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Subject:

Identifying BorgWarner transfer cases

Unit:

13-54, 44-02, 44-06, 44-08, 44-09, 44-10, 44-11, 44-16, 44-22, 44-23, 44-24, 44-26, 44-73, 44-76, 44-79, 44-81, 44-82, 44-84, 45-54, 45-55, ITM I, ITM II

Vehicle Applications:

Acura, Cadillac, Chevrolet, Ford, GMC, Honda, Hummer, Hyundai, Isuzu, Kia, Lincoln, Mahindra, Mazda, Mercedes-Benz, Ssangyong, Mercury, Telco

Essential Reading:

- Rebuilder
- Shop Owner
- Center Manager
- Diagnostician
- R & R

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Identifying BorgWarner Transfer Cases

One of the greatest challenges to everyone in our business is the huge increase in the number of models and drivetrains. This tremendous proliferation of units and parts has changed our industry dramatically from both the shop and supplier perspectives.

The shop has an infinite variety of different models to understand and repair, and both suppliers and shops have had to endure massive changes in the levels of inventory they keep on hand. This makes the identification of what you are working on a critical issue. To diagnose and repair we have to know exactly which model of transmission, transfer case or differential we are dealing with. Add to that the fact that there are subtle design changes even within one model year that can require different schematics or parts and that wear and tear on the unit may have eliminated the factory ID tags or labels, and we are all in the detection business before we can even start to diagnose or repair the vehicle.

We have assembled here an identification guide for the current-production models of BorgWarner transfer cases, which will include a number of models that are not sold in the United States. Since we now have a global economy and *Transmission Digest* is read by technicians around the world, it is necessary to try to help our brothers in other countries to identify the complete line of transfer cases.

13-54

Application: Ford Ranger, Explorer Sport Trac, Mazda B-Series trucks



Configuration: Part time

Low-range ratio: 2.48-1

Low range: helical planetary design

Lube system: gerotor pump

Fluid type: ATF

Dry weight: 67 lbs.

Shift Pattern: 2H-4H-N-4L

Shift control: electrical or mechanical, with 4W High shift-on-the-fly

44-02

Application: Hyundai Starex



Configuration: part time

Low-range ratio: 2.48-1

Low range: helical planetary design

Lube system: gerotor pump

Fluid type: ATF

Dry weight: 63 lbs.

Shift pattern: 2H-4H-N-4L

Shift control: electrical, with 4W High shift-on-the-fly

44-06

Application: Ford F Series



Configuration: part time

Low-range ratio: 2.64-1

Low range: helical planetary design

Fluid type: ATF

Weight with fluid: 98.5 lbs.

Shift pattern: 2H-4H-N-4L mechanical, 2H-4H-4L electrical part time

Shift control: mechanical or electrical

44-08

Application:
Ssangyong
Korando, Musso,
Rexton



Configuration: Part time
Low-range ratio: 2.48-1
Low range: helical planetary design
Lube system: gerotor pump
Fluid type: ATF
Dry weight: 68 lbs.
Shift pattern: 2H-4H-N-4L
Shift control: electrical, with 4W
High shift-on-the-fly

44-09

Application:
Mercedes-Benz
M Class



Configuration: full time
Low-range ratio: 2.64-1
Low range: helical planetary design
Lube system: gerotor pump
Fluid type: ATF
Dry weight: 89 lbs.
Differential control: open
Torque split front/rear: 48/52
Electronic control unit: all-wheel drive at all times

44-10

Application:
Lincoln Aviator,
Mercury
Mountaineer



Configuration: full time, AWD at all times
Lube system: induction
Fluid type: ATF
Dry weight: 64 lbs.
Center differential: planetary design
Differential control: viscous-coupling unit
Torque split front/rear: 35/65

44-11

Application:
Lincoln Aviator



Configuration:
TOD (torque on demand)
Lube system: gerotor pump
Fluid type: ATF
Dry weight: 62 lbs.
Shift pattern: A4WDH-4H
Shift control: electrical (TOD) – automatically delivers 4WD operation as required by computer controls and modulating clutch. Computer adjusts amount of power to the front wheels up to 50 times per second.

44-11

2-speed TOD

Application: Ford
Explorer



Configuration:
TOD (torque on demand)
Low-range ratio: 2.48-1
Low range: helical planetary design
Lube system: gerotor pump
Fluid type: ATF
Dry weight: 74 lbs.
Shift pattern: A4WD-4H-4L
Shift control: electrical

44-16 TOD

Application: Ford
Expedition,
Lincoln Navigator



Configuration:
torque on demand
Low-range ratio: 2.64-1
Low range: helical planetary design
Lube system: gerotor pump
Fluid type: ATF
Weight with fluid: 93 lbs.
Shift pattern: 2H-4WD-4H-4L torque on demand
Shift control: electrical

44-22

Application: Isuzu
Axiom



Configuration:
torque on demand
Low-range ratio: 2.48-1
Low range: helical planetary design
Lube system: gerotor pump
Fluid type: ATF
Dry weight: 78 lbs.
Shift control: electrical
Shift pattern: 2H-4H-N-4L

44-23 TOD

Application:
Ssangyong
Korando, Musso,
Rexton



Configuration: torque on demand
Low-range ratio: 2.48-1
Low range: helical planetary design
Lube system: gerotor pump
Fluid type: ATF
Dry weight: 82.2 lbs.
Shift Pattern: 4H-4L
Shift control: electrical

44-24

Application:
Hyundai Terracan,
Kia Sorrento



Configuration:
Part time and torque on demand
Low-range ratio: 2.48-1
Low range: helical planetary design
Lube system: gerotor pump
Fluid type: ATF
Dry weight: 79.3 lbs.
Shift pattern: 4H-4L electronic, shift-on-the-fly to 4WD on part-time model
Shift control: electrical

**44-26 ESOF
(electronic
shift-on-the-fly)**



Application:
Ssangyong
Korando, Musso, Rexton
Configuration: part time
Low-range ratio: 2.48-1
Low range: helical planetary de-
sign
Lube system: gerotor pump
Fluid Type: ATF
Dry weight: 79.6 lbs.
Shift Pattern: 2H-4H-N-4L
Shift control: electrical, 4WH shift-
on-the-fly

44-26 TOD



Application:
Ssangyong
Korando, Musso,
Rexton
Configuration: torque on demand
Low-range ratio: 2.48-1
Low range: helical planetary de-
sign
Lube system: gerotor pump
Fluid type: ATF
Dry weight: 73.6 lbs.
Shift Pattern: 4H-4L
Shift control: electrical

44-73



Application:
Chevrolet Express
van, GMC Savana
van
Configuration: full time
Lube system: splash
Fluid type: ATF
Dry weight: 70.8 lbs.
Center differential: planetary
Differential control: viscous cou-
pling
Torque split front/rear: 35/65

44-76



Application:
Cadillac SRX
Configuration: full
time
Lube system: splash
Fluid type: ATF
Dry weight: 48.1 lbs.
Center differential: planetary
Differential control: open
Torque split front/rear: 50/50

44-79



Application:
Cadillac STS
Configuration: full
time
Lube system: splash
Fluid type: ATF
Dry weight: 48.1 lbs.
Center differential: planetary
Differential control: open
Torque split front/rear: 40/60

44-81



Application:
Cadillac Escalade,
GMC Yukon
Denali
Configuration: full time
Fluid type: ATF
Dry weight: 61.1 lbs.
Center differential: planetary
Differential control: open
Torque split front/rear: 40/60

44-82



Application:
Chevrolet Tahoe
and Suburban,
GMC Yukon and
Yukon XL
Configuration: full time
Low-range ratio: 2.64-1

Low range: helical planetary de-
sign
Lube system: gerotor pump
Fluid Type: ATF
Dry weight: 82.7 lbs.
Shift pattern: 4H-N-4L lock
Shift control: electrical
Center differential: planetary
Differential control: open
Torque split front/rear: 40/60

44-84



Application:
Hummer H2
Configuration: full
time
Low range: helical planetary de-
sign
Lube system: gerotor pump
Fluid type: ATF
Dry weight: 90 lbs.
Shift pattern: 4H-4H lock-N-4L
lock
Shift control: electrical
4WH lock: shift-on-the-fly
Center differential: planetary
Differential control: open
Torque split front/rear: 40/60

45-54



Application: Telco
Safari, Sumo,
Sierra, crew cab
Configuration:
Part time
Low-range ratio: 2.48-1
Low range: helical planetary de-
sign
Lube system: gerotor pump
Fluid type: ATF
Dry weight: 63 lbs.
Shift pattern: 2H-4H-N-4L
Shift control: electrical, 4WH shift-
on-the-fly

45-55

Application: Mahindra Bolero and Scorpio

Configuration: part time

Low-range ratio: 2.48-1

Low range: helical planetary design

Lube system: gerotor pump

Fluid type: ATF

Dry weight: 63 lbs.

Shift Pattern: 2H-4H-N-4L

Shift control: electrical, 4WH shift-on-the-fly



**ITM 1
(Interactive Torque Management)**

Application: Hyundai Santa Fe

Configuration: torque-transfer device for on-demand 4WD

Lubricant type: ATF, fill for life

Power supply: 12 volts

Current draw: 1-2 amps nominal, 3-5 amps peak demand

Activation/deactivation time: 100ms

Power divider for front-wheel-drive transaxles to create 4WD system



**ITM II
(Interactive Torque Management)**

Application: Acura MDX and Honda Pilot

Configuration: electronically controlled secondary axle assembly

Lubricant: Mobil 424

Controls torque transfer between two rear wheels of a 4WD vehicle

On-demand 4 WD

Fully interactive with engine and transmission management systems, brake-based traction controls and vehicle stability control.

No differential; each axle has clutch packs to differentiate torque to each wheel.



TD