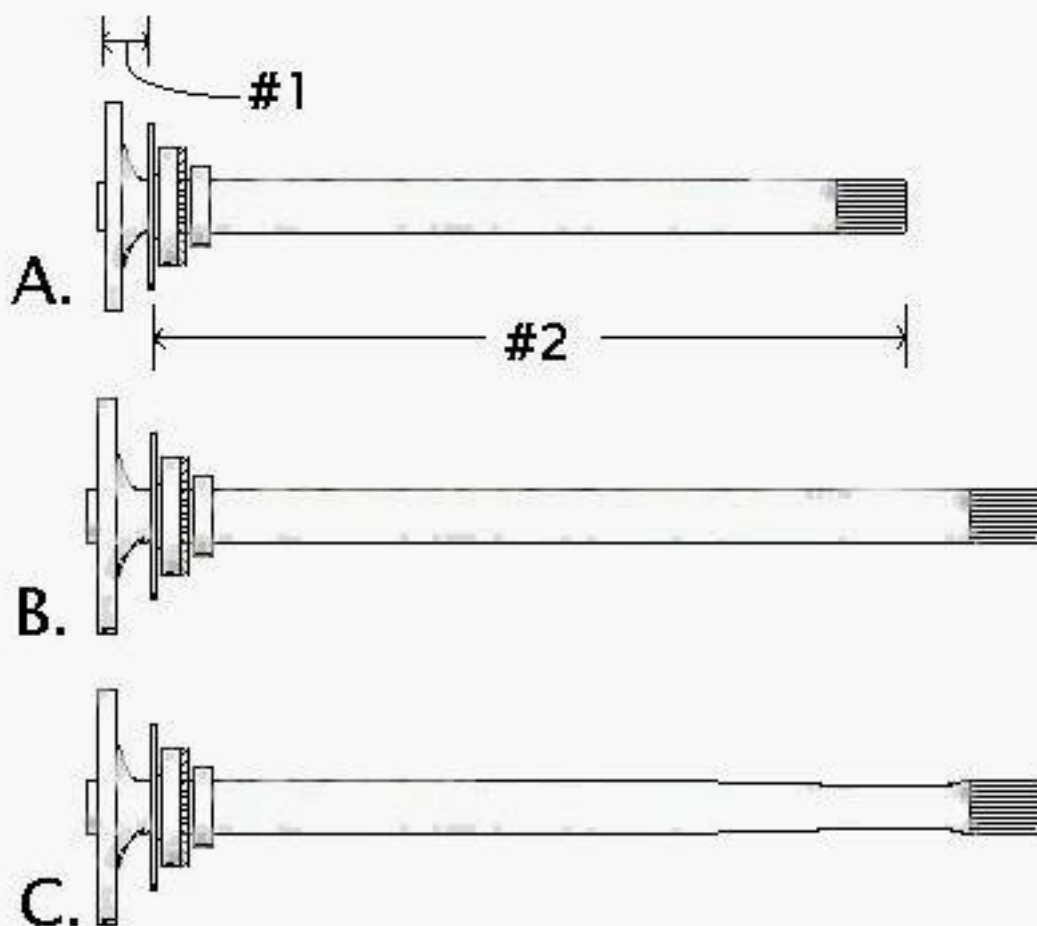


Chrysler 8-3/4" Rear Axle Guide



The diagram illustrates 8-3/4" axles. The top is a 66-72 A-body axle, and the other two are longer axles that generally resemble the B and C body and truck axles. C body and truck axles can be shortened and resplined by a quality machine shop, however it is important to note that not all C-body/Truck axles are created equally.

The top axle shows that at the location of where the new splines will be (26" from bearing retaining plate to the end of the axle, see measurement #2 in the diagram) the outside diameter (OD) must be larger than what the OD of the spline needs to be.

The bottom axle illustrates how many mid-60's axles taper as they near the splines, these can not be used as A-body short axle

The Chrysler 8-3/4" rear axle assembly was introduced in 1957. It is a banjo-type (Hotchkiss) axle, ie. the differential is contained in a removable carrier assembly. The axle has an 8-3/4" diameter ring gear. There are three basic types available distinguished by their drive pinion stem diameter. The 8-3/4" axle was the primary axle assembly used in most car lines through 1972.

8-3/4" Axle Center Section Types

The 8-3/4" axle was available in three basic types. The types are differentiated by the pinion stem diameter.... 1-3/8", 1-3/4", 1-7/8". The choice of axle pinion assembly was determined based on the application.

1-3/8" small stem pinion (aka. '741') >

Carrier casting numbers: 1820657 (1957-1964), 2070741 (1964-1972). This assembly was typically used in low weight/low horsepower applications through low weight/medium horsepower and high weight/low horsepower applications. Pinion depth and bearing preload is set with shims. Differential bearing setting (ie. backlash) is set with threaded adjusters.

1-3/4" large stem pinion (aka. '742')

Carrier casting numbers: 1634985 (1957-1964), 2070742 (~1961-1969). This assembly was replaced by a phase-in of the 1-7/8" pinion starting in the 1969 model year. 1970 RW (Plymouth and Dodge mid-size) were the last models to use the 1-3/4" which appeared in a 2881489 case. This assembly was typically used in high weight/medium horsepower applications through high weight/high horsepower applications. Pinion depth and bearing preload is set with shims. Differential bearing setting (ie. backlash) is set with threaded adjusters.

1-7/8" tapered stem pinion (aka. '489')

Carrier casting numbers: 2881488, 2881489 (1969-1974). This assembly was introduced in 1969 and was phased-in to replace the 1-3/4" unit through 1970. Note: the 1-3/4" pinion also appeared in some '489' carriers during this period. By 1973, the '489' was the only unit available in passenger car applications. This assembly was typically used in high weight/medium horsepower applications through high weight/high horsepower applications. Pinion depth is set with shims, preload is set with a crush sleeve. Differential bearing setting (ie. backlash) is set with threaded adjusters.

All 8-3/4" carrier assemblies can be identified externally by the casting numbers. Additionally, the '741' commonly has a large X cast on the left side, the '742' may have a large 2 cast on the left side, and the '489' has a large 9 cast on the left side. Through 1965, the factory ratio was stamped on the identification boss, followed by an 'S' if Sure Grip equipped. After 1965, a tag was affixed under one of the carrier mounting nuts to identify the ratio. If Sure Grip equipped, an additional Sure Grip lube tag was sometimes affixed; later years sometimes had the filler plug painted orange.

Gear ratios available on the 8-3/4" axle through the years include: 2.76, 2.93, 3.23, 3.31, 3.55, 3.73, 3.91, 4.10, 4.56, 4.89, 5.17, 5.57. On OEM gear sets, the ratio is usually stamped on the ring gear edge. Ratio may be determined by the number of teeth on the ring gear divided by the number of teeth on the pinion gear or by counting the ratio of the number of turns of the pinion relative to one turn of the axle shaft.

The 8-3/4" center section is removed from the front of the housing. It is retained by 10 nuts on studs in the housing. The rear of the housing is smooth, the back is welded onto the main housing. The axle tubes are part of the overall housing. To remove the center section, remove the wheels, brake drums, and drive shaft (note: pre-65 units have a pressed-on brake hub requires a puller for removal). Remove the axle shafts, 5 bolts on the backing plate flange on post 64 units, use puller for pressed-in pre-65 units. Remove the 10 nuts on the housing studs around the carrier perimeter. Remove the carrier may require prying, fluid will drain when carrier gasket seal is broken.

Interchange Notes:

Any 8-3/4" center section may be interchanged for another as an entire assembly, with the exception of center sections manufactured prior to model year 1964 (See Section 1: "Thrust Block Variations").

Sure Grip:

Sure Grip is the Chrysler name for a limited slip differential. It was optional on the 8-3/4" axles, 1958-1974. Two styles were used.

1958-1969 used the Dana Power-Lok (# 2881487). This unit utilized clutches for the differential locking action. The Power-Lok can be rebuilt using kit # 2070845 (Mopar Performance [MP] # P4529484). In this assembly, axle driveshaft end thrust is taken by the thrust block assembly (replacement # 2881313). This Sure Grip appeared in the '741' and '742' assemblies. The axle bearings are: 25590 (Timken cone), and 25520 (Timken cup), (Chrysler numbers 1790523 and 696403). The Dana Power-Lok can be recognized by its bolt-together assembly, bolts around the side opposite the ring gear, and multiple openings exposing the cross shafts.

1969-1974 used the Borg Warner Spin Resistant (# 2881343). This unit utilized a spring-preloaded cone friction arrangement for the locking action. Axle end thrust is taken by the cross shaft. This Sure Grip appeared in '489' assemblies and 70 and later '741'/'742' assemblies. The differential axle bearings are: LM 104912 (Timken cone), and LM 104949 (Timken cup), (Chrysler numbers 2852729 and 2852728). The Borg Warner Spin Resistant unit can be recognized by its lack of bolts on the side opposite the ring gear (like the Dana), and two openings exposing the preload springs. Borg Warner sold this design to Auburn Gear who currently offers the replacement Sure Grip assemblies.

Non-Sure Grip differentials can be identified by the large openings in the differential exposing the differential (aka. spider) gears. There are no springs or clutches.

Interchange Notes:

The two Sure Grip types can be interchanged between the carriers if the matching differential axle bearings are retained. The outside diameter of the cups are the same between the '741'/'742' and the '489'; the inner cone differs.

The Sure Grip differential can be used as a direct replacement for the non-Sure Grip within the carrier/bearing limits previously noted.

There is an interchange problem with differentials and axles manufactured prior to 1964 (See Part II, Section 1: "Thrust Block Variations").

Universal Joint Yokes

The 8-3/4" axle was offered with two size cross & roller style universal joint. These are referred to as the '7260' (2-1/8" yoke ID) and the '7290' (2-5/8" yoke ID). Most Imperials and some C-bodies used a different universal joint. The '1330' type joint was used on Imperials and others with a constant velocity joint. The '1330' uses outside snap rings instead of the inside snap rings used by the '7269' and '7290'. The cap diameter for the '7260' is 1.078". The cap diameter for the '7290' is 1.126". The '1330' style joint cap diameter is 1.063".

There are four different yokes that have been used with the 8-3/4" axle for the '7260' and '7290' style universal joints. The '741'/'742' assemblies used a coarse spline (10 splines) drive pinion. Most of the aftermarket gears also use this coarse spline yoke mount. There is a small yoke for the '7260' and a larger one for the '7290'. The '489' assembly used a fine spline (29 splines) yoke. Note: during the phase-in period of 69-71 for the '489' unit, there were several permutations of pinion size and yoke availability. 69-70 '489' units may be equipped with a coarse (10) spline pinion, particularly for the '7290'. There are two yokes for the '7260' and '7290' universal joints with fine (29) splines. Two additional yokes were used for the '1330' style universal joint in constant velocity applications, one for 10 splines and one for 29 splines.

Interchange Notes:

7260, 7290, 1330 yokes may be interchanged if the spline count is the same.

Note: the 9-1/4" axle (73-up) uses the same fine spline yokes as the 8-3/4" fine spline units (29 splines).

Strength Considerations

Pinions:

The 1-3/8" '741' pinion is the weakest. It is still a capable unit in most moderate power, moderate traction street applications. For high torque applications with high traction tires, the 1-3/4" or 1-7/8" should be considered.

The 1-7/8" '489' is supposedly the strongest. Although the stem tapers down along it's length, it appears inherently stronger from a pinion stem perspective and the inherent strength of the fine splines (OEM gears). The 1-3/4" '742' has a larger rear pinion bearing

yielding greater strength in this area. The 1-3/4" shares yoke mount diameter and mounting nut with the 1-3/8".

For perspective, the 7-1/4" has a 1-3/8" pinion, the 8-1/4 has a 1-5/8" pinion, the 9-1/4" (70s) has a 1-7/8" pinion.

Sure Grips:

The Dana Power-Lok is inherently stronger and provides better, equal torque transmission to both axles. It's locking capability is also proportionate to the applied torque. The Borg Warner unit is weaker, but is a more versatile unit for practical street applications in inclement traction periods. The Dana unit is better for racing applications and has clutch rebuild kits available.

Axle and Housing Notes:

Because the 8-3/4" axle was available in most body lines, there are a variety of housings available. Following are some of the passenger car axle dimensions and notations. The 'Perches' dimension is the distance center to center between the spring mount perches. Dimensions are in inches.

Body line Track Perches Notes:

A-body, 65-72 55.6 43.0 4" lug bolt circle, offered in heavy duty apps.

B-body, 62-70 59.2 44.0

B-body, 71-72 62.0 47.3

B-body, 71-72 63.4 47.3 station wagon

C-body, 64-72 63.4 47.3

D-body, 64-72 63.4 47.3

E-body, 70-74 60.7 46.0

The 8-3/4 was also available in the 58-74 D100/W100 trucks (and variants), the 64-70 A-100 trucks and vans, the 67-70 A-108 trucks and vans, the 71-74 B100/B200 vans and non-listed 57-64 full and mid-size car models.

Note: the axle centerline to yoke/universal centerline is 12.35" for the 8-3/4" axle.

See Part II, Section 3: "Part Numbers and Dimensions of Axles and Housings" for axle housing part numbers, sizes, and more detailed interchange information of axles and housings.

Interchange Notes:

Any 8-3/4" center section may be interchanged for another as an entire assembly except for a thrust block difference of non-Suregrip units built before 1964 (See Part II, Section 1).

All 8-3/4" axle shafts, 65-74, are retained by a bolt-on flange. Axles can be interchanged within housings of the same width. The passenger side axle has a threaded adjuster to set axle shaft end play.

Note: there was a slight dimensional change in axle shaft length when the Sure Grip design changed. If interchanging axles with the slight difference, the threaded end play adjustment can be used to accomodate it.

Note: the 57-64 8-3/4 axle driveshafts were tapered and used a keyway and locknut to retain the brake assemblies and end play was set with shims. The 65 and later units use flanged axle shafts and a threaded adjuster to set axle end play.

Service Parts Information:

Most replacement parts for the 8-3/4" axle are still available. Some items not available are new Dana Power-Lok assemblies, most OEM gears, most carrier housings and complete differentials and housings. Sure Grips are available from Auburn Gear. The Power-Lok clutch kits are available from MP and other sources. Gear sets (typically performance oriented ratios) are available from MP and the aftermarket for the '489' and '742'. Bearings and seals are readily available.

Some sources:

*Mopar Performance dealers, Chrysler dealers.
Moser Engineering, 1616 Franklin St, Portland IN, 47371 (219-726-6689).
Reider Racing, 12351 Universal Dr., Taylor MI, 48180 (313-946-8672).
Aftermarket for general replacements, ie. seals, bearings, etc.*

Selected Parts Reference:

Numbers listed for reference, some may be superceded or discontinued, some variances among models/years may occur. Reference factory or replacement parts catalogs for exact replacement details.

Universal Joint Items:

*Item Chrysler Precision Dana TRW
(Detroit ref.) (OEM or MP) (Moog) (Spicer) (FederalMogul)*

7260 joint 4364400 315G 5-1306X 20030, 20030P

7290 joint 4057025 316 5-1309X 20059, 20059P

*Combination * --- 347 --- 20226*

1330 joint 2533202 354 5-213X 20064, 20064P

7260 strap kit P4120468 318-10 2-70-38X 20704

7290 strap kit P4120469 492-10 2-70-28X 20705

** This is a combination of the 7260 and 7290 universal joints to allow mating of the two styles.*

Yokes:

Chrysler numbers:

3432485 -> 29 spline 7260 (2-1/8" ID), also P4529481

3432487 -> 29 spline 7290 (2-5/8" ID), also P4529483

3004872 -> 10 spline 7260 (2-1/8" ID), also P4529480
P4529482 -> 10 spline 7290 (2-5/8" ID), replaces 2808384, 3004873
2931813 -> 10 spline 1330, for constant velocity, ie. Imperial.
3432489 -> 29 spline 1330, for constant velocity, ie. Imperial.
1556556 -> pinion washer, concave, 3/16" thick, 13/16" hole diameter.
2070117 -> pinion washer, concave, 3/16" thick, 15/16" hole diameter.
1795175 -> pinion washer, flat, 3/32" thick, 13/16" hole diameter.
1795173 -> pinion nut, 3/4"-16 thread, 1-1/4" hex.
6027323 -> pinion nut, 3/4"-16 thread, 1-1/8" hex.
6028041 -> pinion nut, 7/8"-14 thread, 1-1/4" hex.

Sure Grip Items:

Chrysler numbers

Mopar Sure Grip axle additive - 4318060

Dana Power-Lock thrust block set - 2881313

Repair Kit, Dana Power-Lok - P4529484 (replaces 2070845)

Note: there is no repair kit for the Borg Warner/Auburn unit, but the internal cones have been remachined by others to successfully restore performance.

Shim Package:

Chrysler numbers:

1-3/4" pinion -> P4452027

1-7/8" pinion -> P4452026

Ring Gear Bolts:

Chrysler numbers

P4529486 -> 71 and later (also 4131255, pkg. of 10)

P5249163 -> 70 and earlier

Note: the 71 and later bolts may be installed in the earlier units by drilling a shoulder relief in the attachment holes.

Gaskets, Seals:

Position Chrysler National C/R Fel-Pro

Axle inner seal 4796698 8695S 15460 ---

Axle outer seal 2404216 8704S 19000 ---

Axle flange, foam 2070933 see flange kit see flange kit 55032

Axle flange, shim 2881314 see flange kit see flange kit ---

Carrier gasket 1673367 --- --- RDS 65833

Pinion seal, 1-7/8 2931862 5126 18708 ---

Pinion seal, 1-3/4 2931862 7216 18912 ---

Pinion seal, 1-3/8 2931862 8515N 18708 ---

Yoke repair sleeve --- 99187 99187 ---

Bearings:

Position Cup/Cone, Timken, BCA Notes:

Differential, side LM 104949/LM 104912 70-74, Borg Warner

Differential, side 25590/25520 57-69, Dana

Pinion, front M88048/M88010 1-7/8"

Pinion, front HM89443/HM89410 1-3/4"

Pinion, front M88048/M88010 1-3/8"

Pinion, rear M804049/M804010 1-7/8"

Pinion, rear M803149/M803110 1-3/4"

Pinion, rear HM89446/HM89410 1-3/8"

Axle, outer BCA A-7 65-74

Axle, outer C/R BR7 65-74

Axle bearing service kit: Chrysler # 3683966, one axle.

BCA differential kit: 1-7/8", # RA-301, 1-3/4", # RA-300.

BCA axle mounting flange repair kit: Left # A-7-LK, Right # A-7-RK.

C/R axle mounting flange repair kit: Left # A7-LK, Right # A7-RK.

Note: the 8-3/4" axle shaft outer bearings require packing with grease as they are not lubricated by the gear oil.

Miscellaneous:

Vent bolt - Chrysler # 4032798

Spring mounting pads (perches) - Chrysler # P4120074

'489' collapsible spacer (pinion bearing preload) - Chrysler # 2931687

Mopar gear lubricant - 4318058

Mopar Sure Grip axle additive - 4318060

Mopar wheel bearing lubricant - 4318064

Appendix A: 8-3/4 A-body axle upgrade to 4.5" bolt circle

The 65-72 A-bodies were available with the 8-3/4" axle. This was standard on all 340 equipped cars. It was also included in heavy duty packages such as 318 with manual transmission and towing options. It was often included in post 65 273 high performance manual applications.

The bolt circle (BC) on these vehicles was 4". All other Chrysler vehicles (except some Imperials and trucks) of this era were equipped with a 4.5" BC. It is commonly desired by A-body owners to change to the 4.5" BC when upgrading to later style disk brakes or to expand wheel choice.

A-body 8-3/4" axle shaft swap:

There are several methods to accomplish this. Custom axles such as Strange, Summers, Moser, etc. can be specified with the larger lug pattern for the A-body housing. Longer axles from a larger vehicle may be cut and resplined to fit the shorter A-body axle.

Donors for this operation are C-bodies, D-bodies, trucks and vans with the 8-3/4" axle and 4.5" BC. Moser Engineering can perform the cut and respline operation. When selecting a donor axle shaft, look for one that does not taper along its length. Note: A-body 8-3/4" axles were equipped with 10x1-3/4" drum brakes. Replace these with 10x2-

1/2" or 11-2-1/2" brakes and associated hardware from the donor vehicle or similar.

B-body axle in the A-body:

Another alternative can be used to replace an existing 8-3/4" or the smaller 7-1/4" or 8-1/4" axles. An axle from a 66-70 B-body can be installed in the A-body (note: a 62-64 axle can be used, but it does not contain the flanged axles of the later units). The later sport coupe style cars, Duster, Demon, Dart Sport, have the roomiest fenderwells. The 67-76 sedan and hardtop models have less. The 60-66 appear to be the tightest fit. The A-body has a spring perch spacing of 43.0", the 66-70 B-body is 44.0". To mount the B-body axle on the A-body springs, the perches need to be removed and new ones welded in place 1/2" inward from the original location on each side. The B-body track width is greater than the A-body. This may be a concern depending on the wheel/tire combination.

The wider track enhances handling and aesthetics to some degree. This has been performed on the author's 73 Duster, now equipped with 15x6.5" rallye wheels and P255/60R-15 tires with 11x2.5" brakes. Originally setup with 15x7" rallye wheels and P275/60R-15 tires will rolled fender lips. The larger tires exhibited scrubbing when loaded on dips/bumps.

If replacing a 7-1/4" or 8-1/4" axle, the driveshaft must be changed as the axle centerline to yoke centerline is greater for the 8-3/4" (12.35" vs. 10.09" for 7-1/4" and 11.69" for 8-1/4"). If changing a 7-1/4" axle the shock plates and u-bolts/nuts must be changed to the larger units from an 8-3/4" car.

Section 1: Thrust Block Variations

There was a difference in thrust blocks prior to 1964 that make center section interchange, as well as axle interchange problematic. The thrust block, or "axle shaft thrust spacer", is the block that both left and right axles butt up against inside the center of the differential. Prior to 1964, all open differentials used a thrust block was approximately 1/8" to 1/4" thicker than units made after 1964. The Sure Grip thrust block prior to 1964, however, was identical to all 1964 and later Sure Grips and open differentials. In 1964, the thrust block width was changed to match the Sure Grip thrust block width.

This difference in thrust blocks between Sure Grip differentials and open differentials required that two different axles be produced for each 8-3/4" housing manufactured. This is true of all 1959-1963 cars with 8-3/4"s.

A 1964 and later differential, or any Sure Grip differential, cannot be used with 1959-1963 rearends and axles originally equipped with an open differential. The original axles must be machined or original Sure Grip length axles must be used.

Part II, Section 3 contains housing and axle sizes and part numbers for these early 8-3/4" rearends.

Section 2: Flange Axle Taper and Flange Differences

Besides the obvious bolt circle lug pattern difference between the A-body 4" BC axle and all other passenger car 4.5" BC axles, there is a sometimes unexpected difference in the flange that tends to cause confusion. The distance from the axle housing flange to the wheel flange of the axle is 1/4" smaller on A-body axles than on the standard 4.5" passenger car axle. On an A-body axle this measures 2", on 4.5" BC axles its 2.25".

This slight difference will cause problems when one attempts to adapt brake systems (drum and backing plate together), or a brake drum from a 4.5" BC axle to a 4" BC axle. If you are using original A-body axles, regardless of what BC is may have been redrilled for, you can only use the original 10x1.75" drums (redrill the drums as well).

Section 3: Part Numbers and Demensions of Axles and Housings

Body line Track Perches Notes

A-body, 65-72 55.6 43.0 4" lug bolt circle, offered in heavy duty apps.

B-body, 62-70 59.2 44.0

B-body, 71-72 62.0 47.3

B-body, 71-72 63.4 47.3 station wagon

C-body, 64-72 63.4 47.3

D-body, 64-72 63.4 47.3

E-body, 70-74 60.7 46.0

Axle Housing PN Application Housing Width/Axle Information

1045744 57-61 8-1/4" same width as 57-62 fullsize V8

2070269 and 63-64 Chrysler/880 flange to flange: 55-5/8" (est.)

Note 8-1/4" axles 57-61 have different housing part numbers.

1945745 57-62 fullsize V8 same width as 63-64 Chrysler and 880 2070270 SG axle shorter than open rear axle flange to flange: 55-5/8" (est.)

2070960 63-64 Chrysler same width as all 61-62 rearends listed 63-64 880 above (2070259 / 2070270)

SG axle shorter than open rear axle (63)

SG axle and open axle same length (64)

flange to flange: 55-5/8" (est.)

NA 65 C-body axle 2404228, same housing and axles as A-100 vans and trucks.

2800175 66 C-body unknown

2881003 69 C-body flange to flange: 56-7/16"

2881310 69 C-body wagon flange to flange: 59-7/64"

NA 70 C-body flange to flange: 57-3/4"

2070231 60-62 Imperial Imperials: 57-63 SG, all 64 axle 1829267

2070961 63-64 Imperial Imperials: 57-63 open axle 1675449

2404208 65-66 Imperial different from above axles, 2404139

2800224 69 Imperial

2070539 62-63 B-body, flange to flange: 53-1/4"

64 Max Wedge Parts Manuals list four different axles for this housing:

2070573 741 case w/o SG 30-1/2" overall

2404003 742 case w/o SG 30-1/2" overall

2070695 741 case SG 30-7/16" overall

2404050 742 case SG 30-7/16" overall

2404271 64 B-body flange to flange: 55-5/8" (Hollander est) except 1/8" - 1/4" narrower than 2070270 housing Max Wedge axle 31-1/2" overall

2404143 65 B-body flange to flange: 54-1/2" uses axle 2404223

2643409 66 B-body flange to flange: unknown, thought to be narrower than 68-70 B-body

2852838 68-69 B-body flange to flange: 54-15/16"

3432295 70 B-body flange to flange: 54-29/32"

3507502 71-73 B-body flange to flange: 57-47/64"

3507501 71-73 C-body flange to flange: 59-1/8" 71-73 B-body SW

2800227 66-72 A-body flange to flange: 52-13/64" (70-71) 3432647 52-37/64" (72) 3432295

2852882 70-74 E-body flange to flange: 56-7/16"

Section 4: 8-1/4" Carrier Housing

From 1957 to 1964 Chrysler manufactured a front loading center section similar to an 8-3/4". Its ring gear diameter was 8-1/4". This is not related to the Spicer built 8-1/4" rearend used in Chrysler products in the Seventies.

From 1957 until 1961 or 1962, it used a case with a casting number 1828448. It appears that in 1963 and 1964 this gearset was installed in a 741 case. The 1828448 may have used a different housing flange pattern as it calls for a different housing (1045744,2070269). These rearends were for extreme light duty and were only used in six cylinder applications. six cylinder station wagons used 8-3/4"s. Along other available gear ratios, there was a 3.31:1 for manual transmissions and a 2.93:1 for automatic transmissions.

References

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- *Chrysler parts catalogs, various, 1957-1974*
- *Hollander Interchange Manuals, 40th edition*
- *Mopar Performance catalogs*
- *Mopar Performance Chassis Manual*
- *Mopar Performance Oval Track Manual*
- *Mopar Action magazine, selected articles*
- *High Performance Mopar magazine, selected articles*
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- *BCA/National catalog # 510-1, 1995*
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