WINTERS

Since 1958

TRANSMISSION and DRIVELINE COMPONENTS

FALCON ROLLER SLIDE

RAPTOR & FALCON LATE MODEL

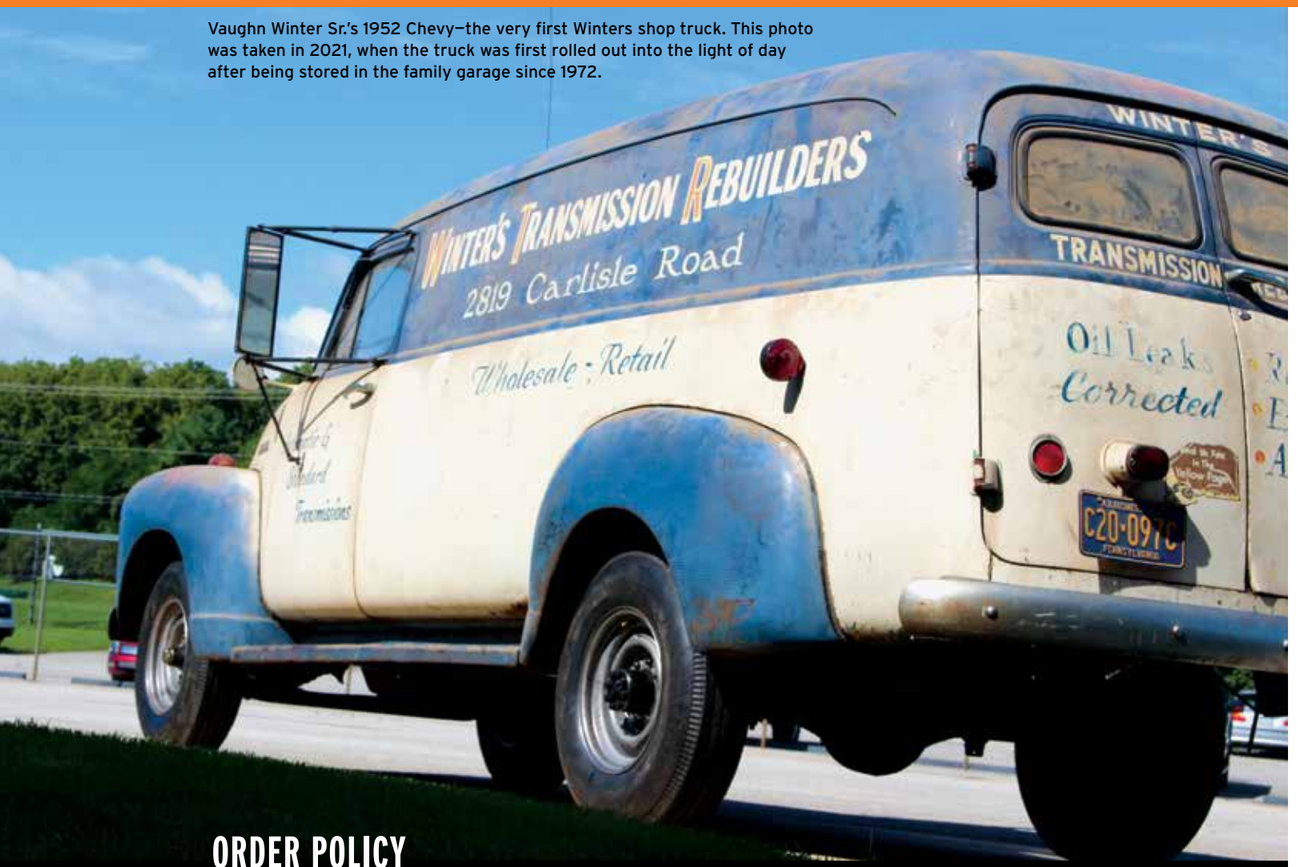
RAPTOR & FALCON SHORTY

PHOENIX

In 1958

founder Vaughn Winter Sr. rebuilt his first racing transmission on the kitchen table of his home while stationed in Wyoming with the U.S. Air Force. It was the start of a legacy of designing and manufacturing the highest quality transmissions, rear ends, and driveline components available to the racing community.

Today, over 60 years later, Winters is still family owned and operated, and the Winters name is still synonymous with quality, durability, and innovation.



Vaughn Winter Sr.'s 1952 Chevy—the very first Winters shop truck. This photo was taken in 2021, when the truck was first rolled out into the light of day after being stored in the family garage since 1972.

ORDER POLICY

- Please provide your customer number. If you are a new customer, one will be provided.
- Order by part number. Winters will not be responsible for incorrect orders placed by description only.
- Specify shipping instructions - otherwise use our discretion.
- Refused orders will have a $25.00 handling charge and applicable freight charges billed to the customers account.
- Special orders cannot be cancelled after the order is in process.
- PLEASE NOTE: Part numbers are listed showing required quantity. If two or more quantities are listed, you must order two or more of that part number.

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WINTERS Since 1958

RETURN POLICY

All returns must include a Return Authorization Number (RA#). Issuing of an RA# does not constitute a guarantee of credit or replacement. Credit, refund or replacement will only be issued after an inspection and determination at our discretion. No returns are accepted on special order merchandise, obsolete products, damaged, used or altered merchandise. Returns will not be accepted after six (6) months from date of purchase.

ALL RETURNED MERCHANDISE MUST INCLUDE:

- ❒ RA# clearly written on outside of box/boxes
- ❒ Customer number, name & phone number
- ❒ Copy of invoice
- ❒ Written explanation of reason for return
- ❒ Specify Credit, Refund or Replacement

- **Except for seller's error, returned merchandise is subject to a 15% restocking fee up to 90 days from date of purchase, and a 25% restocking fee from 91 days to 6 months.**
- **Returns must be freight pre-paid (except seller's error).**
- **Returned parts must be packaged properly to avoid damage in transit.**
- **SHIPPING DAMAGES MUST BE REPORTED IMMEDIATELY TO YOUR CARRIER.**
- **SHORTAGE CLAIMS MUST BE REPORTED IMMEDIATELY.**
- **SAVE YOUR PACKAGING.**

FALCON LATE MODEL

ASSEMBLY P/N 60100
45lbs. with options

The Falcon Late Model transmission has two forward speeds, neutral, and reverse, with an integral hydraulically-applied clutch operating low and reverse gears. High gear is a direct-drive 1-to-1 ratio with minimal rotating mass. With its aluminum case and extension housing, the transmission weighs just 45 pounds.

It's comparable dimensionally to a Muncie, T-10, and other similar transmissions—and that includes the $1^{3}/_{16}$" x 27-spline output shaft, which by design contributes to the most positive high gear retention in the industry. It comes with the correct crank coupler for easy installation—even to a stock flywheel housing. Frictionless bearings support all rotating components for unmatched durability, and as with all Winters transmissions, all rotating internals, from gears to shafts, are REM-finished.

Extension housing includes a sturdy roller bearing to accommodate 1 ½" diameter slip yokes. Output shaft spline length is long enough to accomodate 9" yoke.

Assembly comes standard with Chevy SB and BB 18-Spline Crank Coupler (P/N 62348-18). 18/10-Spline Intermediate Shaft (Option 8251-62348-10) and other crank coupler options available (see page 24 for details).

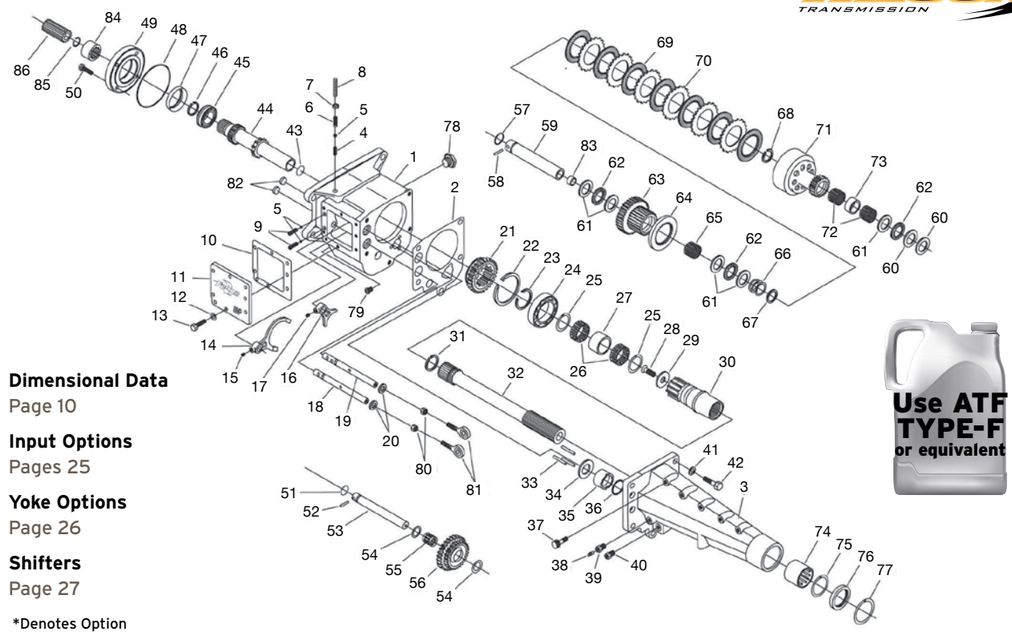
Oil Level Inspection Plug
Assembly P/N 60100 shown with Thermal Dispersant Coating (Option 88208-L)

Assembly P/N 60100 shown with Shifter (Option 80112L) 7" Heat Treated Yoke (Option 62946-7)

Assembly P/N 60100 shown with Shorty Extension Housing (Option 80120) 7" Heat Treated Yoke (Option 62946-7)

See page 26 for driveline accessories

OPTION #	
80109	Front Seal, Viton, P/N 67256V
80110L	Rear Seal, Viton, P/N 67257V
80112L	Shifter Installed
80120	Shorty Extension Housing
80119-6	6" Heat Treated Yoke P/N 62946-6
80119-7	7" Heat Treated Yoke P/N 62946-7
80119-8	8" Heat Treated Yoke P/N 62946-8
80119-9	9" Heat Treated Yoke P/N 62946-8
88208-L	Thermal Dispersant Coating, Late Model
8251-XX	Crank Coupler Options (see page 24)



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Yoke Options
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Shifters
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*Denotes Option

#	P/N	DESCRIPTION	QTY REQ'D
1	61745	Transmission Case, Aluminum	1
2	62155	Gasket	1
3	61877	Extension Housing, Aluminum	1
3*	62598	Extension Housing, Shorty	1
4	62105	Shuttle Pin	1
5	67398	Detent Ball	3
6	62333	Detent Spring, Top	1
7	68031	3/8-16 Jam Nut, Detent Screw	1
8	68030	3/8-16 x 1" Detent Screw	1
9	62332	Detent Spring, Side	2
10	62156	Gasket, Side Cover	1
11	62158	Side Cover, Late Model	1
12	67127	5/16" Washer	8
13	68034	5/16-18 x 3/4" HHCS	8
14	61911	Shift Yoke, Main	1
15	67837	5/16-24 x 1/2" SHSS	1
16	61691	Shift Yoke, Reverse	1
17	68027	1/4-28 x 1/2" SHSS	1
18	62212	Shift Shaft, Reverse	1
19	62211	Shift Shaft, Low / Neutral / Direct	1
20	67259	Seal, Shift Shaft	2
21	61741	Sliding Gear	1
22	67686	Retaining Ring, Rear Bearing	1
23	67685	Retaining Ring, Rear Shaft	1
24	67556	Bearing, Rear Shaft	1
25	67695	Retaining Ring	2
26	67568	Needle Bearing	2
27	61921	Aluminum Spacer	1
28	67149	3/8-24 x 7/8" 12pt., Output Shaft	1
29	61907	Washer, Output Shaft	1
30	61897	Rear Shaft	1
31	67694	Retaining Ring, Output Shaft	1
32	61903	Output Shaft	1
32*	62597	Output Shaft, Shorty	1
33	61845	Push Rod	3
34	61906	Piston Thrust Washer	1
35	61844	Piston	1
36	67482	O'Ring, Piston	1
37	68024	Breather	1
38	65313	Bleeder	1
39	65314	Adapter, Bleeder	1
40	68042	Compression Fitting	1
41	67811	Washer	5
42	67117	7/16-14 x 1 1/4" HHCS	5
43	68026	Core Plug	1
44	61991	Main Shaft	1

#	P/N	DESCRIPTION	QTY REQ'D
45	67555	Bearing, Input Shaft	1
46	67682	Retaining Ring, Input Bearing	1
47	67256	Seal, Seal Plate	1
47*	67256V	Seal, Viton, Seal Plate	1
48	67483	O-Ring, Seal Plate	1
49	61744	Seal Plate	1
50	67195	5/16-18 x 3/4" 12pt	4
51	67481	O-Ring, Reverse Shaft	1
52	67992	Roll Pin, Reverse Shaft	1
53	61743	Reverse Counter Shaft	1
54	68303	Retaining Ring	2
55	67563	Needle Bearing	1
56	61742	Reverse Idler Gear	1
57	67480	O-Ring	1
58	67991	Roll Pin, Counter Shaft	1
59	61737	Counter Shaft	1
60	67560	Thrust Washer, .063"	1
60*	68840	Thrust Washer, .070"	1
60*	68842	Thrust Washer, .080"	1
61	67585	Thrust Washer, .093"	5
62	67562	Thrust Bearing	3
63	61734-36	Clutch Pack Hub	1
64	61736-1	Clutch Pack Spacer	1
64*	61617-36	Clutch Pack Spacer, Aluminum	1
65	67591	Needle Bearing	1
66	61912	Clutch Spring	1
67	61847	Clutch Spring Spacer	1
68	67687	Retaining Ring	1
69	61853RS-E	Clutch Disk, Friction	7
70	61852RS-A	Clutch Disk, Steel	6
71	61735	Clutch Gear	1
72	67559	Needle Bearing	2
73	62354	Spacer	1
74	67574	Bearing, Extension Housing	1
75	67602	Retaining Ring, Bearing	1
76	67257	Seal, Extension Housing	1
76*	67257V	Seal, Viton, Extension Housing	1
77	67691	Retaining Ring, Seal	1
78	68035	Fill Plug	1
79	67874	Drain Plug	1
80	68032	Jam Nut, Heim End	2
81	67580	Heim End	2
82	68052	Case Plug	2
83	68025	Cap Plug	1
84	62407	Collar	1
85	67639	Snap Ring, Collar	1
86	62901	Input Shaft, 18/18 Splines	1

FALCON ROLLER SLIDE

ASSEMBLY P/N 60120
47lbs. with options

Assembly 60120 shown with
10-Spline, One-Piece Input Shaft (Standard)
Thermal Dispersant Coating (Option 88208-L)

Cutaway shows telescoping
rear yoke assembly,
which allows for
5 1/2" of travel.

Gliding on roller bearings, the Falcon Roller Slide transmission telescopes 5½" at the rear yoke, allowing your driveline and suspension the freedom to move forward and backward without inducing or limiting roll steer. The Roller Slide has all the advantages of more driveline travel and less maintenance, while being durable enough to handle the tough environment of today's racing. As with all Falcon transmissions, the Roller Slide provides two speeds forward, neutral, and reverse, with an integral hydraulically-applied clutch operating low and reverse. High gear is a direct-drive 1-to-1 ratio. Well lubricated, frictionless bearings support all rotating components for superior durability. The Falcon Roller Slide also features ARP yoke bolts, and as with all Winters transmission rotating internals, from gears to shafts, are REM-finished.

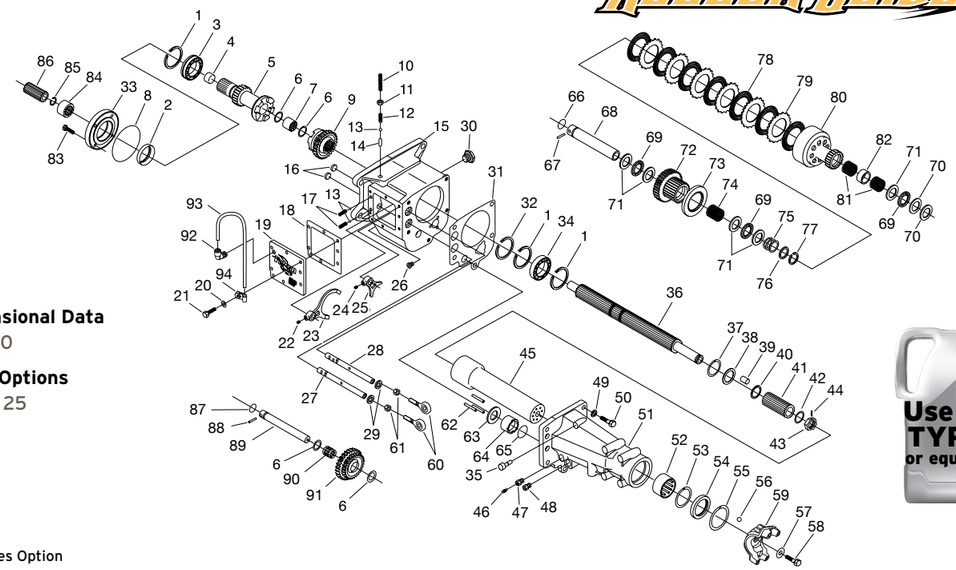
Assembly P/N 60120 shown with
18-Spline, Three-Piece Floating Input Shaft (Option 80111-18-3)
Also requires Counterbore Spacer (P/N 62705)

Floating input shaft and crank coupler contributes to the most positive high gear retention in the industry.

18/10-spline intermediate shaft (Option 8251-62348-10) and other crank coupler options available (see page 24 for details).

OPTION #	
80109	Front Seal, Viton, P/N 67256V
80111-18	18-Spline, 1-Piece Input Shaft
80111-18-3	18-Spline, 3-Piece Floating Input Shaft
88208-L	Thermal Dispersant Coating, Late Model
8251-XX	Crank Coupler Options (see page 24)

*See page 26 for driveline accessories



Dimensional Data
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Input Options
Pages 25

*Denotes Option

#	P/N	DESCRIPTION	QTY REQ'D
1	67682	Snap Ring	3
2	67256	Seal, Seal Plate	1
3	67555	Bearing, Input Shaft	1
4	68026	Core Plug	1
4*	67860	1" Core Plug, 1-Piece, Main Shaft	1
4*	67860-1	1/2" Core Plug, 1-Piece, Main Shaft	1
5	62879-10	Main Shaft, 1-Piece, 10-Spline	1
5*	62879	Main Shaft for 3-Piece Input Shaft	1
6	68303	Snap Ring	4
7	67563	Needle Bearing	2
8	67483	O-Ring, Seal Plate	1
9	62878	Slider Gear	1
10	68030	3/8-16 x 1" Detent Screw	1
11	68031	3/8-16 Jam Nut, Detent Screw	1
12	62333	Detent Spring, Top	1
13	67398	Detent Ball	3
14	62105	Shutter Pin	1
15	61745	Transmission Case	1
16	68052	Case Plug	2
17	62332-S	Detent Spring	2
18	62156	Gasket, Side Cover	1
19	62158	Side Cover	1
20	67172	5/16" Washer	8
21	68034	5/16-18 x 3/4" HHCS	8
22	67837	5/16-24 x 1/2" SHSS	1
23	61911	Shift Yoke, Main	1
24	68027	1/4-28 x 1/2" SHSS	1
25	61691	Shift Yoke, Reverse	1
26	67874	Drain Plug	1
27	62212	Shift Shaft, Reverse	1
28	63491	Shift Shaft, Low / Neutral / Direct	1
29	67259	Seal, Shift Shaft	2
30	68035	Fill Plug	1
31	62155	Gasket	1
32	68331	Snap Ring	1
33	61744	Seal Plate	1
34	68662	Bearing	1
35	67772	1/8" NPT Plug	1
36	62872	Fixed Sliding Shaft	1
37	68347	Retaining Ring	1
38	62877	Retainer	1
39	68721	1" Dowel	6
40	62920	Washer	1
41	62921	Splined Spacer	1
42	62922	Washer	1
43	62923	Nut	1
44	68729	3/32 x 7/8" Spring Pin	1
45	62873	Sliding Shaft Assembly	1
46	65313	Bleeder	1
47	65314	Adapter, Bleeder	1

#	P/N	DESCRIPTION	QTY REQ'D
48	68042	Compression Fitting	1
49	67811	Washer	5
50	67117	7/16-14 x 1 1/4" HHCS	5
51	62871	Extension Housing	1
52	68660	Needle Bearing	1
53	67653	Snap Ring	1
54	67282V	Seal, Extension Housing	1
55	67678	Retaining Ring, Seal	1
56	67347	Steel Ball	15
57	68372	ARP Washer	1
58	68373	ARP 5/8-18 x 1" HHCS	1
59	62874	Rear Yoke	1
60	67580	Heim End	2
61	68032	Jam Nut, Heim End	2
62	61845	Push Rod	3
63	61906	Piston Thrust Washer	1
64	61844	Piston	1
65	67482	O-Ring, Piston	1
66	67480	O-Ring	1
67	67991	Roll Pin, Counter Shaft	1
68	61737	Counter Shaft	1
69	67562	Thrust Bearing	3
70	67585	Thrust Washer, .063"	1
70*	68840	Thrust Washer, .070"	1
70*	68842	Thrust Washer, .080"	1
71	67560	Thrust Washer, .093"	5
72	61734-36	Clutch Pack Hub	1
73	61736-1	Clutch Pack Spacer, Steel	1
73*	61736	Clutch Pack Spacer, Aluminum	1
74	67591	Needle Bearing	1
75	61912	Clutch Spring	1
76	61847	Clutch Spring Spacer	1
77	67687	Retaining Ring	1
78	61853RS-E	Clutch Disk, Friction	7
79	61852RS-A	Clutch Disk, Steel	6
80	61735	Clutch Gear	1
81	67559	Needle Bearing	2
82	62354	Spacer	1
83	67195	5/16-18 x 3/4" 12pt.	4
84	62407	Collar	1
85	67639	Snap Ring, Collar	1
86	62901	Input Shaft, 18/18 Splines	1
87	67481	O-Ring, Reverse Shaft	1
88	67992	Roll Pin, Reverse Shaft	1
89	61743	Reverse Counter Shaft	1
90	67563	Needle Bearing	
91	61742	Reverse Idler Gear	1
92	68961	Breather Elbow	1
93	68962	Breather Tube / Per Inch	2 ft.
94	68973	Clamp, Breather Tube	2
	69399	ARP Ultra Torque Lube	1

FALCON SHORTY

ASSEMBLY P/N 60150
38lbs. with options

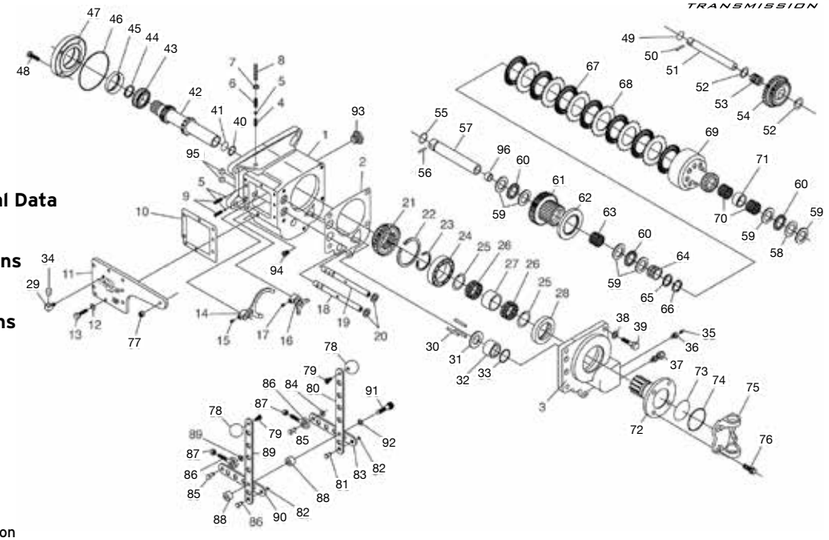
Assembly P/N 60150 comes standard with Chevy SB & BB 18-Spline Crank Coupler (P/N 62348-18).
See page 24 for optional crank couplers.

The Falcon Shorty transmission is more compact and considerably lighter than any other transmission of its kind. It features two forward speeds, neutral, and reverse, with an integral hydraulically-applied clutch operating low and reverse. High gear is a direct-drive 1-to-1 ratio, and low gear is a 2.4-to-1 ratio. The Falcon was designed with the durability to withstand the rigors of racing, remaining in gear even under the most grueling conditions while still maintaining the best direct-drive shift quality possible. Internal clutches are the only degrading internal parts in the transmission. And as with every Winters transmissions, all rotating internals, from gears to shafts, are REM-finished.

The Falcon Shorty measures 8⁷/₈" from the front of the case to center of the rear yoke, and comes complete with a crank coupler, lightweight shifter and hand-operated master cylinder (see page 26). This transmission is available in open drive only.

OPTION #	
80109	Front Seal, Viton, P/N 67256V
80110S	Rear Seal, Viton, P/N 67262V
88208S	Thermal Dispersant Coating, Shorty
8251-XX	Crank Coupler Options (see page 24)

See page 26 for driveline accessories and hand-operated master cylinder



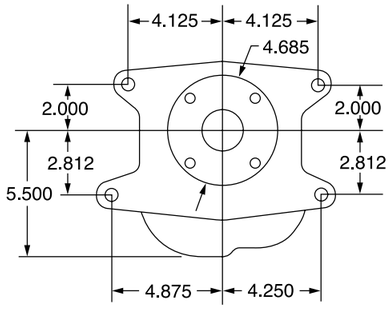
*Denotes Option

#	P/N	DESCRIPTION	QTY REQ'D
1	61745	Transmission Case, Aluminum	1
2	62155	Gasket	1
3	61843	Rear Cover, Aluminum	1
4	62105	Shuttle Pin	1
5	67398	Detent Ball	3
6	62333	Detent Spring, Top	1
7	68031	3/8-16 Jam Nut, Detent Screw	1
8	68030	3/8-16 x 1" Detent Screw	1
9	62332	Detent Spring, Side	2
10	62156	Gasket, Side Cover	1
11	62157	Side Cover, Shorty	1
12	67127	5/16" Washer	8
13	68034	5/16-18 x 3/4" HHCS	5
13	68879	5/16-18 x 1" HHCS	3
14	61911	Shift Yoke, Low / Neutral / Direct	1
15	67837	5/16-24 x 1/2" SHSS	1
16	61691	Shift Yoke, Reverse	1
17	68027	1/4-28 x 1/2" SHSS	1
18	62212	Shift Shaft, Reverse	1
19	62211	Shift Shaft, Low / Neutral / Direct	1
20	67259	Seal, Shift Shaft	2
21	61741	Sliding Gear	1
22	67686	Retaining Ring, Rear Bearing	1
23	67685	Retaining Ring, Rear Shaft	1
24	67556	Bearing, Rear Shaft	1
25	67695	Retaining Ring	2
26	67568	Needle Bearing	2
27	62373	Aluminum Spacer	1
28	67262	Rear Seal	1
28*	67262V	Rear Seal, Viton	1
29	68036	Street Elbow, 1/8 NPT	1
30	61845	Push Rod	3
31	61906	Piston Thrust Washer	1
32	61844	Piston	1
33	67482	O-Ring, Piston	1
34	68024	Breather	1
35	65313	Bleeder	1
36	65314	Adapter, Bleeder	1
37	68042	Compression Fitting	1
38	67811	Washer	5
39	67117	7/16-14 x 1 1/4" HHCS	5
40	68304	Retaining Ring, Core Plug	1
41	68000	Core Plug	1
42	61991	Main Shaft	1
43	67555	Bearing, Input Shaft	1
44	67682	Retaining Ring, Input Bearing	1
45	67256	Seal, Seal Plate	1
45*	67256V	Seal, Viton, Seal Plate	1
46	67483	O-Ring, Seal Plate	1
47	61744	Seal Plate	1
48	67195	5/16-18 x 3/4" 12pt.	4

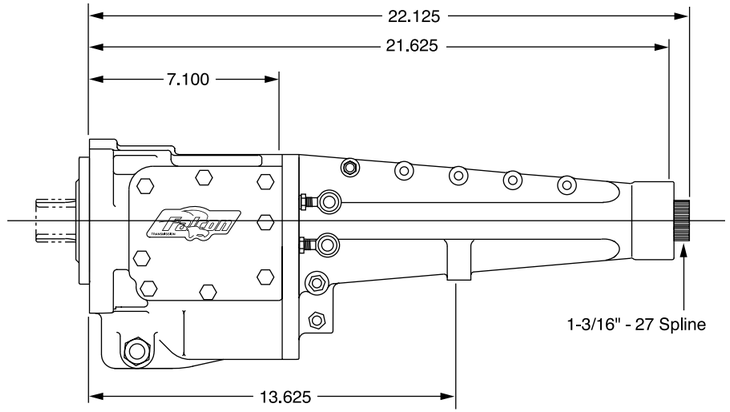
#	P/N	DESCRIPTION	QTY REQ'D
49	67481	O-Ring, Reverse Shaft	1
50	67992	Roll Pin, Reverse Shaft	1
51	61743	Reverse Counter Shaft	1
52	68303	Retaining Ring	2
53	67563	Needle Bearing	1
54	61742	Reverse Idler Gear	1
55	67480	O-Ring	1
56	67991	Roll Pin, Counter Shaft	1
57	61737	Counter Shaft	1
58	67585	Thrust Washer, .063"	1
58*	68840	Thrust Washer, .070"	1
58*	68842	Thrust Washer, .080"	1
59	67560	Thrust Washer, .093"	5
60	67562	Thrust Bearing	3
61	61734-36	Clutch Pack Hub	1
62	61736-1	Clutch Pack Spacer, Steel	1
62*	61736	Clutch Pack Spacer, Aluminum	1
63	67591	Needle Bearing	1
64	61912	Clutch Spring	1
65	61847	Clutch Spring Spacer	1
66	67687	Retaining Ring	1
67	61853RS-E	Clutch Disk, Friction	7
68	61852RS-A	Clutch Disk, Steel	6
69	61735	Clutch Gear	1
70	67559	Needle Bearing	2
71	62354	Spacer	1
72	61740	Rear Flange	1
73	67990	Core Plug	1
74	67676	Retaining Ring, Core Plug	1
75	65856	Flange Yoke	1
76	67152	3/8-24 x 7/8" 12pt.	4
77	68031	3/8-16 Jam Nut	1
78	62637	Shift Knob, Black	2
79	68040	5/16-18 x 5/8" BHCS	2
80	62168	Shift Arm, Low / Neutral / Direct	1
81	62306	Linkage Pin	2
82	68301	Clip, Linkage Pin	2
83	62401	Shift Linkage, Low / Neutral / Direct	1
84	68302	Clip, Clevis Pin	2
85	62307	Clevis Pin	2
86	67580	Heim End	2
87	68032	Jam Nut, Heim End	2
88	62336	Spacer	2
89	62169	Shift Arm, Reverse	1
90	62402	Shift Linkage, Reverse	1
91	68019	Shoulder Bolt	1
92	68013	Wave Washer	1
93	68035	Fill Plug	1
94	67874	Drain Plug	1
95	68052	Case Plug	2
96	68025	Cap Plug	1

FALCON DIMENSIONS

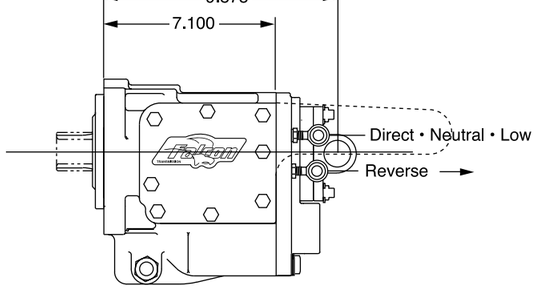
FALCON (ALL)



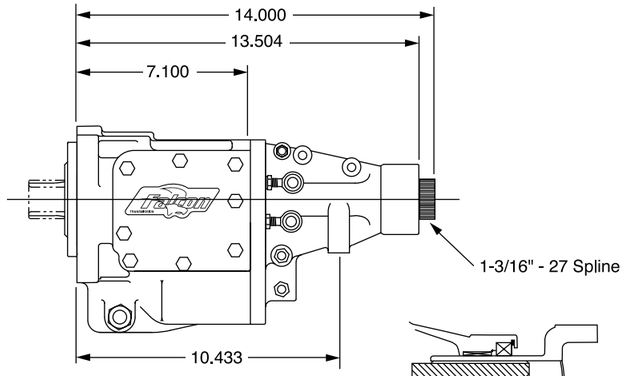
FALCON LATE MODEL



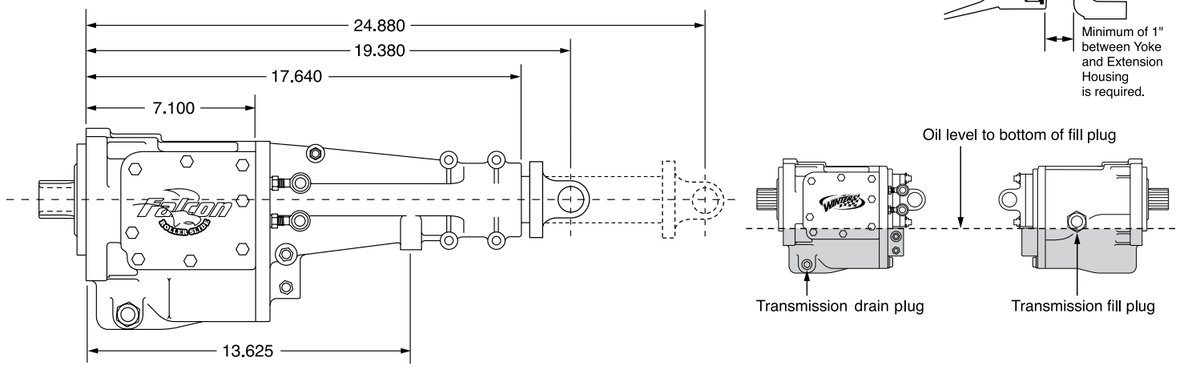
FALCON SHORTY



FALCON WITH SHORTY EXTENSION HOUSING



FALCON ROLLER SLIDE



SHIFT PATTERN

NEUTRAL

- Note position of shifter heims when in neutral
- Opposing shift shaft must be in neutral to select desired gear

REVERSE

- Push reverse lever forward (pull bottom shift shaft out) to select reverse gear
- As you apply the clutch pedal the car will back up

LOW GEAR

- Push low / high lever forward (pull upper shift shaft out) to select low gear
- As you apply the clutch pedal the car will move forward

HIGH GEAR / DIRECT DRIVE

- Reach a speed so that when you release the clutch pedal the car continues to roll along without scrubbing off speed
- Drop engine RPM simultaneously to a little more than 1/2 of where it was
- Pull high / low lever back (push upper shift shaft in) to select high gear / direct drive

PHOENIX

ASSEMBLY P/N 60170
42lbs. with options

The Phoenix transmission is the most compact internal clutch transmission available, measuring just 9" from the bellhousing face to the centerline of the rear yoke. It features two forward speeds plus neutral, and high gear is a direct-drive 1-to-1 ratio. The rugged magnesium case has a closed driveline provision and an integral 10" magnesium bell housing with starter mounting for our optional reverse rotation starters (P/N 63085 or P/N 63085G). As with all Winters transmissions, all rotating internals, from gears to shafts, are REM-finished. The Phoenix is designed to be bolted to motor plate regardless of engine used, and is available with our small 7⅝" diameter, 74-tooth starter gear (P/N 63562-X—see page 23).

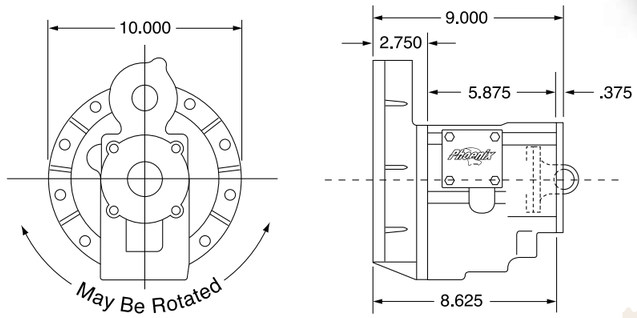
Assembly P/N 60170 comes standard with Chevy SB & BB 18-Spline Crank Coupler (P/N 63572-A). See page 24 for optional crank couplers.

Assembly P/N 60170 shown with Drive Line Insert (P/N 63274) Torque Ball Retainer (P/N 62274) 4 ½" Torque Ball (P/N 64064)

Built for open wheel (self start) racing. Available as open or closed drive.

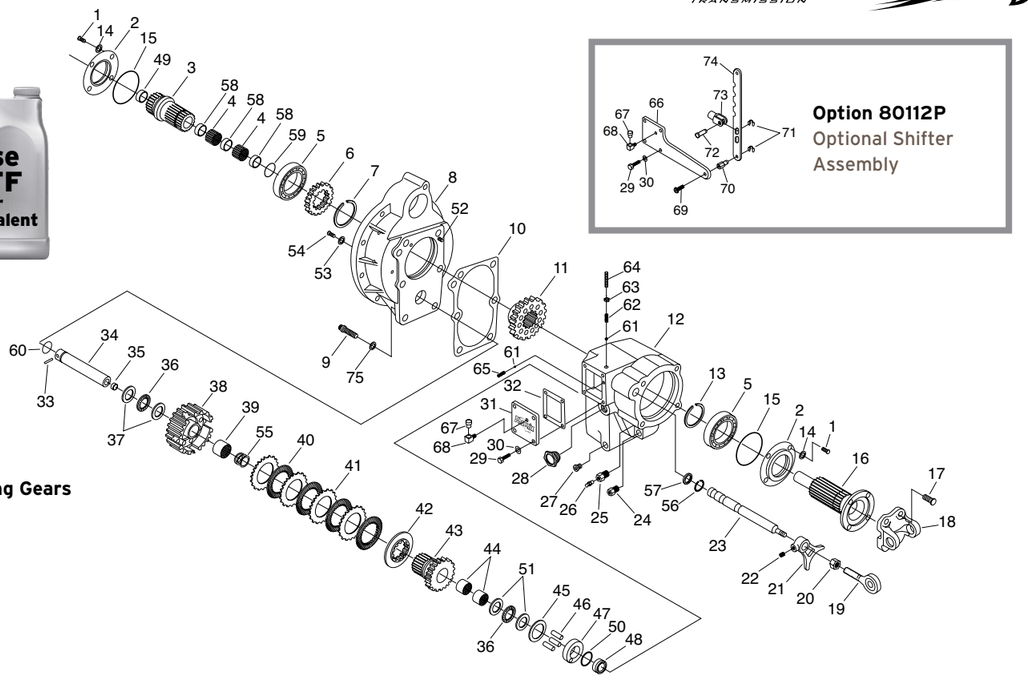
***See page 26 for hand-operated master cylinder**

PHOENIX DIMENSIONS



The Phoenix transmission may be rotated to facilitate installation of power steering and fuel pumps.

8251-XX Crank Coupler Options (see page 24)



Option 80112P
Optional Shifter Assembly

Starters
Page 22

Starter Ring Gears
Page 23

*Denotes Option

#	P/N	DESCRIPTION	QTY REQ'D
1	68772	10-24 x 3/4" SHCS	12
2	67285V	Seal Plate	2
3	63488	Input Shaft	1
4	68671	Needle Bearing	2
5	67555	Rear Bearing	2
6	61654	Main Gear	1
7	67692	Snap Ring	1
8	63285M	Bellhousing	1
9	67713	3/8-16 x 1 1/4" 12pt.	6
10	62357	Gasket	1
11	61628	Slider Gear	1
12	61783M	Case	1
13	67682	Snap Ring	1
14	68773	#10 SAE Washer	12
15	68421	O-Ring	2
16	61794	Rear Flange	1
17	67152	3/8-24 x 7/8" 12pt.	4
18	65856	Flange Yoke	1
19	68774	Heim	1
20	67181	Jam Nut, Heim End	1
21	61690	Shift Yoke	1
22	67837	5/16-24 x 1/2" SHSS	1
23	63728	Shift Shaft	1
24	68042	Compression Fitting	1
25	65314	Adapter, Bleeder	1
26	65313	Bleeder	1
27	67874	Drain Plug	1
28	68082	Fill Plug	1
29	68034	5/16-18 x 3/4" HHCS	4
30	67127	5/16" Washer	4
31	63729	Side Cover	1
32	63730	Gasket, Side Cover	1
33	67992	Roll Pin	1
34	62557	Counter Shaft	1
35	68672	Core Plug	1
36	67566	Thrust Bearing	2
37	67565-30	Thrust Washer	2
38	61653	Clutch Gear	1
39	63732	Needle Bearing	1
40	62477	Clutch Disk, Friction	4
41	62478	Clutch Disk, Steel	4
42	61725	Apply Flange	1
43	61675	Lower Gear	1
44	67586	Needle Bearing	2
45	68673	Retaining Ring	1
46	63282	Push Pin	4
47	63279	Pin Guide	1
48	63574	Piston	1
49	68674	Cup Plug	1
50	68425	O-Ring	1
51	67565-60	Thrust Washer	2
52	67803	1/4" x 3/4" Dowel Pin	4
53	67130	1/4" Washer	1
54	67919	1/4-20 x 3/8" BHCS	1
55	68352	Spring	1
56	68360	Retaining Ring	1
57	67269	Seal	1
58	64311	Spacer	3
59	68361	Retaining Ring	1
60	68424	O-Ring	1
61	63543	Detent Pin	2
62	68972	Detent Spring	1
63	68031	3/8-16 Jam Nut	1
64	68859	3/8-16 x 1/2" SHSS	1
65	68971	Detent Spring	1
66*	63729-01	Optional Side Cover	1
67	68024	Breather	1
68	68036	1/8 NPT Street Elbow	1
69*	68974	3/8-24 x 3/4" BHCS	1
70*	64854	Spacer	1
71*	68302	Clip	2
72*	64715	Linkage Pin	1
73*	64714	Clevis	1
74*	64716	Shift Arm	1
75	67151	Washer	1

RAPTOR LATE MODEL

The Raptor Late Model transmission has two forward speeds, neutral and reverse. High gear is a direct-drive 1-to-1 ratio with the least amount of rotating mass of any Late Model-style transmission in circle track racing. A floating input shaft contributes to the most positive high gear retention in the industry. All gears and shafts rotate on frictionless bearings, and as with all Winters transmissions, all rotating internals, from gears to shafts, are REM-finished.

Extension housing includes a sturdy roller bearing to accommodate 1 1/2" diameter slip yokes. Output shaft spline length is long enough to accomodate 9" yoke.

Assembly P/N 60200 shown with
Shifter (Option 80112L)
7" Heat Treated Yoke (P/N 62946-7)

ASSEMBLY P/N 60200
43lbs. with options

The Raptor is a non-synchro sliding gear transmission. Fully engage low before power starts, then shift to high gear (direct drive) any time by matching engine RPM to speed. The front bearing retainer (clutch release bearing support) is designed to be compatible with Quarter Master hydraulic clutch release assembly, however other styles will work. The Raptor is dimensionally equal to a Muncie, T-10, etc. including the 1 1/8"/ 26-spline or 1 1/8"/ 10-spline input shaft and 1 3/16"/ 27-spline output shaft. A pilot bushing is required, so bushing length must be accounted for with the thickness of the motor plate you use. The Raptor comes standard with a 1.504 low gear ratio. See chart below for optional low gear ratios. For use with single or multi-disc clutches. When ordering specify input spline and low gear ratio.

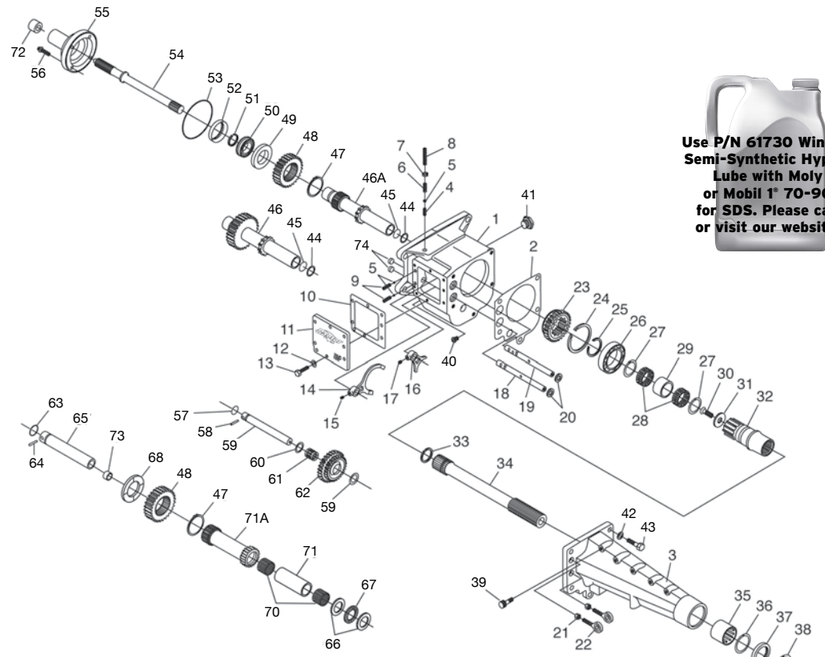
Assembly P/N 60200 shown with
Shorty Extension Housing (Option 80120)
7" Heat Treated Yoke (P/N 62946-7)

OPTION #	
80109	Front Seal, Viton, P/N 67256V
80110	Rear Seal, Viton, P/N 67257V
80112L	Shifter Installed
80120	Shorty Extension Housing
80119-6	6" Heat Treated Yoke P/N 62946-6
80119-7	7" Heat Treated Yoke P/N 62946-7
80119-8	8" Heat Treated Yoke P/N 62946-8
80119-9	9" Heat Treated Yoke P/N 62946-9
88208-L	Thermal Dispersant Coating, Late Model
82458-XX	Low Gear Ratio
82445	1-1/8"/ 26-Spline Input Shaft
82547	1-1/8"/ 10-Spline Input Shaft

LOW GEAR RATIOS

OPTIONAL RATIO TOP / BOTTOM	LOW GEAR RATIO
25/35	2.251
26/34	2.103
27/33	1.965
28/32	1.837
29/31	1.717
30/30	1.608
31/29	1.504
32/28	1.407
33/27	1.315
34/26	1.230
35/25	1.148

*See page 26 for driveline accessories



Use P/N 61730 Winters Semi-Synthetic Hypoid Lube with Moly or Mobil 1® 70-90 for SDS. Please call or visit our website.

Dimensional Data
Page 18

Input Options
Pages 25

Yoke Options
Page 26

Shifters
Page 27

*Denotes Option

#	P/N	DESCRIPTION	QTY REQ'D
1	61745	Transmission Case, Aluminum	1
2	62155	Gasket	1
3	61877	Extension Housing, Aluminum	1
3*	62598	Extension Housing, Shorty	1
4	62105	Shuttle Pin	1
5	67398	Detent Ball	4
6	62333	Detent Spring, Top	1
7	68031	3/8-16 Jam Nut, Detent Screw	1
8	68030	3/8-16 x 1" Detent Screw	1
9	62332	Detent Spring, Side	3
10	62156	Gasket, Side Cover	1
11	62158	Side Cover	1
12	67127	5/16" Washer	8
13	68034	5/16-18 x 3/4" HHCS	8
14	61911	Shift Yoke, Low / Neutral / Direct	1
15	67837	5/16-24 x 1/2" SHSS	1
16	61691	Shift Yoke, Reverse	1
17	68027	1/4-28 x 1/2" SHSS	1
18	62212	Shift Shaft, Reverse	1
19	62211	Shift Shaft, Low / Neutral / Reverse	1
20	67259	Seal, Shift Shaft	2
21	68032	Jam Nut, Heim End	2
22	67580	Heim End	2
23	61741	Sliding Gear	1
24	67686	Retaining Ring, Rear Bearing	1
25	67685	Retaining Ring, Rear Shaft	1
26	67556	Bearing, Rear Shaft	1
27	67695	Retaining Ring	2
28	67568	Needle Bearing	2
29	61921	Aluminum Spacer	1
30	67149	3/8-24 x 7/8" 12pt., Output Shaft	1
31	61907	Washer, Output Shaft	1
32	61897	Rear Shaft	1
33	67694	Retaining Ring, Output Shaft	1
34	61903	Output Shaft	1
34*	62597	Output Shaft, Shorty	1
35	67574	Bearing, Extension Housing	1
36	67602	Retaining Ring, Bearing	1
37	67257	Seal, Extension Housing	1
37*	67257V	Seal, Viton, Extension Housing	1
38	67691	Retaining Ring, Seal	1

#	P/N	DESCRIPTION	QTY REQ'D
39	68024	Breather	1
40	67874	Drain Plug	1
41	68035	Fill Plug	1
42	67811	Washer	5
43	67117	7/16-14 x 1 1/4" HHCS	5
44	68304	Retaining Ring, Core Plug	1
45	68000	Core Plug	1
46	62399	Main Shaft, 31T	1
46A*	62456	Main Shaft, For Change Gear	1
47*	68309	Retaining Ring, Gear	2
48*	62458	Gear, Specify Set	2
49*	62460	Washer	1
50	67555SP	Bearing, Input Shaft	1
51	67682	Retaining Ring, Input Bearing	1
52	67256	Seal, Seal Plate	1
52*	67256V	Seal, Viton, Seal Plate	1
53	67483	O-Ring, Seal Plate	1
54	62445	1 1/8"/26-Spline Input Shaft	1
54*	62547	1 1/8"/10-Spline Input Shaft	1
55	62440	Seal Plate	1
56	67195	5/16-18 x 3/4" 12pt.	4
57	67481	O-Ring, Reverse Shaft	1
58	67992	Roll Pin, Reverse Shaft	1
59	61743	Reverse Counter Shaft	1
60	68303	Retaining Ring	2
61	67563	Needle Bearing	1
62	61742	Reverse Idler Gear	1
63	67480	O-Ring	1
64	67991	Roll Pin, Counter Shaft	1
65	61737	Counter Shaft	1
66*	67585	Thrust Washer	4
67*	67562	Thrust Bearing	2
68*	62461	Washer	1
69	62397	Reverse Shaft, 29T	1
69A*	62457	Reverse Shaft, For Change Gear	1
70	67559	Needle Bearing	2
71	62354-01	Spacer	1
72	GM14061685	Pilot Bearing (For Reference Only)	1
73	68025	Plug	1
74	68052	Case Plug	2

RAPTOR SHORTY

ASSEMBLY P/N 60250

35lbs. with options

Assembly P/N 60250 shown with Shifter (Option 80112S)

Available in 1 1/8"/ 26-Spline or 1 1/8"/ 10-Spline at the input shaft.

Assembly P/N 60250 shown with Shifter (Option 80112S)

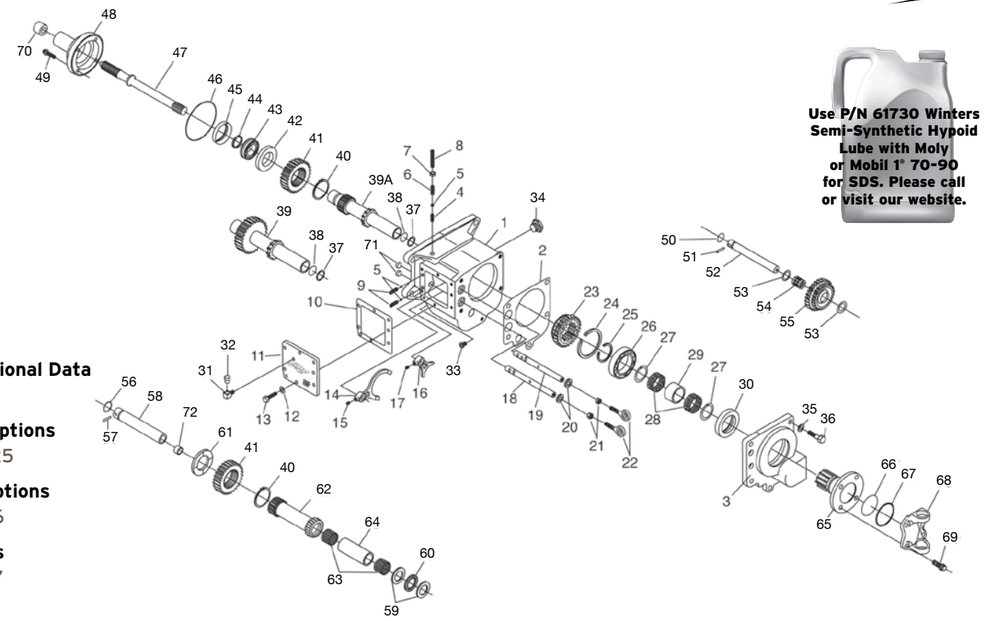
The Raptor Shorty is the lightest fully functional transmission available, weighing in at as little as 35 pounds with options. It is only 9 7/8" from the face of the case to the center of the rear yoke, and it replicates conventional Chevy input shaft dimensions. As with all Raptor transmissions, it has two forward speeds, neutral, and reverse. High gear is a direct-drive 1-to-1 ratio, and change gears are available with a total of 11 ratios. This is a non-synchro sliding gear transmission so you must match engine RPM to vehicle speed for smooth shifts from low to high. The Raptor Shorty has an extremely durable design, with all gears and shafts rotating on frictionless bearings and all rotating internals REM-finished. A floating input shaft contributes to positive high gear shifts while remaining in gear under the most competitive racing conditions. For use with single or multi-disc clutches. When ordering specify input spline and low gear ratio.

OPTION #	
80109	Front Seal, Viton, P/N 67256V
80110S	Rear Seal, Viton, P/N 67257V
80112S	Shifter Installed
88208	Thermal Dispersant Coating, Shorty
82458-XX	Low Gear Ratio
82445	1-1/8"/ 26-Spline Input Shaft
82547	1-1/8"/ 10-Spline Input Shaft

LOW GEAR RATIOS

OPTIONAL RATIO TOP / BOTTOM	LOW GEAR RATIO
25/35	2.251
26/34	2.103
27/33	1.965
28/32	1.837
29/31	1.717
30/30	1.608
31/29	1.504
32/28	1.407
33/27	1.315
34/26	1.230
35/25	1.148

*See page 26 for driveline accessories and hand-operated master cylinder



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Dimensional Data
Page 18

Input Options
Pages 25

Yoke Options
Page 26

Shifters
Page 27

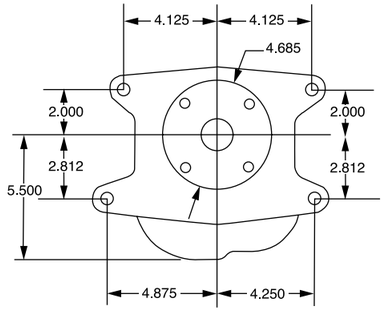
*Denotes Option

#	P/N	DESCRIPTION	QTY REQ'D
1	61745	Transmission Case, Aluminum	1
2	62155	Gasket	1
3	61843	Rear Cover	1
4	62105	Shuttle Pin	1
5	67398	Detent Ball	4
6	62333	Detent Spring, Top	1
7	68031	3/8-16 Jam Nut, Detent Screw	1
8	68030	3/8-16 x 1" Detent Screw	1
9	62332	Detent Spring, Side	3
10	62156	Gasket, Side Cover	1
11	62158	Side Cover, Late Model	1
12	67127	5/16" Washer	8
13	68034	5/16-18 x 3/4" HHCS	8
14	61911	Shift Yoke, Low / Neutral / Direct	1
15	67837	5/16-24 x 1/2" SHSS	1
16	61691	Shift Yoke, Reverse	1
17	68027	1/4-28 x 1/2" SHSS	1
18	62212	Shift Shaft, Reverse	1
19	62211	Shift Shaft, Low / Neutral / Direct	1
20	67259	Seal, Shift Shaft	2
21	68032	Jam Nut, Heim End	2
22	67580	Heim End	2
23	61741	Sliding Gear	1
24	67686	Retaining Ring, Rear Bearing	1
25	67685	Retaining Ring, Rear Shaft	1
26	67556	Bearing, Rear Shaft	1
27	67695	Retaining Ring	2
28	67568	Needle Bearing	2
29	62373	Aluminum Spacer	1
30	67262	Rear Seal	1
30*	67262V	Rear Seal, Viton	1
31	68036	Street Elbow, 1/8 NPT	1
32	68024	Breather	1
33	67874	Drain Plug	1
34	68035	Fill Plug	1
35	67811	Washer	5
36	67117	7/16-14 x 1 1/4" HHCS	5
37	68304	Retaining Ring, Core Plug	1
38	68000	Core Plug	1

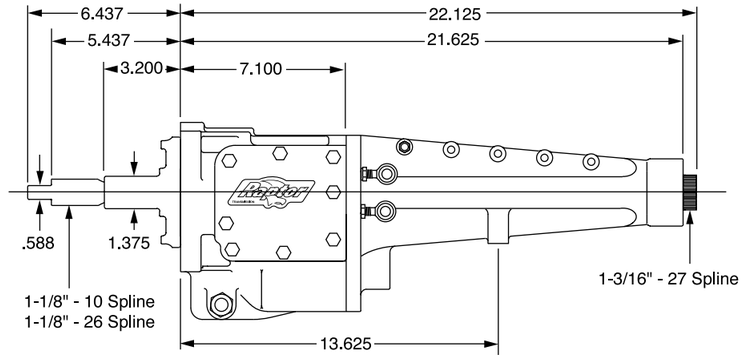
#	P/N	DESCRIPTION	QTY REQ'D
39	62399	Main Shaft, 31T	1
39A*	62456	Main Shaft, For Change Gear	1
40*	68309	Retaining Ring, Gear	2
41*	62458	Gear, Specify Set	2
42*	62460	Washer	1
43	67555SP	Bearing, Input Shaft	1
44	67682	Retaining Ring, Input Bearing	1
45	67256	Seal, Seal Plate	1
45*	67256V	Seal, Viton, Seal Plate	1
46	67483	O-Ring, Seal Plate	1
47	62445	1 1/8"/ 26-Spline Input Shaft	1
47*	62547	1 1/8"/ 10-Spline Input Shaft	1
48	62440	Seal Plate	1
49	67195	5/16-18 x 3/4" 12pt.	4
50	67481	O-Ring, Reverse Shaft	1
51	67992	Roll Pin, Reverse Shaft	1
52	61743	Reverse Counter Shaft	1
53	68303	Retaining Ring	2
54	67563	Needle Bearing	1
55	61742	Reverse Idler Gear	1
56	67480	O-Ring	1
57	67991	Roll Pin, Counter Shaft	1
58	61737	Counter Shaft	1
59*	67585	Thrust Washer	4
60*	67562	Thrust Bearing	2
61*	62461	Washer	1
62	62397	Reverse Shaft, For Change Gear	1
62*	62457	Reverse Shaft, 29T	1
63	67559	Needle Bearing	2
64	62354-01	Spacer	1
65	61740	Flange	1
66	67990	Core Plug	1
67	67676	Retaining Ring, Core Plug	1
68	65856	Flange Yoke	1
69	67152	3/8-24 x 7/8" 12pt.	4
70	GM14061685	Pilot Bearing (For Reference Only)	1
71	68052	Case Plug	2
72	68025	Cap Plug	1

RAPTOR DIMENSIONS

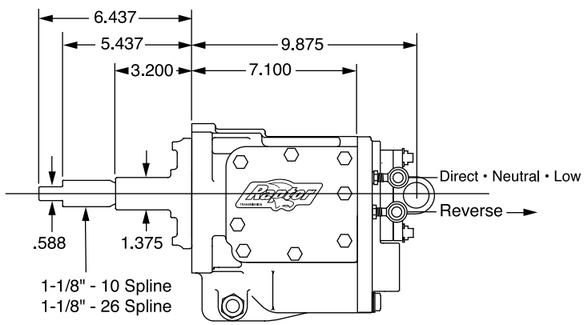
RAPTOR (ALL)



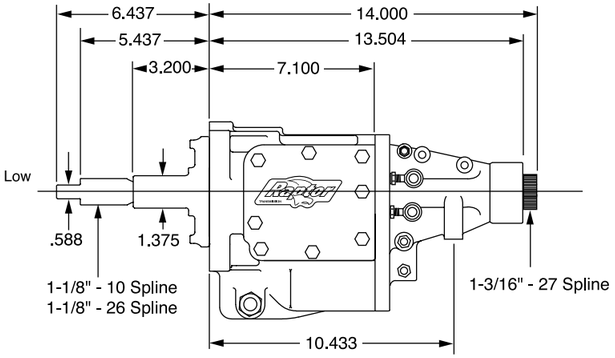
RAPTOR LATE MODEL

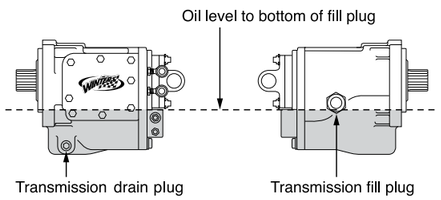


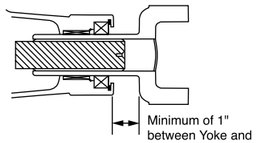
RAPTOR SHORTY



RAPTOR WITH SHORTY EXTENSION HOUSING







SHIFT PATTERN

NEUTRAL

- Note position of shifter heims when in neutral
- Opposing shift shaft must be in neutral to select desired gear

REVERSE

- Push reverse lever forward (pull bottom shift shaft out) to select reverse gear
- As you apply the clutch pedal the car will back up

LOW GEAR

- Push low / high lever forward (pull upper shift shaft out) to select low gear
- As you apply the clutch pedal the car will move forward

HIGH GEAR

- When shifting into high gear, push in the clutch pedal and drop engine RPMs to match low gear ratio
- Pull high / low lever back (push upper shift shaft in) to select high gear
- Release clutch pedal

BELLHOUSINGS

May Be Used With Motor Plates

ASSEMBLY
P/N 62844 Chevy
P/N 62904 Ford
Aluminum Housing
10lbs. 4oz.

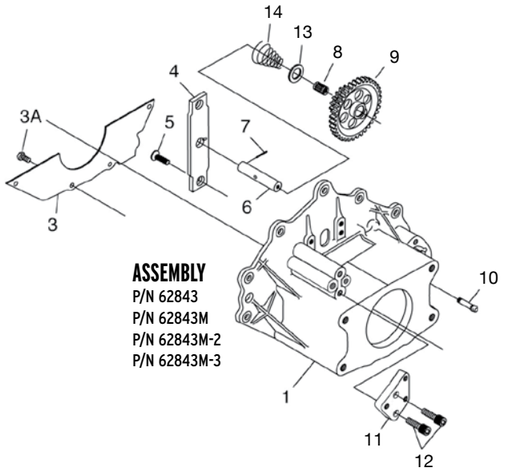
ALUMINUM HOUSINGS

Heavy duty version of a GM flywheel housing. Retains OEM dimensions for use with block mounted starters and hydraulic clutch release bearings. Uses 153-tooth ring gear. Accepts Falcon, Raptor and other popular transmissions.

P/N 62787
Aluminum Housing
9lbs. 14oz.

2 5/8" DEEP BELLHOUSING ASSEMBLY

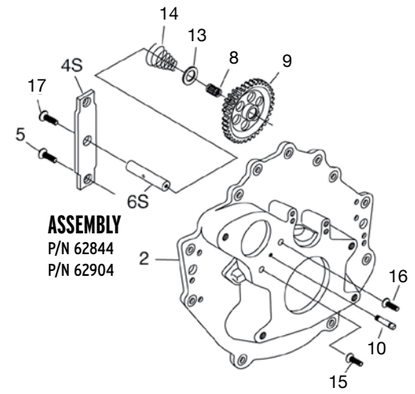
This assembly, with reverse starter mount, accepts Falcon transmissions and other popular internal clutch transmissions with short input shafts. Assembly includes mounts for smallblock and big block camshaft-driven pumps, idler gear, 63-tooth starter ring gear, and spacer shims.



ASSEMBLY
P/N 62843
P/N 62843M
P/N 62843M-2
P/N 62843M-3

*Denotes Option

#	P/N	DESCRIPTION	QTY REQ'D
1	61967	Bellhousing, Chevy, Late Model, Aluminum	1
1	61967-2	Bellhousing, Ford, Late Model, Aluminum	1
1	61967-3	Bellhousing, Mopar, Late Model, Aluminum	1
2	62684	Bellhousing, Chevy, Shorty, Aluminum	1
2	62684	Bellhousing, Ford, Late Model, Aluminum	1
2A*	61988M	Bellhousing, Chevy, Right Side Starter, Aluminum	1
3*	61997	Cover	1
3A	67179	5/16-18 x 1/2" HHCS	2
4	62277	Idler Mounting Plate, Late Model	1
4S	62686	Idler Mounting Plate, Shorty	1
5	67120	5/16-18 x 3/4" FHCS	2
6	62278	Idler Shaft, Late Model	1

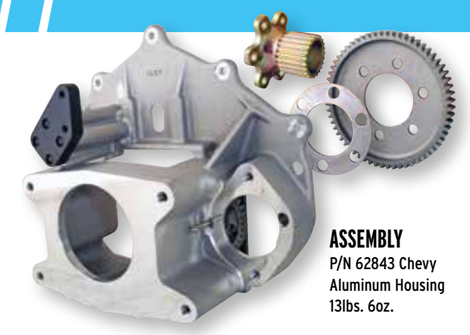


ASSEMBLY
P/N 62844
P/N 62904

#	P/N	DESCRIPTION	QTY REQ'D
6S	62685	Idler Shaft, Shorty	1
7	68015	Roll Pin, Idler Shaft	1
8	62204	Bushing	1
9	62344	Idler Gear	1
10	62816	Grease Fitting, Long	1
11	62681	Adapter Block	1
12	67162	5/16-18 x 1 1/4" 12pt.	2
13	62815	Thrust Washer	1
14	62341	Return Spring	1
15	62914	Stud, Transmission	1
16	62915	Stud, Starter	1
17	68073	1/4-28 x 5/8" FHCS	1

6 1/4" DEEP BELLHOUSING ASSEMBLY

This assembly, with reverse starter mount, features mounting locations for both belt-driven or camshaft-driven pumps from popular pump manufacturers. Accepts Falcon transmissions and other popular internal clutch late model transmissions. Assembly includes idler gear, 63-tooth starter ring gear, crank coupler with HTD gear, and spacer shims. Use Winters/Powermaster starter P/N 69408 (page 22).



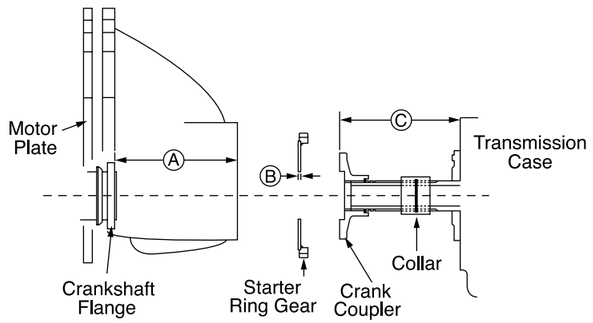
ASSEMBLY
P/N 62843 Chevy
Aluminum Housing
13lbs. 6oz.

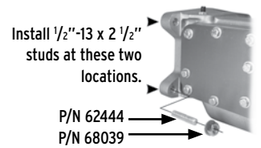
ASSEMBLY
P/N 62843-3 Mopar
Aluminum Housing

ASSEMBLY
P/N 62843-2 Ford
Aluminum Housing

LATE MODEL BELLHOUSING INSTALLATION

Using 18-Spline Input Shaft and Coupler with Winters Bellhousing.





P/N 68727 Stud and Nut Kit (2 each)

When using a motor plate, it must be in place before making measurements. With motor plate in place, accurately measure from rear face of crankshaft flange to rear face of bellhousing (A). Subtract thickness of starter flex plate (B) and also subtract .125" for required input shaft end clearance. Use your measurements and follow the example to find your coupler measurement (C). It is also advisable to grease the drive splines in the crank coupler and collar before assembly.

Example:	**(A)**	**6.000**
Flex Plate Thickness	**(B)**	**- .125**
Clearance		**- .125**
Coupler Measurement	**(C)**	**5.750**

Dowel pins and pilot bushings must be lengthened to compensate for motor plate thickness. Install studs and nuts to retain transmission to flywheel housing on left side (optional at four locations).

STARTERS

We have partnered with renowned starter manufacturer Powermaster Performance to offer a line of Winters-spec high-torque gear reduction starters. The first available starter (P/N 69408) is designed for use with our Chevy bellhousing (P/N 62843). Engineered with dirt and asphalt Late Models, left-steer Modifieds, and other racing applications in mind, the 1.4kw Powermaster/Winters starter uses 4.4:1 gear reduction to produce 200 lb-ft of torque and 1.8 horsepower—powerful enough to start engines with up to 18:1 compression! And weighing just 7.5 pounds, it's one of the lightest starters available!

STARTER INSTALLATION

Proper mounting of the starter is important because it ensures that the starter pinion will engage with the ring gear without binding and subsequently damaging the starter pinion and/or ring gear.

• **MOUNT STARTER,** making sure the mounting surface of the engine block is smooth, flat, and free of paint build up. Torque starter mounting bolts to engine manufacturer's specifications (typically 32 lb-ft)

• **CHECK PINION CLEARANCE.** There should be 1/8" (.125") minimum from the backside of the ring gear to the front edge of the starter pinion teeth (Figure A). Check in at least three locations on the ring gear. If not in spec, verify that the ring gear is properly installed. ***When using an idler gear,** ensure the same .125" minimum from the backside of the ring gear to the front edge of the idler gear.

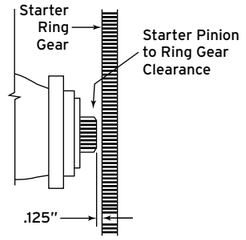


Figure A

• **PULL PINION OUT TO CHECK ENGAGEMENT** with the ring gear. This can be done by either using a tool to pry the pinion out of the starter, or connect 12 VDC to the "Switch" terminal ONLY (DO NOT connect battery cable to "BAT" terminal on the starter solenoid). This engages the solenoid but does not spin the starter. **CAUTION—DO NOT leave the solenoid engaged like this for more than 3 to 5 seconds at a time or the solenoid will overheat.** After releasing the solenoid, the pinion may stay engaged in the ring gear until the engine is started. This is normal for gear reduction starters and does NOT require shimming to correct.

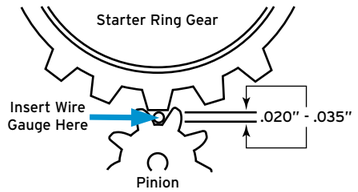


Figure B

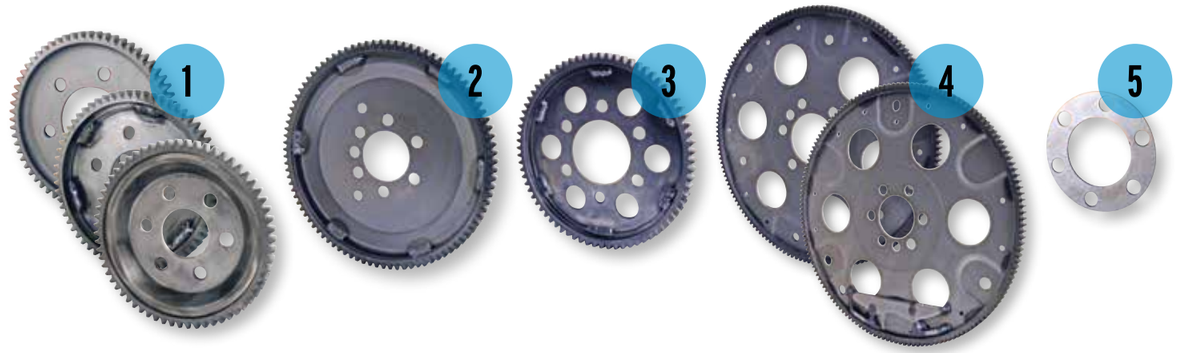
Insert a wire gauge to check for proper clearance between the ring gear and starter pinion. There should be a .020" to .035" clearance from the root of the starter pinion to the tip of the ring gear tooth (Figure B). Check clearance in at least three places on the ring gear. If the clearance is too small, add one shim at a time between the starter and the engine block to bring it into spec. In many installations no shims are necessary.

• **ATTACH BATTERY CABLE AND SWITCH WIRE.** The switch wire should be capable of handling 15A (typically 14AWG wire). The battery cable must be the proper size for the length of the cable (Figure C). All connections should be clean and tight, and terminals should be soldered if possible. The ground cable to the frame should be the same size as the starter cable, and a ground strap must be installed from the frame to the engine.

Distance	3'	5'	7'	10'	+10'
AWG	4	2	1	0	00

Figure C

STARTER RING GEARS



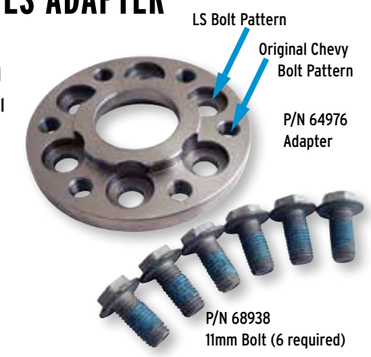
APPLICATION	#1 RING GEAR 6-1/2" DIAMETER 63-TOOTH	#2 RING GEAR 9-3/8" DIAMETER 92-TOOTH	#3 RING GEAR 7-5/8" DIAMETER 74-TOOTH	#4 RING GEAR 12-7/8" DIAMETER VARIOUS TOOTH	#5 SHIM
Chevy SB & BB	P/N 62479-A	P/N 62907-A	P/N 63562-A	P/N 62864 (153-TOOTH)	P/N 62320
Chevy Late SB	P/N 62479-D	P/N 62907-D	P/N 63562-D	P/N 62866 (153-TOOTH)	P/N 62321
Ford SB	P/N 62479-C	P/N 62907-C	P/N 63562-C	P/N 62868 (157-TOOTH)	P/N 62322
Ford BB	P/N 62479-E	P/N 62907-E	P/N 63562-E	P/N 62867 (157-TOOTH)	P/N 62322-BB
Mopar 6-Bolt	P/N 62479-B	P/N 62907-B	P/N 63562-B	P/N 62869 (130-TOOTH)	P/N 62323
Mopar 8-Bolt	P/N 62479-F	P/N 62907-F	P/N 63562-F	P/N 62870 (130-TOOTH)	P/N 62324

P/N 63844-18
Late Chevy 18-Spline Bell, External Balance

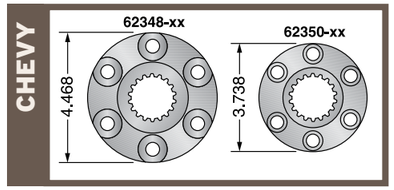
P/N 62479D-1
Late Chevy Counter Weight, External Balance

CHEVY LS-SERIES ADAPTER

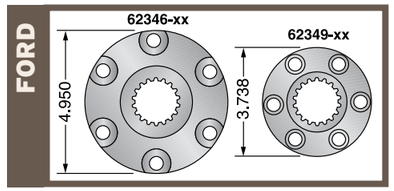
Adapts LS1, LS2, LS3 (CT525), LS6, LS7 and L92 engines to original Chevy bolt pattern and location



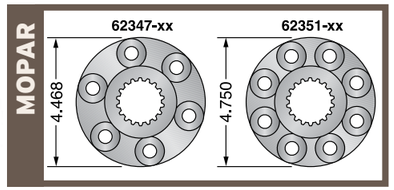
CRANK COUPLERS



P/N 62348-XX Big Block & Early Smallblock
P/N 62350-XX Late Smallblock



P/N 62346-XX Big Block
P/N 62349-XX Smallblock



P/N 62347-XX 6-Bolt
P/N 62351-XX 8-Bolt, Hemi

P/N	DESCRIPTION
62348-S10	Chevy SB & BB 10-Spline, Short, Steel
62348-18	Chevy SB & BB 18-Spline, Standard, Steel
62348-18A	Chevy SB & BB 18-Spline, Standard, Aluminum
62348-S18	Chevy SB & BB 18-Spline, Short, Steel
62348-S18A	Chevy SB & BB 18-Spline, Short, Aluminum
62348-L18	Chevy SB & BB 18-Spline, Long, Steel
62350-18	Chevy Late SB 18-Spline, Standard, Steel
62350-18A	Chevy Late SB 18-Spline, Standard, Aluminum
62446	Chevy 18-Spline w/HTD Pulley, Steel
62446A	Chevy 18-Spline w/HTD Pulley, Aluminum
62447	Chevy 10-Spline w/HTD Pulley, Steel
62890	Chevy Late 18-Spline w/HTD Pulley, Steel
62890A	Chevy Late 18-Spline w/HTD Pulley, Aluminum
62346-18	Ford BB 18-Spline, Standard, Steel
62346-18A	Ford BB 18-Spline, Standard, Aluminum
62346-S18	Ford BB 18-Spline, Short, Steel
62349-L10	Ford SB 10-Spline, Long, Steel
62349-18	Ford SB 18-Spline, Standard, Steel
62349-18A	Ford SB 18-Spline, Standard, Aluminum

P/N	DESCRIPTION
62349-S18	Ford SB 18-Spline, Short, Steel
62349-L18	Ford SB 18-Spline, Long, Steel
62887	Ford 18-Spline w/HTD Pulley, Steel
62887A	Ford 18-Spline w/HTD Pulley, Aluminum
62347-18	Mopar 6-Bolt 18-Spline, Standard, Steel
62347-18A	Mopar 6-Bolt 18-Spline, Standard, Aluminum
62347-S18	Mopar 6-Bolt 18-Spline, Short, Steel
62351-18	Mopar 8-Bolt 18-Spline, Standard, Steel
62351-18A	Mopar 8-Bolt 18-Spline, Standard, Aluminum
62888	Mopar 6-Bolt 18-Spline w/HTD Pulley, Steel
62888A	Mopar 6-Bolt 18-Spline w/HTD Pulley, Aluminum
62889	Mopar 8-Bolt 18-Spline w/HTD Pulley, Steel
62889A	Mopar 8-Bolt 18-Spline w/HTD Pulley, Aluminum
62714-10	AMC 10-Spline, Standard, Steel
62348-SB	Blank, 18-Spline, Standard, Aluminum
62348-B1	Blank, 18-Spline, Standard, Aluminum
62348-B2	Blank, 18-Spline, Standard, Aluminum
62348-B5	Blank, 18-Spline, Standard, Aluminum

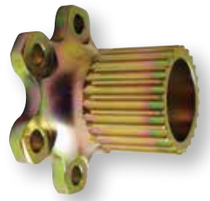
Add prefix 8251- to any crank coupler part number when substituting in bellhousing assemblies.
Example: 8251-62447 substitutes a 62887 Ford 18 spline w/HTD pulley crank coupler for the standard crank coupler.

PHOENIX CRANK COUPLERS

APPLICATION	CRANK COUPLER	OPTION
Chevy SB & BB, Steel	63572-A	STANDARD
Chevy Late SB, Aluminum	63572A-D	8251A-D

APPLICATION	CRANK COUPLER	OPTION
Ford SB, Steel	63572-C	8251-C
Ford SB, Aluminum	63572A-C	8251A-C

INPUT SHAFTS FALCON 18-SPLINE



See page 24 for 10 and 18-Spline Couplers with HTD

See page 24 for 18-Spline Coupler Options

Standard

P/N 62901 18/18-Spline Input Shaft

P/N 67696 18-Spline Input Shaft Retaining Ring

P/N 62406 18/18-Spline Input Shaft

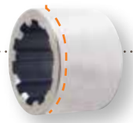
P/N 62407 Collar

P/N 67639 Replacement Collar Snap Ring (not shown)

Can be trimmed on end opposite retaining ring recess

P/N 62705 Crankshaft Bore Spacer

See page 24 for 10-Spline Coupler Options



P/N 64825 Splined Spacer

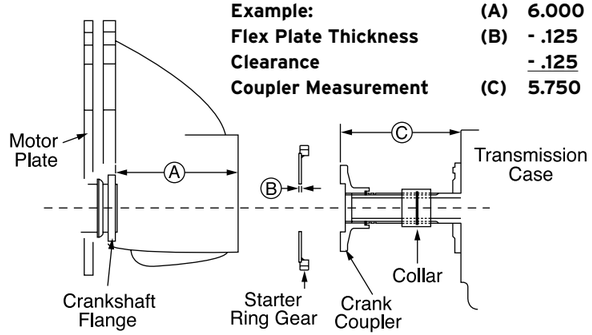
P/N 68317 18/10-Spline Input Shaft Retaining Ring

10-Spline

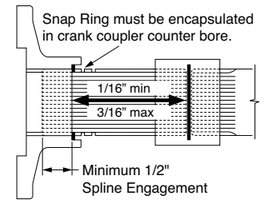
P/N 62409 18/10-Spline Input Shaft

INPUT SHAFT MEASUREMENTS AND INSTALLATION *Designed to be used with 1/4" motor plate*

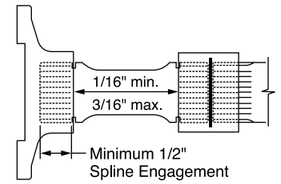
When using a motor plate, it must be in place before making measurements. With motor plate in place, accurately measure from rear face of crankshaft flange to rear face of bellhousing (A). Subtract thickness of starter flex plate (B) and also subtract .125" for required input shaft end clearance. Use your measurements and follow the example to find your coupler measurement (C). It is also advisable to grease the drive splines in the crank coupler and collar before assembly.



Example:	**(A)**	**6.000**
Flex Plate Thickness	**(B)**	**- .125**
Clearance		**- .125**
Coupler Measurement	**(C)**	**5.750**



For Input Shaft P/N 62406, by moving the snap ring from one groove to another on the input shaft, you are adjusting the end play of the input shaft. After transmission installation, re-check input shaft to ensure 1/16" min and 3/16" max end play.



For Input Shaft P/N 62901, installed input shaft must have free play.

YOKES & ACCESSORIES

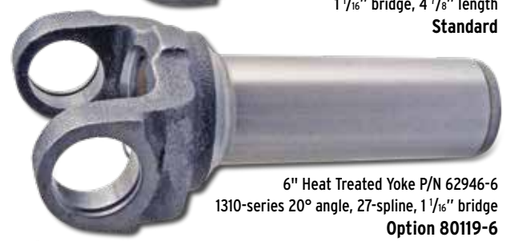
1310-SERIES

P/N 65382
1310-series, caps with grease fittings
1 1/16" Journal Assembly, 3 7/32" across bridge

P/N 66847
1310-series, HD caps without grease fittings
1 1/16" Journal Assembly, 3 7/32" across bridge

P/N 66996
1310-Series 1 3/16" Journal Assembly,
3 5/8" across bearing caps

P/N 62221
1310-series 20° angle, 27-spline
1 1/16" bridge, 4 7/8" length
Standard



6" Heat Treated Yoke P/N 62946-6
1310-series 20° angle, 27-spline, 1 1/16" bridge
Option 80119-6

P/N 65856
1310-series 20° angle, 3/8" bolt diameter
3 1/8" bolt circle, 1 3/8" offset, 1 1/16" bridge

P/N 66874
1310-series 30° angle, 3/8" bolt diameter
3 1/8" bolt circle, 1 5/8" offset, 1 1/16" bridge

7" Heat Treated Yoke P/N 62946-7
1310-series 20° angle, 27-spline, 1 1/16" bridge
Option 80119-7

8" Heat Treated Yoke P/N 62946-8
1310-series 20° angle, 27-spline, 1 1/16" bridge
Option 80119-8

P/N 65855 ***(Torque 15 lb-ft)***
1310-Series U-Bolt Assembly
with nuts and lockwashers

P/N 66999 ***(Torque 15 lb-ft)***
1350-Series U-Bolt Assembly
with nuts and lockwashers

9" Heat Treated Yoke P/N 62946-9
1310-series 20° angle, 27-spline, 1 1/16" bridge
Option 80119-9

P/N 62482B
Hand-Operated Master Cylinder

8 1/2" Heat Treated Yoke P/N 63830-1350
1350-series 20° angle, 32-spline, 1 3/16" bridge

1350-SERIES

REBUILD KITS

Complete Kit (shown) includes clutches, O-rings, gaskets, seals and bearings

Basic Kit includes clutches, O-rings, gaskets, and seals **but no bearings**

COMPLETE REBUILD KIT *(includes bearings)*

P/N 62823-2 Falcon Late Model
P/N 62825-2 Falcon Shorty
P/N 63477-2 Falcon Roller Slide
P/N 62827 Raptor Late Model
P/N 62829 Raptor Shorty
P/N 63481 Phoenix

BASIC REBUILD KIT *(without bearings)*

P/N 62822-2 Falcon Late Model
P/N 62824-2 Falcon Shorty
P/N 63476-2 Falcon Roller Slide
P/N 62826 Raptor Late Model
P/N 62828 Raptor Shorty
P/N 63480 Phoenix

MASTER CYLINDER REBUILD KIT

P/N 62820

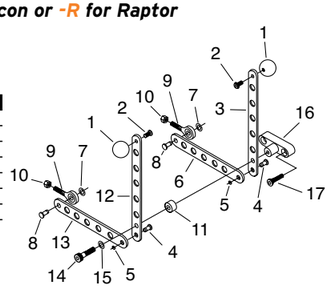
SHIFTERS

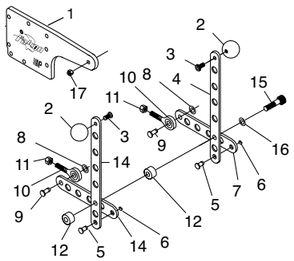
When Ordering Add Suffix -F for Falcon or -R for Raptor
Example: P/N 60115S-F = Falcon

P/N 60115L Late Model, **Option 80112L**

#	P/N	DESCRIPTION	QTY REQ'D
1	62637	Shift Knob, Specify Red or Black	2
2	68040	5/16-18 x 5/8" BHCS	2
3	62169	Shift Arm, Reverse	1
4	62306	Linkage Pin	2
5	68301	Clip, Linkage Pin	2
6	62292	Shift Linkage, Reverse	1
7	68302	Clip, Clevis Pin	2
8	62307	Clevis Pin	2
9	67580	Heim End	2

#	P/N	DESCRIPTION	QTY REQ'D
10	68032	Jam Nut, Heim End	2
11	62336	Spacer	1
12	62168	Shift Arm, Low / Neutral / Direct	1
13	62291	Shift Linkage, Low / Neutral / Direct	1
14	68019	Shoulder Bolt	1
15	68013	Wave Washer	1
16	62199	Pivot Bracket	1
17	68041	3/8-16 x 1" FHCS	2





P/N 60115S Shorty, **Option 80112S**

#	P/N	DESCRIPTION	QTY REQ'D
1	62157	Side Cover, Shorty	1
2	62637	Shift Knob, Specify Red or Black	2
3	68040	5/16-18 x 5/8" BHCS	2
4	62168	Shift Arm, Low / Neutral / Direct	1
5	62306	Linkage Pin	2
6	68301	Clip, Linkage Pin	2
7	62401	Shift Linkage, Low / Neutral / Direct	1
8	68302	Clip, Clevis Pin	2
9	62307	Clevis Pin	2
10	67580	Heim End	2
11	68032	Jam Nut, Heim End	2

#	P/N	DESCRIPTION	QTY REQ'D
12	62336	Spacer	2
13	62169	Shift Arm, Reverse	1
14	62402	Shift Linkage, Reverse	1
15	68019	Shoulder Bolt	1
16	68013	Wave Washer	1
17	68031	Jam Nut	1
	68036	Elbow Street 1/8" NPT	1
	68024	Breather	1
	68035	Plug Fill	1
	12763	Shifter Pin Replacement Bolt Kit	

TRANSMISSION TIPS

FALCON & PHOENIX

• The Falcon Transmission is a non-synchro sliding gear transmission. Fully engage low gear before power starts. High gear (direct-drive) shifts can be made at any time by matching engine RPM with speed of car. Example: Low gear is 2.4-to-1 and high gear is 1-to-1, so RPM must be cut more than half while shifting.

• **DO NOT** attempt to shift into high gear with the car at rest and the engine running.

• With new transmissions, gear grinding is not unusual when shifting to low or reverse with engine running. The clutch pack is set up tight at the factory, and the clutches break in with use. To move vehicle without grinding, we suggest placing the shift lever into low or reverse with engine off, then start the engine and apply the clutch (hydraulic pressure).

• **CAUTION - DO NOT slip clutches more than necessary.** Apply clutches firmly for longevity. Maintain enough pressure to minimize slipping.

• Low gear is for moving your vehicle fast enough to shift into high gear. It is not made for hard, fast starts, packing the track, loading and unloading onto the trailer, etc.

• When in low gear use only as much engine power as is necessary to get your vehicle moving fast enough to shift into high gear.

• High gear is direct-drive with no clutch between the engine and rear wheels.

• Maintain transmission oil level and do not over fill. Level should be to the bottom of the fill plug (see Figure A). Use ATF or equivalent.

• Transmissions feature a high gear (direct-drive) detent ball adjustment screw that's adjusted by loosening the jam nut and adjusting the amount of tension on detent ball.

• Make sure there are no chassis or body parts interfering with the shift linkage. Allow plenty of clearance so transmission gears can be full engaged at rest and on the track.

• Route clutch hydraulic lines so they are not affected by heat and are safe from being abraided or cut.

• **Pre-lube yoke support bearing and seal prior to installing driveshaft in a Late Model transmission. It is advisable to use a heat treated yoke on your driveshaft because your Winters transmission has a bearing rather than a bushing in the extension housing.**

• Check and torque all bolts and plugs on transmission prior to installation in your race car.

• **CAUTION - *DO NOT* attempt to force transmission into flywheel housing with bolts. Install and torque transmission retaining bolts after transmission is solidly against flywheel housing.**

Figure A

• Master cylinder must be mounted above the transmission apply cylinder, away from heat. Bleed the hydraulic system with the same precautions used when bleeding brakes (use DOT 3 brake fluid). Do not use master cylinders with residual valves, check valves, or line-lock valves. It is important that the master cylinder apply lever retracts fully; brake fluid must be free to return to the master cylinder reservoir without maintaining hydraulic pressure.

• Input shaft must have free play (up to 3/16") after final installation. Minimum spline engagement should be 1/2".

RAPTOR

• The Raptor Transmission is a non-synchro sliding gear transmission. Fully engage low gear before applying the clutch. High gear (direct-drive) shifts can be made at any time by matching engine RPM with speed of car. Example: Low gear is 1.504-to-1 and high gear is 1-to-1, so RPM must be cut by one quarter.

• The Raptor requires the use of a pilot bushing or bearing that must be in good condition and must support the transmission input shaft.

• When using a motor plate, extended pilot bushings or bearings and longer dowel pins are required to properly locate the flywheel housing and input shaft.

• Maintain transmission oil level and do not over fill. Level should be to the bottom of the fill plug (see Figure A).

• Transmissions feature a high gear (direct-drive) detent ball adjustment screw that's adjusted by loosening the jam nut and adjusting the amount of tension on detent ball.

• **Pre-lube yoke support bearing and seal prior to installing driveshaft in a Late Model transmission. It is advisable to use a heat treated yoke on your driveshaft because your Winters transmission has a bearing rather than a bushing in the extension housing.**

• **Check and torque all bolts and plugs on transmission prior to installation in your racecar.**

• **CAUTION - *DO NOT* attempt to force transmission into flywheel housing with bolts. Install and torque transmission retaining bolts after transmission is solidly against flywheel housing.**

• **Never allow your transmission to become a stressed member of your race car chassis.**

BREAK-IN PROCEDURE

• As with any new or rebuilt product, be it an engine, transmission, or rear end, it is important to avoid premature wear on the gears and bearings by avoiding full throttle loads and high RPM conditions for at least 20 miles.

• Start break-in at 30% power and gradually increase, not to exceed 80% power.

• Return the car to the pits, drain and refill the gear lube to the proper oil levels with the car sitting level (see Figure B). Over filling will cause excessive heat.

• Car is now ready for competition.

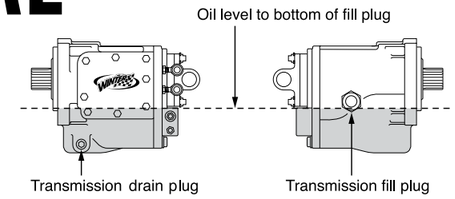


Figure B

BELLHOUSING INSTALLATION TIPS

• Place transmission in high gear (direct-drive) prior to installing transmission in bellhousing. This allows the installer to rotate the output shaft, which turns the input shaft to facilitate spline engagement with clutch splines or crankshaft drive flange.

• When using a motor plate, the plate must be flat and even with back of engine block and perfectly true and flat across chassis.

• Dowel pins must be long enough to pass through the motor plate and fully engage with bellhousing.

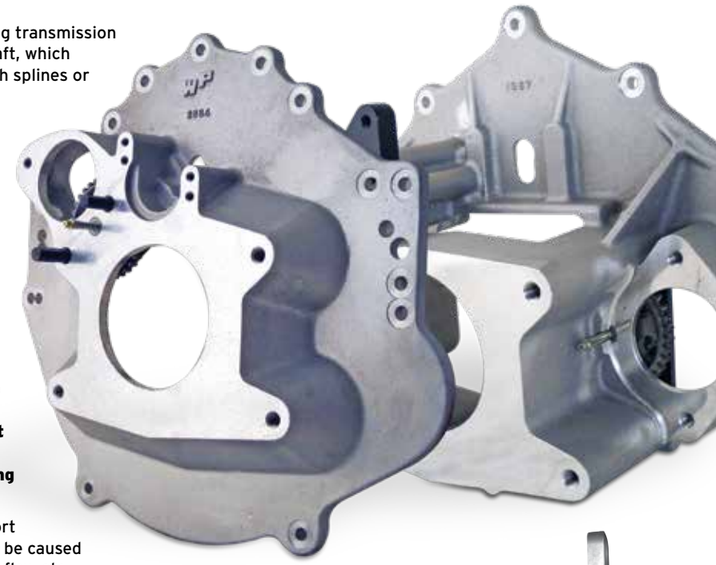
• Bellhousing must be aligned with engine. See bellhousing alignment instructions on page 30.

• Pilot bushing, if used, must be long enough to compensate for motor plate thickness.

• Remove pilot bushing from crankshaft with Falcon Transmission.

• **CAUTION - *DO NOT* attempt to force transmission into bellhousing with bolts. Transmission will assemble into flywheel housing if splines are aligned, assuming input shaft splines and clutch splines or crank coupler splines are compatible. DO NOT install and torque transmission retaining bolts unless transmission is solidly against bell housing.**

• Bellhousing distortion can be greatly reduced by using a support mount under the transmission extension housing. Distortion can be caused by rough track conditions, contact with walls/other cars, chassis flex, etc.



INBOARD STARTER BELLHOUSINGS

• Center hole in motor plate must be large enough to clear all protrusions from back of bellhousing, minimum 13" I.D. (see Figure C).

• Adjust bell clearance to idler gear (see page 30). Shim bell to .80/.100 clearance. Make sure starter is in place while checking clearance.

• Idler gear must slide freely on shaft.

• Check idler shaft periodically for signs of wear.

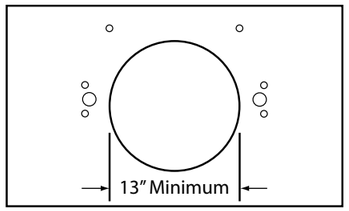
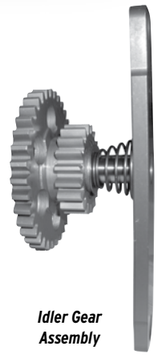


Figure C



Idler Gear Assembly

• Check alignment of idler gear to bell. By hand, push idler gear forward and engage into bell, making sure there is clearance. **It's very important to follow bellhousing alignment instructions very carefully.**

• Clean and regrease bushing in idler gear during routine maintenance. A moderate amount of grease is correct—more is not better.

• Remember, a starter is an electric motor. Cover when washing car.

BELLHOUSING ALIGNMENT

• Crankshaft and transmission MUST be in alignment with each other (.005 T.I.R. tolerance).

• Bellhousing bore misalignment with the crank shaft holds the key to almost all clutch and transmission problems. DO NOT shortcut proper alignment.

• You assume new bellhousings are made accurately and the bolt holes, dowel pin holes, etc. are machined in the right locations and the front and rear of the housing is parallel. If using a used bellhousing, it is likely that the housing faces are not parallel within .005 T.I.R. Before installing a used housing, have a machine shop reface a minimum amount off the rear to bring the housing into specifications. Before having the bellhousing refaced, measure the transmission register bore diameter to determine if bellhousing is compatible with transmission register diameter.

• Check the bellhousing on the engine after installing motor plate over dowel pins, making sure the dowel pins are long enough to exit the dowel pin holes in the bellhousing.

Figure D

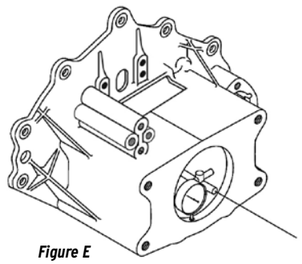


Figure E

• Torque retaining bolts to 28-32 lb-ft. Install 6-8" threaded rod into the crank flange threaded hole (see Figure D). Mount and zero dial indicator in the bore in the bellhousing (see Figure E). Rotate the crankshaft while observing the indicator reading (.005 T.I.R. maximum allowable run-out). If in tolerance, reposition the dial indicator to the rear face of the bellhousing (see figure F). Zero indicator, rotate crankshaft while observing indicator reading (.005 T.I.R. maximum allowable run-out).

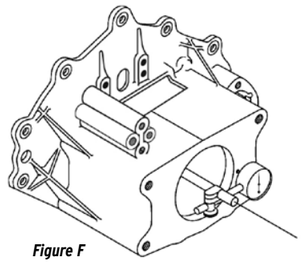


Figure F

• If either bore or face exceed .005 T.I.R., correction must be made for bore run-out. There are three popular methods of correction.

• **Method 1:** Offset dowel pins are the preferred method (see Figure G). Suppose your offset is (plus) + .020 at 12 o'clock (the bore must be raised .010), which is very common with blocks that have been align bored. Have a machine shop make .010 offset dowel pins with a timed slot in the end so that the pins can be installed with the slots parallel to each other. Remove original pins and correctly install the new pins.

• **Method 2:** Remove original dowels from engine and reinstall the motor plate (if used) and the bellhousing. Lightly torque the bolts and re-indicate. Bump the housing into perfect alignment and finish torquing the retaining bolts. With an oversized reamer, ream and oversize the dowel pin holes. Make new oversized, stepped pins (see figure H) and install.

• Re-check the bore alignment.

• If rear face is out of tolerance and the bellhousing was checked for parallelism and is in tolerance, the problem is your motor plate or the back of the motor is not square with the crank shaft. Correct as needed.

• **Method 3:** Use a commercially available bellhousing alignment tool (see Figure I), which bolts directly to the crankshaft flange and has an appropriate diameter flange that registers in the bore of your bellhousing and positions the bellhousing in the proper location respective to the crankshaft center line. Install and evenly torque housing attachment bolts. Ream oversize dowel pin holes and insert oversize pins. Re-check bore and face with an indicator to insure housing bore remains within specifications.

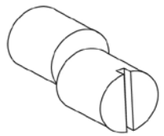


Figure G

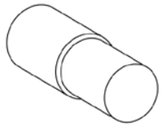


Figure H

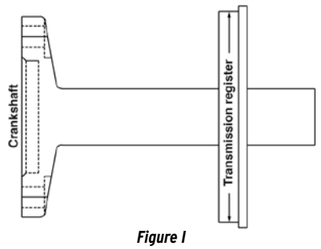


Figure I

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