



***DIFFERENTIAL
AND DRIVETRAIN***




Ring & Pinion Sets



Ring & Pinion Set – Part #1312-27-110A

RING & PINION SETS

PART NUMBER	CODE	# REQ.	DESCRIPTION	MODEL/ ENGINE TYPE	YEAR	NOTES
M068-27-110A	S	1	Ring & Pinion Set (4.11 Ratio)	RX7 Miata	1979-85 1994-97	Short pinion design. Also fits RX2, RX3 SP.
M054-27-110A	S	1	Ring & Pinion Set (4.44 Ratio)	RX7 Miata	1979-85 1994-97	Short pinion design. Also fits RX2, RX3 SP.
1312-27-110A	C	1	Ring & Pinion Set (4.875 Ratio)	RX7 Miata	1979-85 1994-97	Short pinion design. Also fits RX2, RX3 SP.
1480-27-110	C	1	Ring & Pinion Set (5.125 Ratio)	RX7 Miata	1979-85 1994-97	Short pinion design. Also fits RX2, RX3 SP.
M055-27-110A	S	1	Ring & Pinion Set (4.11 Ratio)	RX7 NT	1986-91	
M066-27-110A	S	1	Ring & Pinion Set (4.33 Ratio)	RX7 NT	1986-91	
P092-27-110B	C	1	Ring & Pinion Set (4.33 Ratio)	RX7 T	1987-91	
P061-27-110	S	1	Ring & Pinion Set (4.10 Ratio)	RX7 TT	1993-95	
P0A5-27-110A	C	1	Ring & Pinion Set (4.33 Ratio)	RX7 TT	1993-95	
0662-27-950A		1	Ring & Pinion Set (4.875 Ratio)	Miata 1.6	1990-93	Requires special fitment. Call for information.

 = NEW! Competition Part

NT = Non-Turbo

T = Turbo

TT = Twin-Turbo (93-95 RX7)

NOTE: 1986-91 RX7 Non-Turbo Ring & Pinions: The 4.33 ratio gear set is the lowest gear set available for 1986-91 non-turbo RX7s. To obtain an even lower gear ratio (4.44, 4.875, etc.), there are two options:

1. The least expensive modification is very complicated and should be done only by qualified machinists. It requires grafting (splining and welding) of a short pinion shaft from an early (1979-85) RX7 to the end of an (1986-91) RX7 non-turbo long pinion shaft.
2. Purchase an adapter kit that allows you to fit a short pinion gear set to the 1986-91 RX7. This is more expensive than the modification explained above but does provide the ability to install a different pinion shaft later, if you need an alternate ratio.

Please call for information on purchasing these modifications and/or parts.

Ring & Pinion Information

Mazda offers optional gear sets that can be used for the early RX7 1979-85, RX2 all and RX3 SP 1977-78. These models use "short pinion" gear sets.

RX3 models (except those of "SP" variety) use a "long pinion" shaft. The pinion shaft is approximately 2-3/8" longer than the "short pinion" shaft version. There are two (2) alternate gear sets available from the factory that will fit the "long pinion" differential case. Please call for information about these ring and pinion sets.

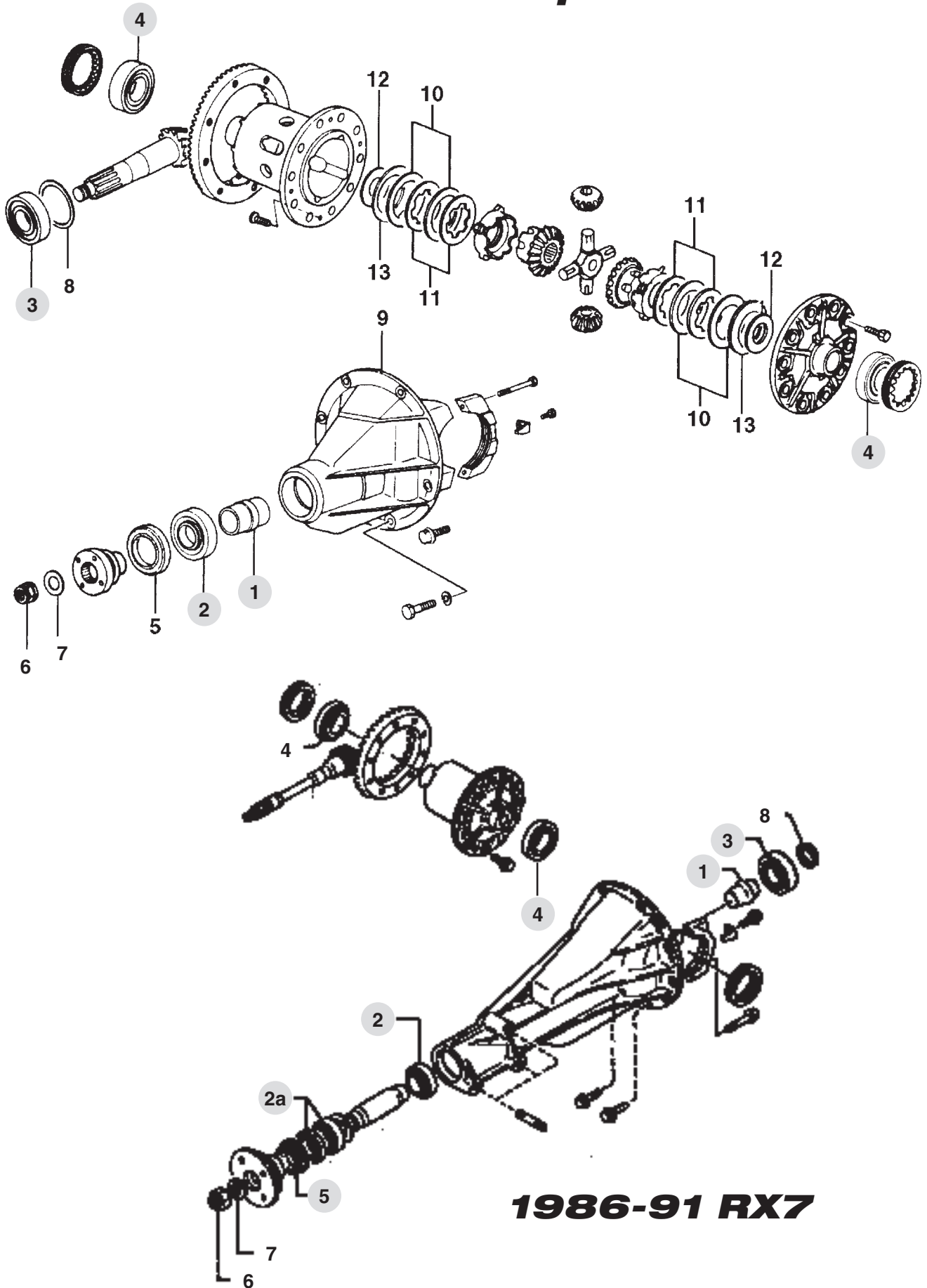
Ring & pinion sets for the RX7 1986-91 have the longest pinions of any differential Mazda produced. The normally aspirated RX7's ring & pinion set is not interchangeable with the turbo gear set. The only alternate gear set available for the RX7 1986-91 non-turbo is a 4.33 ratio, which came in the limited edition 1989 GTUS model.

Using a lower ratio gear set improves acceleration and torque. A higher number means a lower ratio. To help calculate the proper gear set for your racing application, please use the formula below. This formula should only be considered a guide. Use the gear ratio chart in the transmission section of this catalog to obtain the transmission ratio needed for the formula.

$$\text{SPEED (MPH)} = \frac{A \times B}{C \times D \times (1056)}$$

- A = Rear tire circumference (measure in inches at the outside edge).
- B = Engine rpm (be as accurate as possible).
- C = Rear axle ratio.
- D = Transmission gear ratio.

Differential Components



1986-91 RX7

DIFFERENTIAL COMPONENTS

ITEM NO.	PART NUMBER	CODE	# REQ.	DESCRIPTION	MODEL/ ENGINE TYPE	YEAR	NOTES
1	4352-27-171	C	1	Tube, Crush	I2A & I3B	ALL	For competition unit only.
1	0305-27-171	S	1	Tube, Crush	I2A & I3B RX7 RX7 T	1971-78 1979-85 1987-91	
1	M035-27-171	S	1	Tube, Crush	RX7 NT Miata 1.8	1986-91 1994-97	
1	R004-27-171	S	1	Tube, Crush	RX7 TT	1993-95	
1	T020-27-171	S	1	Tube, Crush	Miata 1.6	1990-93	
2	0540-27-210	C	1	Bearing, Front Pinion	I2A & I3B	ALL	For use in competition differential only.
2	0755-27-210	S	1	Bearing, Front Pinion	I2A & I3B RX7 NT Miata 1.8	1971-78 1979-91 1994-97	
2	0604-27-220	S	1	Bearing, Front Pinion	RX7 T RX7 TT	1987-91 1993-95	
2	3919-27-220	S	1	Bearing, Front Pinion	Miata 1.6	1990-93	
2A	M055-27-143	S	2	Bearing, Drive Pinion (Front)	RX7 NT	1986-91	See inset drawing.
2A	P016-27-143	S	2	Bearing, Drive Pinion (Front)	RX7 T	1987-91	See inset drawing.
3	0221-27-210	S	1	Bearing, Rear Pinion	I2A & I3B RX7	1971-78 1979-85	
3	M025-27-210	S	1	Bearing, Rear Pinion	RX7 NT RX7 T Miata 1.8	1986-91 1987-91 1994-97	
3	R001-27-210	S	1	Bearing, Rear Pinion	RX7 TT	1993-95	
3	0755-27-210	S	1	Bearing, Rear Pinion	Miata 1.6	1990-93	
4	0221-27-350	S	2	Bearing, Side	I2A & I3B RX7 NT Miata 1.8	1971-78 1979-91 1994-97	
4	0118-27-350A	S	2	Bearing, Side	RX7 T RX7 TT	1987-91 1993-95	
4	0249-27-350	S	2	Bearing, Side	Miata 1.6	1990-93	
5	0223-27-018	S	1	Seal, Pinion	I2A & I3B RX7	1971-78 1979-82	
5	M005-27-165	S	1	Seal, Pinion	RX7	1983-85	
5	M055-27-165	S	1	Seal, Pinion	RX7 NT	1986-91	With and without limited slip.
5	P090-27-165	S	1	Seal, Pinion	RX7 T	1987-91	
5	R001-27-165	S	1	Seal, Pinion	RX7 TT	1993-95	
5	T020-27-165	S	1	Seal, Pinion	Miata 1.6	1990-93	
5	MA02-27-165	S	1	Seal, Pinion	Miata 1.8	1994-97	



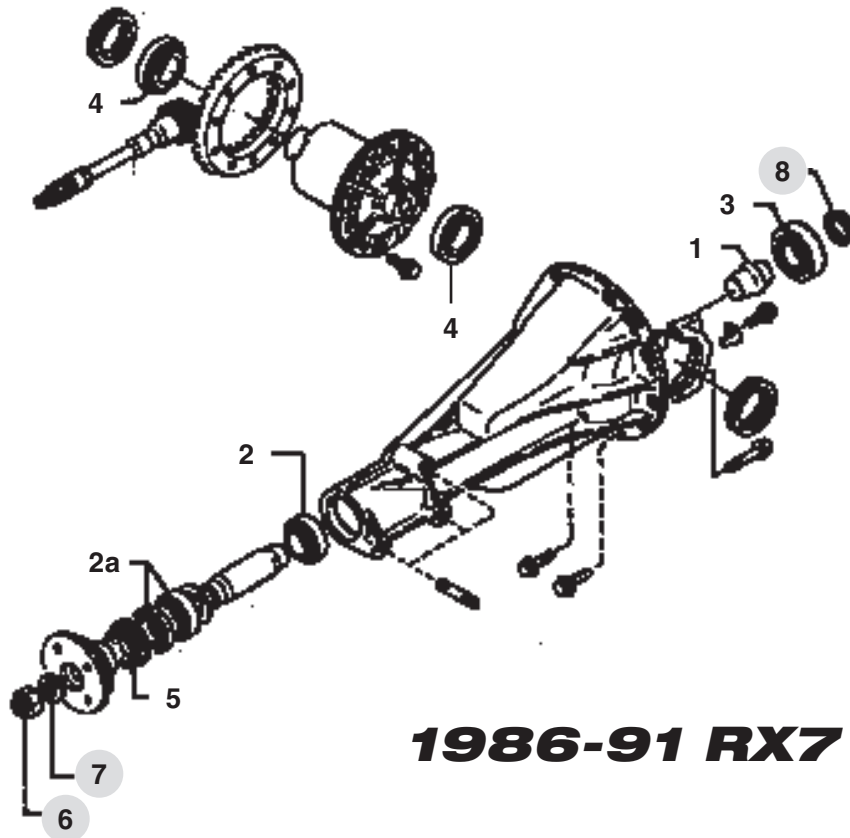
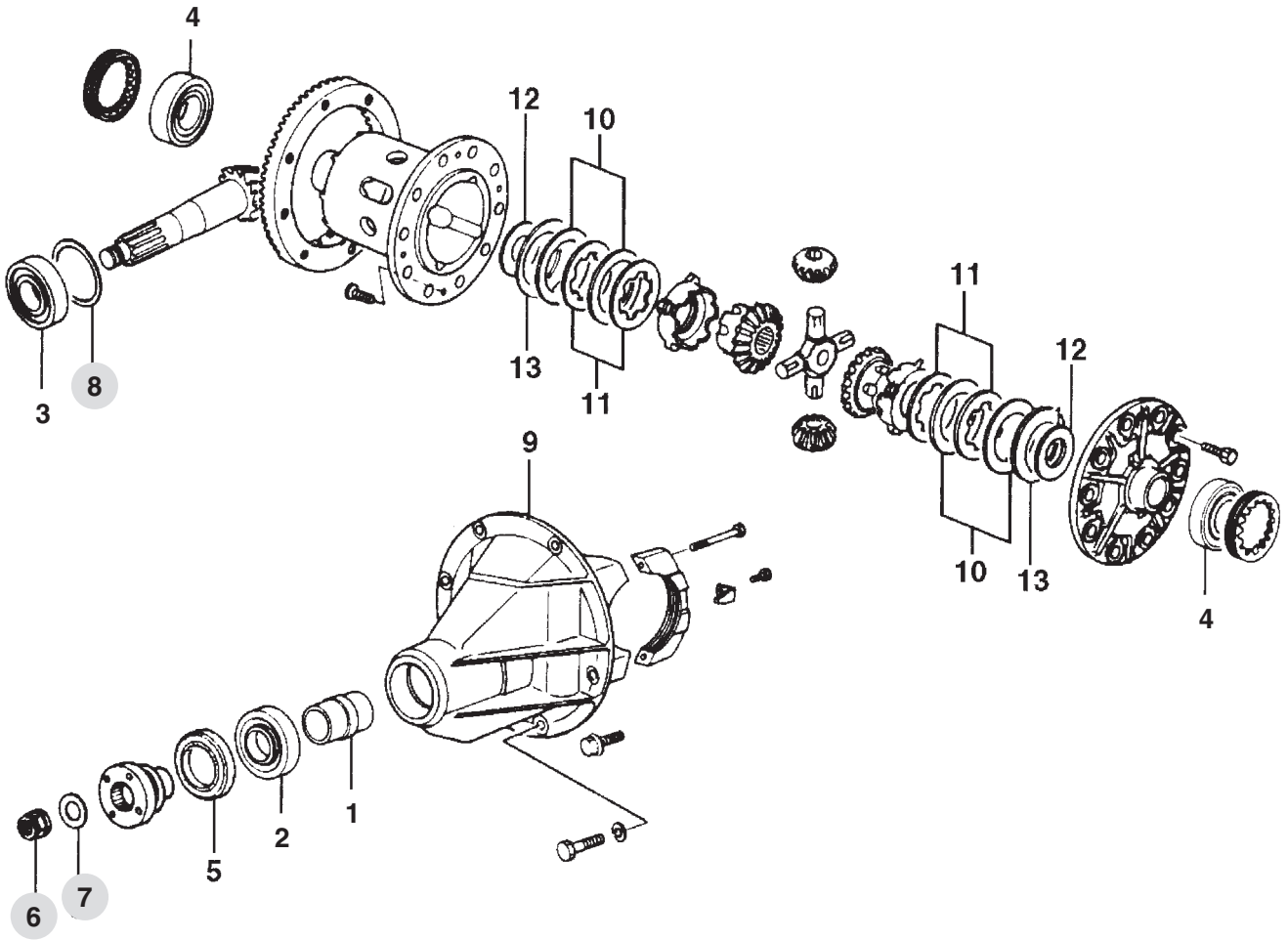
= NEW! Competition Part

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Differential Components, *continued ...*



1986-91 RX7

DIFFERENTIAL COMPONENTS, *continued ...*

ITEM NO.	PART NUMBER	CODE	# REQ.	DESCRIPTION	MODEL/ ENGINE TYPE	YEAR	NOTES
6	0223-27-030	S	1	Nut, Lock	12A & 13B RX7 NT & T RX7 TT Miata 1.8	1971-78 1979-91 1993-95 1994-97	
6	3919-27-130	S	1	Nut, Lock	Miata 1.6	1990-93	
7	0223-27-012	S	1	Washer	12A & 13B RX7 NT & T RX7 TT Miata 1.8	1971-78 1979-91 1993-95 1994-97	
7	3919-27-012	S	1	Washer	Miata 1.6	1990-93	
8	0223-27-401A	S	1	Spacer (3.08 mm)	12A & 13B RX7 NT & T Miata 1.8	1971-78 1979-91 1994-97	
8	0223-27-402A	S	1	Spacer (3.11 mm)	"	"	
8	0223-27-403A	S	1	Spacer (3.14 mm)	"	"	
8	0223-27-404A	S	1	Spacer (3.17 mm)	"	"	
8	0223-27-405A	S	1	Spacer (3.20 mm)	"	"	
8	0223-27-406A	S	1	Spacer (3.23 mm)	"	"	
8	0223-27-407A	S	1	Spacer (3.26 mm)	"	"	
8	0223-27-408A	S	1	Spacer (3.29 mm)	"	"	
8	0223-27-409A	S	1	Spacer (3.32 mm)	"	"	
8	0223-27-411A	S	1	Spacer (3.35 mm)	"	"	
8	0223-27-412A	S	1	Spacer (3.38 mm)	"	"	
8	0223-27-413A	S	1	Spacer (3.41 mm)	"	"	
8	0223-27-414A	S	1	Spacer (3.44 mm)	"	"	
8	0223-27-415A	S	1	Spacer (3.47 mm)	"	"	
	F003-27-238A	S	2	Seal, Side	RX7 NT	1986-88	Not shown in diagram
	M0A2-27-238	S	2	Seal, Side	RX7 NT	89-3/90	Not shown in diagram
	M0A1-27-238	S	2	Seal, Side	RX7 NT	4/90-91	Not shown in diagram
	P016-27-238	S	2	Seal, Side	RX7 T	1987-91	Not shown in diagram
	P043-27-238	S	2	Seal, Side	RX7 TT	1993-95	Not shown in diagram
	T020-27-238	S	2	Seal, Side	Miata 1.6	1990-93	Not shown in diagram
	MA02-27-238	S	2	Seal, Side	Miata 1.8	1994-97	Not shown in diagram



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NOTE: Due to space limitations, adjustment shims and spacers for some models are not listed here. Please call for information on additional differential parts listings.



Torsen Limited-Slip Differential – Part #MM02-27-200A

LIMITED-SLIP DIFFERENTIALS

PART NUMBER	CODE	# REQ.	DESCRIPTION	MODEL/ ENGINE TYPE	YEAR	NOTES
0820-79-970B	C	1	Mechanical L/S	12A & 13B RX7	1971-78 1979-85	Cam-actuated, mechanical limited-slip unit will fit stock case with minor modifications. See installation and maintenance notes on page TT-31.
M081-27-200	S	1	Mechanical L/S	RX7 NT	1986-91	Stock L/S from early models.
MM01-27-200	S	1	Torsen L/S	RX7 NT Miata 1.8	1984-91 1994-97	Torsen "Type 1" unit from 1994-95 Miata can be fitted to 1986-91 RX7 non-turbo models. May also be used on 1984-85 RX7s (12A & 13B).
MM02-27-200A	S	1	Torsen L/S	RX7 NT Miata 1.8	1984-91 1994-97	Torsen "Type 2" unit from 1997 Miata. Type 2 Torsen unit has a slightly higher bias ratio than Type 1 units and is less expensive. See notes for Part #MM01-27-200 above.
P099-27-100B	C	1	Torsen L/S	RX7 T	1987-91	Replaces stock turbo (mechanical or viscous-type) limited-slip units.
P090-27-200B	S	1	Mechanical L/S	RX7 T	1987-91	Stock limited-slip from 1987-88 turbo can be used in place of 1989-91 viscous unit.
P099-27-200E	S	1	Torsen L/S	RX7 TT	1993-95	
TOY1-27-200	C	1	Mechanical L/S	Miata 1.6 323 GTX	1990-93 1988-89	Easy bolt-in fitment to non-viscous limited-slip Miatas. Replacement of viscous-type differential requires changing output shafts (Part #T005-27-270B).
9B1A-79-960	C	1	Mechanical L/S	Protege 1.8 DOHC	1990-94	
9B2A-79-960	C	1	Mechanical L/S	323 1.6 SOHC	1986-89	



= NEW! Competition Part

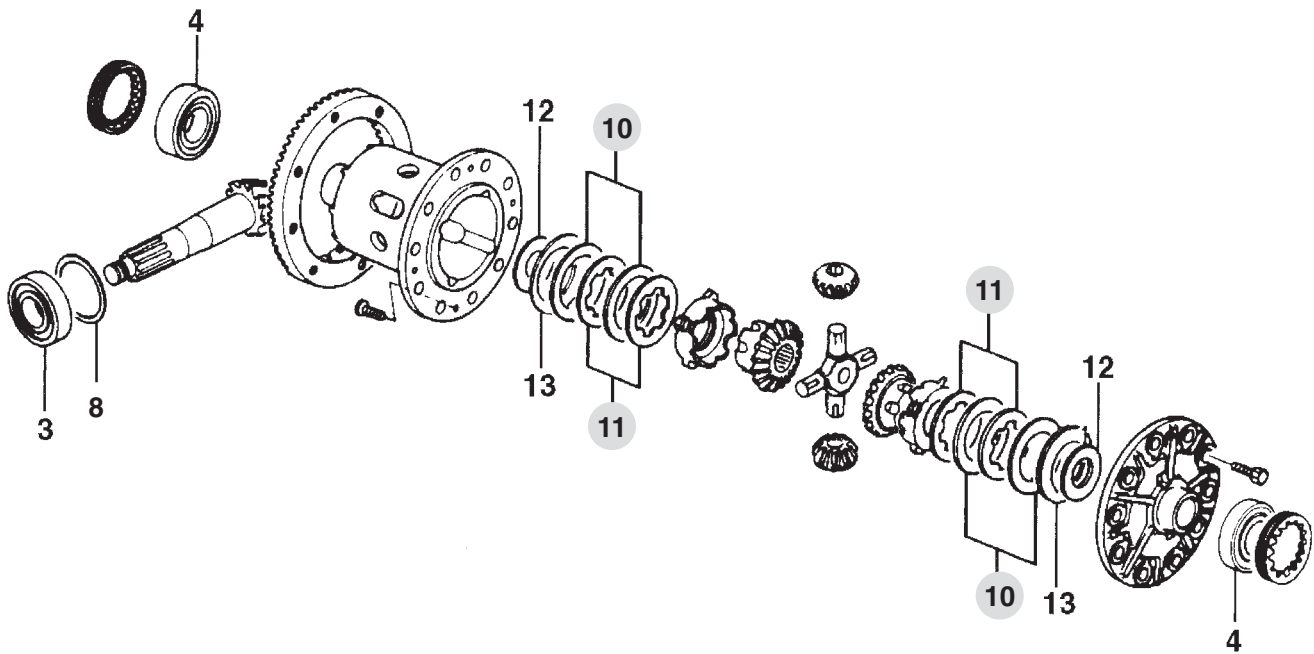
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NOTE: 1979-85 RX7s — If you are building a first-generation (12A) RX7 for road racing (ITA, etc.), we recommend using a 1981-85 GSL model. The GSL model was fitted with rear disc brakes and a mechanical limited-slip differential. If you have a GS model with rear drum brakes, we recommend finding a complete GSL rear end (housing, axles, brakes, differential, etc.) from a wrecking yard. Mazda does not offer a complete limited slip assembly for the GSL, but we can provide replacement parts (friction discs, etc.) to rebuild the limited-slip. For assistance in finding a GSL rear end please call us for salvage yards that specialize in used Mazda parts.

Limited-Slip Differential Replacement Parts



LIMITED-SLIP DIFFERENTIAL REPLACEMENT PARTS

ITEM NO.	PART NUMBER	CODE	# REQ.	DESCRIPTION	MODEL/ ENGINE TYPE	YEAR	NOTES
10	0221-79-977	C	4	Plate, Friction	12A & 13B	ALL	For competition limited-slip only.
10	M020-27-258	S	4/6	Plate, Friction	RX7 NT	1981-88	Quantity required: 1981-85 RX7 (4) / 1986-88 RX7 (6).
10	P020-27-258	S	2	Plate, Friction	RX7 T	1987-88	
10	T0Y1-27-258	C	4	Plate, Friction	Miata 1.6	1990-93	For competition limited-slip only.
11	0221-79-977	C	4	Disc, Friction (2.0 mm)	12A & 13B	ALL	For competition limited-slip only.
11	0221-79-978	C	4	Disc, Friction (2.06 mm - O/S)	12A & 13B	ALL	For competition limited-slip only.
11	M020-27-256	S	4/2	Disc, Friction (2.0 mm)	RX7 NT	1981-88	1981-85 models with rear disc brakes.
11	M020-27-257	S	4/2	Disc, Friction (2.1 mm - O/S).	RX7 NT	1981-88	1981-85 models with rear disc brakes.
11	P020-27-256	S	4	Disc, Friction (1.75 mm)	RX7 T	1987-88	
11	P020-27-257	S	4	Disc, Friction (1.85 mm - O/S)	RX7 T	1987-88	
11	T0Y1-27-256	C	4	Disc, Friction (Standard)	Miata 1.6	1990-93	For competition limited-slip only.
11	T0Y1-27-257	C	4	Disc, Friction (O/S)	Miata 1.6	1990-93	For competition limited-slip only.

 = NEW! Competition Part

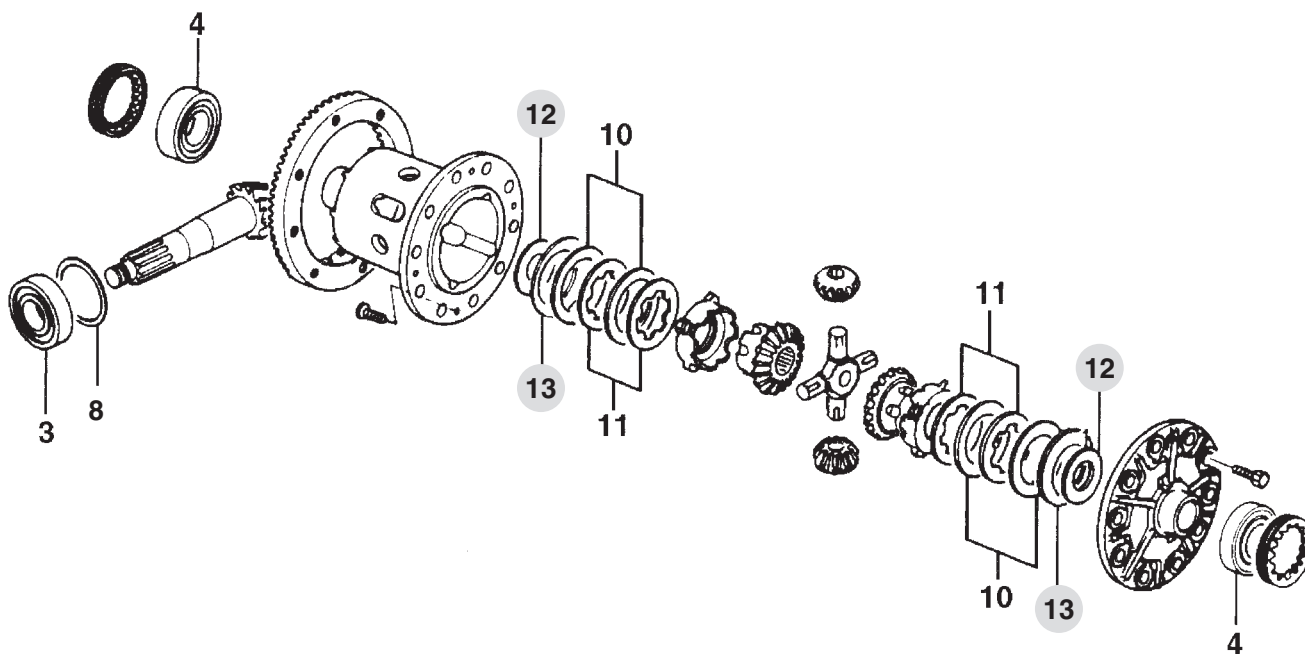
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NOTE: Quantities for replacement parts listed for the 1986-88 RX7 L.S.D. do not correspond to the drawing provided.

Limited-Slip Differential Replacement Parts, *continued ...*



LIMITED-SLIP DIFFERENTIAL REPLACEMENT PARTS, *continued ...*

ITEM NO.	PART NUMBER	CODE	# REQ.	DESCRIPTION	MODEL/ ENGINE TYPE	YEAR	NOTES
12	0221-79-987	C	2	Washer, Thrust (1.47 mm)	I2A & I3B	ALL	For competition limited-slip units only.
12	0221-79-988	C	2	Washer, Thrust (1.68 mm - O/S)	I2A & I3B	ALL	For competition limited-slip units only.
12	M020-27-252	S	2	Washer, Thrust (1.6 mm)	RX7 NT	1981-88	
12	M020-27-253	S	2	Washer, Thrust (1.8 mm - O/S)	RX7 NT	1981-88	
12	P020-27-252	S	2	Washer, Thrust (1.5 mm)	RX7 T	1987-88	
12	P020-27-253	S	2	Washer, Thrust (1.6 mm - O/S)	RX7 T	1987-88	
12	P020-27-254	S	2	Washer, Thrust (1.77 mm - O/S)	RX7 T	1987-88	
12	T0Y1-27-265	C	2	Washer, Thrust	Miata 1.6	1990-93	For competition limited-slip units only.
13	M020-27-259	S	2	Spring, Conical	RX7 NT	1981-88	
13	T0Y1-27-259	C	2	Spring, Conical	Miata 1.6	1990-93	For competition limited-slip units only.

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DRIVETRAIN (MISCELLANEOUS)

PART NUMBER	CODE	# REQ.	DESCRIPTION	MODEL/ ENGINE TYPE	YEAR	NOTES
4352-25-100	C	1	2-Piece Driveshaft	Various	Various	Designed to remove the resonant frequency and harmonics from the working range of driveshaft speed. For GT applications.
4352-25-130	C	1	Hardened Sliding Yoke	Various	Various	For transmission fitted with competition extension housing needle bearings. Not recommended for use with transmission bushing.
4352-25-300	C	1	Center Support Bearing	Various	Various	Center support bearing for competition two-piece driveshaft.
8BB1-25-060	S	2/4	Universal Joint	Various	Various	Replacement U-joint for use on RX2, RX3, RX4 and early RX7 models (1979-83) with serviceable driveshafts. Also fits competition 2-piece driveshaft.

