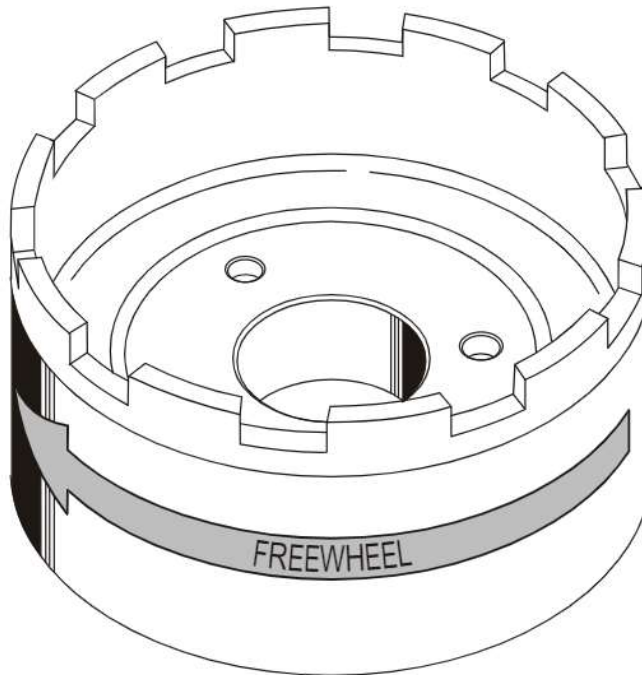
FREEWHEEL
PLANETARY
CARRIER



HOLD
INNER RACE
(CENTER SUPPORT)

C-4 AND C-5 LOW ROLLER CLUTCH

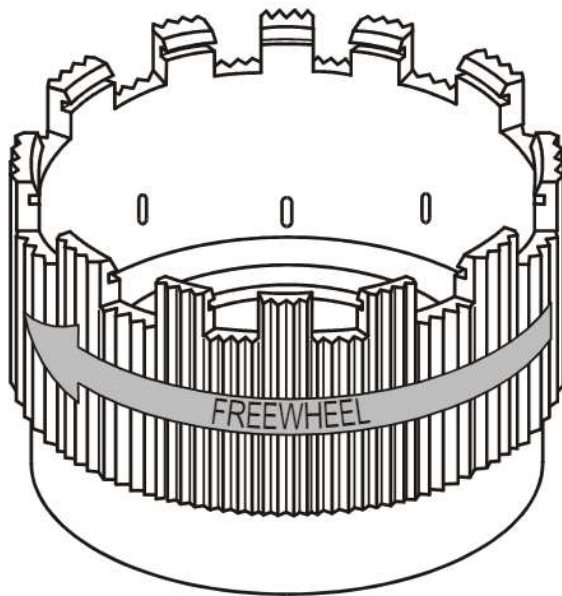
*THE LOW AND REVERSE DRUM MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN INSTALLED IN THE CASE*



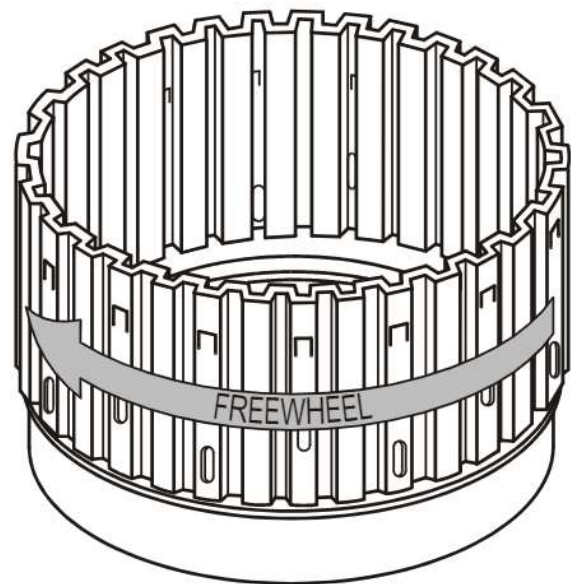
C-6, E40D, 4R100, LOW ROLLER CLUTCH

*THE LOW AND REVERSE CLUTCH HUB MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN INSTALLED IN THE CASE*

C-6 AND E40D
1989-1996
LOW/REVERSE HUB



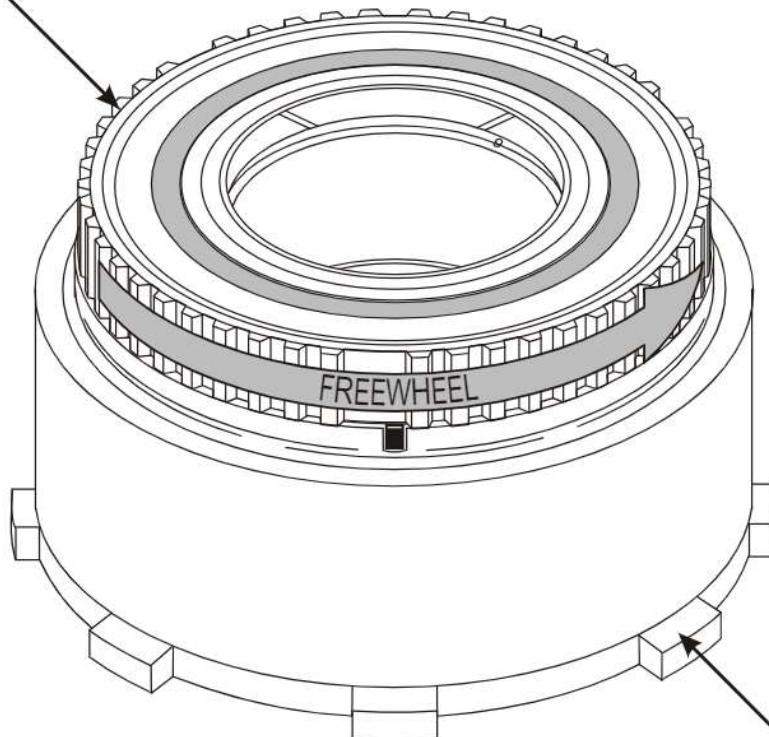
1997 AND LATER
E40D AND 4R100
LOW/REVERSE HUB



**E40D AND 4R100
INTERMEDIATE SPRAG**

***THE INTERMEDIATE OUTER SPRAG RACE MUST FREEWHEEL
COUNTERCLOCKWISE AND LOCK CLOCKWISE WHEN HOLDING
THE DIRECT CLUTCH DRUM***

**FREEWHEEL
INTERMEDIATE SPRAG
OUTER RACE**

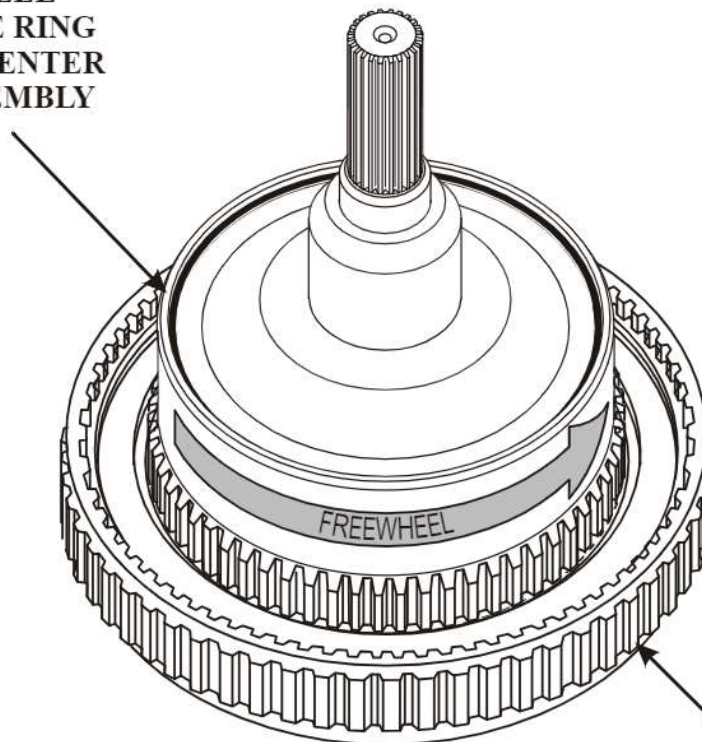


**HOLD
DIRECT CLUTCH
HOUSING**

E40D AND 4R100 OVERDRIVE ONE-WAY CLUTCH

***THE OVERDRIVE RING GEAR AND CENTER SHAFT ASSEMBLY MUST
FREEWHEEL COUNTER CLOCKWISE AND LOCK CLOCKWISE
WHEN HOLDING THE COAST CLUTCH DRUM***

**FREEWHEEL
OVERDRIVE RING
GEAR AND CENTER
SHAFT ASSEMBLY**

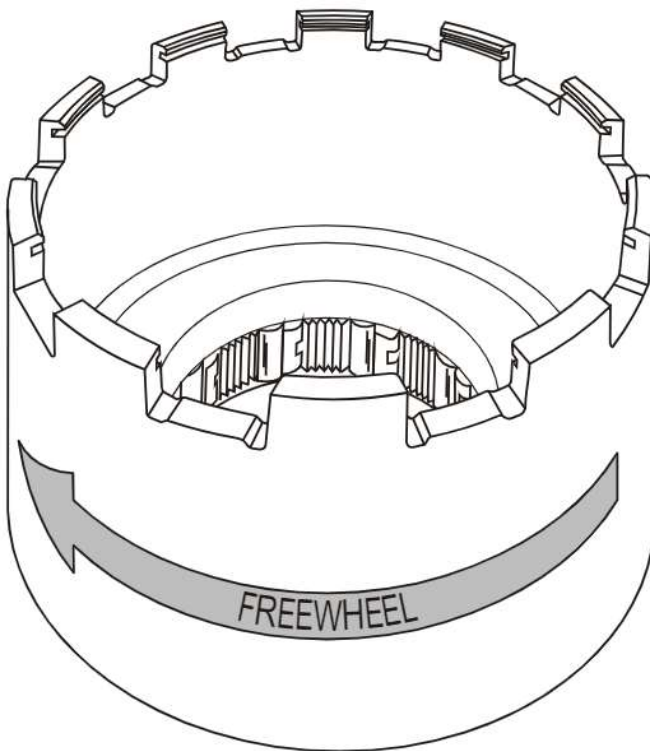


**HOLD
COAST CLUTCH
HOUSING**

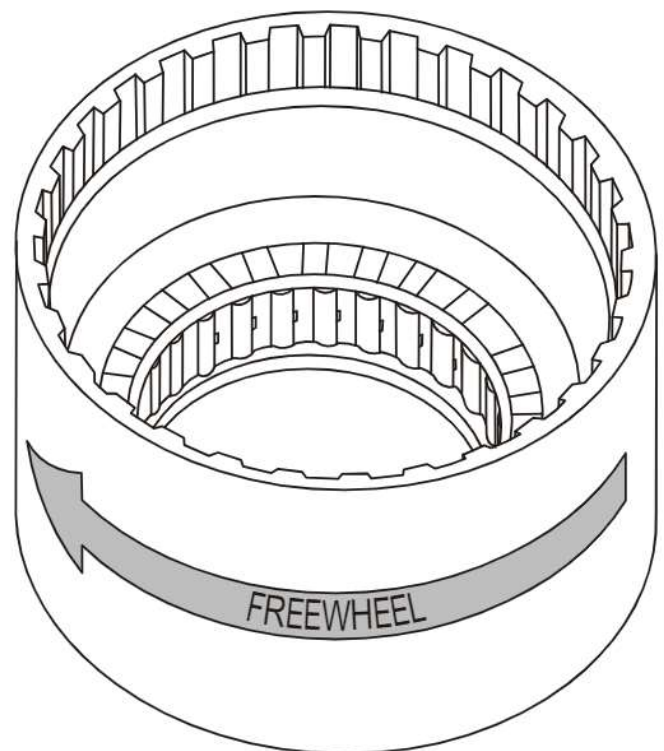
C3, A4LD, 4R44E, 4R55E, 5R55E, 5R55N, LOW ONE WAY CLUTCH

*THE LOW AND REVERSE DRUM MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN INSTALLED IN THE CASE*

**C3, A4LD,
LOW/REVERSE DRUM**



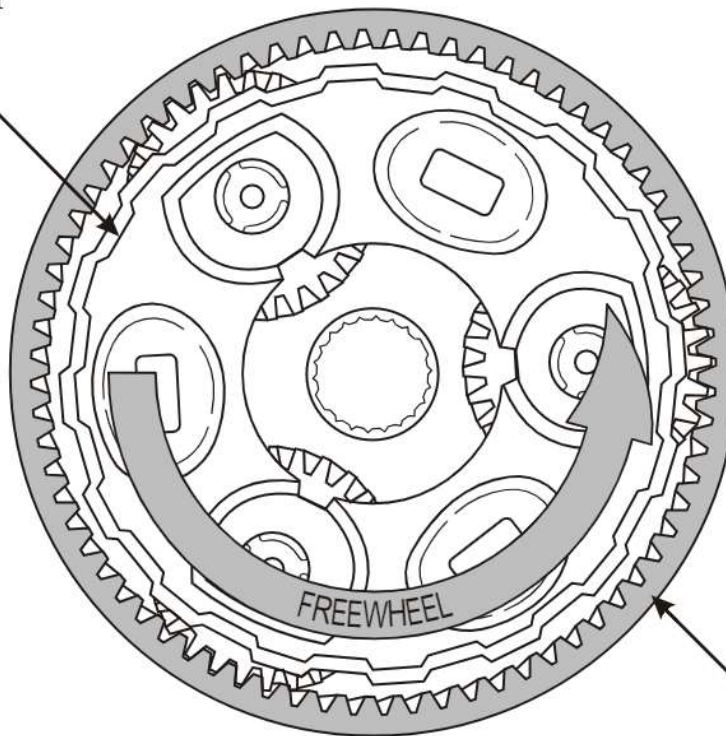
**A4LD, 4R44E, 4R55E, 5R55E, 5R55N,
LOW/REVERSE DRUM**



A4LD, 4R44E, 4R55E, 5R55E, 5R55N, OVERDRIVE SPRAG

*THE OVERDRIVE PLANETARY MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN THE RING GEAR IS HELD*

FREEWHEEL
OVERDRIVE
PLANETARY

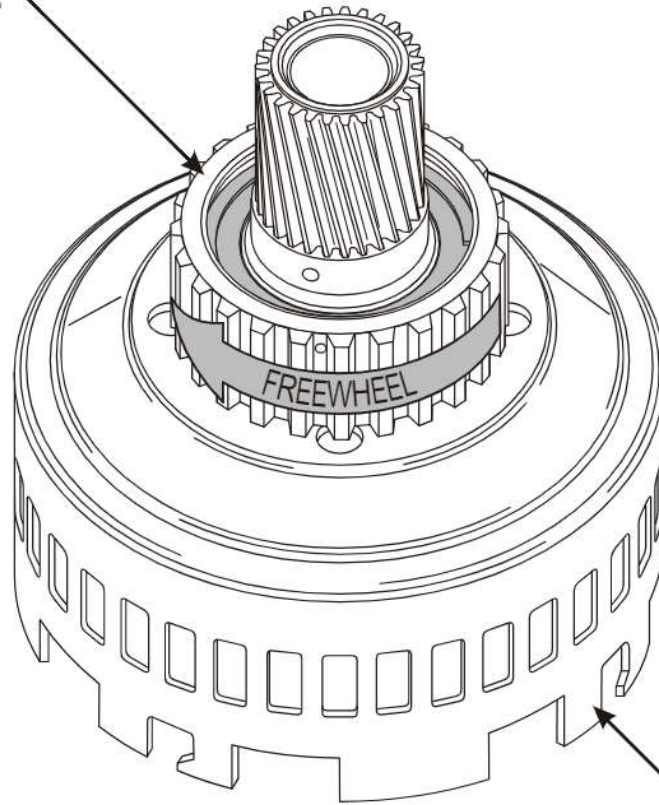


HOLD
RING GEAR

5R55N SUN GEAR SHELL SPRAG

THE OUTER SPRAG RACE MUST FREEWHEEL CLOCKWISE AND LOCK COUNTER CLOCKWISE WHEN HOLDING SUN GEAR AND SHELL ASSEMBLY

FREEWHEEL
OUTER SPRAG
RACE

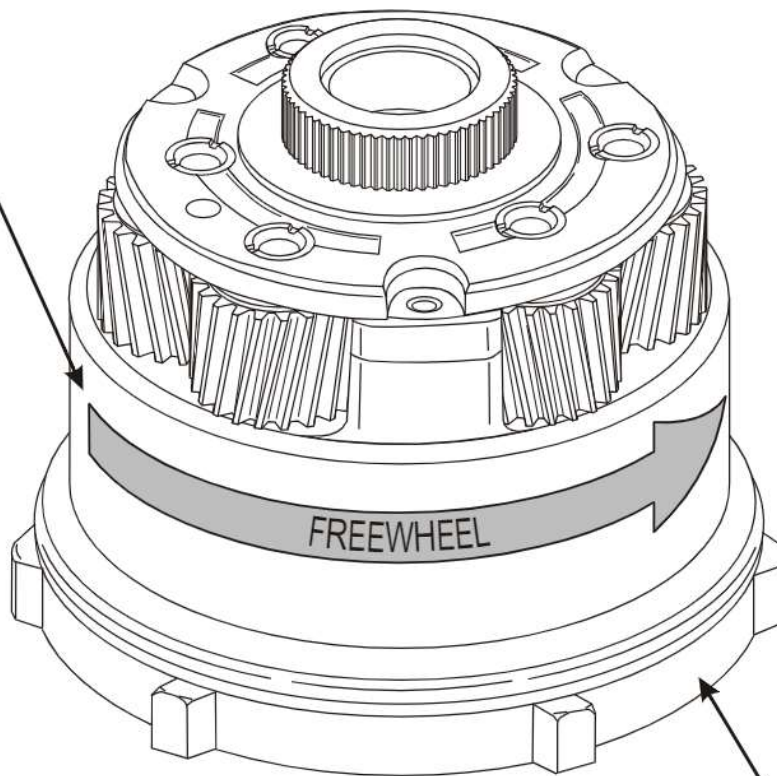


HOLD
SUN GEAR AND
SHELL ASSEMBLY

AOD, AODE, 4R70W, LOW ROLLER CLUTCH

*THE REAR PLANETARY MUST FREEWHEEL COUNTER CLOCKWISE AND
LOCK CLOCKWISE WHEN HOLDING THE LOW ROLLER CLUTCH INNER RACE*

FREEWHEEL
REAR PLANETARY

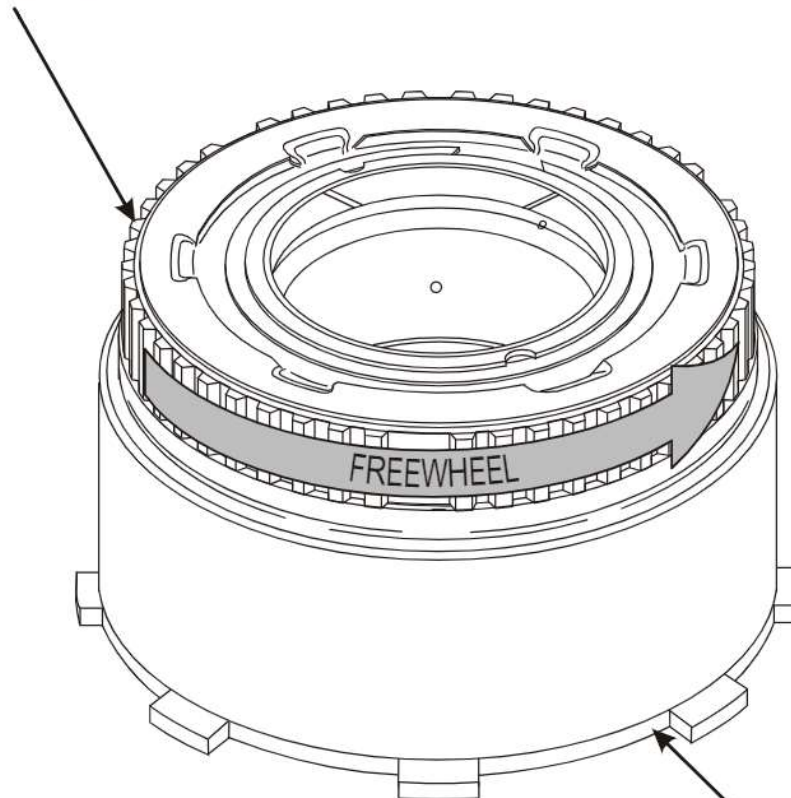


HOLD
LOW ROLLER
CLUTCH INNER RACE

**AOD, AODE, 4R70W,
INTERMEDIATE ONE-WAY CLUTCH**

***THE INTERMEDIATE ONE-WAY OUTER RACE MUST FREEWHEEL
COUNTERCLOCKWISE AND LOCK CLOCKWISE WHEN HOLDING
THE REVERSE INPUT CLUTCH DRUM***

**FREEWHEEL
INTERMEDIATE
ONE-WAY
OUTER RACE**

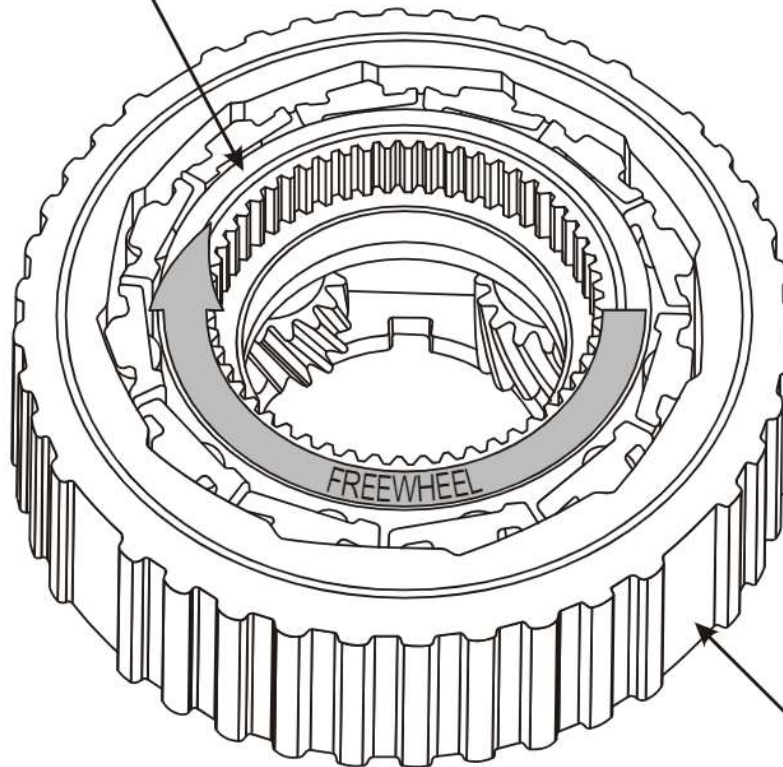


**HOLD
REVERSE INPUT
HOUSING**

THM 125, 125C, 325, 325-4L LOW ROLLER CLUTCH

*THE INNER RACE MUST FREEWHEEL CLOCKWISE AND LOCK
COUNTER CLOCKWISE WHEN THE PLANETARY CARRIER IS HELD*

FREEWHEEL
INNER RACE

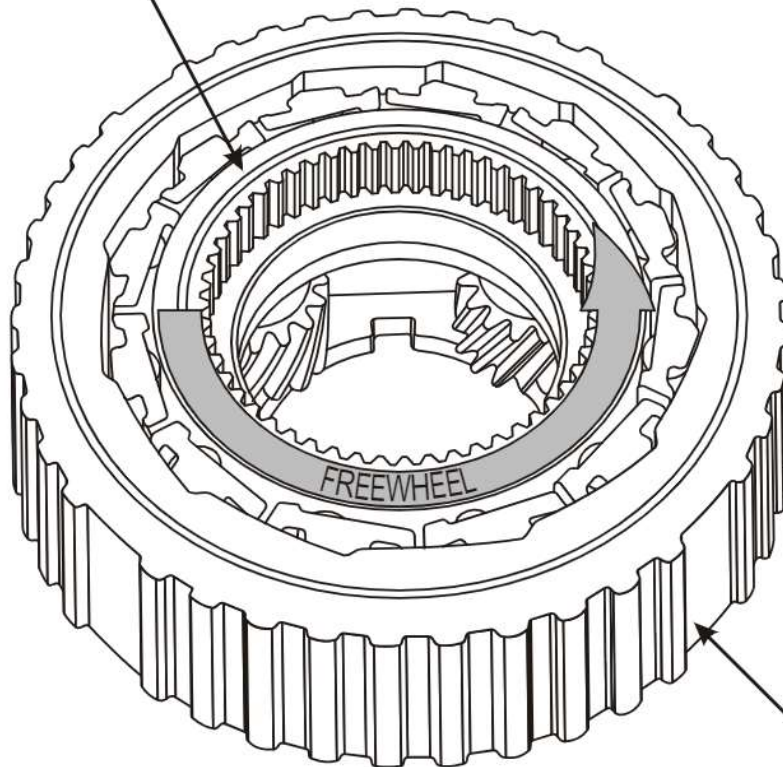


HOLD
PLANETARY
CARRIER

THM 200, 200-4R, LOW ROLLER CLUTCH

*THE INNER RACE MUST FREEWHEEL COUNTER CLOCKWISE AND
LOCK CLOCKWISE WHEN THE PLANETARY CARRIER IS HELD*

FREEWHEEL
INNER RACE

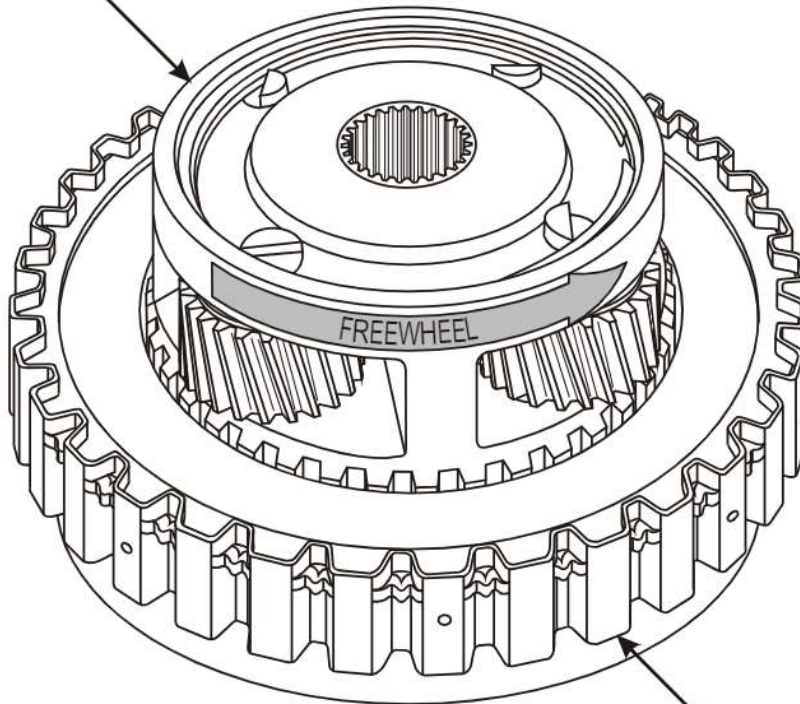


HOLD
PLANETARY
CARRIER

THM 200-4R, 325-4L, OVERRUN ROLLER CLUTCH

*THE OVERDRIVE CARRIER MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING OVERRUN CLUTCH HOUSING*

FREEWHEEL
OVERDRIVE
CARRIER

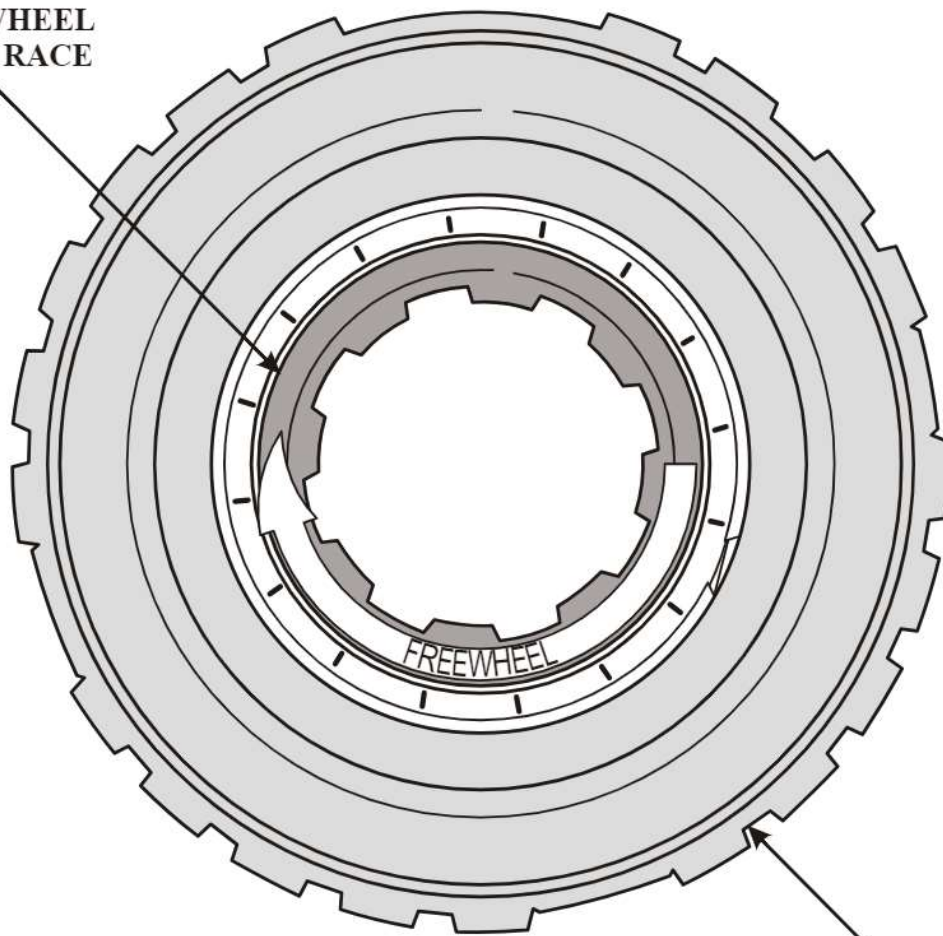


HOLD
OVERRUN
CLUTCH DRUM

THM 250, 250C, 350, 350C, 700-R4, 4L60-E LOW ROLLER CLUTCH

*THE INNER RACE MUST FREEWHEEL CLOCKWISE AND LOCK
COUNTER CLOCKWISE WHEN HOLDING THE CENTER SUPPORT*

**FREEWHEEL
INNER RACE**

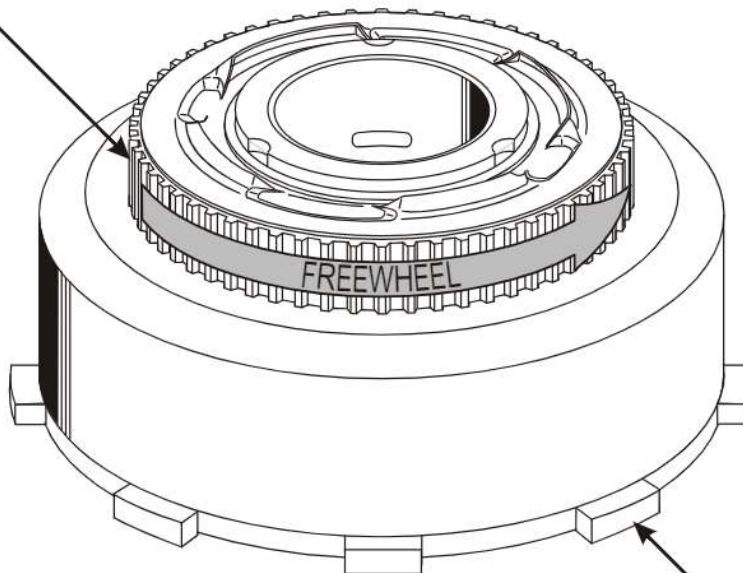


**HOLD
CENTER SUPPORT**

THM 350, 350C, INTERMEDIATE ROLLER CLUTCH

***THE INTERMEDIATE ROLLER CLUTCH OUTER RACE MUST FREEWHEEL
COUNTER CLOCKWISE AND LOCK CLOCKWISE WHEN HOLDING
THE DIRECT CLUTCH DRUM***

**FREEWHEEL
INTERMEDIATE ROLLER
CLUTCH OUTER RACE**



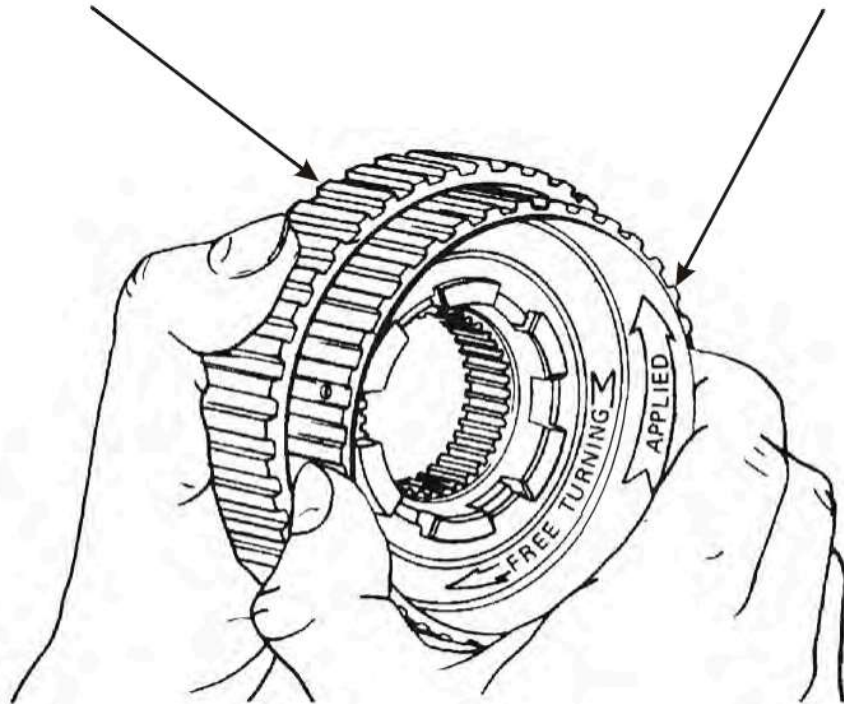
**HOLD
DIRECT CLUTCH
HOUSING**

**THM 700-R4, 4L60-E,
INPUT SPRAG**

***THE OVERRUN CLUTCH HUB MUST FREEWHEEL CLOCKWISE AND LOCK
COUNTER CLOCKWISE WHEN THE FORWARD HUB IS HELD***

**HOLD
FORWARD
CLUTCH HUB**

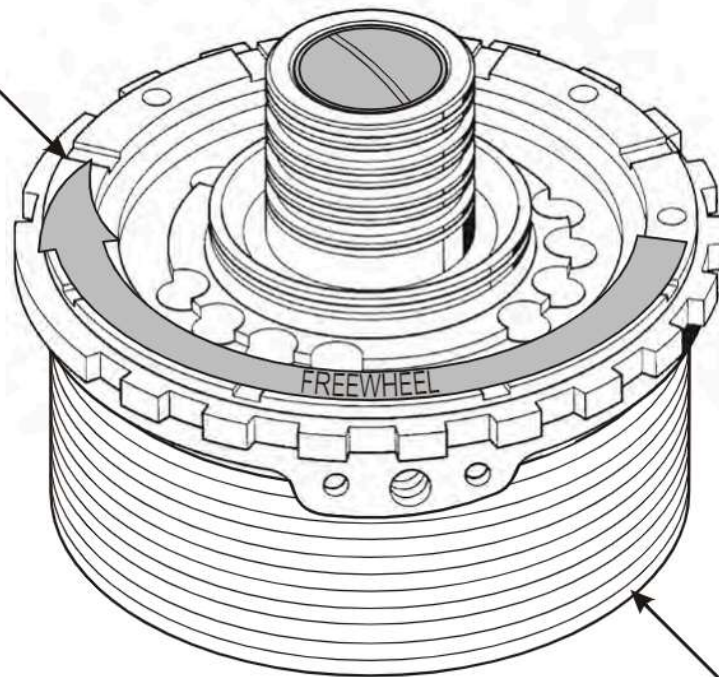
**FREEWHEEL
OVERRUN
CLUTCH HUB**



THM 425, LOW ROLLER CLUTCH

*THE CENTER SUPPORT MUST FREEWHEEL CLOCKWISE AND
LOCK COUNTER CLOCKWISE WHEN HOLDING THE REACTION CARRIER*

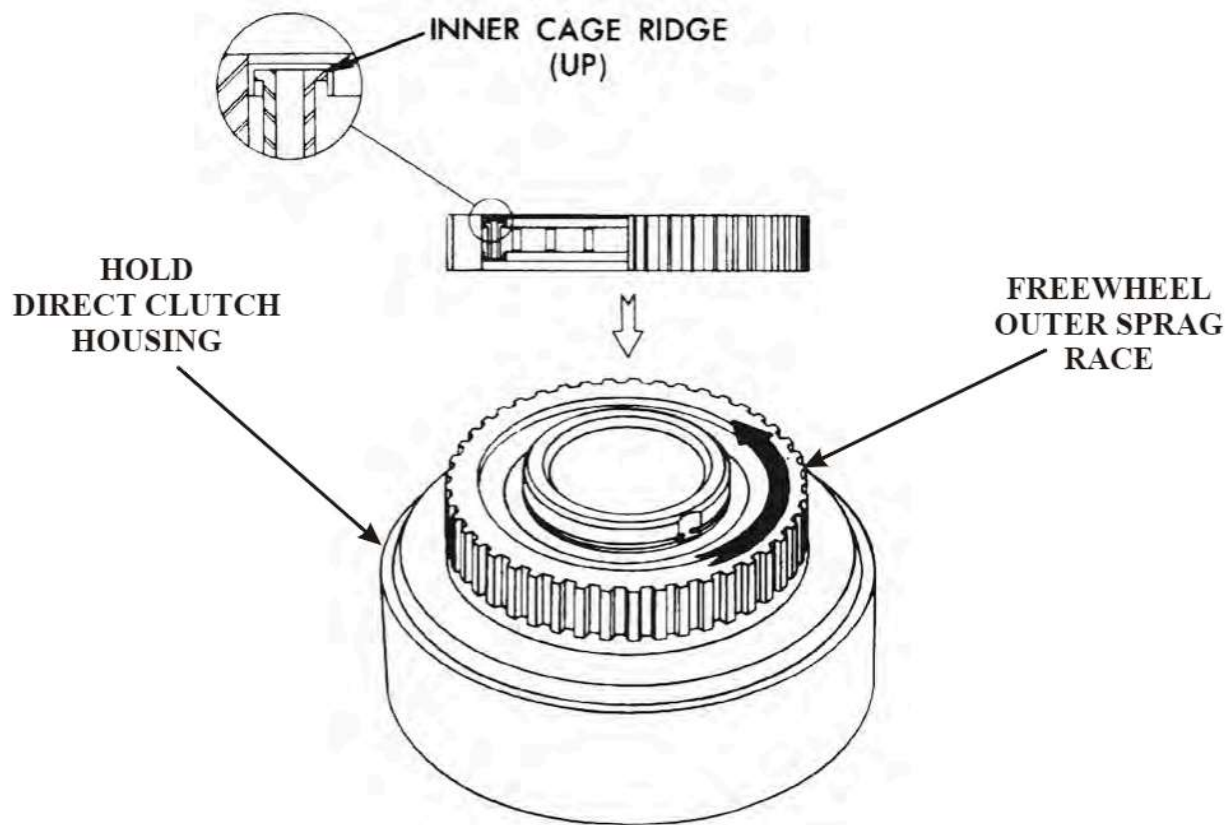
FREEWHEEL
CENTER SUPPORT



HOLD
REACTION
CARRIER

THM 425, INTERMEDIATE ONE-WAY CLUTCH

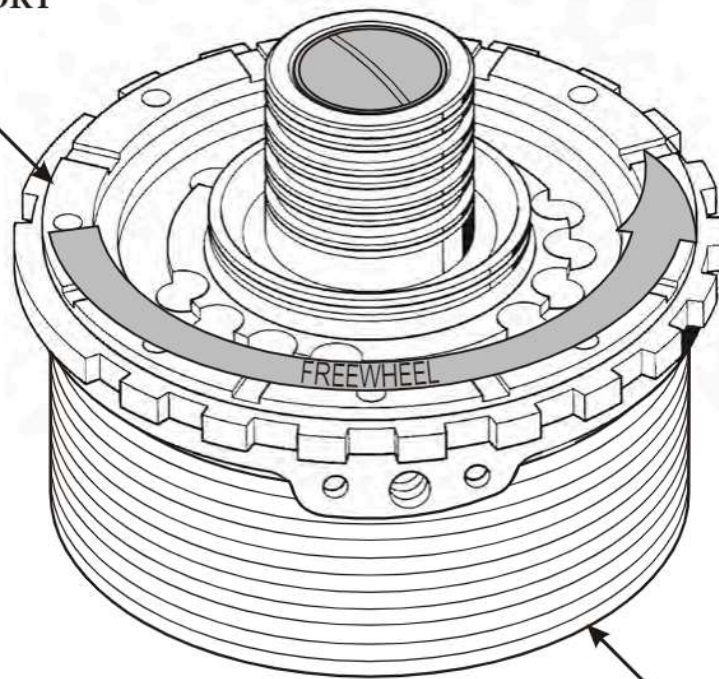
*THE OUTER SPRAG RACE MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING THE DIRECT DRUM*



THM 400, 4L80-E, 4L80-EHD LOW ROLLER CLUTCH

*THE CENTER SUPPORT MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING THE REACTION CARRIER*

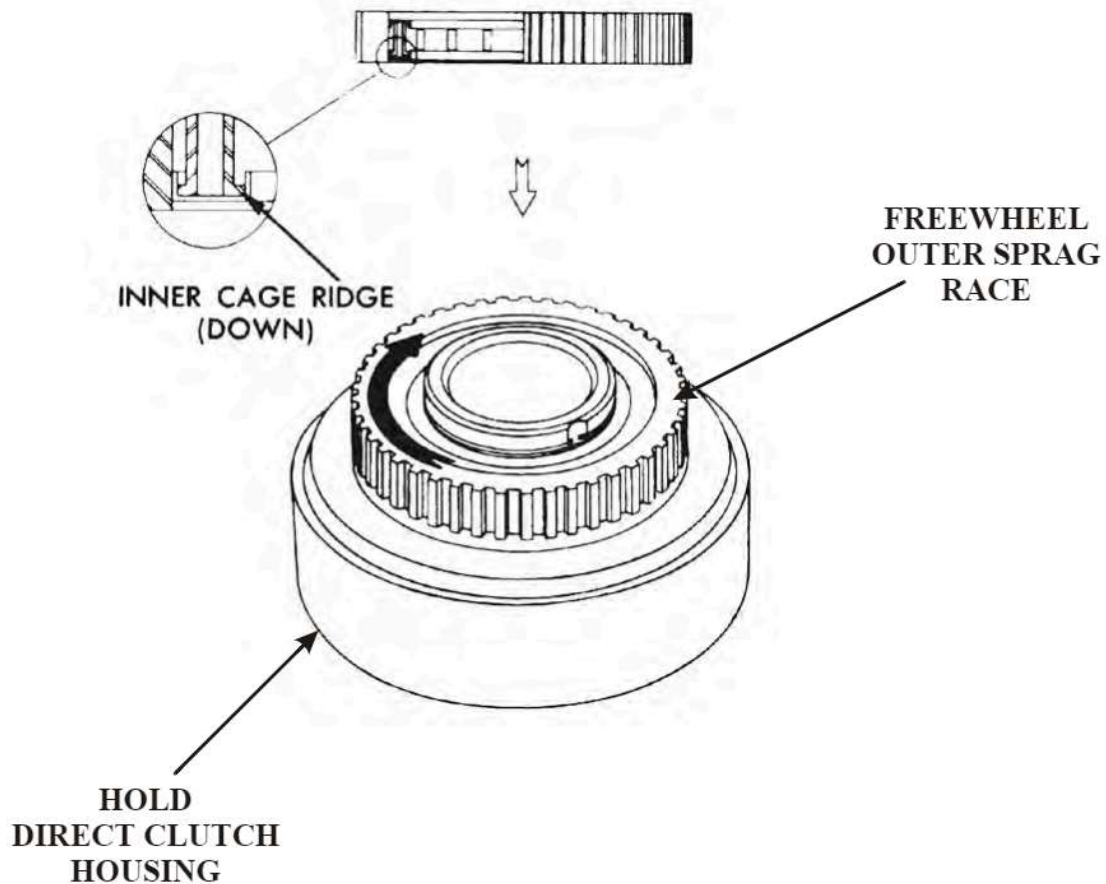
FREEWHEEL
CENTER SUPPORT



HOLD
REACTION
CARRIER

THM 400, 4L80-E, 4L80-EHD INTERMEDIATE ONE-WAY CLUTCH

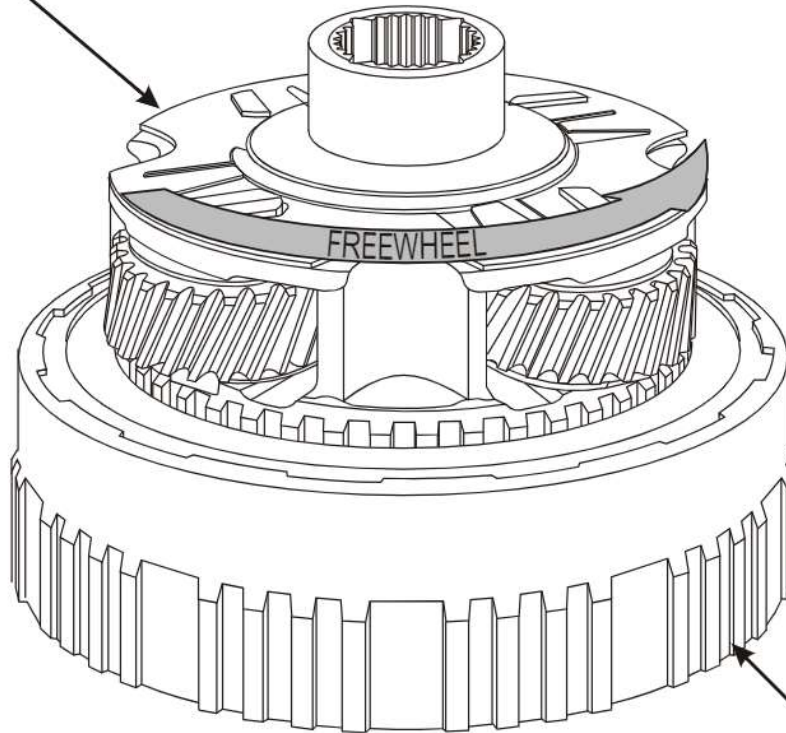
THE OUTER SPRAG RACE MUST FREEWHEEL CLOCKWISE AND LOCK COUNTER CLOCKWISE WHEN HOLDING THE DIRECT DRUM



THM 4L80-E, 4L80-EHD, OVERDRIVE ROLLER CLUTCH

*THE OVERDRIVE PLANETARY MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN THE OVERRUN CLUTCH DRUM IS HELD*

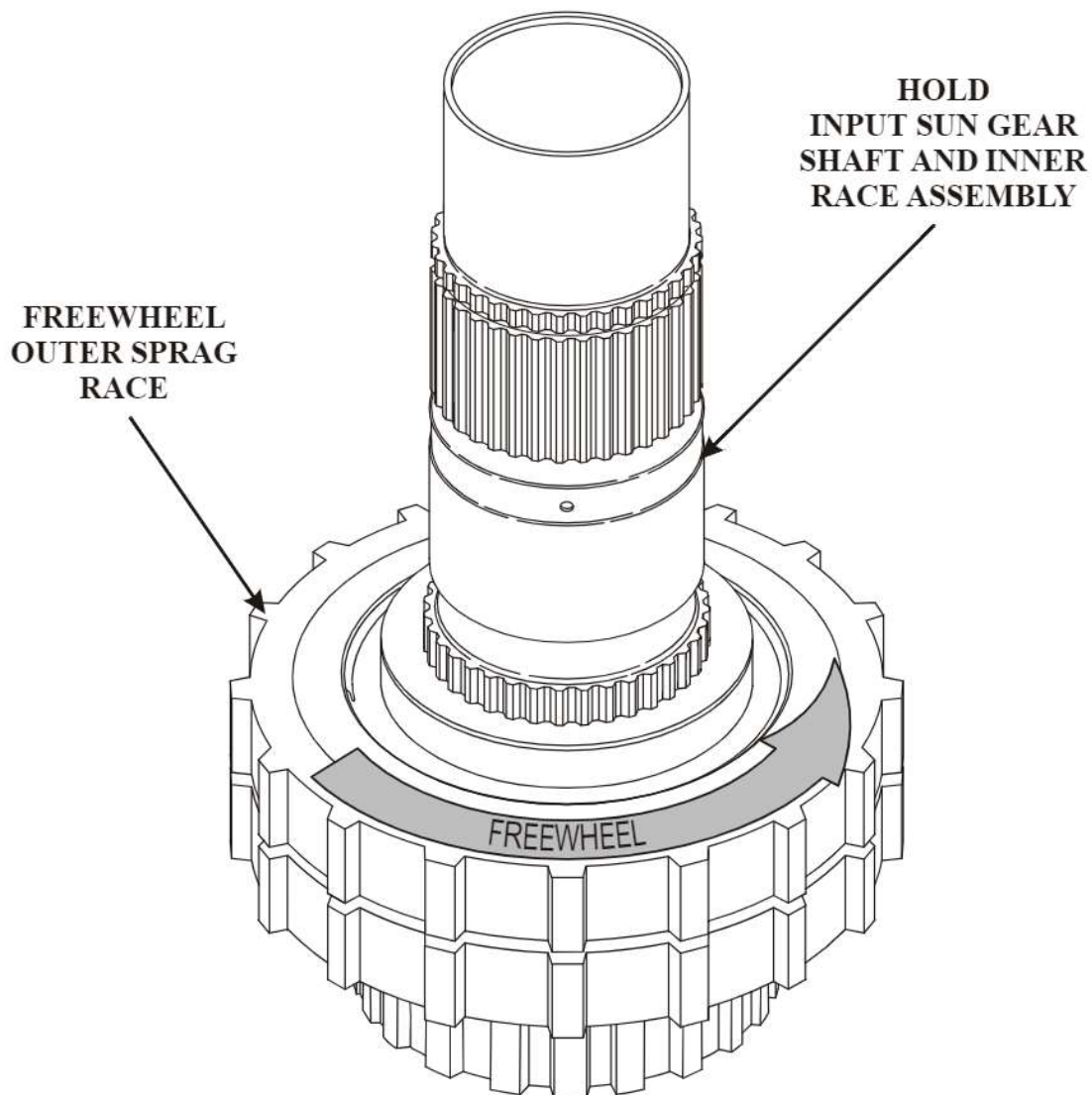
**FREEWHEEL
OVERDRIVE
PLANETARY**



**HOLD
OVERRUN
CLUTCH DRUM**

**THM 4T40-E,
INPUT SPRAG**

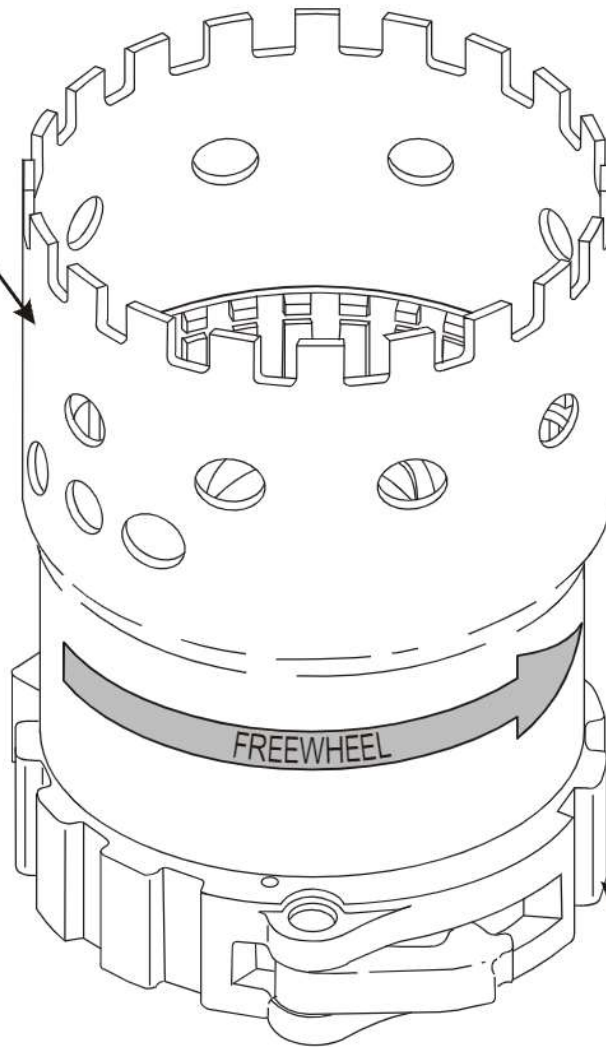
***THE INPUT SPRAG OUTER RACE MUST FREEWHEEL COUNTER
CLOCKWISE AND LOCK CLOCKWISE WHEN HOLDING
THE INPUT SUN GEAR SHAFT***



THM 4T40E, LOW ROLLER CLUTCH

***THE FORWARD CLUTCH HOUSING MUST FREEWHEEL COUNTER
CLOCKWISE AND LOCK CLOCKWISE WHEN HOLDING
THE FORWARD CLUTCH SUPPORT***

**FREEWHEEL
FORWARD CLUTCH
HOUSING**

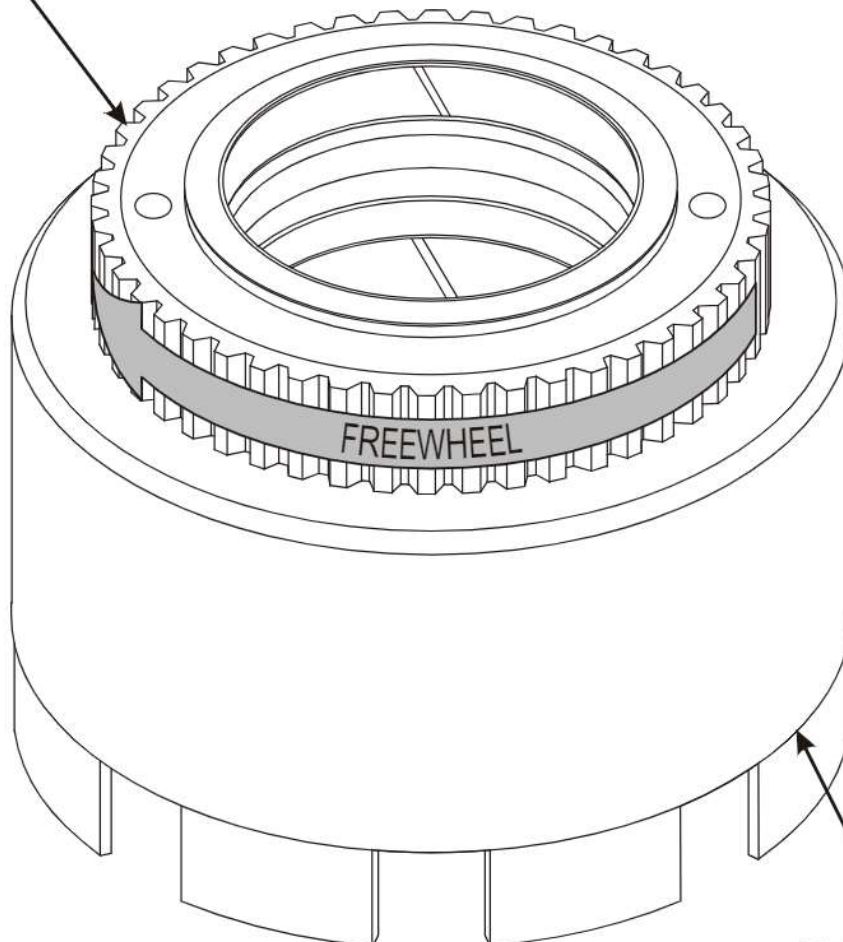


**HOLD
FORWARD CLUTCH
SUPPORT**

THM 4T40E, 2ND ROLLER CLUTCH

*THE ROLLER CLUTCH OUTER RACE MUST FREEWHEEL CLOCKWISE AND
LOCK COUNTER CLOCKWISE WHEN HOLDING
THE REVERSE CLUTCH HOUSING*

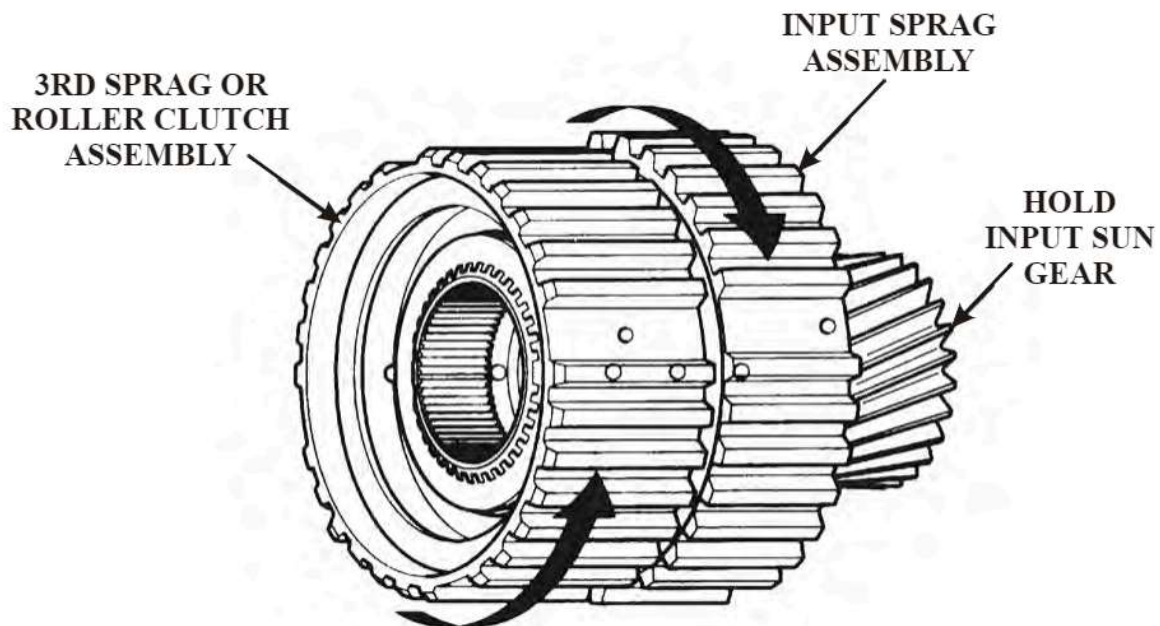
FREEWHEEL
ROLLER CLUTCH
OUTER RACE



HOLD
REVERSE CLUTCH
HOUSING

THM 4T60, 4T60E, 4T65E, INPUT AND 3RD SPRAG ASSEMBLY

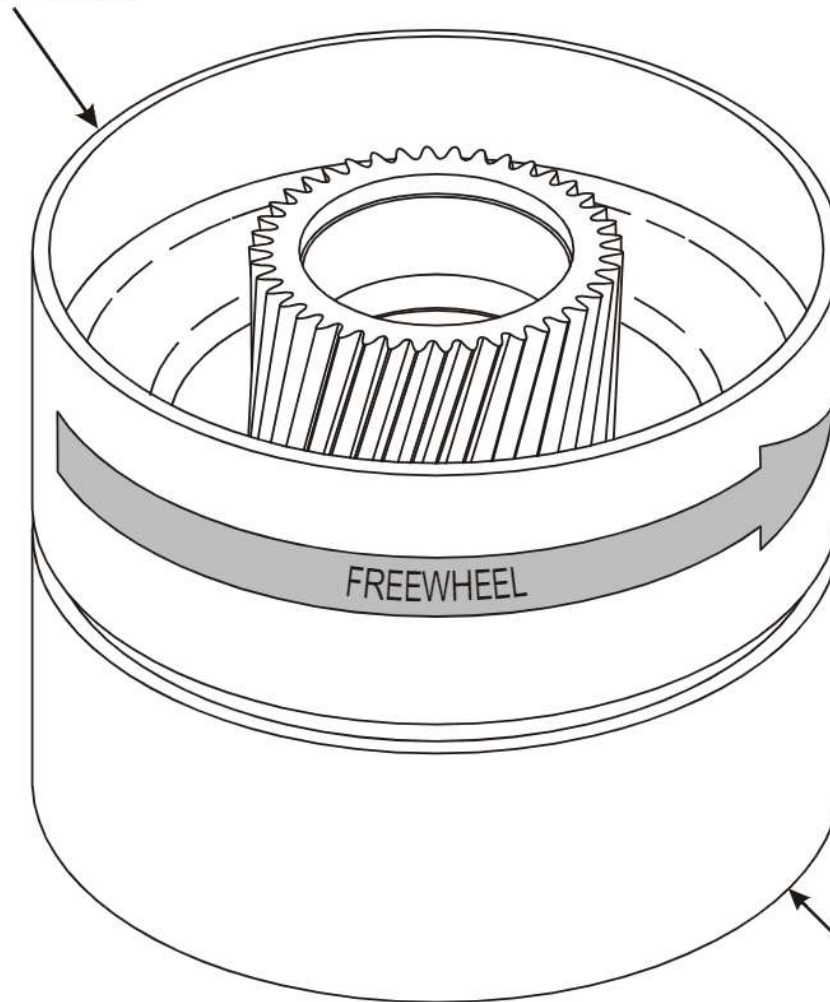
***THE SPRAG/ROLLER CLUTCH ASSEMBLIES MUST FREEWHEEL IN
DIRECTION OF ARROWS, AND HOLD IN OPPOSITE DIRECTION
WHILE HOLDING SUN GEAR AND SHAFT ASSEMBLY***



THM 4T60E, 4T65-E, 1-2 ROLLER CLUTCH

***REACTION SUN GEAR DRUM MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN THE 1-2 ROLLER CLUTCH ASSEMBLY IS HELD***

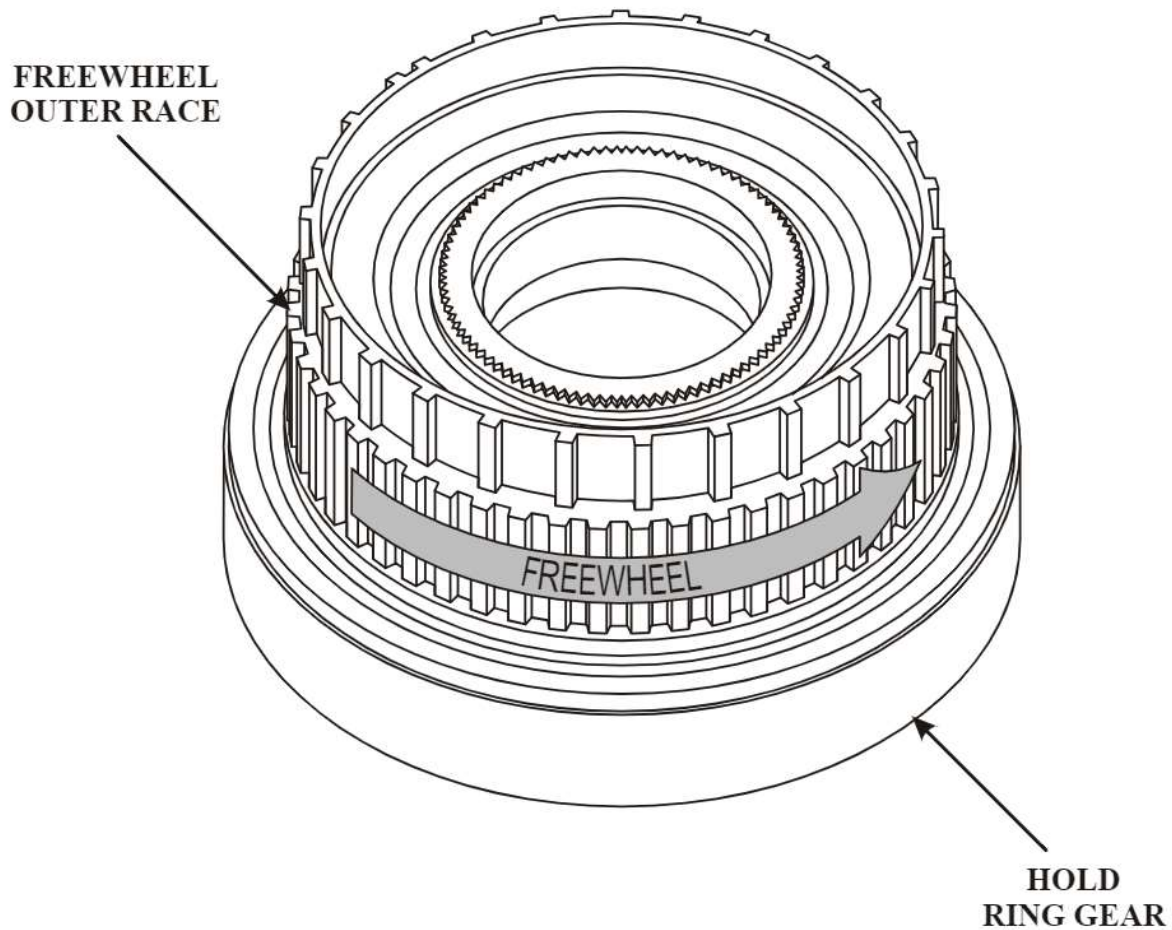
**FREEWHEEL
REACTION
SUN GEAR DRUM**



**HOLD
1-2 ROLLER
CLUTCH ASSEMBLY**

THM 4T80E, INPUT SPRAG

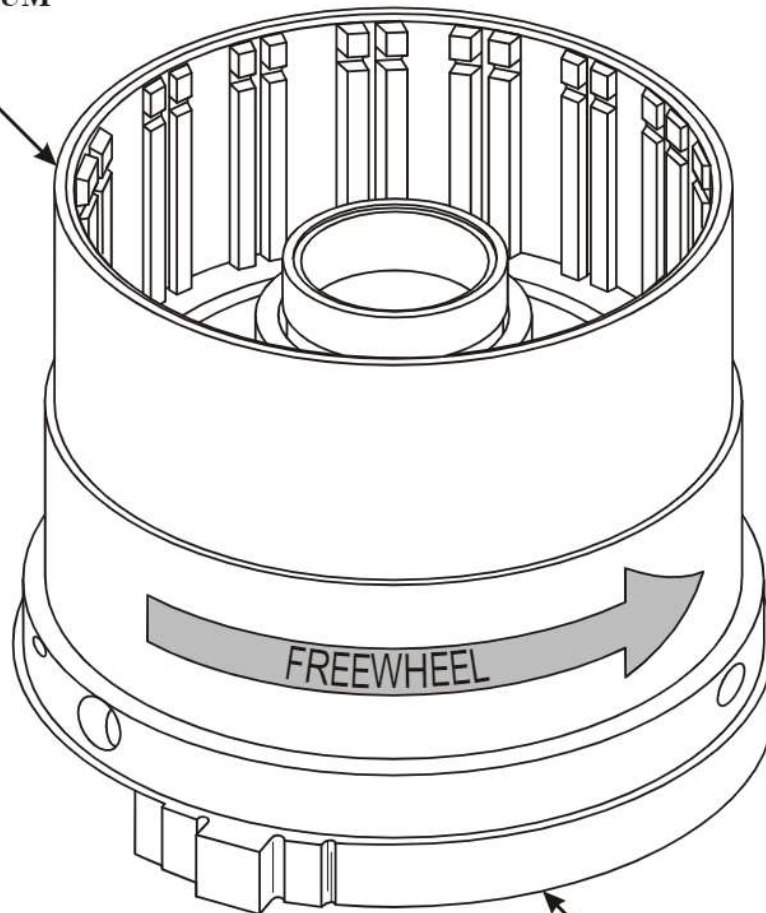
*THE OUTER RACE/CLUTCH HUB MUST FREEWHEEL
COUNTER CLOCKWISE AND LOCK CLOCKWISE
WHEN HOLDING RING GEAR*



THM 4T80E, LOW ROLLER CLUTCH

*THE FORWARD/COAST CLUTCH DRUM MUST FREEWHEEL
COUNTER CLOCKWISE AND LOCK CLOCKWISE ON SUPPORT*

FREEWHEEL
FORWARD DRUM

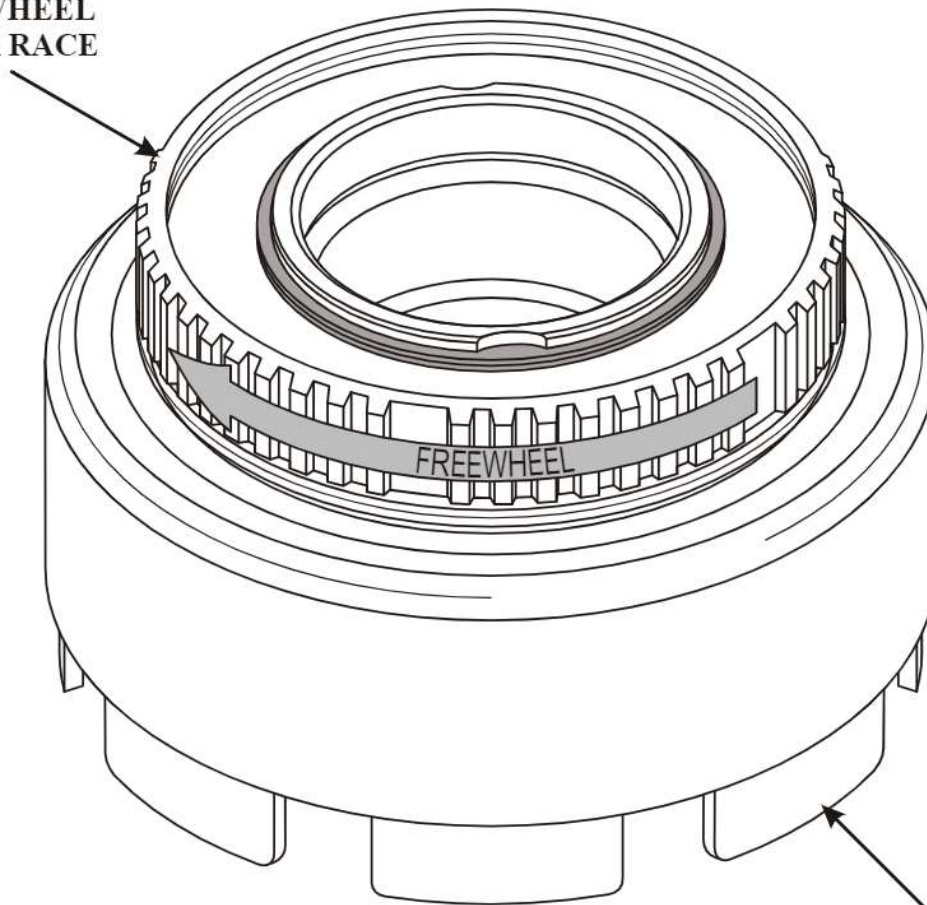


HOLD
SUPPORT

THM 4T80-E, INTERMEDIATE SPRAG

*THE OUTER RACE MUST FREEWHEEL CLOCKWISE AND
LOCK COUNTER CLOCKWISE WHEN HOLDING REVERSE DRUM*

FREEWHEEL
OUTER RACE



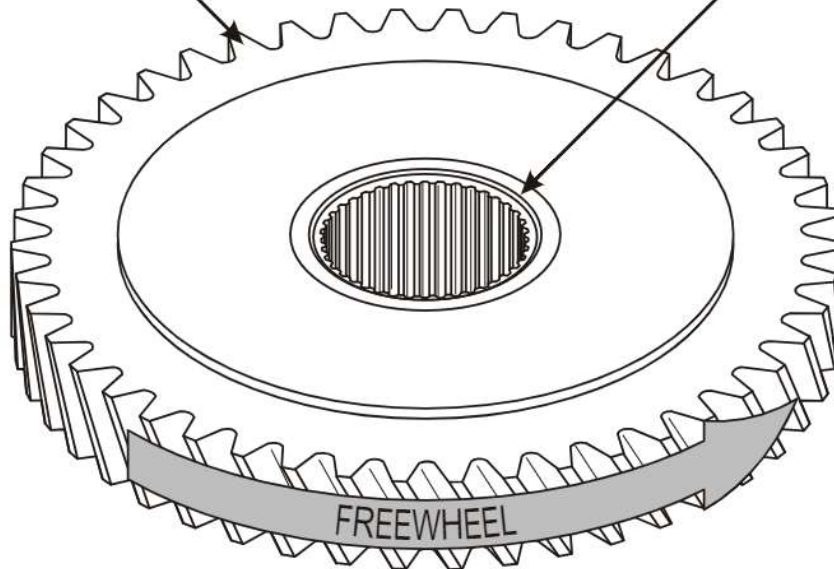
HOLD
REVERSE DRUM

SATURN TAAT

***THE 1ST DRIVEN GEAR MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHILE HOLDING INNER HUB***

**FREEWHEEL
1ST DRIVEN
GEAR**

**HOLD
INNER HUB**

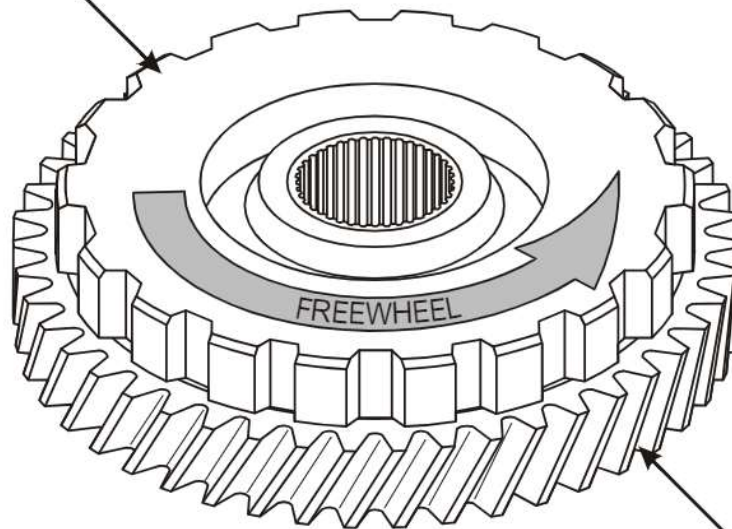


HONDA

**AK, AS, CA, F4, K4, L4, S5, A4RA, A24A, B4RA, M4RA, M4TA,
M24A, MDLA, MDMA, MPSA, MY8A, PY8A, S24A, SDMA,
LOW ONE-WAY CLUTCH**

*THE PARKING GEAR MUST FREEWHEEL
COUNTER CLOCKWISE AND LOCK CLOCKWISE*

**FREEWHEEL
PARKING GEAR**

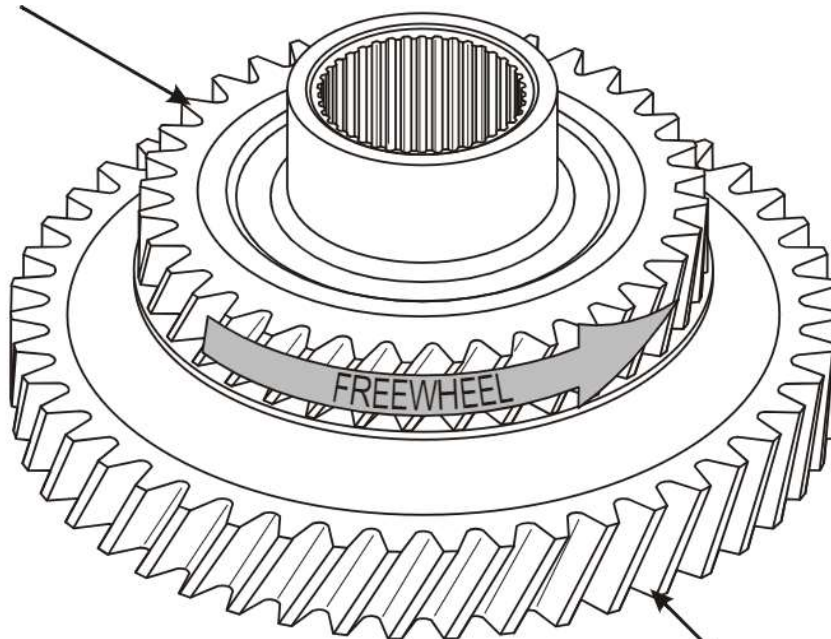


**HOLD
COUNTERSHAFT
1ST GEAR**

HONDA AOYA, APX4, MP1A, MPJA, MPOA, PX4B, LOW ONE-WAY CLUTCH

*COUNTERSHAFT 3RD GEAR MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING COUNTERSHAFT 1ST GEAR*

FREEWHEEL
COUNTERSHAFT
3RD GEAR

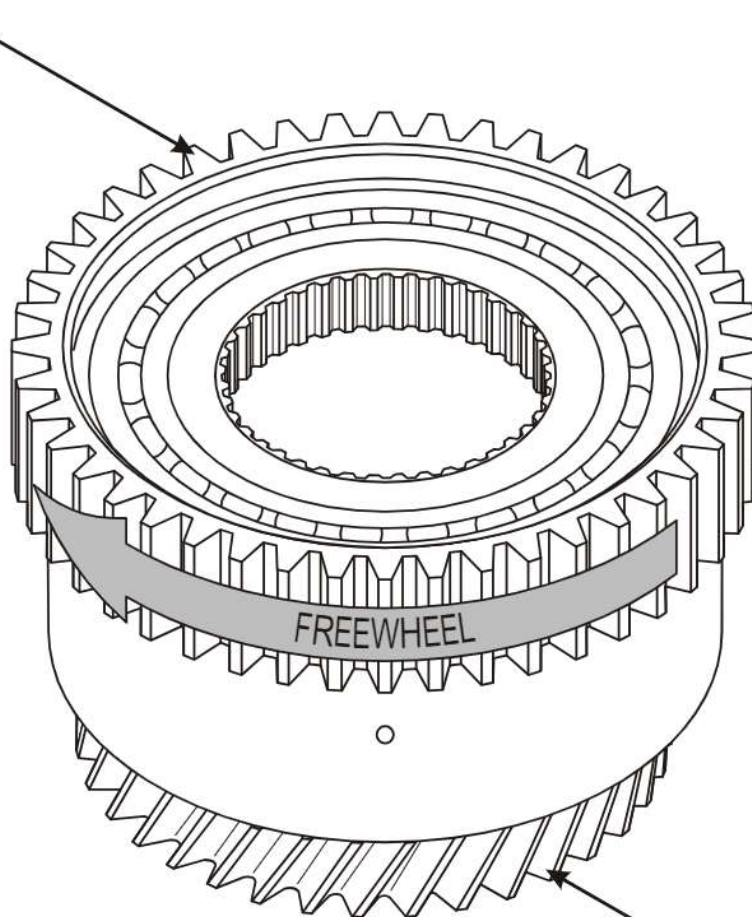


HOLD
COUNTERSHAFT
1ST GEAR

HONDA MPZA LOW ONE-WAY CLUTCH

*THE SECONDARY SHAFT 1ST CLUTCH HUB MUST
FREEWHEEL CLOCKWISE AND LOCK COUNTER CLOCKWISE*

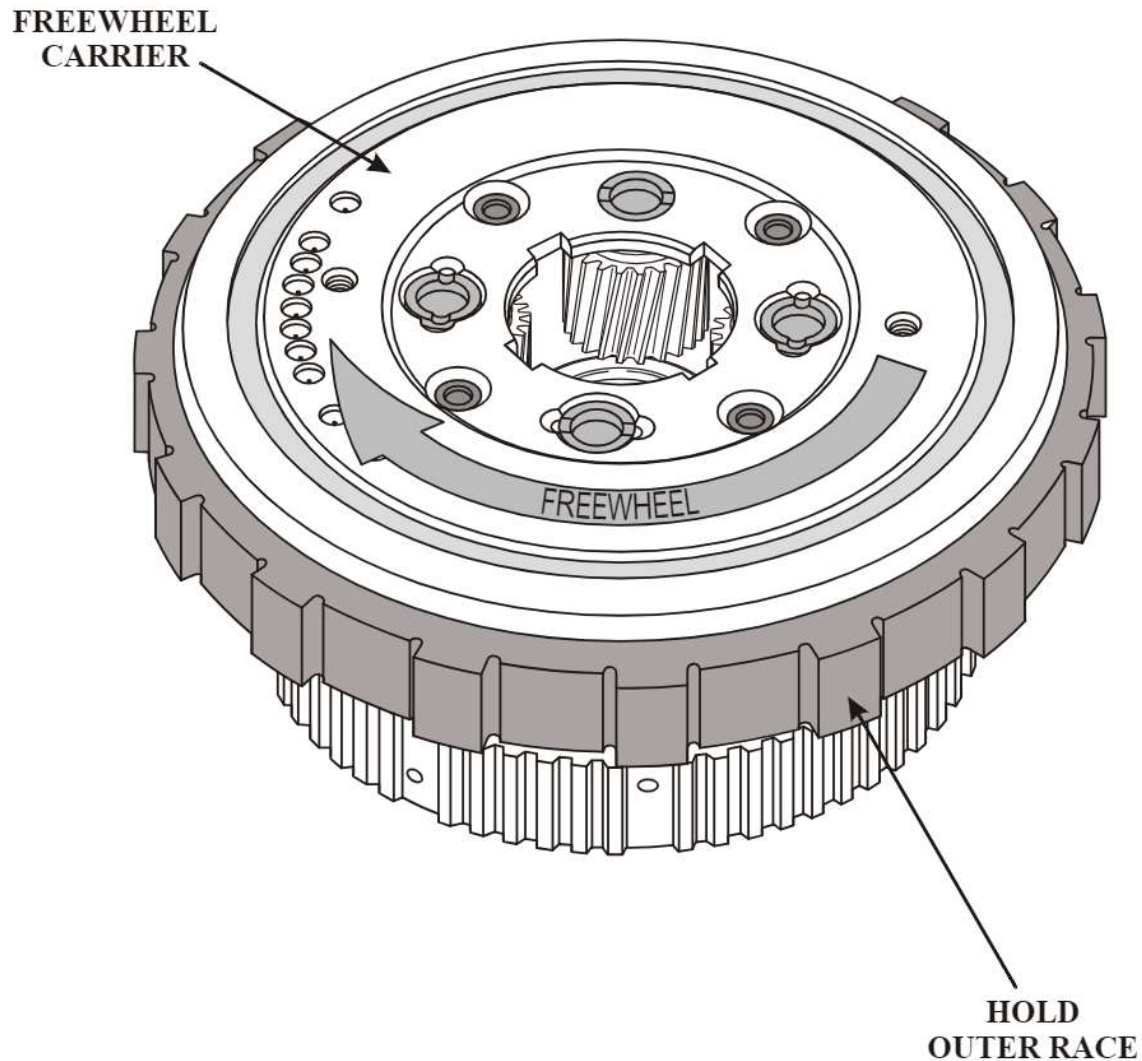
FREEWHEEL
SECONDARY SHAFT
1ST CLUTCH HUB



HOLD
SECONDARY SHAFT
1ST GEAR

AISIN SEIKI
LOW SPRAG

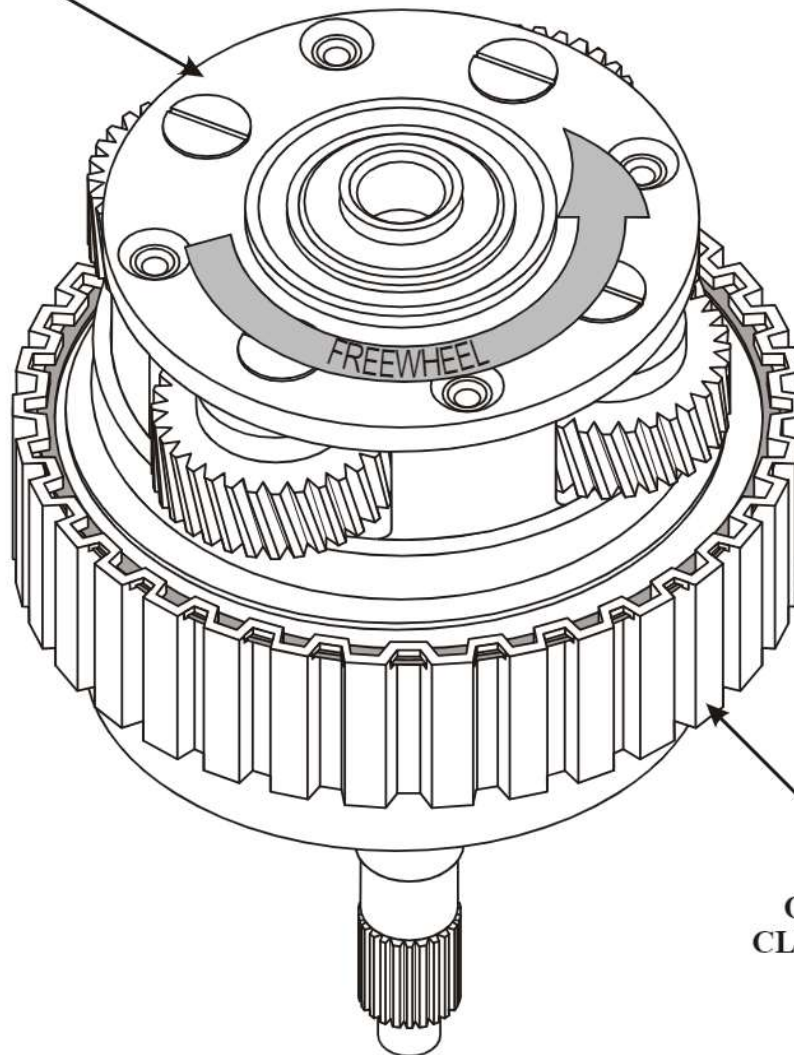
*THE PLANETARY CARRIER MUST FREEWHEEL CLOCKWISE AND
LOCK COUNTER CLOCKWISE WHEN HOLDING OUTER RACE*



AISIN SEIKI OVERDRIVE SPRAG

*THE OVERDRIVE CARRIER MUST FREEWHEEL
COUNTER CLOCKWISE AND LOCK CLOCKWISE*

FREEWHEEL
O.D. CARRIER

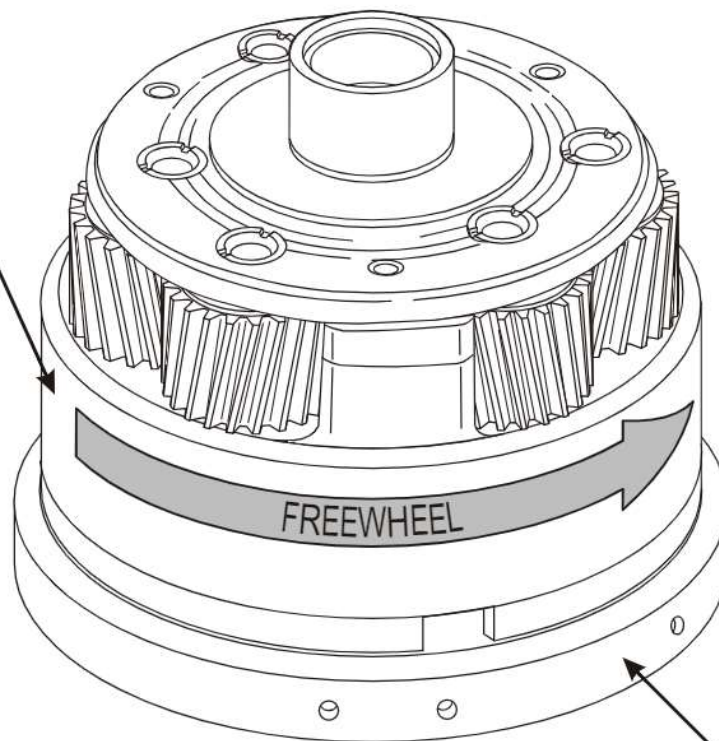


HOLD
OD DIRECT
CLUTCH DRUM

**JAGUAR BORG WARNER-65, BW-66,
LOW ROLLER CLUTCH**

***THE REAR PLANETARY MUST FREEWHEEL COUNTER CLOCKWISE AND
LOCK CLOCKWISE WHEN HOLDING THE INNER RACE***

**FREEWHEEL
PLANETARY
CARRIER**

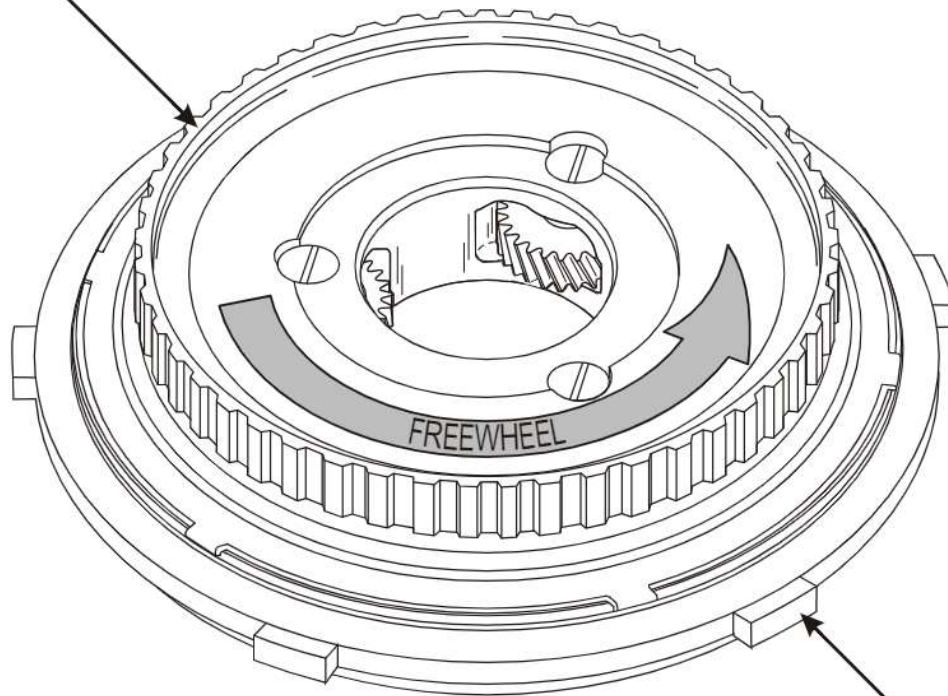


**HOLD
INNER RACE
(CENTER SUPPORT)**

F3A, KF100, LOW SPRAG

***THE PLANETARY ASSEMBLY MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING THE OUTER RACE***

**FREEWHEEL
PLANETARY
ASSEMBLY**

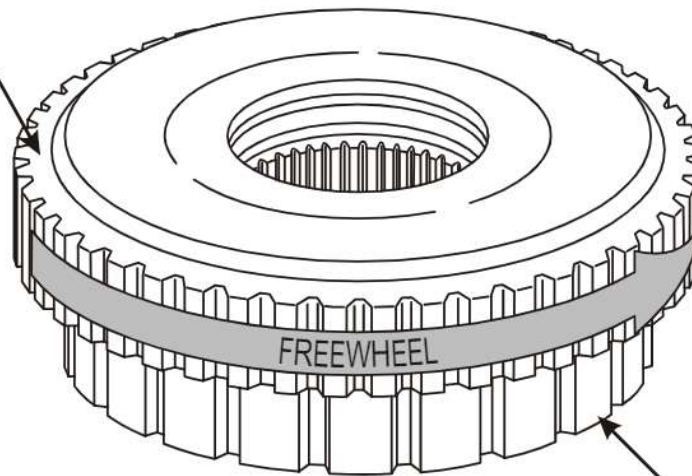


**HOLD
OUTER SPRAG
RACE**

**FORD/MAZDA F4EAT, F4A-EL, FB4A-EL,
FORWARD ONE WAY SPRAG**

*THE FORWARD CLUTCH HUB MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING THE OVERRUN CLUTCH HUB*

**FREEWHEEL
FORWARD
CLUTCH HUB**

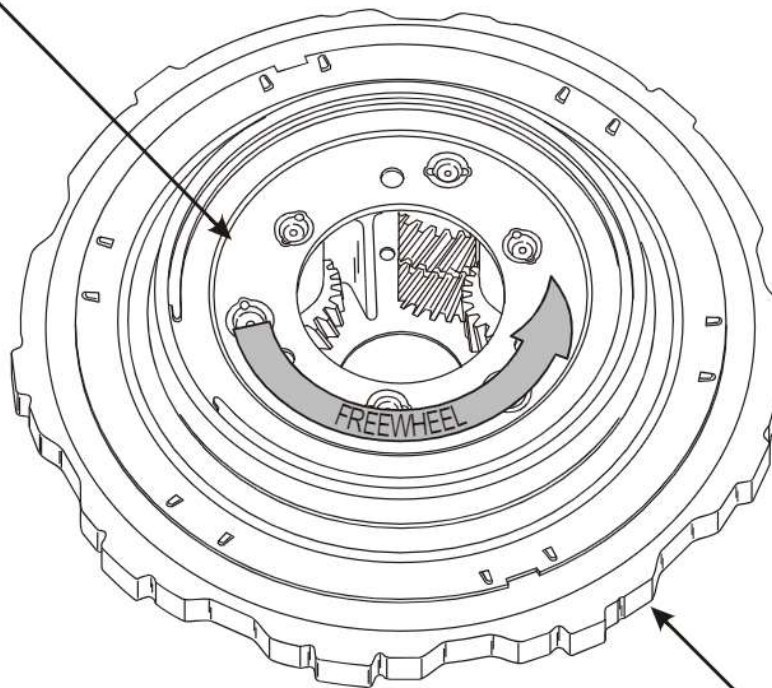


**HOLD
OVERRUN
CLUTCH HUB**

FORD/MAZDA F4EAT, F4A-EL, FB4A-EL G4A-HL, G4A-EL, GF4A-EL LOW ROLLER CLUTCH

*PLANETARY CARRIER MUST FREEWHEEL COUNTER CLOCKWISE AND
LOCK CLOCKWISE, WHEN THE ROLLER CLUTCH IS HELD STATIONARY*

FREEWHEEL
PLANETARY
CARRIER

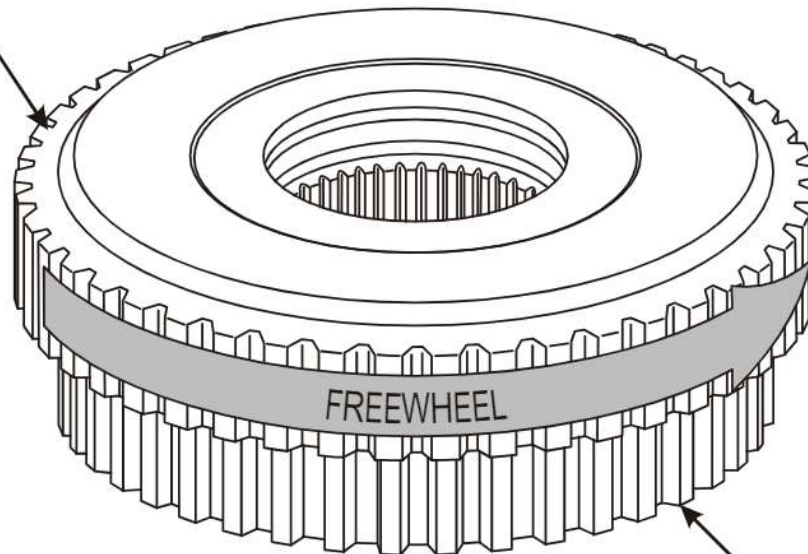


HOLD
ROLLER CLUTCH

FORD/MAZDA G4A-HL, G4A-EL, GF4A-EL FORWARD ONE WAY SPRAG

*THE FORWARD CLUTCH HUB MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING THE OVERRUN CLUTCH HUB*

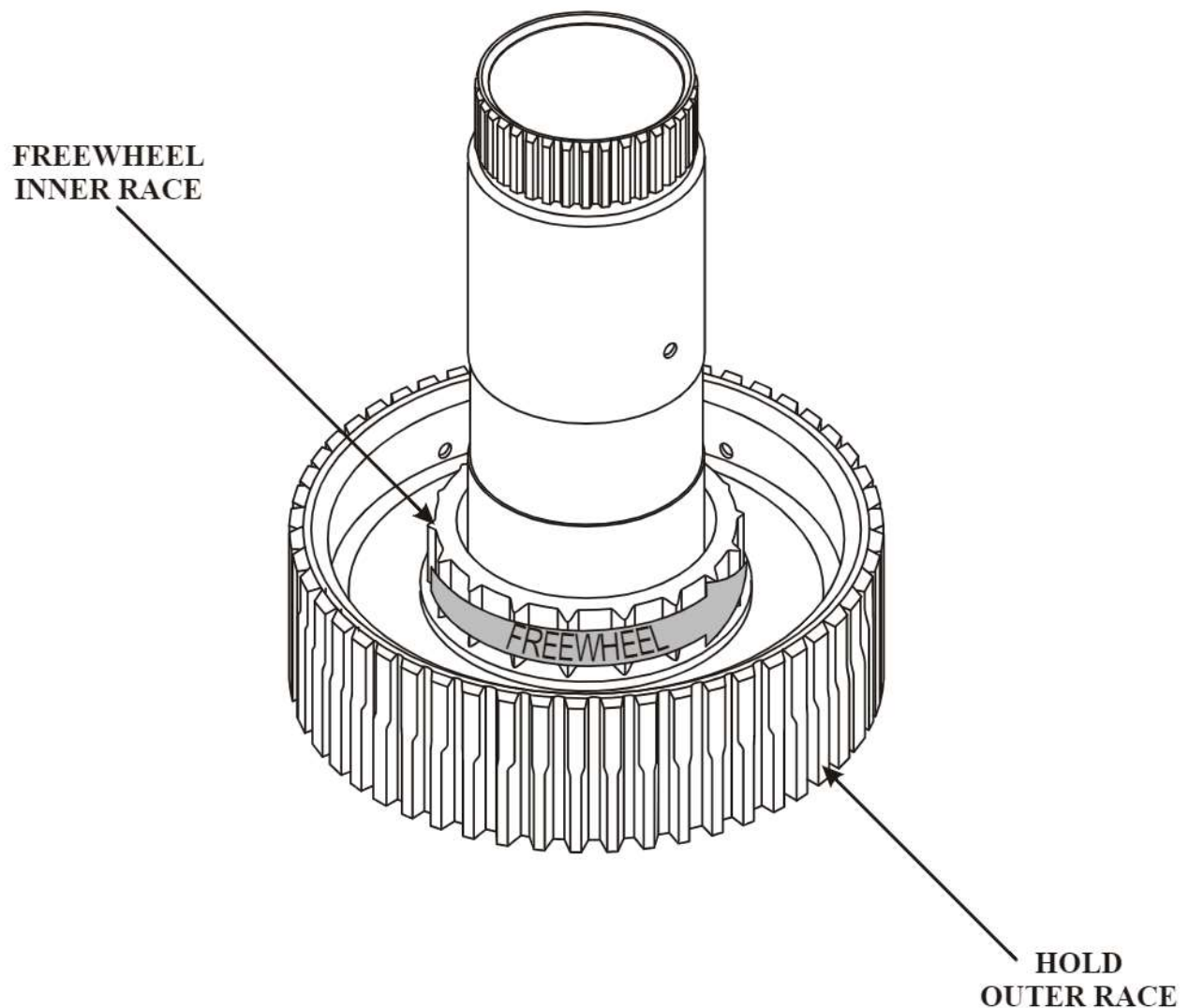
FREEWHEEL
FORWARD
CLUTCH HUB



HOLD
OVERRUN
CLUTCH HUB

MERCEDES 722.1, 722.2 LOW SPRAG

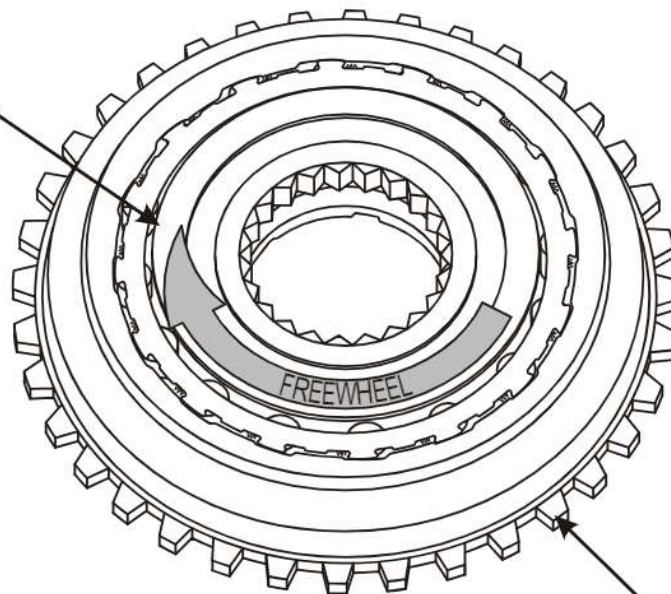
*THE INNER RACE OF THE LOW SPRAG MUST FREEWHEEL COUNTER
CLOCKWISE AND LOCK CLOCKWISE WHEN HOLDING THE OUTER RACE*



MERCEDES 722.3, 722.4, 722.5 LOW ROLLER CLUTCH

***LOW ROLLER CLUTCH INNER RACE MUST FREEWHEEL
CLOCKWISE AND LOCK COUNTER CLOCKWISE
WHEN HOLDING THE OUTER RACE AND
VIEWED AS SHOWN BELOW***

**FREEWHEEL
INNER RACE**



**HOLD
OUTER RACE**

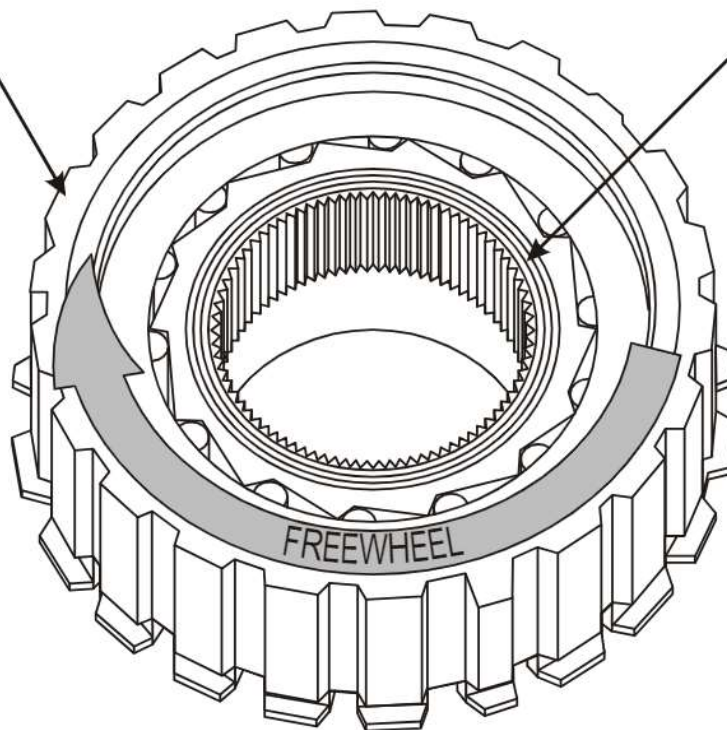
NOTE: Illustration shows REAR view.

MERCEDES 722.5 OVERDRIVE ONE-WAY CLUTCH

*THE CLUTCH HUB/OUTER RACE MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN HOLDING INNER RACE*

FREEWHEEL
OUTER RACE

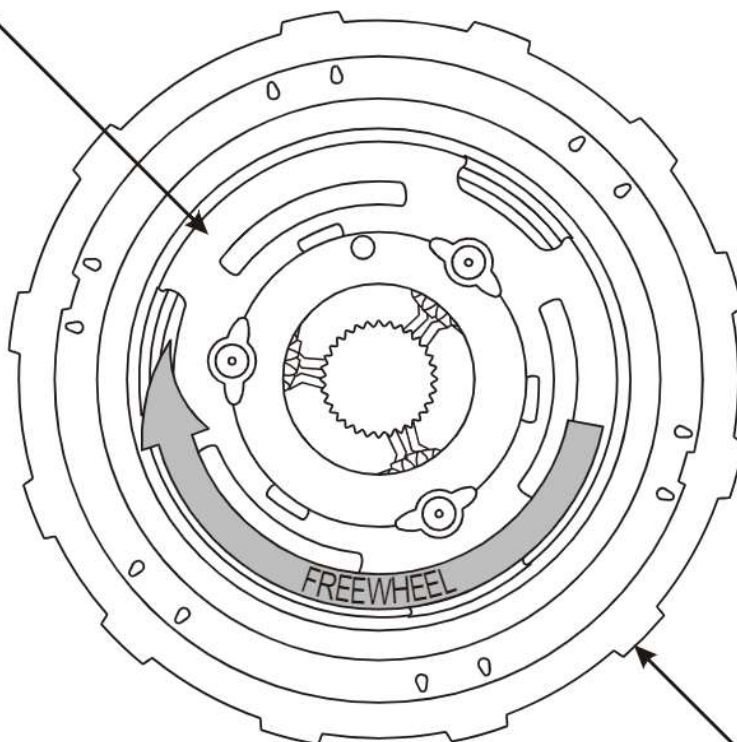
HOLD
INNER RACE



**RL3FO1A, RN3FO1A, RL4FO2A, RE4FO2A, RE4FO3A,
RL4FO4A, RE4FO4A, 4F20E, JF403E, LJ4A-EL,
LOW ONE-WAY ROLLER CLUTCH**

*THE PLANETARY CARRIER MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN HOLDING
THE LOW ONE WAY ROLLER CLUTCH*

**FREEWHEEL
PLANETARY
CARRIER**

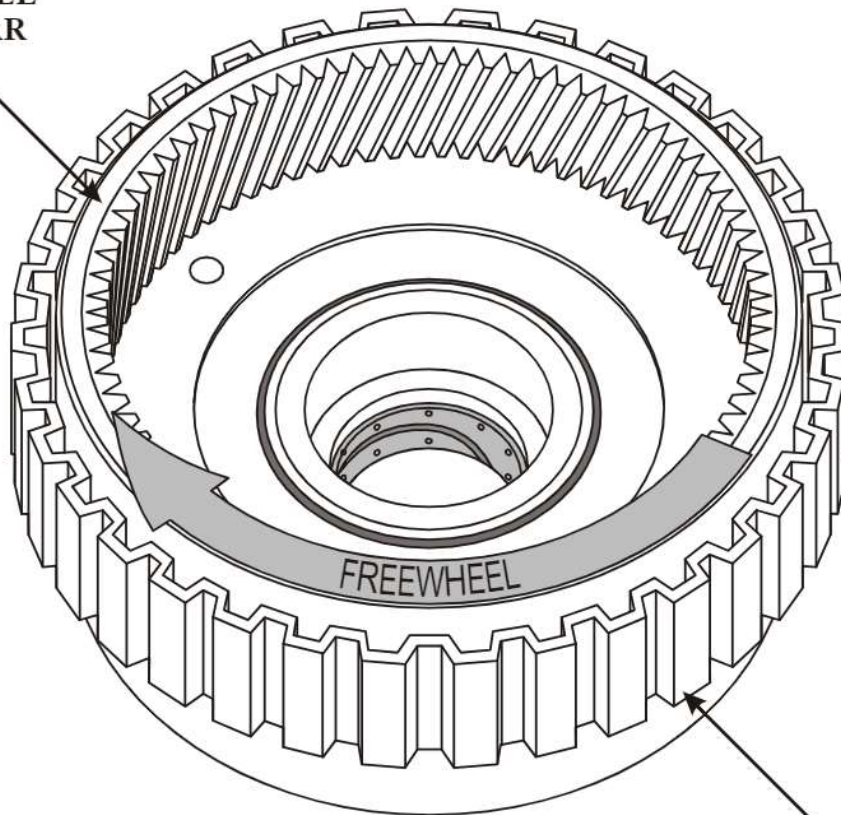


**HOLD
LOW ONE WAY
ROLLER CLUTCH**

**RL4FO3A, RE4FO3A, RL4FO4A, RE4FO4A,
4F20E, JF403E, LJ4A-EL,
FORWARD SPRAG**

*THE REAR INTERNAL RING GEAR MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN HOLDING FORWARD HUB*

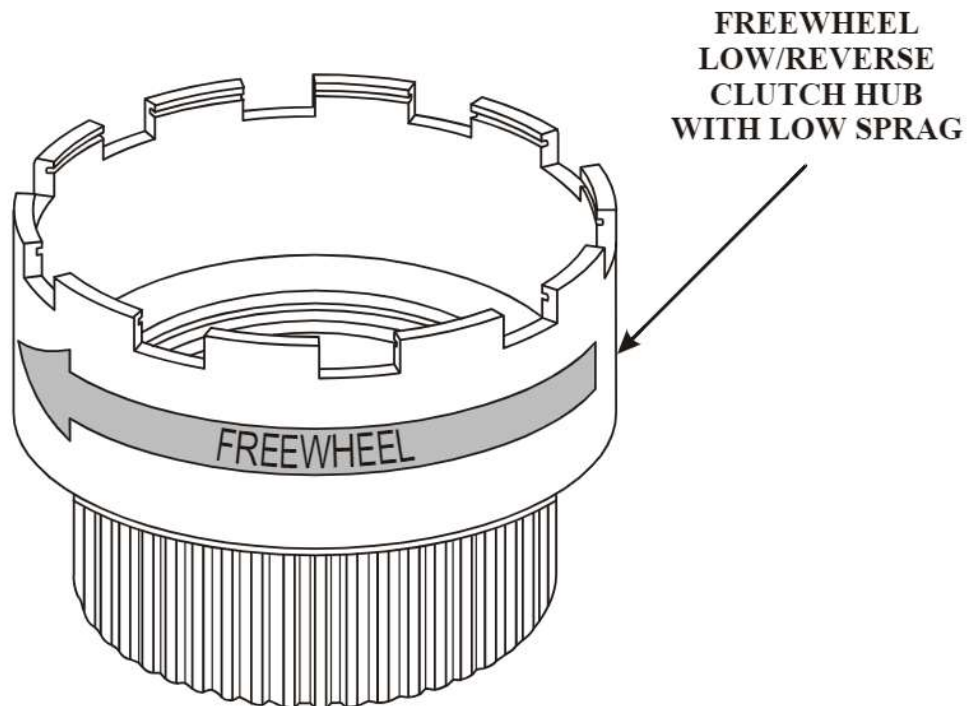
**FREEWHEEL
RING GEAR**



**HOLD
FORWARD
CLUTCH HUB**

L3N71B, L4N71B, E4N71B, N4A-EL LOW ONE-WAY CLUTCH

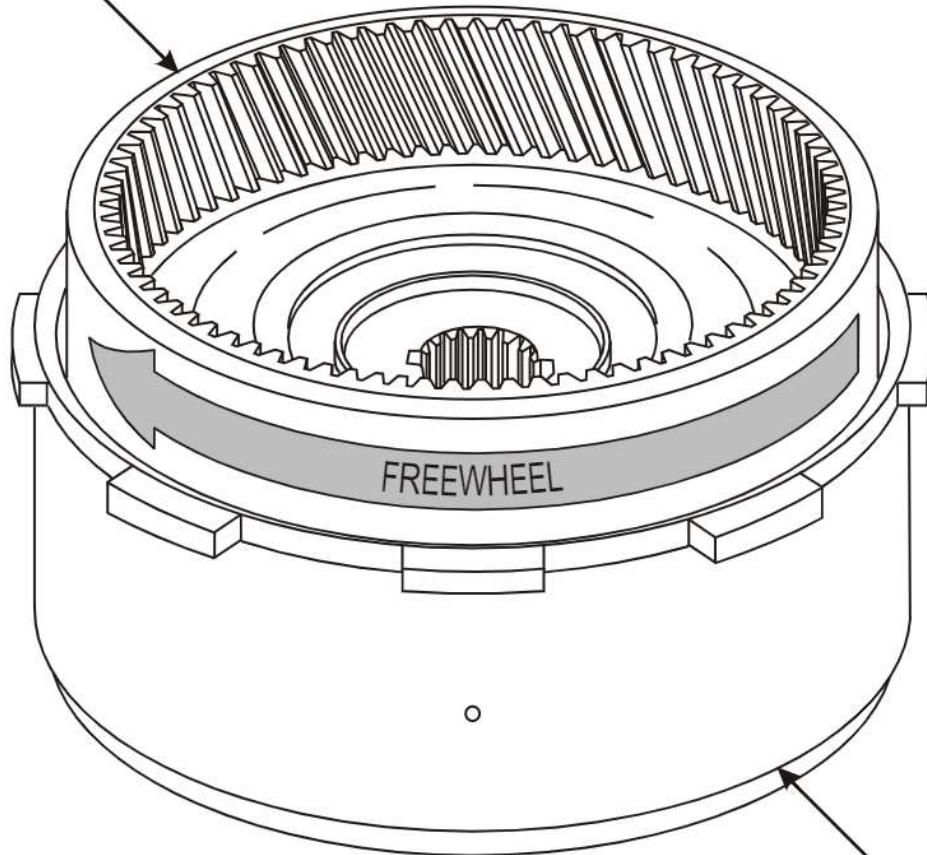
*THE LOW/REVERSE CLUTCH HUB WITH LOW SPRAG
MUST FREEWHEEL CLOCKWISE AND LOCK COUNTER CLOCKWISE
WHEN INSTALLED IN CASE*



L4N71B, E4N71B, N4A-EL OVERDRIVE SPRAG

*THE RING GEAR MUST FREEWHEEL CLOCKWISE AND LOCK
COUNTER-CLOCKWISE WHEN DIRECT DRUM IS HELD*

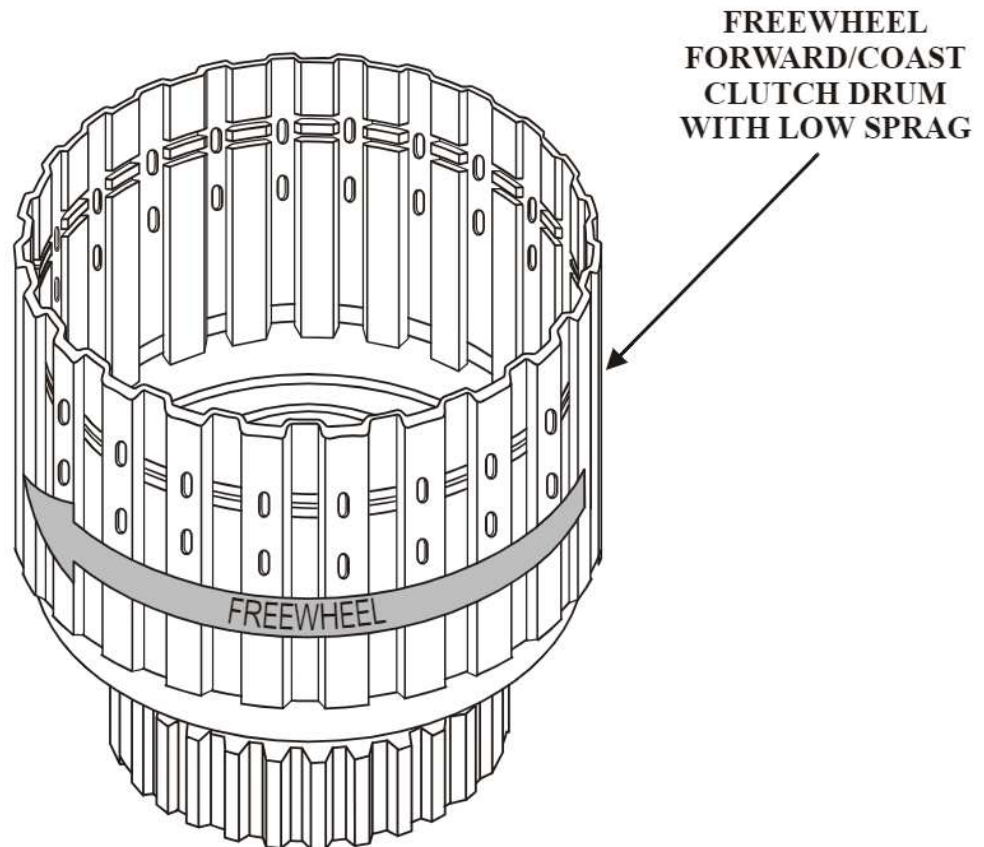
FREEWHEEL
RING GEAR



HOLD
DIRECT DRUM

RL4R01A, RE4R01A, RE4R03A, RE5R01A, JR403E, R4A-EL, SUBARU 4 SPEED, LOW ONE-WAY CLUTCH

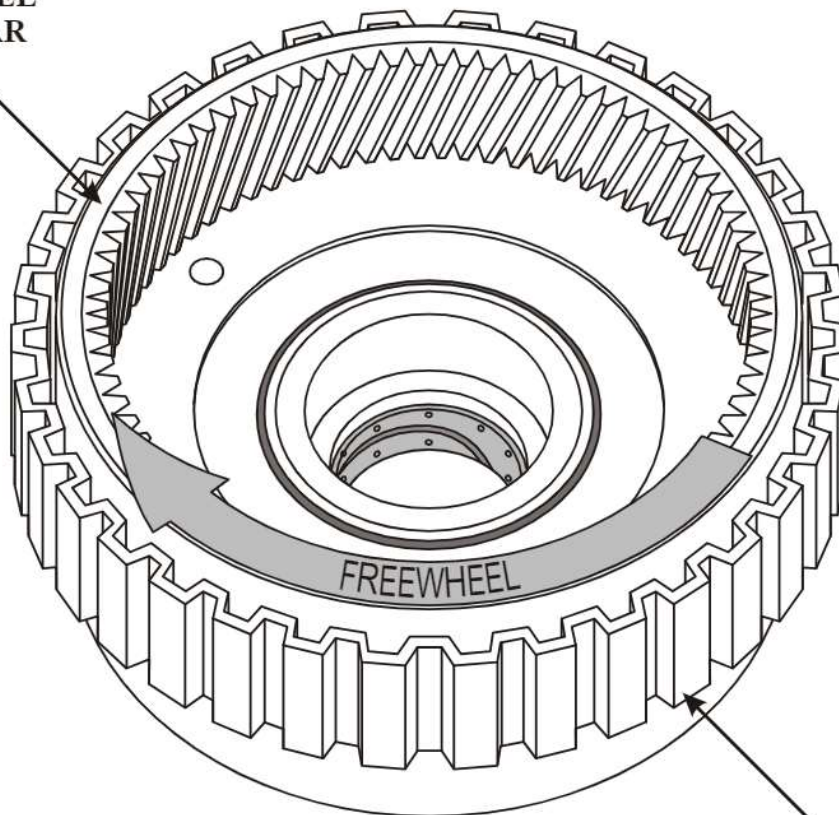
*THE FORWARD/COAST CLUTCH DRUM WITH LOW SPRAG
MUST FREEWHEEL CLOCKWISE AND LOCK COUNTER CLOCKWISE
WHEN INSTALLED IN CASE*



RL4R01A, RE4R01A, RE4R03A, RE5R01A, JR403E, R4A-EL, SUBARU 4 SPD FORWARD SPRAG

*THE REAR INTERNAL RING GEAR MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN HOLDING FORWARD HUB*

FREEWHEEL
RING GEAR

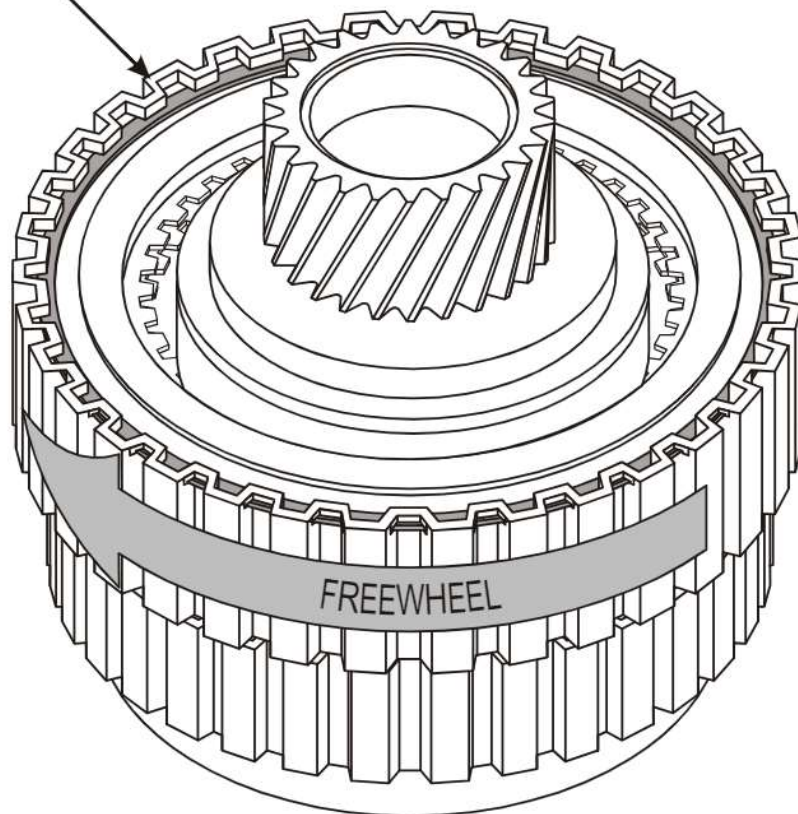


HOLD
FORWARD
CLUTCH HUB

NISSAN RE5R01A OVERDRIVE ONE-WAY CLUTCH

*THE DIRECT CLUTCH DRUM MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN INSTALLED IN THE CASE*

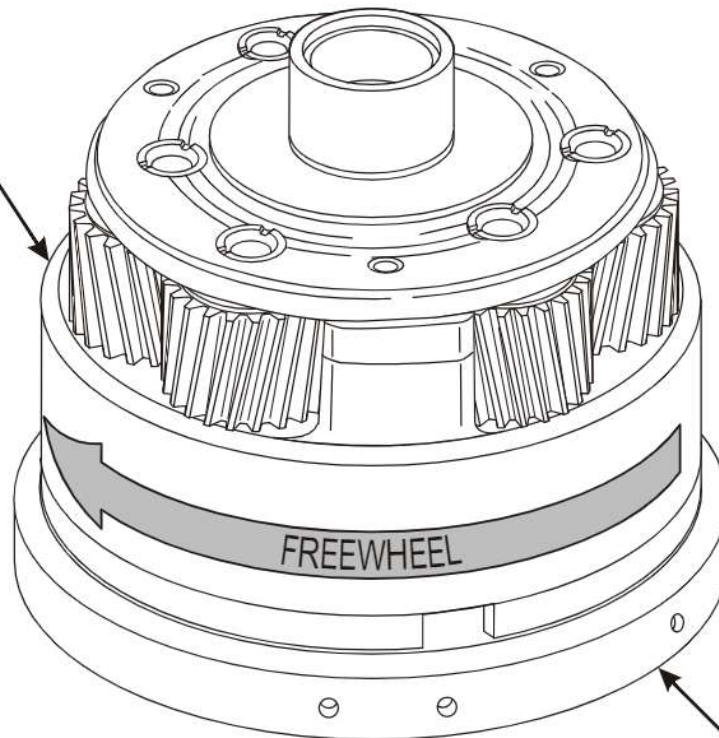
FREEWHEEL
DIRECT CLUTCH
HOUSING



**SAAB TB35, TB37
LOW ONE-WAY CLUTCH**

*THE REAR PLANETARY MUST FREEWHEEL CLOCKWISE AND
LOCK COUNTER CLOCKWISE WHEN HOLDING THE INNER RACE*

**FREEWHEEL
PLANETARY**

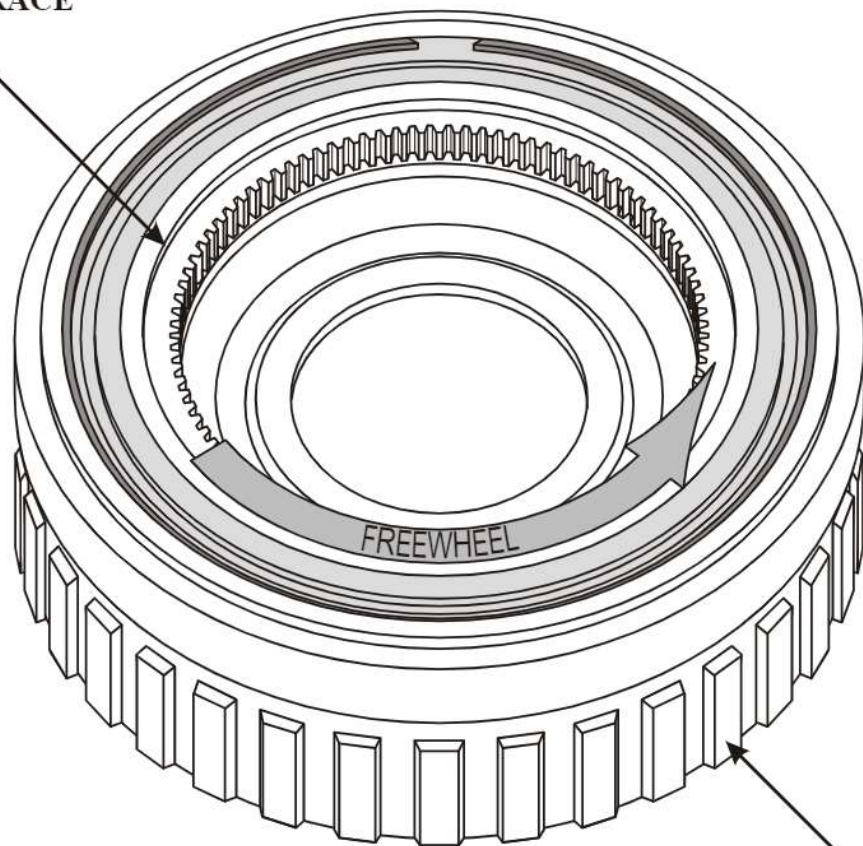


**HOLD
INNER RACE**

SAAB/VOLVO AW50-40, AW50-42LE LOW ONE-WAY CLUTCH

*THE INNER RACE MUST FREEWHEEL
COUNTER CLOCKWISE AND LOCK CLOCKWISE*

FREEWHEEL
INNER RACE

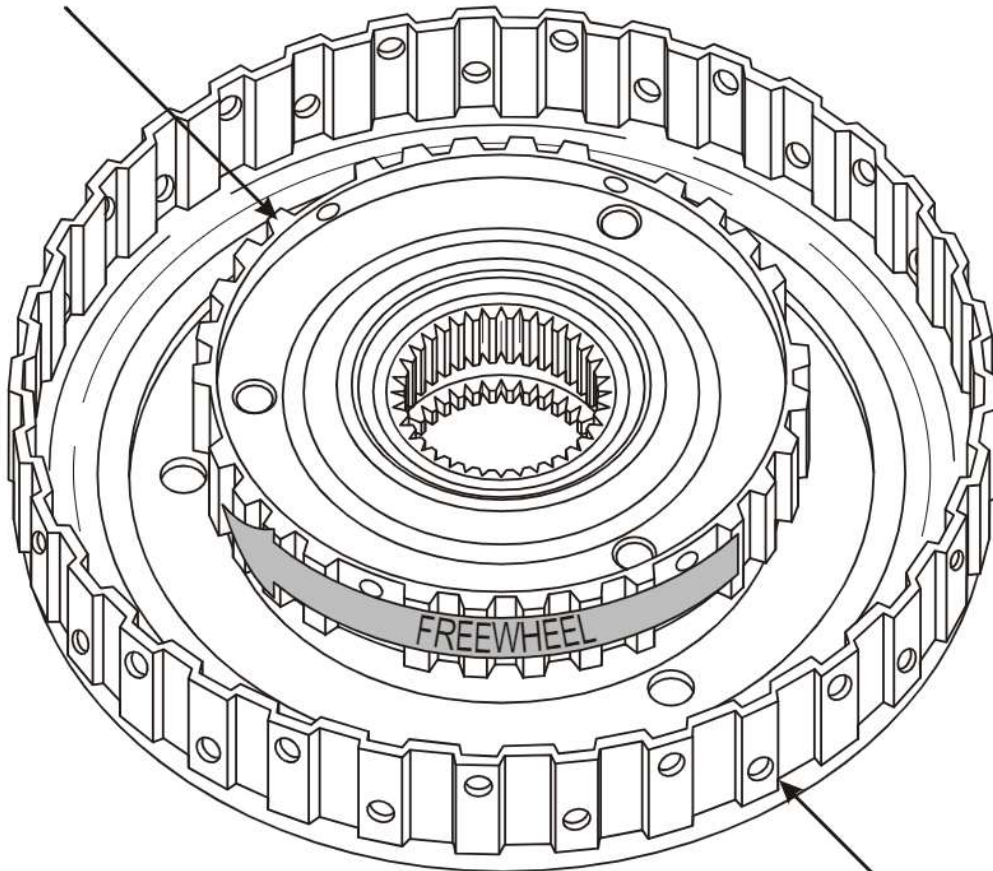


HOLD
CLUTCH HUB

SAAB/VOLVO AW50-40, AW50-42LE INTERMEDIATE SPRAG

*THE OUTER SPRAG RACE MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE*

FREEWHEEL
OUTER RACE

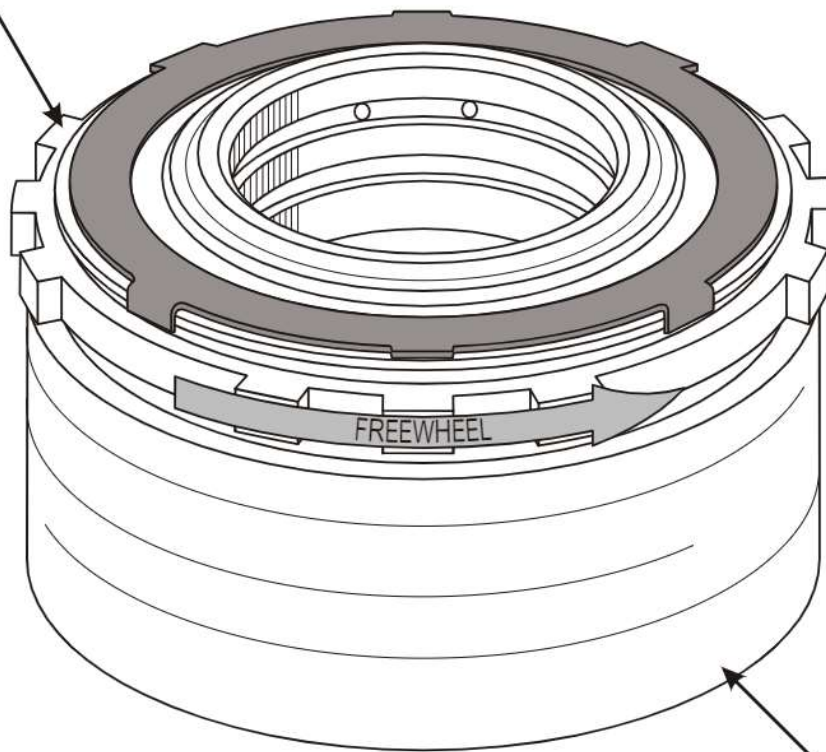


HOLD
HUB/INNER RACE

SAAB/VOLVO AW50-40, AW50-42LE UNDERDRIVE SPRAG

*THE OUTER RACE MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE, AS SHOWN BELOW*

**FREEWHEEL
OUTER RACE**

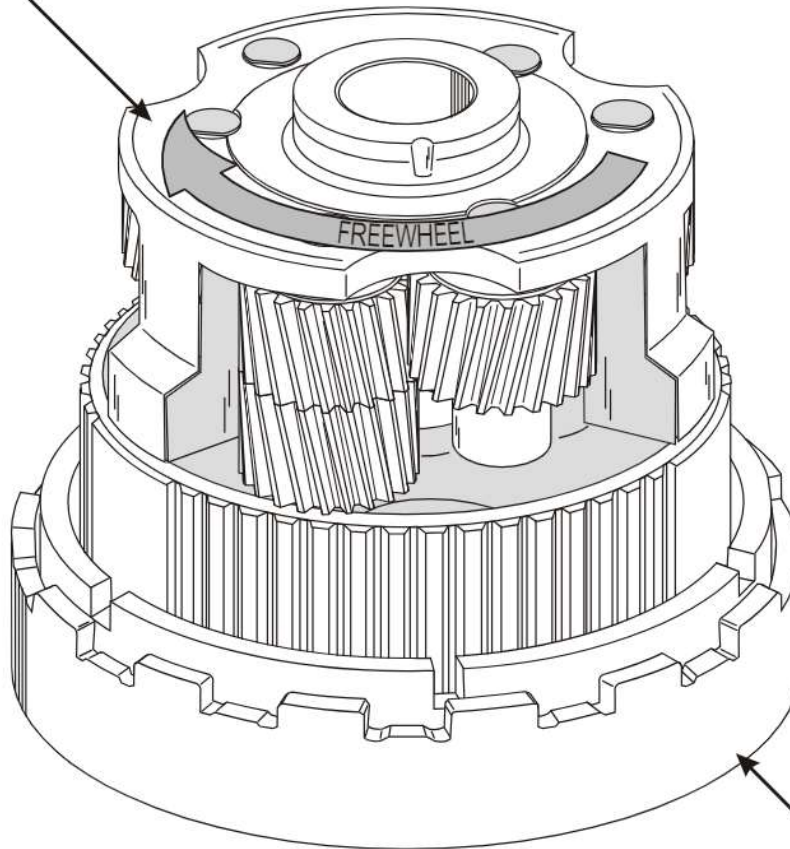


**HOLD
UNDERDRIVE
DRUM**

**SUBARU 3 SPEED
LOW ONE-WAY CLUTCH**

*THE PLANETARY ASSEMBLY MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN HOLDING THE CENTER SUPPORT*

**FREEWHEEL
PLANETARY
ASSEMBLY**

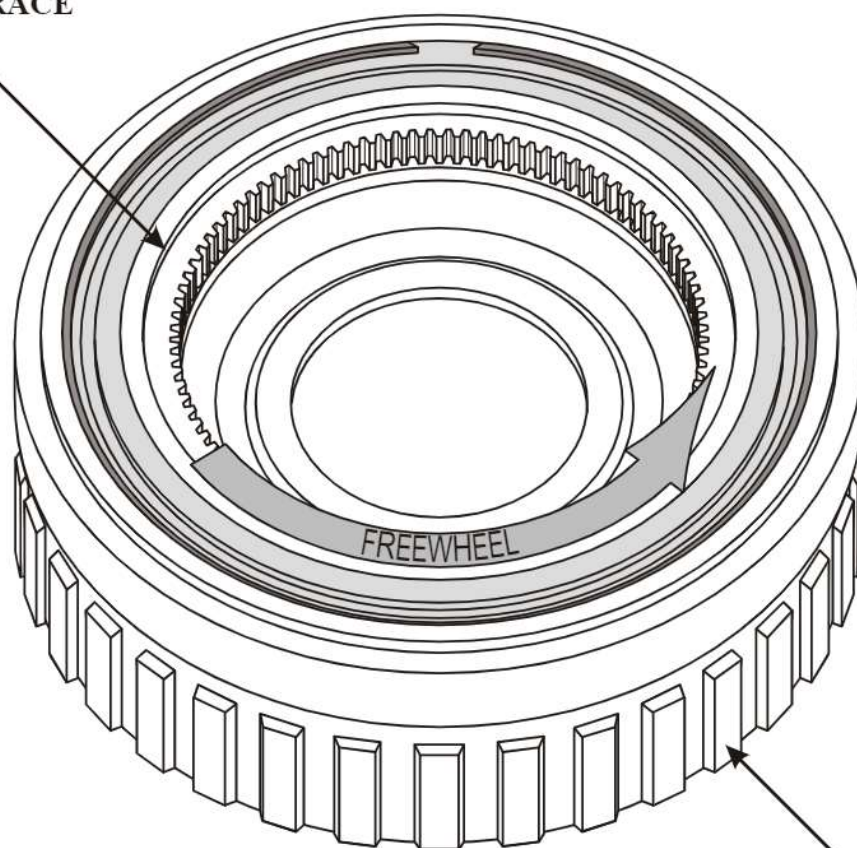


**HOLD
CENTER
SUPPORT**

**SUZUKI ESTEEM AW 60-40
LOW ONE-WAY CLUTCH**

*THE INNER RACE MUST FREEWHEEL
COUNTER CLOCKWISE AND LOCK CLOCKWISE*

**FREEWHEEL
INNER RACE**

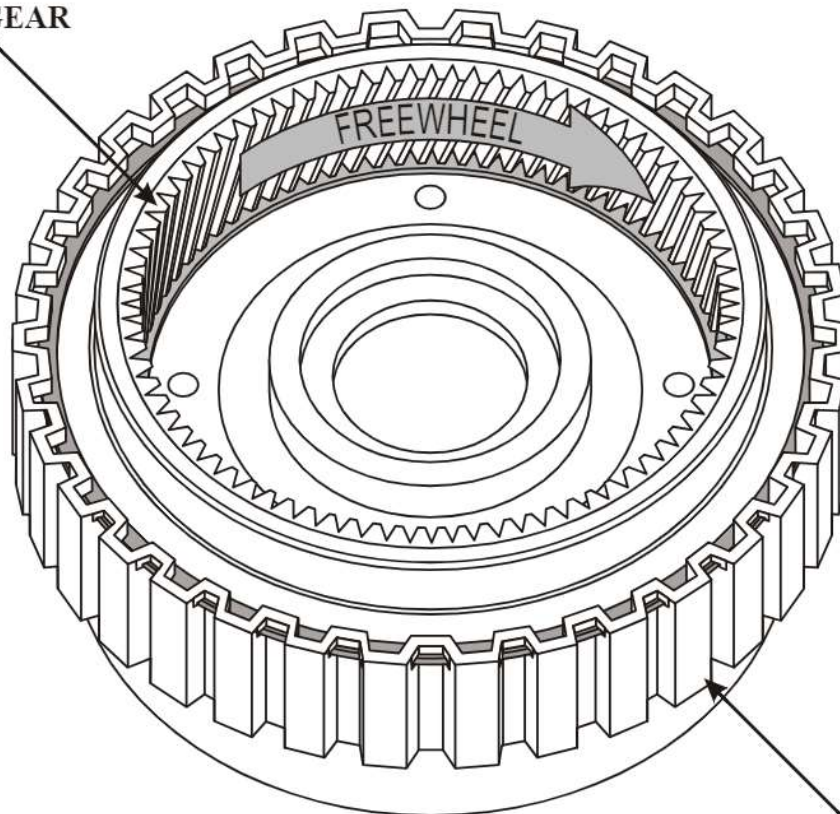


**HOLD
CLUTCH HUB**

SUZUKI ESTEEM AW 60-40 FORWARD SPRAG

*THE REAR INTERNAL RING GEAR MUST FREEWHEEL
CLOCKWISE AND LOCK COUNTER CLOCKWISE*

FREEWHEEL
RING GEAR



HOLD
OVERDRIVE
COAST DRUM

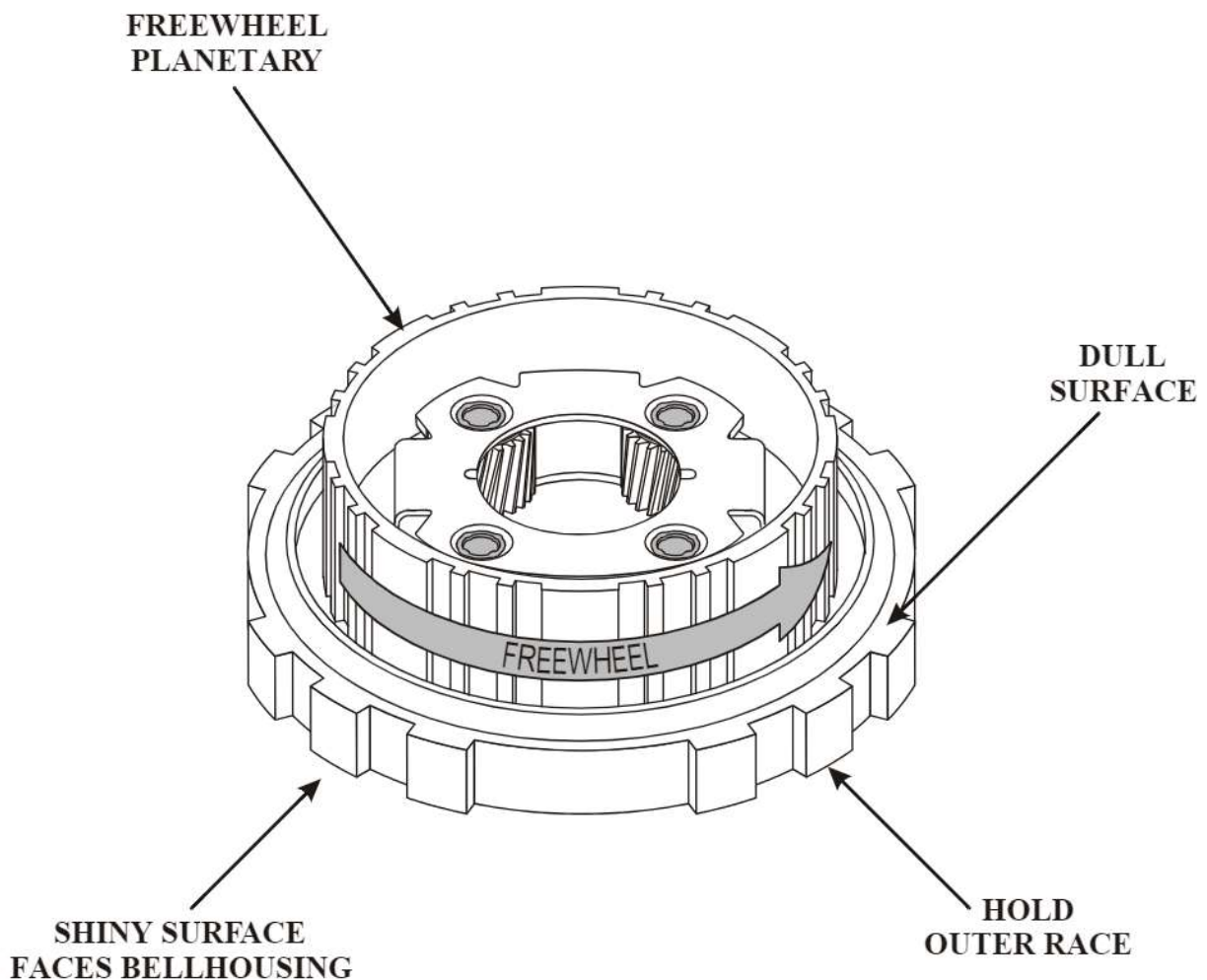


FREEWHEEL BOOK

TOYOTA
A130, A140,
A240, A540,
MX17

TOYOTA A130, A140, A240, A540 SERIES AND MX17 LOW ONE-WAY CLUTCH

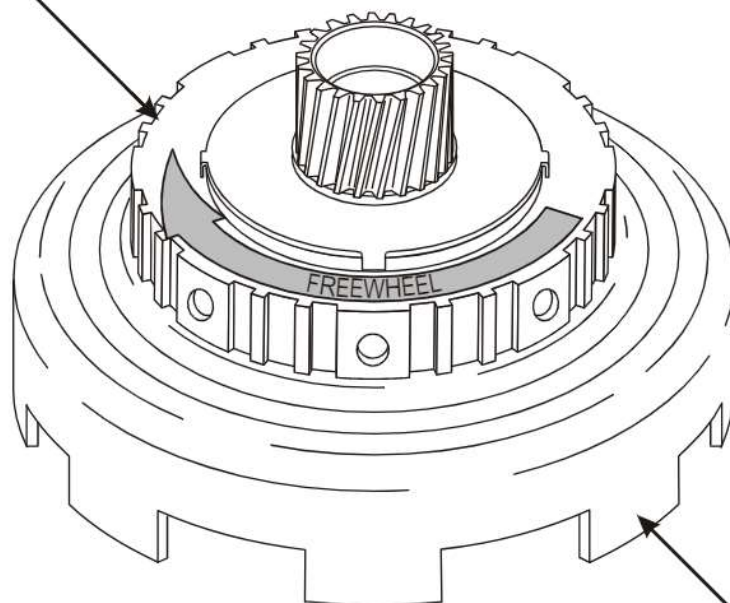
*THE PLANETARY MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN THE OUTER RACE IS HELD*



TOYOTA A130, A140, A240, A540 SERIES INTERMEDIATE ONE-WAY CLUTCH

*THE CLUTCH HUB MUST FREEWHEEL CLOCKWISE AND LOCK
COUNTER CLOCKWISE WHEN THE SUN SHELL IS HELD*

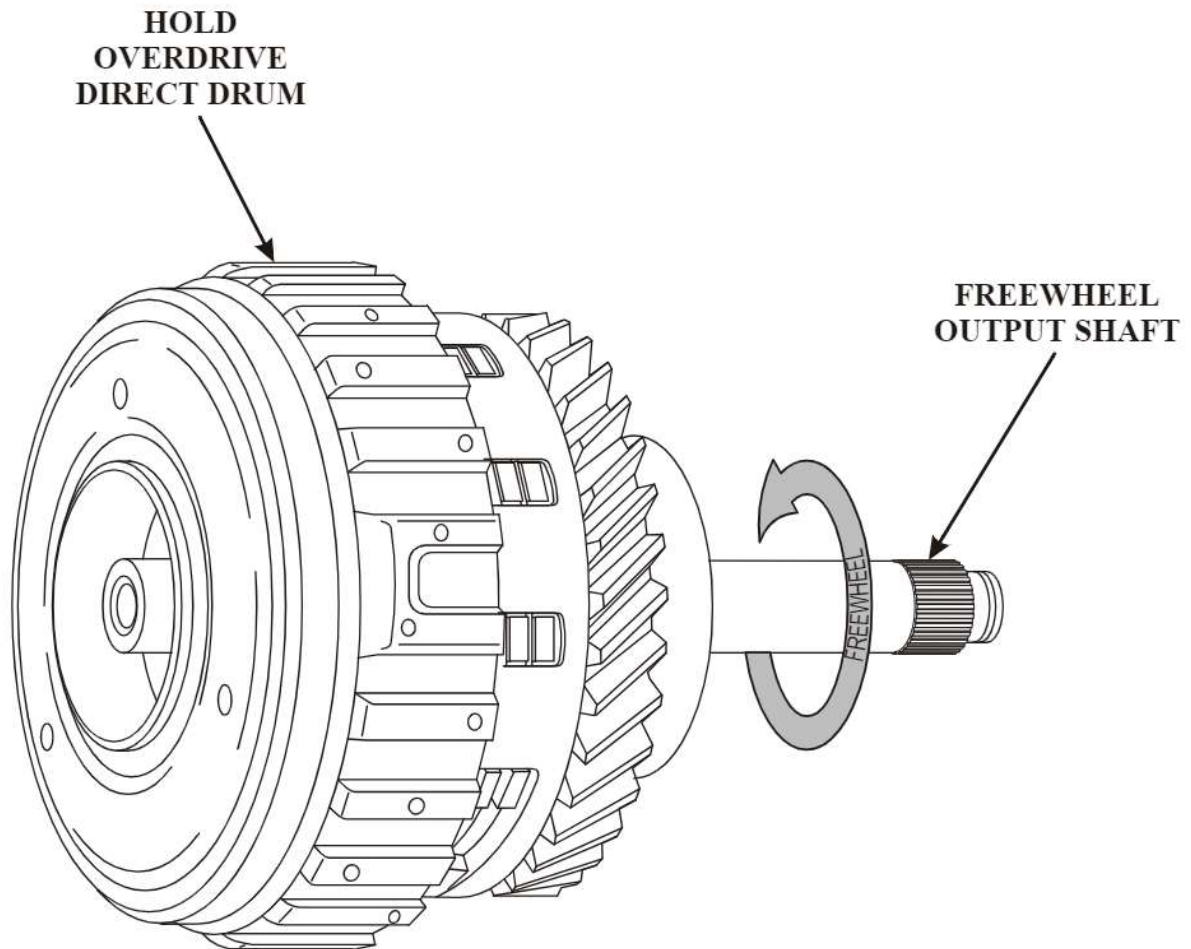
**FREEWHEEL
CLUTCH HUB**



**HOLD
SUN SHELL**

TOYOTA A140, A540 SERIES OVERDRIVE ONE-WAY CLUTCH

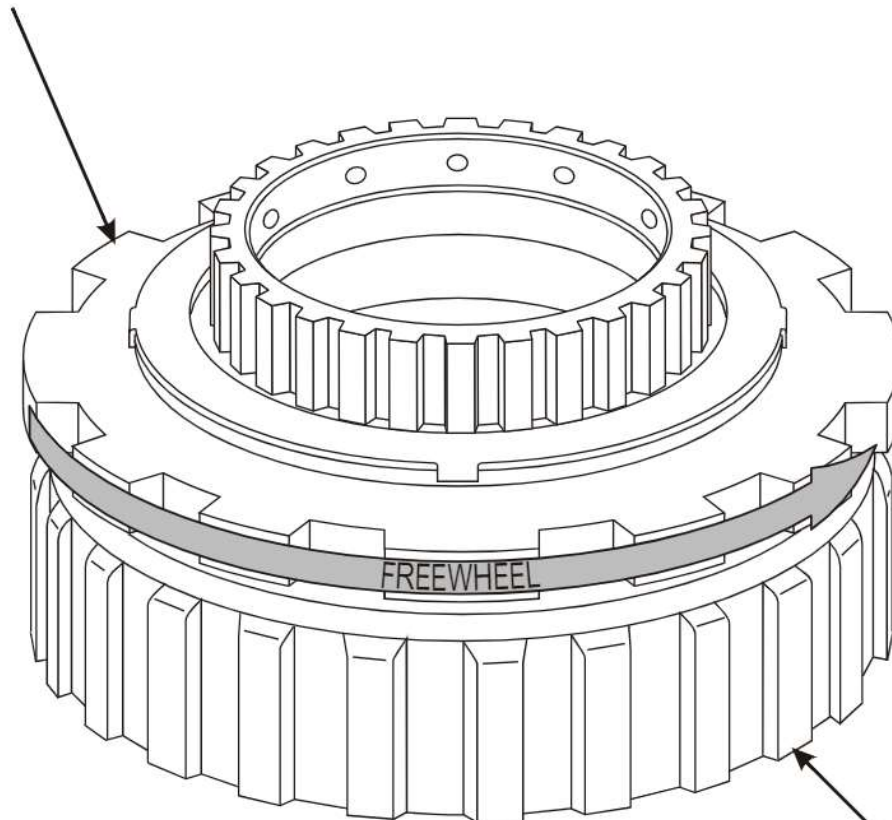
*THE SHAFT MUST FREEWHEEL CLOCKWISE AND LOCK COUNTER
CLOCKWISE WHEN THE OVERDRIVE DIRECT DRUM IS HELD*



TOYOTA A240 SERIES UNDERDRIVE (F3) SPRAG

*THE UNDERDRIVE SPRAG OUTER RACE MUST FREEWHEEL
COUNTER CLOCKWISE AND LOCK CLOCKWISE
WHEN UNDERDRIVE HOUSING IS HELD*

**FREEWHEEL
UNDERDRIVE SPRAG
OUTER RACE**

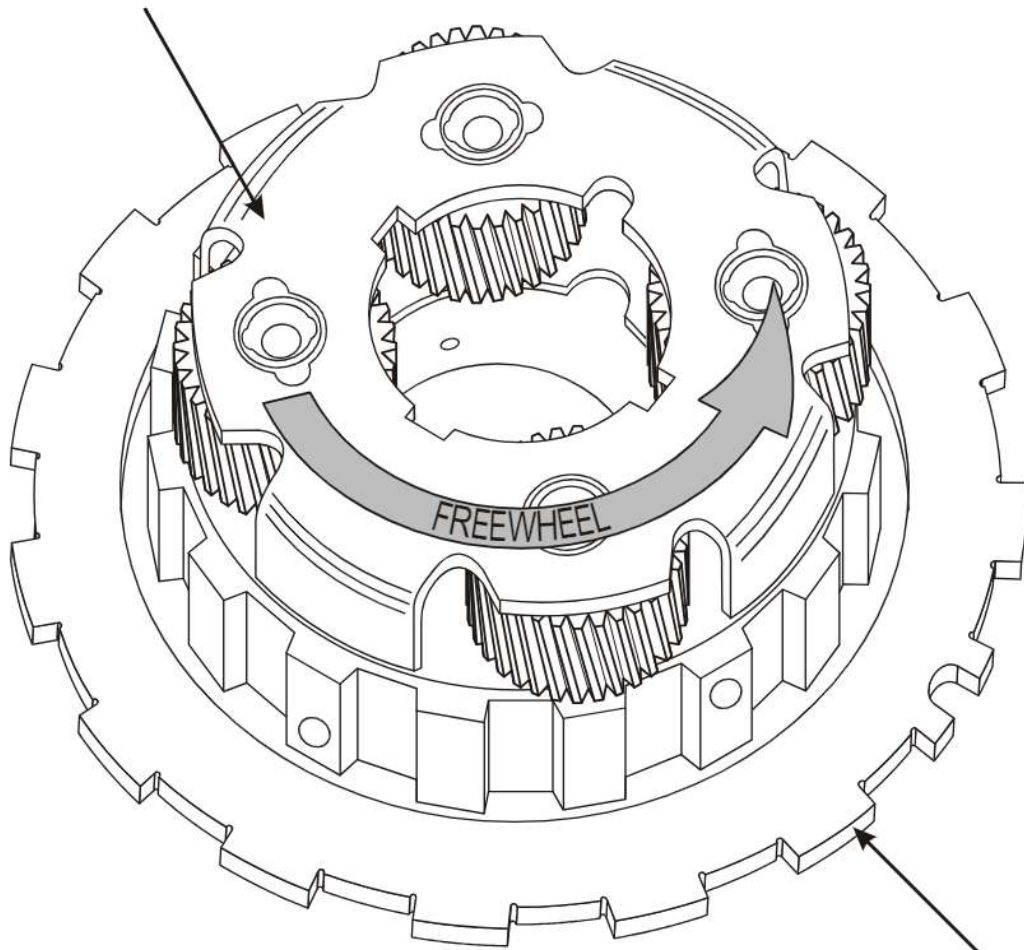


**HOLD
UNDERDRIVE
HOUSING**

**AW3, A40 SERIES, A55,
LOW (NO. 2) ONE WAY CLUTCH**

*THE PLANETARY MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN THE INNER RACE IS HELD*

**FREEWHEEL
PLANETARY CARRIER**

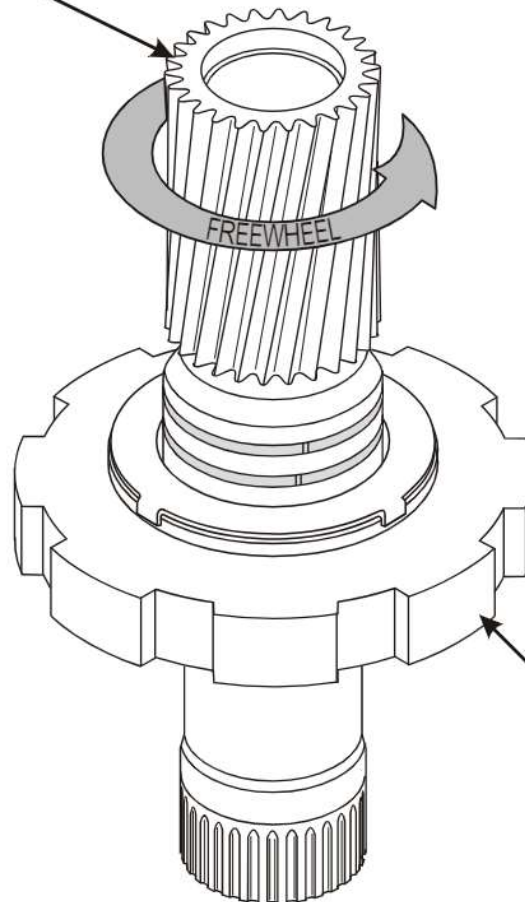


**HOLD
INNER RACE**

AW3, A40 SERIES, A55, 2ND GEAR (NO. 1) ONE WAY CLUTCH

*THE SUN GEAR MUST FREEWHEEL COUNTER CLOCKWISE AND LOCK
CLOCKWISE WHEN THE ONE-WAY CLUTCH OUTER RACE IS HELD*

FREEWHEEL
SUN GEAR

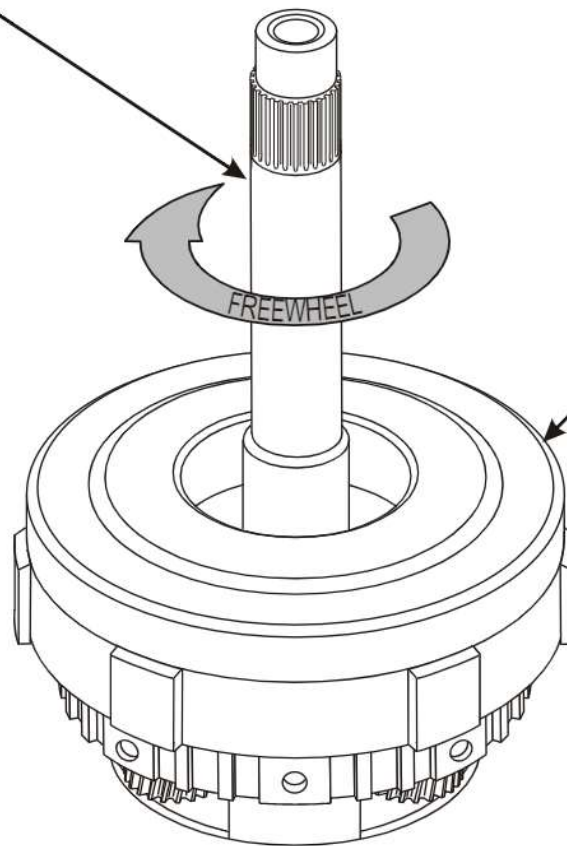


HOLD
OUTER RACE

A40 SERIES OVERDRIVE ONE WAY CLUTCH

THE INPUT SHAFT MUST FREEWHEEL CLOCKWISE AND LOCK COUNTER CLOCKWISE WHEN THE OVERDRIVE / DIRECT DRUM IS HELD

FREEWHEEL
INPUT SHAFT

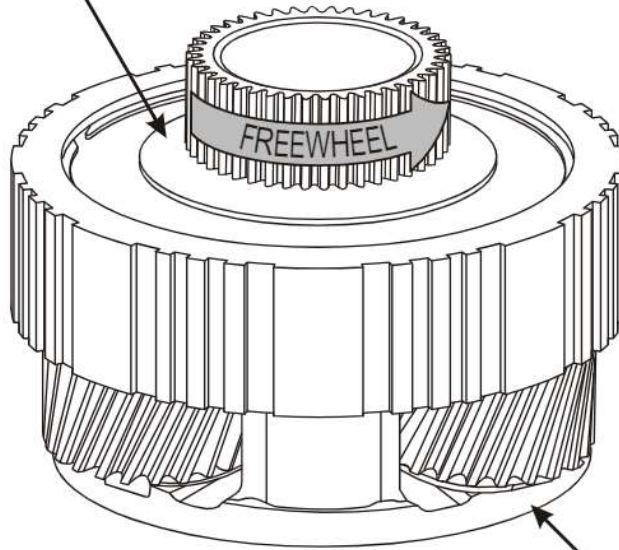


HOLD
OD/DIRECT
DRUM

TOYOTA A340E, A340F, A340H, A341E, A350E, AW30-40LE, AW30-80LE, AW4, LOW (No. 2) ONE-WAY CLUTCH

*THE INNER RACE MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN THE PLANETARY CARRIER IS HELD*

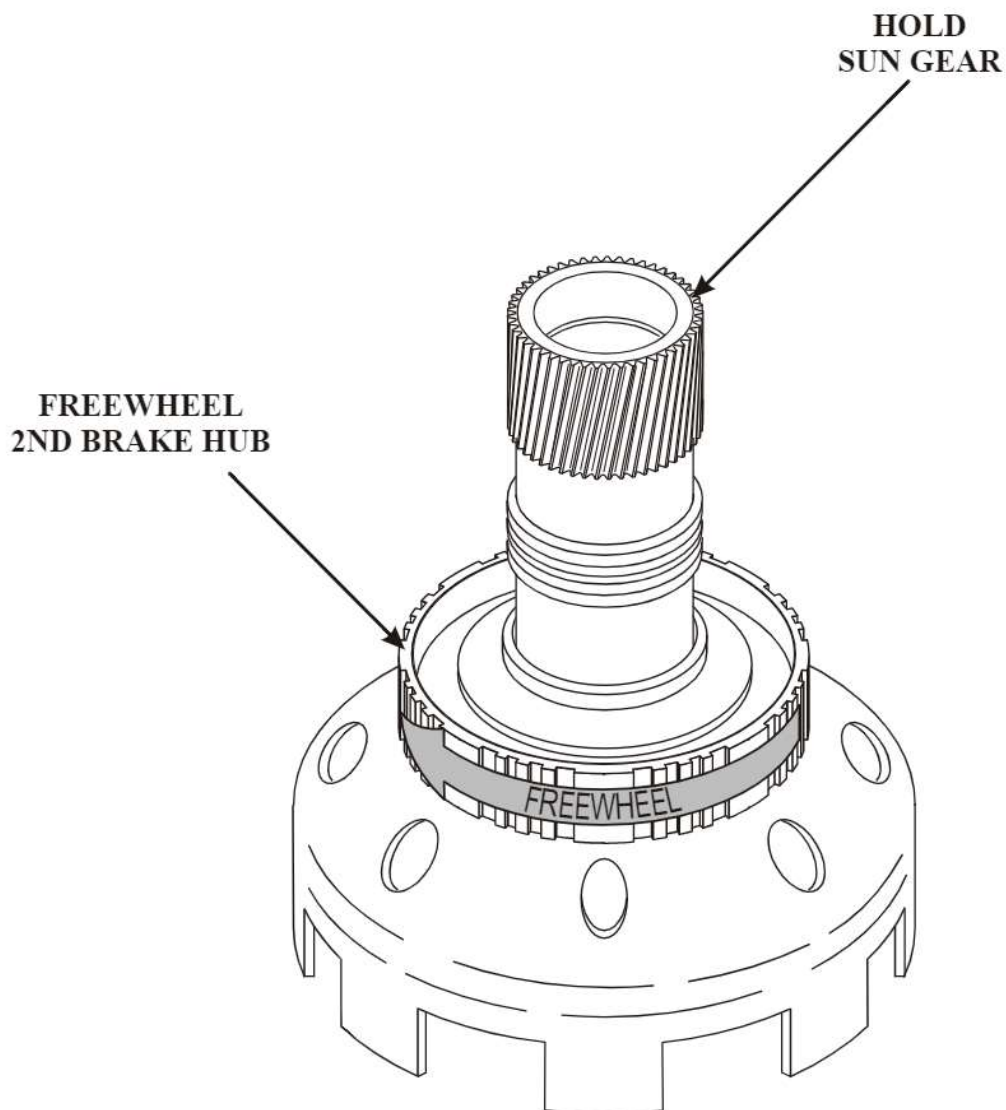
FREEWHEEL
INNER RACE



HOLD
PLANETARY
CARRIER

**TOYOTA A340E, A340F, A340H, A341E,
A350E, AW30-40LE, AW30-80LE, AW4,
2ND GEAR (No. 1) ONE-WAY CLUTCH**

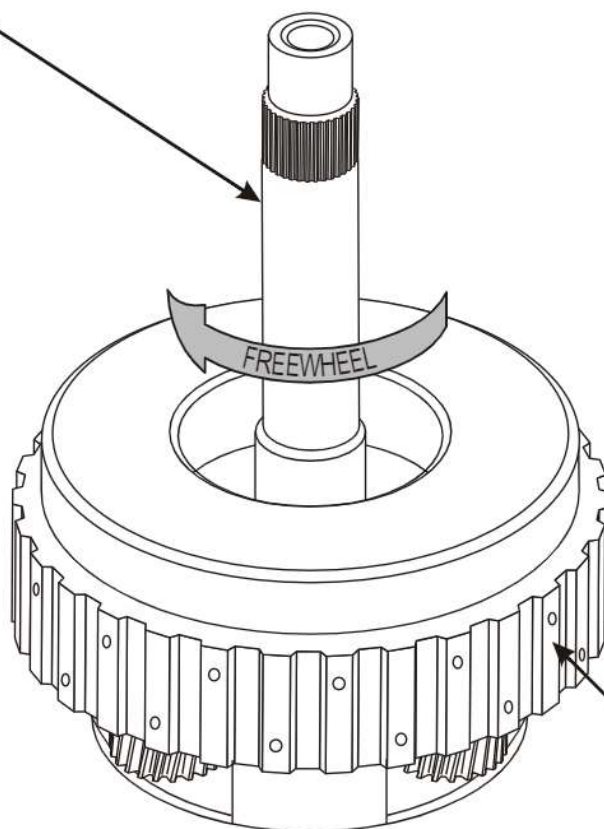
*THE 2ND BRAKE HUB MUST FREEWHEEL CLOCKWISE AND
LOCK COUNTER CLOCKWISE WHEN HOLDING THE SUN GEAR*



TOYOTA A340E, A340F, A340H, A341E, A350E, AW30-40LE, AW30-80LE, AW4, OVERDRIVE ONE-WAY CLUTCH

*THE INPUT SHAFT MUST FREEWHEEL CLOCKWISE AND LOCK
COUNTER CLOCKWISE WHEN THE O/D DIRECT DRUM IS HELD*

**FREEWHEEL
INPUT SHAFT**



**HOLD
OVERDRIVE
DIRECT DRUM**



FREEWHEEL BOOK

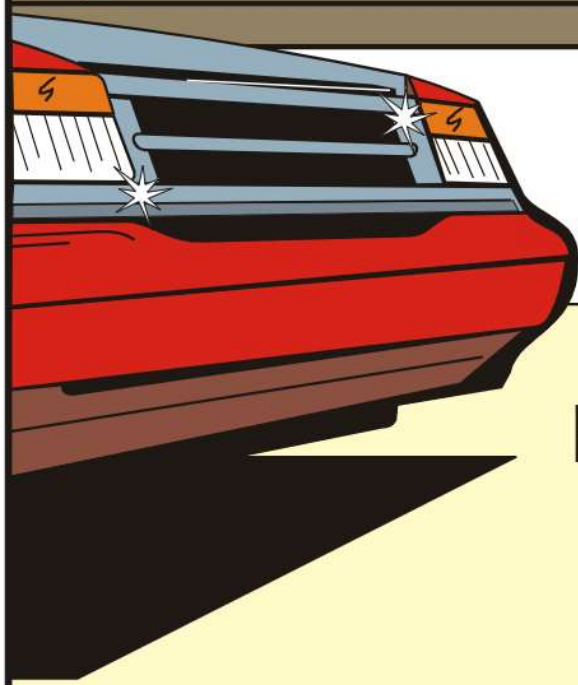


ATSG BULLETINS
AND MANUALS ON CD

THE BEST THING NEXT TO YOUR TOOL BOX
IS A COMPLETE LIBRARY OF TECH AT YOUR
FINGER TIPS...



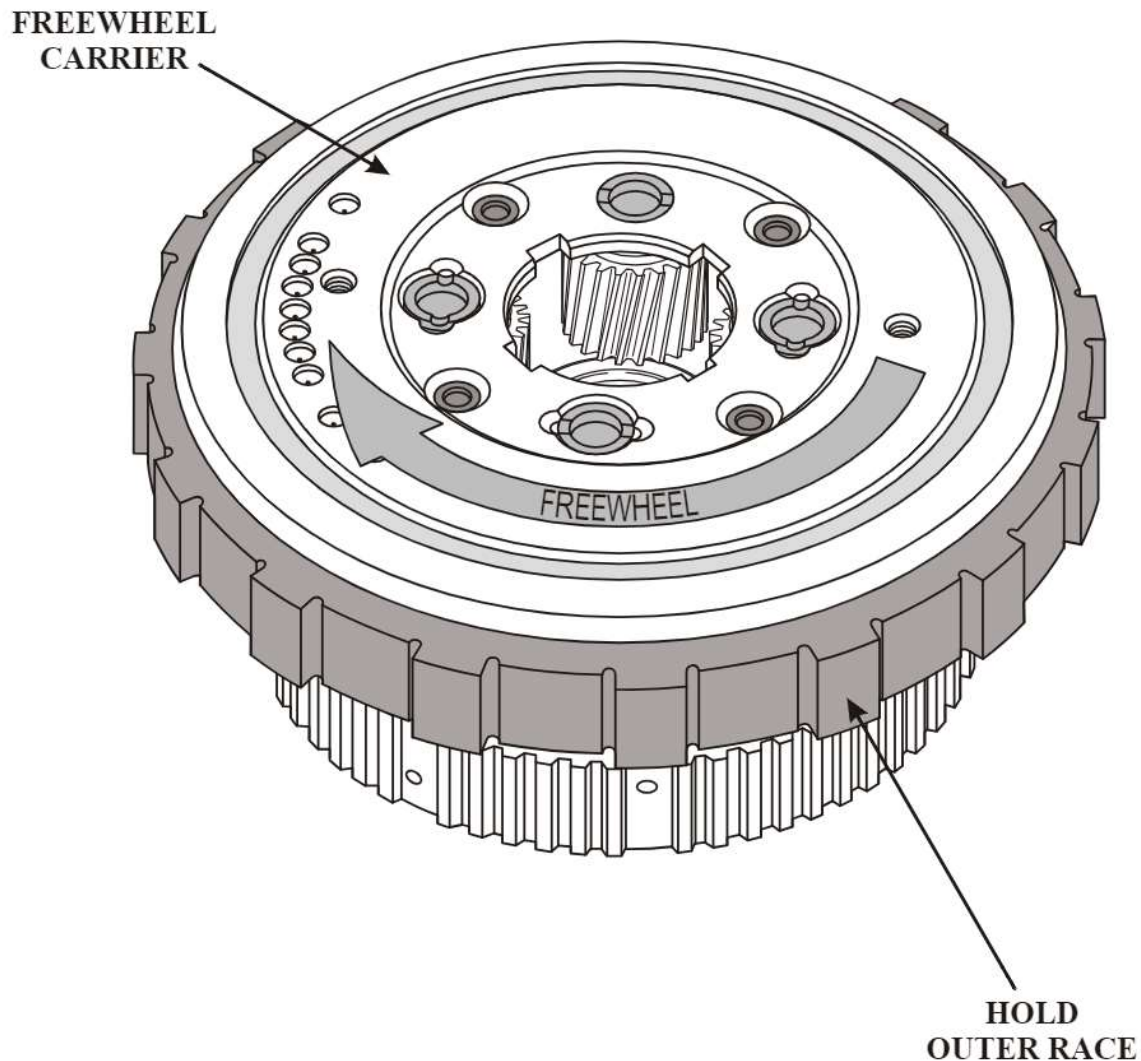
THE TECH YOU NEED...
WHEN YOU NEED IT FAST...



FOR MORE INFORMATION
CALL
(800) 245-7722

**TOYOTA A440 SERIES
LOW ONE-WAY CLUTCH**

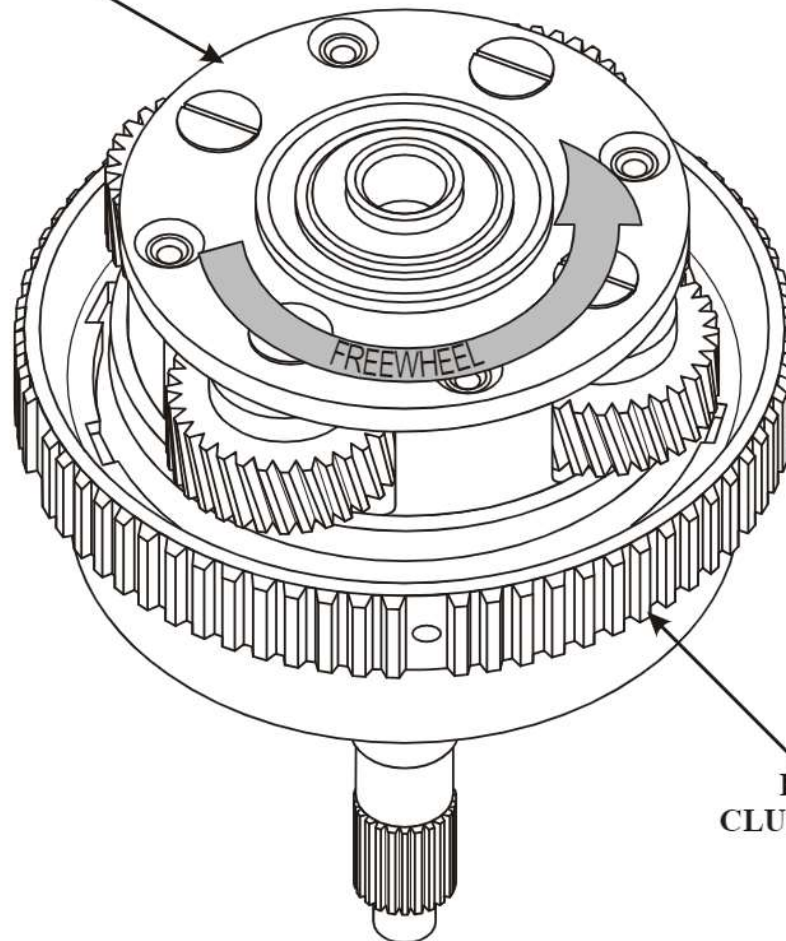
*THE PLANETARY CARRIER MUST FREEWHEEL CLOCKWISE AND
LOCK COUNTER CLOCKWISE WHEN HOLDING OUTER RACE*



TOYOTA A440 SERIES
OVERDRIVE SPRAG

*OVERDRIVE CARRIER MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING CLUTCH HUB*

FREEWHEEL
O.D. CARRIER

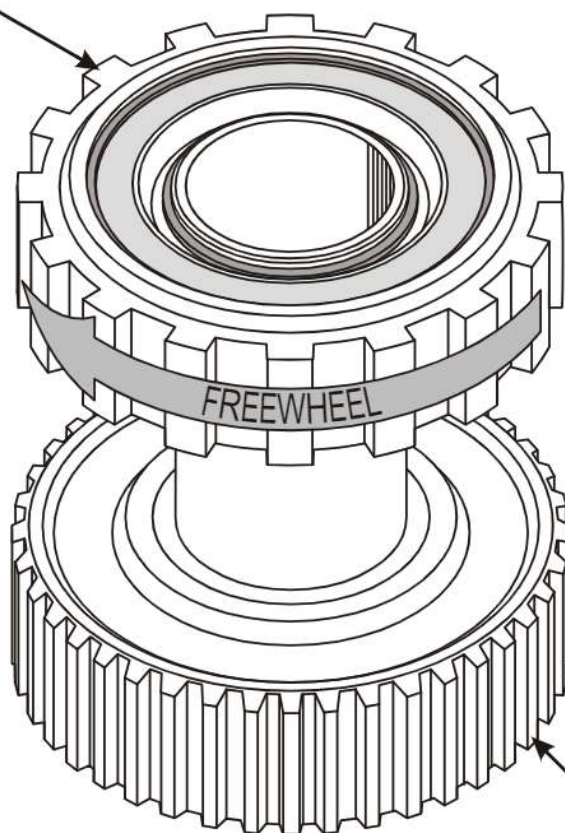


HOLD
CLUTCH HUB

LEXUS A650E LOW (No. 2) ROLLER CLUTCH

*THE LOW ROLLER OUTER RACE MUST FREEWHEEL CLOCKWISE
AND LOCK COUNTER CLOCKWISE WHEN HOLDING THE INNER RACE*

FREEWHEEL
OUTER RACE

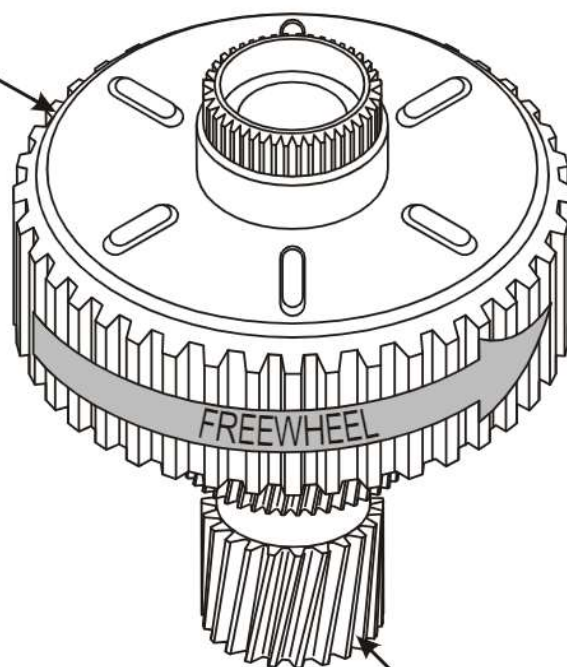


HOLD
CLUTCH HUB THAT IS
SPLINED TO INNER RACE

**LEXUS A650E
3RD GEAR (No. 1) ONE-WAY CLUTCH**

*THE 3RD GEAR OUTER RACE MUST FREEWHEEL COUNTER CLOCKWISE
AND LOCK CLOCKWISE WHEN HOLDING THE INNER RACE (SUN GEAR)*

**FREEWHEEL
OUTER RACE**

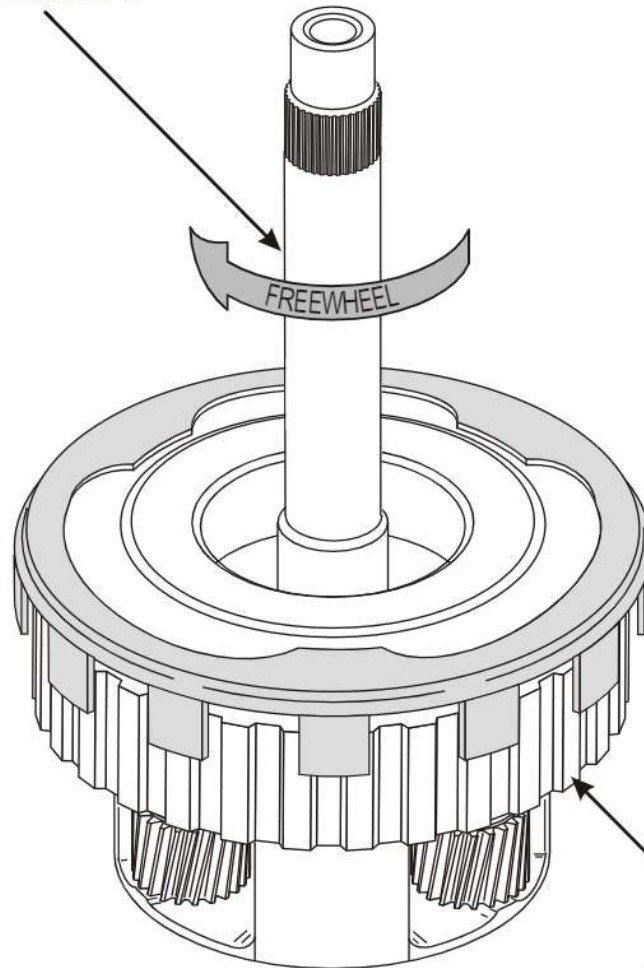


**HOLD
SUN GEAR AND
INNER RACE**

LEXUS A650E OVERDRIVE SPRAG

THE INPUT SHAFT MUST FREEWHEEL CLOCKWISE AND LOCK COUNTER CLOCKWISE WHEN THE O/D DIRECT DRUM IS HELD

FREEWHEEL
INPUT SHAFT



HOLD
OVERDRIVE
DIRECT DRUM



FREEWHEEL BOOK

Notes



FREEWHEEL BOOK

Notes