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FAQ

To get your Ring & Pinion technical questions answered quickly and accurately, have the following information ready when you call Richmond Gear Technical Assistance (864-843-9275):

Year	
Make (Chevy, Jeep, Ford, Dodge, etc.)	
Model (1 / 2 ton, Impala, etc.)	
Vehicle weight (lbs.)	
Transmission brake	() YES () NO
Drag race only	() YES () NO
Street and drag race	() YES () NO
Street only	() YES () NO
Circle/Oval track racing	() YES () NO
Current gear ratio	
New ratio you are considering?	
How will you use the vehicle?	
Tire size (diameter) inches.	
Number of cover bolts; or is it a drop out?	
Number of ring gear bolts.	
Transmission (manual or automatic)	
Engine size (cu. in.), horsepower and torque if known.	
Current RPM's at your normal cruising speed.	
Standard or reverse rotation for front ring & pinion.	
Reverse rotation ring and pinion; the pinion shaft enters the housing above the axle centerline. Standard rotation ring and pinion; the pinion shaft enters the housing below the axle centerline.	
Independent Front Suspension (IFS) or solid straight axle in front.	
If you pull a trailer with your vehicle, what is the loaded trailer weight?	

1. **Does Richmond make a gear set for my car or truck?**
Specified in catalog for most applications. Call Richmond Tech Line on some applications.
2. **What ratios does Richmond make for my car or truck?**
Specified in catalog. Also see the Richmond Double Diamond catalog for more ratios.
3. **Will your gear set fit my carrier?**
Need to know what carrier and/or ring & pinion and what ratio came from the factory.
4. **What part number do I need for my application?**
Specified in catalog. Also see the Richmond Double Diamond catalog for more ratios.
5. **Have a number off either ring gear or pinion but not part number?**
Call Richmond Tech Line. The numbers that are on the ring gear and pinion are manufacturing numbers. Richmond can cross-reference for you.
6. **Have the numbers off tag on rear housing. What rear end ratio do I have?**
Call Richmond Tech Line. You can identify most Ford and Dana from tag. Richmond can identify Dana from number on gear.
7. **Do I need a street gear or a pro gear?**
Pro Gears are for **drag racing only**. Pro Gear or Street Gear selection will depend on the car weight, horsepower, tire size, and type of transmission. If the car weighs 2,800 lbs. or more and has a trans brake and high horsepower, a Pro Gear is recommended.
8. **Can I set up my own rear?**
Yes. Recommend the purchase of Richmond Installation DVD. DVD covers basic set up for applications in catalog.
9. **What is the best ratio for my car?**
Need to determine use, tire size, transmission, etc. and how you want to drive the vehicle. Do RPM calculations. Visit www.richmondgear.com and use the "GEAR CALCULATOR."

Choose The Gear Ratio That Is Best For Your Vehicle

When selecting a Gear Ratio, you should consider the following:

1. Tire Size
2. Transmission Ratio
3. Final Gear Ratio
4. Engine RPM at Cruise Speed

The following formula has been developed to calculate the optimum final Gear Ratio to suit your application.

$$\frac{\text{M.P.H. X Gear Ratio}}{\text{Tire Diameter}} \times 336 = \text{RPM}$$

The chart shown below shows **RPM** calculations at **55 MPH** for various combinations of final **Gear Ratio** and **Tire Diameter**. **Gear Calculator** is available on RICHMOND website www.richmondgear.com

Gear Ratio	Tire Diameter																
	24	25	26	27	28	29	30	31	32	33	34	35	36	38	40	42	44
2.56	1972	1892	1820	1752	1690	1631	1577	1526	1478	1434	1391	1352	1314	1245	1183	1126	1075
2.73	2102	2018	1940	1869	1802	1740	1682	1627	1577	1529	1484	1441	1401	1328	1261	1201	1147
2.94	2264	2173	2090	2012	1942	1874	1811	1753	1698	1646	1599	1552	1509	1429	1358	1294	1235
3.08	2372	2277	2189	2108	2033	1963	1897	1836	1779	1725	1674	1626	1581	1498	1423	1355	1294
3.21	2472	2373	2282	2197	2119	2046	1977	1914	1854	1798	1745	1695	1648	1561	1483	1412	1348
3.31	2549	2447	2353	2266	2185	2110	2039	1973	1912	1854	1799	1748	1699	1610	1529	1456	1390
3.42	2633	2528	2430	2341	2257	2179	2107	2039	1975	1915	1859	1806	1756	1663	1580	1505	1436
3.54	2726	2617	2516	2423	2336	2256	2181	2110	2044	1982	1924	1869	1817	1722	1635	1558	1487
3.73	2872	2757	2651	2553	2462	2377	2298	2224	2154	2089	2027	1969	1915	1814	1723	1641	1567
3.90	3003	2883	2772	2669	2574	2485	2402	2325	2252	2184	2120	2059	2002	1897	1802	1716	1638
4.10	3157	3031	2914	2806	2706	2613	2526	2444	2368	2296	2228	2165	2105	1994	1894	1804	1722
4.27	3288	3156	3035	2923	2818	2721	2630	2545	2466	2391	2321	2255	2192	2077	1973	1879	1793
4.56	3511	3371	3291	3121	3010	2906	2809	2718	2633	2554	2478	2408	2341	2218	2107	2006	1915
4.88	3758	3607	3469	3340	3221	3110	3006	2909	2818	2733	2652	2577	2505	2373	2255	2147	2050
5.29	4073	3910	3760	3621	3491	3371	3259	3154	3055	2962	2875	2793	2716	2573	2444	2328	2222
5.38	4143	3977	3824	3682	3551	3428	3314	3207	3107	3013	2924	2841	2762	2616	2486	2367	2260
5.71	4397	4221	4058	3908	3769	3639	3517	3404	3298	3198	3104	3015	2931	2777	2638	2512	2398
6.17	4751	4561	4385	4223	4072	3932	3801	3678	3563	3455	3354	3258	3167	3001	2851	2715	2591
7.17	5521	5300	5096	4907	4732	4569	4417	4274	4141	4015	3897	3786	3681	3487	3313	3155	3011

How To Choose The Gear Ratio Based On Speed

When selecting a Gear Ratio, you need the following information:

1. Tire Size (diameter)
2. Final Transmission Ratio
3. Engine RPM at Cruise Speed

Formula to calculate Gear Ratio based on speed

$$\frac{\text{RPM X Tire Diameter}}{\text{MPH X 336}} = \text{Ratio}$$

Example: If you want to **Cruise** at 60 MPH at 2000 RPM and your **Tire Diameter** is 30", the **Gear Ratio** you need is a **3.00**

$$\frac{2000 \text{ RPM X } 30" \text{ Tire Dia.}}{60 \text{ MPH X } 336} = 3.00$$

Installation Instructions

All sets are matched pairs and identified by matching numbers on the ring gear and the pinion. Make sure you have a matched set.

Clean all parts before you start the assembly.

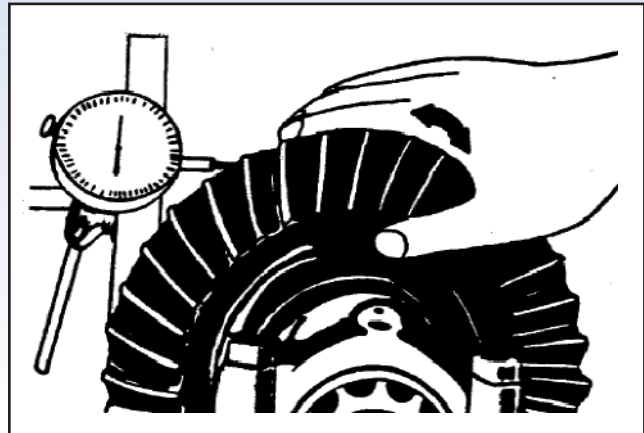
Examine all components and remove any burrs, nicks or sharp edges that could cause components not to seat properly.

CHECKING BACKLASH

It is suggested you set backlash to .008 – .010 inch (see illustration).

Backlash is the free movement of the ring gear with the pinion held fixed in place.

Correct backlash is obtained by shimming or adjusting the ring gear away from or closer to the pinion.



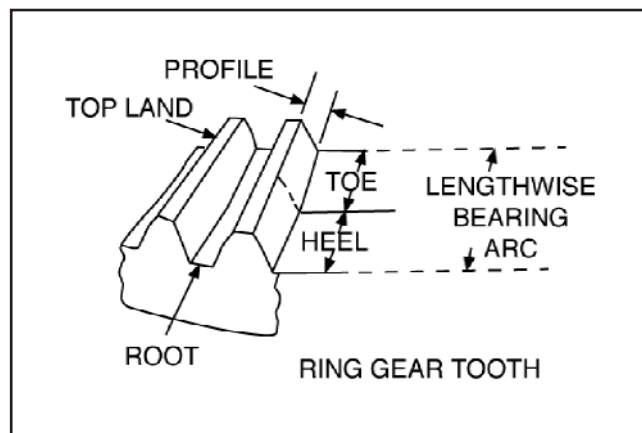
Pinion bearing preload should be approximately 15 in.-lbs. of rotating torque if you are reusing the bearings. If you are installing new bearings you should obtain 25 in.-lbs. of rotating torque. This is accomplished by a preload shim pack (of various thicknesses) or a crush sleeve. When final assembly is being made, you should use a new crush sleeve. See page19 for Installation Kits.

Correct pinion position is obtained by shimming the pinion in or out to obtain the correct tooth pattern. All housings are not shimmed in the same location, but shimming still moves the pinion in or out. For most housings, the shim is located between the pinion teeth and the pinion head bearing. It is suggested that you start with the same shim thickness on the new gear set that was used on the old gear set.

OBTAINING PROPER GEAR PATTERN

Paint the ring gear teeth with a marking compound on both the Drive and Coast side. Richmond part #55-0001-1.

Rotate ring gear several revolutions in both directions while resistance is being applied to the pinion to imprint the pattern on the gear teeth.



Installation Instructions

PATTERN INTERPRETATION (RING GEAR)

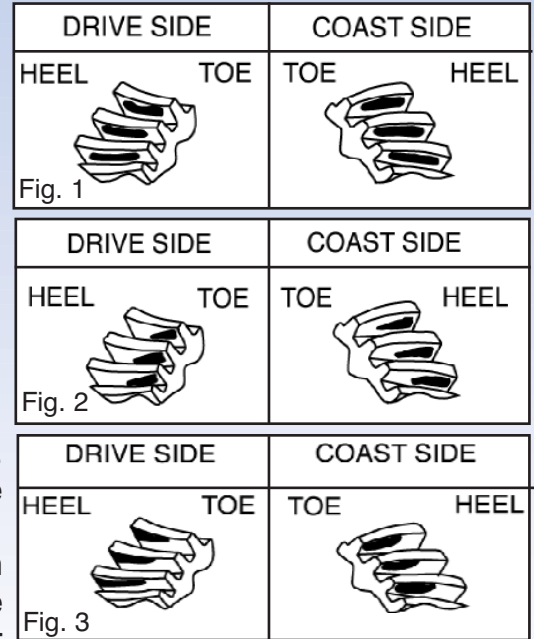
Figure 1: Pinion is normal or has desirable pattern. The **Drive** pattern should be centered on the tooth or slightly toward the toe. The **Coast** pattern should be centered on the tooth, but may be slightly toward the toe. There should be some clearance between the pattern and the top of the tooth.

Figure 2: Pinion is **too deep**. Move pinion away from gear centerline.

Figure 3: Pinion is too shallow. Move pinion toward centerline of gear.

PATTERN MOVEMENTS SUMMARIZED

1. **Decreasing** backlash moves the ring gear closer to the pinion.
2. **Increasing** backlash moves the ring gear away from the pinion.
3. Deep pinion position, with correct backlash, moves the pinion closer to the ring gear. **Drive Pattern** moves deeper on the tooth (flank contact) and slightly toward the toe. **Coast pattern** moves deeper on the tooth and toward the heel.
4. Shallow pinion position, with correct backlash, moves the pinion further from the ring gear. **Drive pattern** moves toward the top of the tooth (face contact) and toward the heel. **Coast pattern** moves toward the top of the tooth and slightly toward the toe.



FASTENER TORQUE SPECIFICATIONS

• Ring Gear Bolts

3/8" All 45-50 ft-lb

7/16" All 60-65 ft-lb

1/2" All 100-110 ft-lb

• Carrier Cap Bolts

7/16" (5/8" head) 60-65 ft-lb

1/2" (3/4" head) 80-85 ft-lb

LUBE

Fill gear case with sufficient amount of Richmond Gear Lube (part # LUBE), and maintain the proper level at all times. Proper maintenance is a must to protect your safety and working life of your gear set. NOTE: For oval track racing, add 2 to 3 additional pints gear lube.

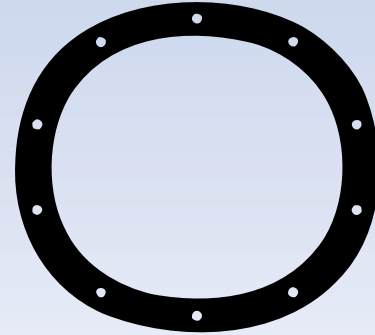
BREAK IN PROCEDURE

All ring and pinion sets require a brief break-in period to ensure long life and quiet operation. The following break-in procedure is recommended before heavy load and constant usage.

1. Bring axle to normal operating temperature by driving vehicle for approximately 15 to 20 miles. Do not create any shock loads. Do not tow or carry a load with the vehicle.
2. Let the axle assembly cool completely. Do this 2 –3 times.
3. For the next 200 miles of operation, drive gently, without any heavy loads.
4. For trailer towing, an additional cycle of 15 to 20 miles break-in is required with the trailer after step #3. This is important! To properly break in a new gear set, 200-300 miles of normal driving is recommended before constant towing.

IF THIS PROCEDURE IS NOT FOLLOWED, OVERHEATING AND EVENTUAL GEAR AND/OR BEARING FAILURE MAY RESULT.

MODEL	YEAR
Cars, various passenger	73-97
B100, B150, B200, B250	69-Present
B, D, W100	66-97
B, D, W200	66-97
B, D, W300	66-97
Aspen, Volare	76-80
Barracuda, Challenger	70-74
Charger, Coronet	73-76
Chrysler 300	72-79
Cordoba	75-83
Dakota	82-Present
Dart	72-76
Diplomat, LeBaron	77-83
Fifth Avenue, New Yorker	72-88
Imperial	81-83
Fury	70-81
Mirada, Magnum	78-83
Newport	72-73
Polara, Satellite	70-74
St. Regis	79-81
W100, W150	86-Present



- 11-3/8"
- Oval Cover 10 Holes
- 10 Bolt
- 8.250" Diameter Ring Gear
- 1.626" Diameter Pinion
- 27 Splines

INSTALLATION KIT/HALF KIT

PART NO.

Consult Factory

RATIO	PART NO.	TEETH
3.55	CR825355	39-11
4.10*	CR825410*	41-10

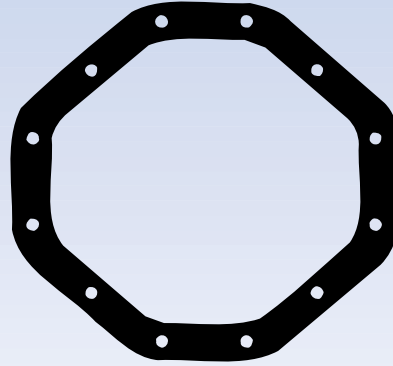
Fits 2.73 ratio and numerically higher carrier.

* Cross shaft pin 80-0278-1 required.

For Maximum Protection and Performance use Part # LUBE

RICHMOND GEAR Synthetic Gear Oil

MODEL	YEAR
Cordoba	75-79
Dakota V-8	98-02
Durango	97-02
Fifth Avenue	73-81
Fury	73-81
Imperial	74-75
Newport	73-81
New Yorker	73-81
Charger	74-76
Monaco	75-85
Polara	70-74
Ram	82-03
Ramcharger	74-96
Trailduster	74-90
B350	84-Present
D200 (Rear)	66-98
D300, D350	74-Present
W100, W150	74-Present
W200, W250	74-Present



- Irregular Cover
- 12 Holes
- 12 Bolt
- 9.25" Diameter Ring Gear
- 1.877" Diameter Pinion
- 29 Splines

RATIO	PART NO.	TEETH
4.10	CR925410	41-10

INSTALLATION KIT/HALF KIT

PART NO.

- 83-1041-1
- 83-1041-M
- 83-1041-B Half-Kit

For Maximum Protection
and Performance use
Part # LUBE



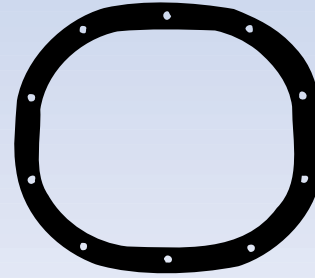
RICHMOND GEAR
Synthetic Gear Oil

MAKE**YEAR**

Bobcat	75-80
Comet	63-71
Cougar	67-79
Fairlane	64-74
Fairmont	75-79
Falcon	64-70
Granada	75-79
Maverick	71-78
Monarch	74-80
Mustang	64-78
Pinto	74-80
Torino	71-74
Zephyr	78

RATIO**PART NO.****TEETH**

3.00	F8355	39-13
3.80	F8380	38-10



- 11"
- Oval Housing
- 10 Holes
- 10 Bolt
- 8" Diameter Ring Gear
- 1.188" Diameter Pinion
- 25 Splines

INSTALLATION KIT/HALF KIT**PART NO.**

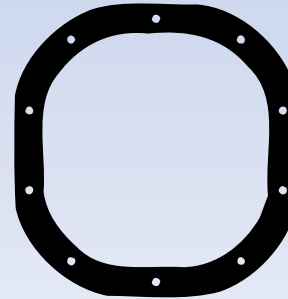
83-1015-1	
83-1015-B	Half-Kit

For Maximum Protection
and Performance use
Part # LUBE



RICHMOND GEAR
Synthetic Gear Oil

MODEL	YEAR
Aerostar	89-97
Bronco	84-91
Capri V8	86
Cougar	88-97
E150	87-Present
Explorer	90 1/2-Present
Expedition except 5.4L	97-02
F-100	81-02
F-150	81-02
F-150 except 5.4L	98
F-150 (Rear)	87-98
F-250	83-84
F-250 (Rear)	87-97
Ford Full Size	86-Present
Mercury Full Size	82-Present
Mercury Marauder	3-Feb
Mustang V8	86-Present
Thunderbird	87-97
Ranger w/4.0L	90 1/2-Present



- 10-9/16" x 10-3/16"
- Oval Cover
- 10 Holes
- 8.8" Diameter Ring Gear
- 1.626" Diameter Pinion
- 30 Splines

RATIO	PART NO.	TEETH
3.55	F88355	39-11
3.73	F88373	41-11
3.89	F88389	35-9
4.10	F88410	41-10
4.56	F88456*	41-9

INSTALLATION KIT/HALF KIT

PART NO.	
83-1043-1	
83-1043-M	
83-1043-B	Half-Kit

SPOOLS

PART NO.	SPLINE	CARRIER
81-8831-1	31	
81-8833-1	33	
81-8835-1	35	

SPOOL BEARING KIT

PART NO.
29-0005-1

MINI-SPOOLS

PART NO.	SPLINE
78-8828-1	Early 28
78-8831-1	Late 31
Cross Shaft Pin	
CSPF88E	
CSPF88L	

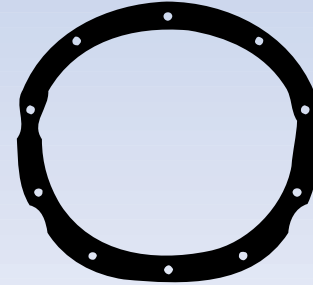
* Special Cross Pin 80-0273-1 required. This will not fit 1987 to 97 Truck. Pin to fit 87-97 Truck 80-0279-1.

For Maximum Protection and Performance use
Part # LUBE

RICHMOND GEAR
Synthetic Gear Oil

NOTE: All spools require C-clip eliminator kit

MODEL	YEAR
All Light Trucks	57-87
Bronco	67-86
Comet	63-72
Cougar	65-73
F-100, F-150	57-86
E-100, E-150	57-86
E-200	68-74
Ford Full Size	57-78
Fairlane	62-73
Granada	75-80
LTD II	71-79
Monarch	75-80
Montego	68-76
Mustang	65-73
Torino	71-70
Versailles	77-80



- 11-3/4"
- Oval Housing
- 10 Holes
- 10 Bolt
- 9.00" Diameter Ring Gear
- 1.313" Diameter Pinion
- 28 Splines

SPOOLS - STEEL

RATIO	PART NO.	TEETH	PART NO.	SPLINE	BORE SIZE	PRESSURE ANGLE
3.50	F9350	35-10	81-0928-1	28	2.891/3.062 case	45
3.55	F9355	39-11	81-0931-1	31	2.891/3.062 case	45
3.70	F9370	37-10	81-0933-1	33	2.891/3.062 case	45
3.89	F9389	35-9	81-0935-3	35	3.250 case	30
4.11	F9411	37-9	81-0935x-1	35	2.891/3.062 case	30
4.33	F9433	39-9				
4.56	F9456	41-9				
4.71	F9471	33-7				
4.86	F9486	34-7				
5.00	F9500	30-6				
5.14	F9514	36-7				
5.29	F9529	37-7				
5.43	F9543	38-7				
5.67	F9567	34-6				
5.83	F9583	35-6				
6.00	F9600	30-5				
6.20	F9620	31-5				
6.33	F9633	38-6				
6.50	F9650	39-6				

INSTALLATION KIT/HALF KIT

MINI-SPOOLS

PART NO.	CARRIER BRG.	PART NO.	SPLINE
83-1011-1	2.891	78-0928-1	28
83-1013-1	3.062	78-0931-1	31
83-1003-1	3.062 - HRW	Cross Shaft Pin	
83-1005-1	3.250 - HRW	CSPF9	
83-1007-1	31 Spline Trk.		
	Lck./3.062		
83-1009-1	28 Spline Trk.		
	Lck./2.891		
83-1011-B	Half-Kit		

SPOOL BEARING KIT

PART NO.	CASE
29-0002-1	2.891
29-0004-1	3.062
29-0003-1	3.250
29-0011-1	3.812

For Maximum Protection and Performance use Part # LUBE



RICHMOND GEAR Synthetic Gear Oil



MODEL

YEAR

All GM Models	77-02
Astro & Safari	82-Present
Bravada	91-Present
Buick Full Size	77-85
Camaro	82-02
Century	78-81
Chevy Full Size Car	77-96
Cutlass	78-87
El Camino	77-87
Firebird, Trans-Am, Z28	82-02
Grand Prix	78-87
Monte Carlo	78-87
Olds Full Size	77-89
Omega	75-79
Pontiac Full Size	77-89
Phoenix	78-81
Regal	78-87
Skylark	76-79
S10, S15 (Rear)	82-Present
Ventura	78-81
Isuzu Rodeo	89-93

Will not fit Monza, etc.

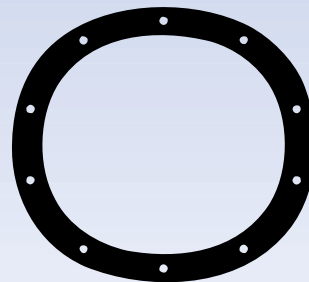
RATIO PART NO. TEETH CARRIER

3.42	GM75342OE	41-12	3
3.42	GM75342TK	41-12	2
3.73	GM75373OE	41-11	3
3.73	GM75373TK	41-11	2
▲ 4.10	GM75410OE	41-10	3
▲ 4.10	GM75410TK	41-10	2
▲ 4.56	GM75456	41-9	3*

For Maximum Protection
and Performance use
Part # LUBE



RICHMOND GEAR
Synthetic Gear Oil



- 8-5/16" x 10-9/16"
- Oval Cover
- 10 Holes
- 10 Bolt
- 7.5" & 7.625" Diameter Ring Gear
- 1.438" Diameter Pinion
- 27 Splines

INSTALLATION KIT/HALF KIT

PART NO.

83-1016-1	77-81
83-1044-1	82-98
83-1016-M	77-81
83-1044-M	82-98
83-1044-B	Half Kit

MINI-SPOOLS

PART NO.

SPLINE

● 78-7526-1	26
Cross Shaft Pin	CSPGM75

- Will not fit 7.625 carrier

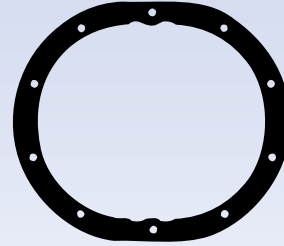
- * Special Cross Pin 80-0270-1 required.
- 2 Fits 3.08 and numerically lower carrier.
- 3 Fits 3.23 and numerically higher carrier.
- ▲ Will not fit on Torsen differential.
- For use in factory carrier only. Not for Mini Spool or Torsen differential.

MAKE**YEAR**Chevrolet
Corvette55-64
55-62**RATIO****PART NO.****TEETH**

3.73

GM82373E*

41-11

** Fits 3.08 to 3.70 carrier.****Fits 4.11 to 4.56 carrier.*

- 11-5/16"
- Oval Housing
- 10 Holes
- 10 Bolt
- 8.20" Diameter Ring Gear
- 1.438" Diameter Pinion
- 17 Splines

For Maximum Protection
and Performance use
Part # LUBE

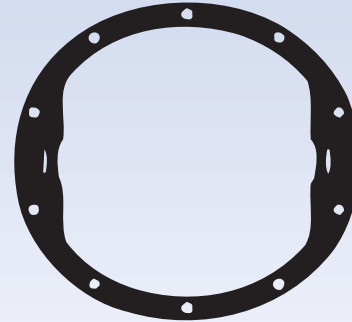


RICHMOND GEAR
Synthetic Gear Oil

MAKE	YEAR
Camaro	67-71
Caprice	65-71
El Camino	64-71
Impala	65-72
Monte Carlo	70-72
Nova, Chevy II, Chevelle	64-72
Sprint	71-72

RATIO	PART NO.	TEETH
3.73	GM82C373	41-11
4.11	GM82411	37-9

*Fits 3.08 + carrier.
Use Crush Sleeve from GM 7-1/2 - 10B or 8.2 - 10B Pontiac*



- 11"
- Oval Cover
- 10 Holes
- 10 Bolt
- 8.20" Diameter Ring Gear
- 1.438" Diameter Pinion
- 25 Splines

INSTALLATION KIT/HALF KIT

PART NO.

83-1022-1	
83-1022-M	
83-1022-B	Half Kit

MINI-SPOOLS

PART NO. SPLINE

78-8228-1	28
Cross Shaft Pin	
CSPGM82	

For Maximum Protection
and Performance use
Part # LUBE

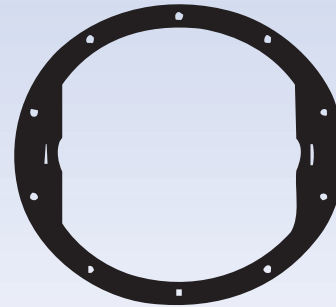


RICHMOND GEAR
Synthetic Gear Oil

MAKE

YEAR

Buick Full Size	77-96
Blazer (K Series Front)	77-91
Apollo, Regal, Century	73-77
Biscayne	71-74
Grand National	84-87
Skylark, GS	71-75, 77-79
Chevelle	70-76
Chevy Full Size	71-96
Chevy II, Nova	70-79
Camaro, Firebird, TA	71-81
Cutlass	71-77
Electra	76-78
Gran Sport	73-77
GTO, Firebird	70-81
LeSabre	73-74
Olds Full Size	71-89
Olds, Hurst	85-88
Pontiac Full Size	71-89
Hurst Olds	85-88
Omega	73-75, 77-79
Grand Prix, Lemans	71-77
Roadmaster	71-74, 91-96
Ventura, Phoenix	71-77
Z28	72-81
Olds F-65	70-76
C10, C15 (Rear)	80-02
K10, K15 (Rear)	80-02
K10, K20 (Front)	77-87
Suburban (Rear)	80-96
Suburban (Front)	77-91
El Camino	73-76
G10, G20 Van	70-96



- 11"
- Oval Cover
- 10 Holes
- 8.50" & 8.625" Diameter Ring Gear
- 1.626" Diameter Pinion
- 30 Splines

RATIO

PART NO.

TEETH

3.08	GM85308	40-13
3.42	GM85342	41-12
3.73	GM85373	41-11
4.10	GM85410	41-10
4.56	GM85456	41-9

SPOOL BEARING KIT

PART NO.

29-0013-1 (28 Spline)
29-0006-1 (30 Spline)

SPOOLS

PART NO. SPLINE

81-1028-1 28
81-1030-1 30

INSTALLATION KIT/HALF KIT

PART NO.

83-1021-1 (Car & Truck rear)
(Truck rear thru 1998)
83-1020-1 (Front)
83-1021-M (Car Only)
83-1021-TE (Truck 73-87)
83-1020-B Half Kit
83-1021-B Half Kit

• Does not fit 8.6 carrier.

MINI-SPOOLS

PART NO.

SPLINE

78-1028-1 28
Cross Shaft Pin
CSPGM85

NOTE: All spools require
C-clip eliminator kit

For Maximum Protection
and Performance use
Part # LUBE



RICHMOND GEAR
Synthetic Gear Oil

* Cross Pin 80-0272-1 required.
When replacing a stock 2.56 and numerically lower, the carrier
must be replaced with a carrier of 2.73 or higher.

MAKE	YEAR
Blazer	64-82
C10	64-82
C15	64-82
K10 (Rear)	64-82
K20 (Rear)	64-82
G10, G15	64-81
G20, G25	69-81

RATIO	PART NO.	TEETH	CARRIER
3.08	12BT308	40-13	3
3.42	12BT342	41-12	3
3.73	12BT373T	41-11	3
3.73	12BT373	41-11	4
4.10	12BT410	41-10	4
4.10	12BT410T	41-10	3
4.56	12BT456	41-9	4
4.56	12BT456T	41-9	3

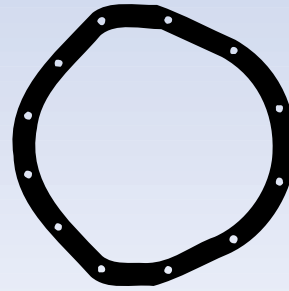
When installing 5.13 and 5.38 ratio sets, differential cross shaft #80-0269-1 must be used.

Note: For use with factory carrier only. Not for use with Mini-Spool

3 - Fits 3.40 ratio and numerically lower carrier.

4 - Fits 3.73 ratio and numerically higher carrier.

Will not fit 2.56 & 2.73 carrier on 80-83 Truck and Blazer



- 11-1/2"
- Irregular 12 Holes
- Truck 12 Bolt Cover
- 8.875" Diameter Ring Gear
- 1.438" Diameter Pinion
- 30 Splines

INSTALLATION KIT/HALF KIT

PART NO.

83-1018-1	
83-1018-M	
83-1018-B	Half Kit

SPOOLS

PART NO. SPLINE CARRIER

81-1230T-1	30	4
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SPOOL BEARING KIT

PART NO.

29-0005-1

MINI-SPOOLS

PART NO. SPLINE

78-1230-1	30
Cross Shaft Pin	
CSPGM2	

NOTE: All spools require C-clip eliminator kit

For Maximum Protection and Performance use Part # LUBE



RICHMOND GEAR Synthetic Gear Oil

MAKE

YEAR

Chevrolet	64-72
Chevy II	64-72
Chevelle	64-72
Camaro	67-72
El Camino	65-72
Firebird	67-72
Grand Prix	70-72
GTO, Lemans	65-72
Monte Carlo	70-72
Nova	70-72
Olds F85	68-70

RATIO PART NO. TEETH CARRIER

3.42	12BC342	41-12	3
3.55	12BC355	39-11	3
3.73	12BC373	41-11	4
3.73	12BC373T	41-11	3
4.10	12BC410	41-10	4
4.10	12BC410T	41-10	3
4.56	12BC456	41-9	4

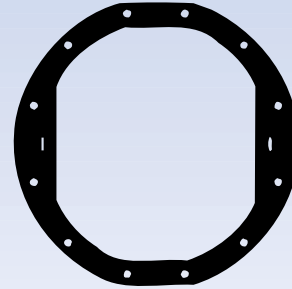
3 - Fits 3.07 to 3.73 ratio carrier.

4 - Fits 3.90 ratio and numerically higher carrier.

For Maximum Protection and Performance use
Part # LUBE



RICHMOND GEAR
Synthetic Gear Oil



- 10-7/8"
- Oval Cover 12 Holes
- 8.875" Diameter Ring Gear
- 1.625" Diameter Pinion
- 30 Splines
- "C" Axle Only

INSTALLATION KIT/HALF KIT

PART NO.

83-1019-1	
83-1019-M	
83-1019-B	Half Kit

SPOOLS

PART NO. SPLINE CARRIER

81-1230-1	30
81-1233-1	33

SPOOL BEARING KIT

PART NO.

29-0005-1

MINI-SPOOLS

PART NO. SPLINE

78-1230-1	30
Cross Shaft Pin	
CSPGM12	

NOTE: All spools require
C-clip eliminator kit

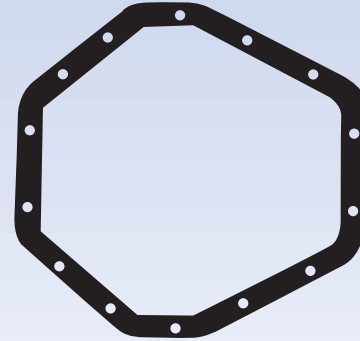
MODEL**YEAR**

3/4 Ton - 1 Ton	1973 & Newer
G30, G35	1973 & Newer
C20, C25	1973-1996
C30, C35	1973 & Newer
K20, K25	1973 & Newer
K30, K35	1973 & Newer

RATIO**PART NO.****TEETH**

*4.56	G105456	41-9
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NOTES: Fits *4.56 and numerically higher



- 14 7/8" x 13"
- 10.5" Diameter Ring Gear
- 1.750: Diameter Pinion
- 12 9/16" x 18 RH Threaded Bolts
- 30 Splines

INSTALLATION KIT/HALF KIT**PART NO.**

Contact Factory

SPOOLS**PART NO. SPLINE CARRIER**

Contact Factory

SPOOL BEARING KIT**PART NO.**

Contact Factory

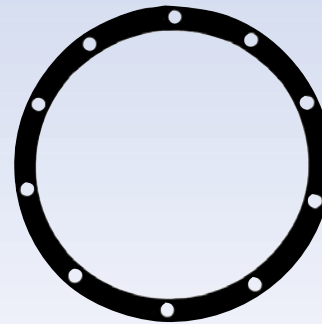
For Maximum Protection
and Performance use
Part # LUBE



RICHMOND GEAR
Synthetic Gear Oil

MODEL	YEAR
4x4 Light Truck (Front & Rear)	79-85
4 Runner (Front & Rear)	79-85
4x4 (Rear)	86-98
4 Cylinder w/out Turbo (Rear)	76-95
4 Runner w/out Turbo (Rear)	86-89

RATIO	PART NO.	TEETH
3.90	TY8410224	39-10
4.37	TY8437223	35-8



- 8-3/8" x 9-3/32"
- 10 Holes Round
- RG Diameter 7.8"
- 10 - 11mm x 1mm RH Threaded Bolts
- 1.3785" Diameter Pinion
- 10 Bolt 3rd Member
- 27 Splines

INSTALLATION KIT/HALF KIT

PART NO.

83-1030-1

83-1030-B Half Kit

SPOOLS

PART NO. SPLINE

81-T1030-1 30

SPOOL BEARING KIT

PART NO.

29-0009-1

NOTE: All spools require C-clip eliminator kit

For Maximum Protection and Performance use Part # LUBE



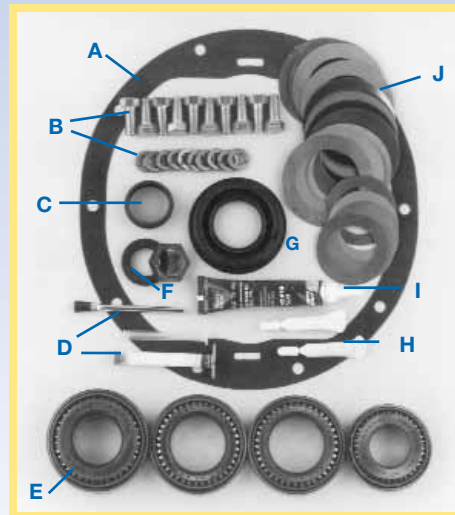
RICHMOND GEAR Synthetic Gear Oil

Complete Kits

PRODUCT DESCRIPTION

PRODUCT DESCRIPTION		PART NO.
Chrysler 8.75 Early	Complete Kit	83-1037-1
Chrysler 8.75 Late	Complete Kit	83-1031-1
Chrysler 9.25	Complete Kit	83-1041-1
Ford 7.5	Complete Kit	83-1045-1
Ford 8.8	Complete Kit	83-1043-1
9" Ford 28 Spl. Open	Complete Kit	83-1011-1
9" Ford HRW 3.062	Complete Kit	83-1003-1
9" Ford HRW 3.250	Complete Kit	83-1005-1
Ford 9" (3.062) 31 Spline	Complete Kit	83-1013-1
9" Ford Trac Lock 31 Spline	Complete Kit	83-1007-1
9" Ford Trac Lock 28 Spline	Complete Kit	83-1009-1
7.5 GM 77-81	Complete Kit	83-1016-1
7.5 GM 82-98	Complete Kit	83-1044-1
GM 8.2" Aftermarket	Complete Kit	83-1022-1
GM 8.5 Car	Complete Kit	83-1021-1
GM 8.5" Truck (Front)	Complete Kit	83-1020-1
GM "B/P"	Complete Kit	83-1040-1
Vette '63-'79	Complete Kit	83-1024-1
GM 12 Bolt Car	Complete Kit	83-1019-1
GM 12 Bolt Truck	Complete Kit	83-1018-1
Dana 44 30 Spline	Complete Kit	83-1033-1
Dana 60	Complete Kit	83-1034-1
8" Ford	Complete Kit	83-1015-1
Toyota 7.8	Complete Kit	83-1030-1
Toyota 7.5 IFS	Complete Kit	83-1039-1
Toyota V-6	Complete Kit	83-1046-1

NOTE: Richmond Gear Lube Part No. LUBE (quart)
 Richmond Gear Lube Part No. LUBE-CASE (12 qt. Bottles)
 Ring & Pinion Installation Video Part No. VIDEO



- A. Cover gasket
- B. Ring gear bolts and washers
- C. Crush sleeve
- D. Marking compound and brush
- E. Pinion and carrier bearings
- F. Pinion nut and washer
- G. Pinion seal
- H. Thread locking compound
- I. Silicone sealer
- J. Pinion and carrier shims

Richmond Kits use only TIMKEN Bearings

Mega Kits

PRODUCT DESCRIPTION

PRODUCT DESCRIPTION		PART NO.
Ford 8.8	Mega Kit	83-1043-M
GM 7.5 10 Bolt Early	Mega Kit	83-1016-M
GM 7.5 10 Bolt Late	Mega Kit	83-1044-M
GM 8.5 10 Bolt Car Only	Mega Kit	83-1021-M
GM 8.5" 10 Bolt Truck 83-87	Mega Kit	83-1021-TE
GM 8.2 10 Bolt	Mega Kit	83-1022-M
GM 12 Bolt Car	Mega Kit	83-1019-M
GM 12 Bolt Truck	Mega Kit	83-1018-M
Chrysler 9.25	Mega Kit	83-1041-M

Richmond Mega Kits have the same quality parts as the regular installation kits but include Axle Seals and Axle Bearings for a Total Rear Rebuild.

NOTE: Richmond Gear Lube Part No. LUBE (quart)
 Richmond Gear Lube Part No. LUBE-CASE (12 qt. Bottles)
 Ring & Pinion Installation Video Part No. VIDEO



Richmond Kits use only TIMKEN Bearings

Half Kits

PRODUCT DESCRIPTION

PRODUCT DESCRIPTION		PART NO.
Chrysler 8.75 Early	Half Kit	83-1037-B
Chrysler 8.75 Late	Half Kit	83-1031-B
Chrysler 9.25	Half Kit	83-1041-B
8" Ford	Half Kit	83-1015-B
Ford 8.8	Half Kit	83-1043-B
Ford 9 Open	Half Kit	83-1011-B
GM 7.5"	Half Kit	83-1044-B
GM 8.2	Half Kit	83-1022-B
GM 8.5 Car	Half Kit	83-1021-B
GM 12 Bolt Car	Half Kit	83-1019-B
GM 8.5 Truck Front	Half Kit	83-1020-B
GM 12 Bolt Truck	Half Kit	83-1018-B
8.2 OEM	Half Kit	83-1023-B
Dana 60	Half Kit	83-1034-B
GM Corvette 63-79	Half Kit	83-1024-B
GM 8.2 B or P	Half Kit	83-1040-B
Ford 7.5	Half Kit	83-1045-B
Toyota 7.8	Half Kit	83-1030-B
Toyota 7.5 IFS	Half Kit	83-1039-B
Toyota V-6	Half Kit	83-1046-B



- A. Cover gasket
- B. Crush sleeve
- C. Pinion Sleeve
- D. Pinion Shims

Individual Components

PRODUCT DESCRIPTION

PRODUCT DESCRIPTION		PART NO.
Dana 60	Carrier Shims	38-0008-1
Ford 7.5, 8.8 - GM 8.5 -10B,12B "C"	Pinion Shims	16-0090-1
Ford 8.8 - GM 12B Tk. "C"	Carrier Shims	38-0007-1
Ford 7.5 - GM 7 1/2 - 8 1/2 - 8.2	Carrier Shims	38-0006-1
Solid Spacer 12 Bolt GM Car	Spacer	04-0012-1
Solid Spacer w/Shims 12 Bolt Car	Spacer/Shims	04-0012-S
Solid Spacer Late 8.75	Spacer	04-0013-1
Solid Spacer w/Shims 8.75	Spacer/Shims	04-0013-S
Solid Spacer 8.8/9" Ford	Spacer	04-0011-1
Solid Spacer w/Shims 9"	Spacer/Shims	04-0011-S
Ford 7.5", 8.8", 9"	Crush Sleeve	19-0002-1
GM 8.5"	Crush Sleeve	19-0004-1
Ford 9	Cover Gasket	14-0010-1
Sealant Kit	Kit	35-0007-1
Marking Compound	Compound	55-0001-1
Richmond Gear Lube	Quart	Lube
Richmond Gear Lube	Case	Lube-Case
Ring & Pinion Installation Video		Video
Shop Cord Reel (35')		Cord Reel
Shop Light		Shop Light



Full Spools

All Richmond Spools . . .

- Are CAD/CAM designed for lightest weight yet optimum strength
- Are CNC machined 4140 forged and are fully heat treated to aircraft specifications
- Have minimum run out to allow the optimum pattern for performance and life
- Are race proven on strip and track



REAR END TYPE	TYPE	MATL	DESCRIPTION	SPLINE	PART #	PRESSURE ANGLE
Ford 9"	Full	Steel		28	81-0928-1	45
Ford 9"	Full	Steel		31	81-0931-1	45
Ford 9"	Full	Steel		33	81-0933-1	45
Ford 9"	Full	Steel	3.250 case 30 PA	35	81-0935-3	30
Ford 9"	Full	Steel	2.891/3.062 case	35	81-0935X-1	30
Ford 8.8	Full	Steel	C-Clip elim reqd	31	81-8831-1	45
Ford 8.8	Full	Steel	C-Clip elim reqd	33	81-8833-1	45
GM 8.5 10 Bolt	Full	Steel	C-Clip elim reqd	28	81-1028-1	45
GM 8.5 10 Bolt	Full	Steel	C-Clip elim reqd	30	81-1030-1	45
GM 12 Bolt	Full	Steel	C-Clip elim reqd	30	81-1230-1	45
GM 12 Bolt	Full	Steel	C-Clip elim reqd	33	81-1233-1	45
GM 12 Bolt Trk 4 ser	Full	Steel	C-Clip elim reqd	30	81-1230T-1	45
Dana 44 3.92 up	Full	Steel		30	81-4430-1	30
Chry 8-3/4	Full	Steel		30	81-87530-1	30

NOTE: Pressure angle of spool must be the same as the angle of the axle splines.

Mini Spools

REAR END TYPE	TYPE	MATL	SPLINE	PART #
Ford 9"	Mini	Steel	28	78-0928-1
Ford 9"	Mini	Steel	31	78-0931-1
GM 8.5 10 Bolt	Mini	Steel	28	78-1028-1
GM 8.2 10 Bolt	Mini	Steel	28	78-8228-1
GM 12 Bolt Car	Mini	Steel	30	78-1230-1
Ford 8.8	Mini	Steel	28	78-8828-1
Ford 8.8	Mini	Steel	31	78-8831-1
GM 7.5	Mini	Steel	26	78-7526-1*
GM 7.5	Mini	Steel	28	78-7528-1**
Dana 44	Mini	Steel	30	78-4430-1



*NOTE: Mini-Spool 78-7526-1 fits 7.5" carrier with 26 Splines with inside carrier spacing of 2.680".
Mini-Spools will not fit 7.625" carriers.

**NOTE: For use with bolt-in 28 spline style axles only.

Cross Shaft Pins

REAR END TYPE	TYPE	MATL	SPLINE	PART #
Ford 9"	Mini	Steel	All	CSPF9
GM 8.5 10 Bolt	Mini	Steel	28	CSPGM85
GM 8.2 10 Bolt	Mini	Steel	28	CSPGM82
GM 12 Bolt Car	Mini	Steel	30	CSPGM12
Ford 8.8	Mini	Steel	28	CSPF88E
Ford 8.8	Mini	Steel	31	CSPF88L
GM 7.5	Mini	Steel	26	CSPGM75
Dana 44	Mini	Steel	30	CSPD44

These Cross Pins can be used only with Mini-Spools.




Spool Bearing Kits

REAR END TYPE	TYPE		PART #
Ford 9"	Full	2.891 case	29-0002-1
Ford 9"	Full	3.062 case	29-0004-1
Ford 9"	Full	3.250 case	29-0003-1
Ford 9"	Full	3.812 case	29-0011-1
Ford 8.8	Full		29-0005-1
GM 8.5, 10 Bolt	Full	(28 spline)	29-0013-1
GM 8.5, 10 Bolt	Full	(30 spline)	29-0006-1
GM 12 Bolt	Full		29-0005-1
Chry 8-3/4	Full		29-0010-1

Spool Bearing Kits come only with Bearings and Bearing Races.

Purpose Built Products

Richmond Gear, a division of Regal Beloit Corporation, is a leading manufacturer of professional quality, hi-performance ring and pinion gears, manual transmission and performance lockers. For over 80 years, the Double Diamond  has signified the highest quality drive train products in the industry.

Now, Richmond Gear is applying that same manufacturing performance and quality to Purpose Built Products. From reverse engineering to complete design, Richmond has the capability to manufacture special gear sizes, ratios and purpose built products as well as provide assembly capabilities for complete or sub-assemblies.



Located in Liberty, South Carolina, the Richmond plant has over 185,000 sq. ft. of manufacturing, engineering and office space. We control the complete manufacturing process from the type and quality of steel forgings, bar stock and castings thru in-house heat treating.

For your Purpose Built Products and special requirements, just call the Richmond Gear Sales Department. We are ready to discuss your needs and earn your business.

Telephone: 864-843-9231 • Fax 864-843-2964

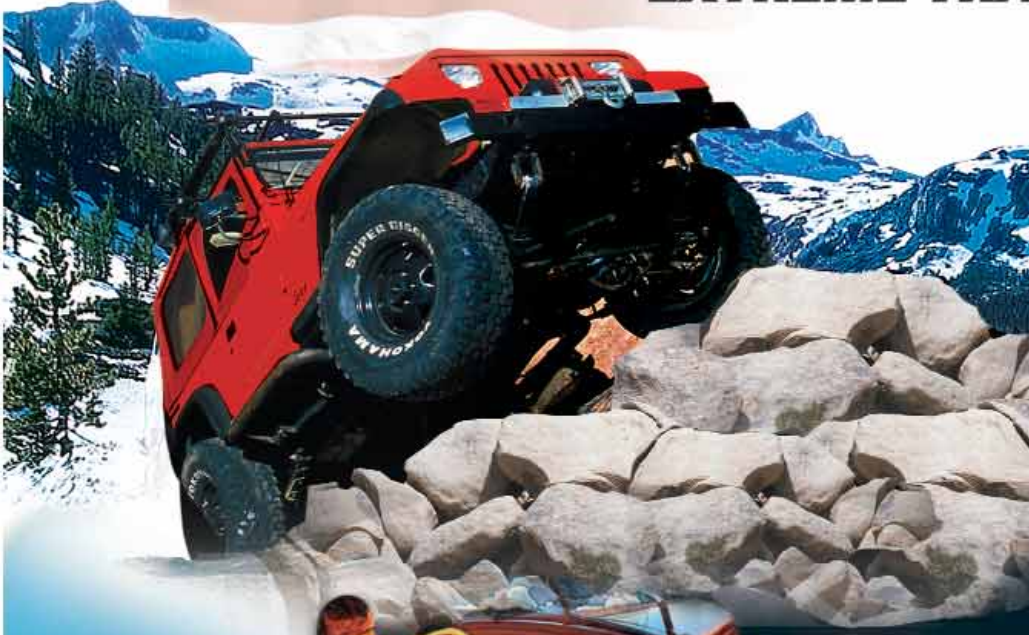
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POWERTRAX[®]

BY  RICHMOND[™]

EXTREME TRACTION SYSTEMS



POWERTRAX[®]
No-Slip Traction System[™]



**LOCK
RIGHT[®]**
POWERTRAX

Made in the U.S.A.

Application Guide

"The Stealth Locker"



POWERTRAX[®]
No-Slip Traction System[™]

With the **Powertrax**[®] **No-Slip Traction System**, you can unleash your performance vehicle's maximum power or give your truck/SUV the ability to get you just about anywhere. Whether you want the added safety of high traction for everyday street use or extreme traction for the most demanding applications, the No-Slip advantage is just a simple upgrade away. **Precision synchronization control provides exceptionally smooth and quiet operation.** There are no friction clutches to wear out and no special lubricants required. Installs easily in about an hour with no special tools or setup needed. Easily converts your "open", limited-slip or locking differential for superior traction output.



"Rugged Applications"



**LOCK
RIGHT**[®]
POWERTRAX

Powertrax[®] **Lock-Right Lockers** are brute force devices for rugged truck applications. They provide the best value for greatly increasing the traction of 2-wheel drive and 4x4 trucks and Jeeps. Lock-Right is the first design not requiring complete replacement of the differential case assembly. Installation is simple because the ring and pinion setups are not altered. Installs easily in rear axle, front axle, or both front and rear. Best suited for extreme off-road to severe on-road use. Proven in the most demanding applications worldwide.



Model Listing

POWERTRAX[®]
No-Slip Traction System™



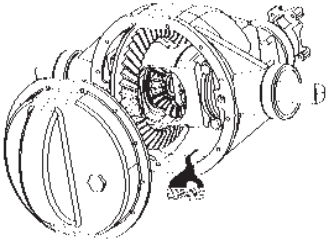
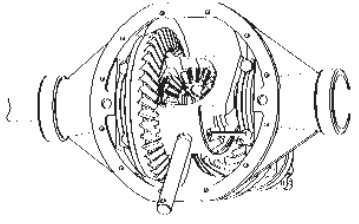
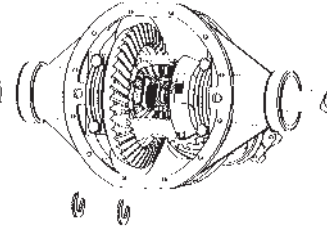
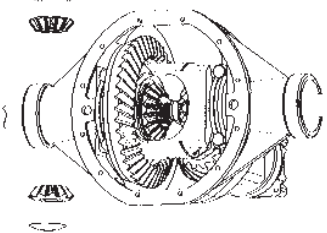
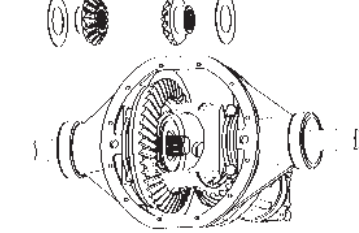
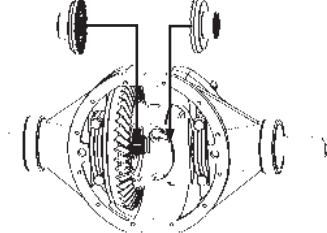

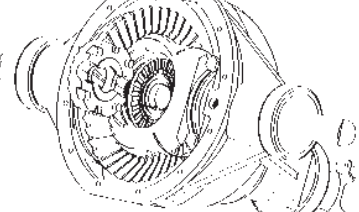
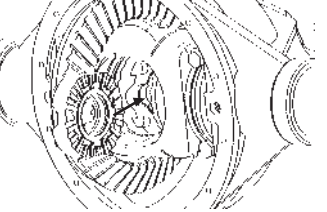
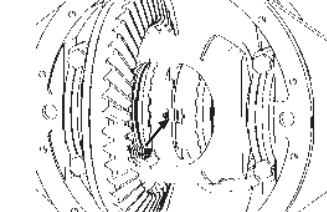
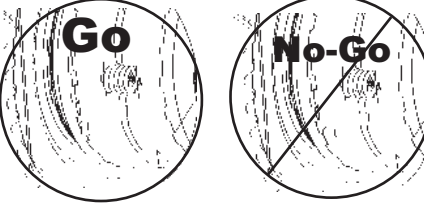
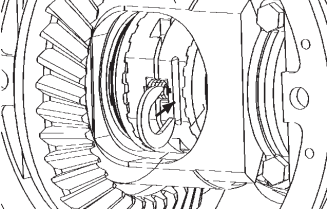

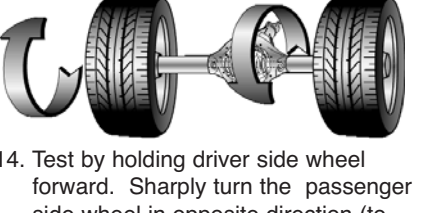

VEHICLE MANUFACTURER	RING GEAR	AXLE MODEL	SPLINE COUNT	DIFFERENTIAL TYPE	SPECIAL NOTES	NO-SLIP TRACTION SYSTEM	LOCK-RIGHT LOCKER
AMC	8.875"	AMC-20	29	Open		92-0120-2900	1710
AMC	8.875"	AMC-20	29	Trac Lok	Stock Axles	92-0120-2920	
CHRYSLER	8.25"		27	Open		92-0382-2705	1230
CHRYSLER	8.25"		27	Trac Lok		92-0382-2725	
CHRYSLER	8.25"		27	Sure-Grip		92-0382-2745	
CHRYSLER	8.25"		29	Open		92-0382-2905	
CHRYSLER	8.25"		29	Trac Lok		92-0382-2925	
CHRYSLER	8.75"		30	Open			1240
CHRYSLER	9.25"		31	Open		92-0392-3105	1220
CHRYSLER	9.25"		31	Trac Lok		92-0392-3125	
CHRYSLER	9.25"		31	Sure-Grip		92-0392-3145	
CHRYSLER				Powerwagon	WC, M		1210
DANA	7.75"	Model 25	10	Open			2110
DANA	7.2"	Model 27	10	Open			2115
DANA	6.625"	Model 28	23	Open			2116
DANA	7.2"	Model 30	27	Open		92-0430-2700	2210
DANA	7.565"	Model 35	27	Open	Non C-Clip (1.625)	92-0435-2700	2310
DANA	7.565"	Model 35	27	Open	IFS (1.625)	92-0435-2701	2310
DANA	7.565"	Model 35	27	Open	IFS & ABS (1.555)	92-0435-2702	2311
DANA	7.565"	Model 35	27	Open	C-Clip (1.625)	92-0435-2705	2310
DANA	7.565"	Model 35	27	Open	C-Clip & ABS (1.555)	92-0435-2706	2311
DANA	7.565"	Model 35	27	Trac Lok	C-Clip	92-0435-2725	
DANA	8.5"	Model 44	27	Open			
DANA	8.5"	Model 44	30	Open		92-0444-3000	2410
DANA	8.5"	Model 44	10	Open			2415
DANA	8.5"	Model 41	10	Open			2416
DANA	8.5"	Model 44	30	Open	IFS	92-0444-3001	2410
DANA	8.5"	Model 44	30	Trac Lok		92-0444-3020	
DANA	9.0"	Model 50	30	Open			2510
DANA	9.0"	Model 50	30	Open	IFS		2510
DANA	9.75"	Model 60	30	Open	Non C-Clip	92-0460-3000	2610
DANA	9.75"	Model 60	30	Open	C-Clip	92-0460-3005	2610
DANA	9.75"	Model 60	30	Trac Lok	Non C-Clip	92-0460-3020	
DANA	9.75"	Model 60	30	Trac Lok	C-Clip	92-0460-3025	
DANA	9.75"	Model 60	32	Open		92-0460-3200	
DANA	9.75"	Model 60	32	Trac Lok		92-0460-3220	
DANA	9.75"	Model 60	35	Open		92-0460-3500	2620
DANA	9.75"	Model 60	35	Trac Lok		92-0460-3520	
DANA	10.5"	Model 70	32	Open		92-0470-3200	2711
DANA	10.5"	Model 70	35	Open		92-0470-3500	2710
DANA	11.25"	Model 80	35	Open		92-0480-3500	2810
DANA	11.25"	Model 80	37	Open		92-0480-3700	2811
FORD	7.5"		28	Open			1830
FORD	8.0"		28	Open		92-0680-2800	1810
FORD	8.8"	3/4" shaft	28	Open		92-0688-2807	1820
FORD	8.8"	3/4" shaft	28	Trac Lok		92-0688-2827	
FORD	8.8"	3/4" shaft	31	Open		92-0688-3107	1821
FORD	8.8"	7/8" shaft	31	Open		92-0688-3108	1822
FORD	8.8"	3/4" shaft	31	Trac Lok		92-0688-3127	
FORD	8.8"	7/8" shaft	31	Trac Lok		92-0688-3128	
FORD	9"		28	Open		92-0690-2800	1810
FORD	9"		31	Open		92-0690-3100	1810
FORD	9"		35	Open		92-0690-3500	
FORD	10.25"		35	Open			1840
GM	7.2"		26	Open	IFS		1935
GM	7.5"	10 bolt	26	Open		92-0775-2605	1930
GM	7.625"	10 bolt	26	Open		92-0776-2605	1932
GM	7.625"	10 bolt	28	Open		92-0776-2805	1931
GM	7.625"	10 bolt	28	Gov Lok		92-0776-2885	
GM	8.2"	10 bolt	28	Open	B.O.P.	92-0782-2801	
GM	8.2"	10 bolt	28	Open		92-0782-2805	1940
GM	8.5"	10 bolt	28	Open		92-0785-2805	1920
GM	8.5"	10 bolt	30	Open		92-0785-3005	1921
GM	8.6"	10 bolt	30	Open		92-0786-3005	
GM	8.875"	12 bolt	30	Open		92-0788-3005	1910
GM	9.5"	14 bolt	33	Open		92-0795-3305	1950
GM	10.5"	14 bolt	30	Open		92-0705-3000	1955
NISSAN	9.1"	H233	31	Open			3220
SUZUKI	6.9"		26	Open	Samurai		1510 or 1530
SUZUKI		SJ-410		Open			1520
SUZUKI	6.9"		26	Open	Sidekick		1512 or 1532
TOYOTA	7.5"		27	Open			1611
TOYOTA	8"	2-pinion	30	Open	pre '95	92-2080-3001	1610
TOYOTA	8"	2-pinion	30	Open	Tacoma	92-2080-3002	1615
TOYOTA	8"	4-pinion	30	Open			1620
TOYOTA	8"	4-pinion	30	Open			1622
TOYOTA	8.875"	12 bolt	10	Open	Land Cruiser	92-2088-1005	1631
TOYOTA	8.875"	12 bolt	10	Open			1631
TOYOTA	8.875"	12 bolt	30	Open	L.C. Front	92-2088-3001	
TOYOTA	8.875"	12 bolt	30	Open	Land Cruiser	92-2088-3005	1630

For Maximum Protection and Performance use Part # LUBE



RICHMOND GEAR
Synthetic Gear Oil

Application Guide

 <p>1. Remove cover and drain oil.</p>	 <p>2. Remove cross-shaft.</p>	 <p>3. Push axles in and remove C-clips.</p>
 <p>4. Rotate wheel to remove spider gears.</p>	 <p>5. Remove side gears, and for limited-slip differentials, remove friction plates.</p>	 <p>6. Install couplers, ring gear side first. Install C-clip on ring gear side only.</p>
 <p>7. Insert springs between drivers, on both sides</p>	 <p>8. Insert spacer in driver and seal together on ring gear side coupler</p>	 <p>9. Insert driver and spacer on opposite side coupler.</p>
 <p>10. Insert springs between drivers, on both sides.</p>	 <p>11. Check gap between drivers using check block provided.</p>	 <p>12. Push in axle and insert second C-clip thru slot in driver/spacer.</p>
 <p>13. Install cross-shaft. Twist and push to get past saddle springs.</p>	 <p>14. Test by holding driver side wheel forward. Sharply turn the passenger side wheel in opposite direction (to disengage the unit). Passenger wheel should rotate freely.</p>	 <p>15. Apply sealant to cover and reinstall. Add differential oil.</p>

The Powertrax No-Slip Traction system installs easily (about 1.5 hours) in your existing case without special tools or skills. Easily upgrades open, limited slip and locking differentials. Visit www.richmondgear.com for complete installation manuals and instructions.

Application Guide

IMPORTANT FRONT AXLE APPLICATION INFORMATION

The Powertrax[®] No-Slip Traction System and Lock-Right Locker works well on the front axle of 4-wheel drive vehicles provided a couple of important guidelines are followed. The Powertrax[®] No-Slip Traction System should be used only on vehicles equipped with locking hubs on the front axle or with front axle disconnect. In addition, the vehicle must not be equipped with full time 4 wheel drive. Vehicles equipped with a Powertrax[®] No-Slip Traction System on the front axle should not be operated on the highway with the front hubs locked and 4-wheel drive engaged. Following these guidelines will ensure very on-road driveability while still providing maximum off-road traction.

FREQUENTLY ASKED QUESTIONS

What is a traction-adding differential?

A traction-adding differential provides engine power to the wheels with the most amount of traction. A stock/open differential provides engine power to the wheels with the least amount of resistance or the wheels with the least amount of traction.

Why do I need a Powertrax[®] traction-adding differential?

Powertrax[®] traction adding differentials can enhance the performance of your vehicle in many ways. The No-Slip Traction System and Lock-Right Locker will provide your light truck, sport utility, van, or performance car with maximum traction when you need it most. Whether you need the added traction for safety, recreation, work, or piece of mind, the Powertrax line of traction-adding differentials is what you need.

What is the difference between the No-Slip Traction System and the Lock-Right Locker?

While both products offer maximum traction, full wheel differentiation, and easy installation, each product has features and benefits that meet the needs of different customers. The No-Slip Traction System uses SynTRAC technology and is the latest design in traction adding differentials. It provides the maximum traction of a locking differential combined with the smooth and quiet operation of a limited-slip device. The Lock-Right Locker is our original product line that offers extreme value in a traction-adding differential. The Lock-Right provides maximum traction, but a light clicking noise can be heard when turning as the Lock-Right gears allow for wheel differentiation. On some vehicles the engine noise will overcome the clicking noise.

Can I install a Powertrax No-Slip Traction System or Lock-Right Locker myself?

In most vehicles, the Powertrax No-Slip Traction System and Lock-Right Locker can be installed by the home mechanic in just a few hours. Detailed instructions that are model specific are provided. Call or e-mail us if you have a question about your specific application.

What special tools and/or oils are required during installation?

The No-Slip Traction System and Lock-Right Locker do not require special tools or oils for installation. In most cases, a wrench and screwdriver are all you need. No special oil additives are required because the units are all gear (no frictional clutches).

What kind of maintenance is required once a No-Slip Traction System or Lock-Right Locker is installed in my vehicle?

We recommend you change the differential oil according to your vehicle manufacturer's specifications.

Is a model offered for my vehicle?

We offer applications for a wide range of domestic and import vehicles. Please see our No-Slip Traction System application chart or our Lock-Right Locker application chart.

(Continued on next page)

Application Guide

Can I install a Powertrax[®] product in the front and rear of my 4 WD?

In most cases where an application is available, the answer is yes. However, we do not recommend installing a unit in the front differential if the vehicle has a full time 4 WD and is primarily used on the pavement.

Is the No-Slip Traction System just for trucks/SUV's, or can it be installed in a car?

Installing a No-Slip Traction System in your performance street rod will give you spool performance when coming off the line, combined with full wheel differentiation when turning. Imagine two wheels gripping the pavement instead of one spinning effortlessly.

Do I need a stock/open differential case to install a Powertrax[®] product?

The No-Slip Traction System can be installed in a wide range of stock/open and limited-slip differential cases. For specific applications, please see our application chart or contact us via. phone or e-mail. The Lock-Right Locker can only be installed in stock/open differential cases.

How does a No-Slip Traction System or Lock-Right Locker affect the towing of my trailer?

The No-Slip Traction System or Lock-Right Locker will have no affect on the towing of your trailer on the road other than you will have more traction when you need it.

Can I tow my vehicle if it has a No-Slip Traction System or Lock-Right Locker installed?

Yes. If the unit is installed in the rear differential, the No-Slip Traction System or Lock-Right Locker will simply provide full wheel differentiation when turning. If the unit is installed in the front differential, we recommend unlocking the front wheel hubs and putting the transfer case in 2WD.

Does tire wear increase with a No-Slip Traction System or Lock-Right Locker installed?

No. The No-Slip Traction System and Lock-Right Locker provide full wheel differentiation when turning. Tire wear is minimized.

Will there be a decrease in gas mileage with the No-Slip Traction System or Lock-Right Locker installed in my vehicle?

No. The No-Slip Traction System and Lock-Right Locker will not have an effect on your "on the road" gas mileage. Off road, you could actually increase your mileage because it will take less effort to get through the loose traction conditions. With a standard open differential you will have to apply more power and get more wheel spin-up, thus using more gas.

What is the price of the No-Slip Traction System and Lock-Right Locker?

Please contact a local distributor or call us for a distributor near you. All our distributors offer competitive pricing.

Do you have applications for front wheel drive cars at this time?

Powertrax[®] does not offer applications for front wheel drive passenger cars at this time.

For Maximum Protection
and Performance use
Part # LUBE



RICHMOND GEAR
Synthetic Gear Oil

Warnings & Cautions



Please Read Carefully



The following ,  and  information is supplied to you for your protection and to provide you with many years of trouble free and safe operation of your Richmond Gear product.

Read **ALL** instructions prior to operating transmission and/or ring and pinion. Injury to personnel, transmission or ring and pinion failure may be caused by improper installation, maintenance or operation.



- **It is dangerous to get under a jacked-up vehicle.** The vehicle could slip off the jack and fall on you. You could be crushed. Never place any part of your body under a vehicle that is on a jack. Never start or run the engine while the vehicle is on a jack. **If you need to get under a raised vehicle, take it to a service center where it can be raised on a lift.**



- Hot oil can cause severe burns. Use extreme care when removing lubrication plugs and when working close to a unit that has been in operation.
- Check lube level between scheduled lube changes to insure that proper lube level is maintained. Inspect vent plug to insure it is clean and operating. Inspect the tightness of mounting bolts, misalignment of connecting shafts, lube leakage, excessive heating, or any unusual noise or vibration.
- Serious personal injury may occur as a result of improperly performed maintenance, adjustments or repairs.
- Do not attempt any of the maintenance, checks or repairs described on the following pages if you are not fully familiar with these or other procedures with respect to the transmission, or are uncertain as to how to proceed. Have the necessary work done by a properly equipped and qualified workshop.
- Always be extremely careful when working on the transmission. Always follow commonly accepted safety practices and general common sense. Never risk personal injury.



- Do not operate the transmission or ring and pinion without proper lube and correct amount.
- For safe operation and to maintain the unit warranty, when changing a factory installed fastener for any reason, it becomes the responsibility of the person making the change to properly account for fastener grade, thread engagement, load, tightening torque and the means of torque retention.
- Mounting bolts should be periodically checked to ensure that the unit is firmly anchored for proper operation.
- These instructions are not intended to cover all details or variations in equipment, nor provide for every possible contingency to be met in connection with selection, installation, operation, and maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the Buyer's purpose, the matter should be referred to Richmond Gear.

In the event of the resale of any of the goods, in whatever form, Resellers/Buyers will include the following language in a conspicuous place and in a conspicuous manner in a written agreement covering such sale:

The manufacturer makes no warranties or representations, express or implied, by operation of law or otherwise, as to the merchantability or fitness for a particular purpose of the goods sold hereunder. Buyer acknowledges that it alone has determined that the goods purchased hereunder will suitably meet the requirements of their intended use. In no event will the manufacturer be liable for consequential, incidental or other damages. Even if the repair or replacement remedy shall be deemed to have failed of its essential purpose under Section 2-719 of the Uniform Commercial Code, the manufacturer shall have no liability to Buyer for consequential damages.

Resellers/Buyers agree to also include this entire document including the danger, warnings and cautions above in a conspicuous place and in a conspicuous manner in writing to instruct users on the safe usage of the product.

This information should be read together with all other printed information supplied by Richmond Gear.

Terms & Conditions

**TERMS AND CONDITIONS OF SALES QUOTATIONS ARE MADE AND ORDERS ARE ACCEPTED BY SELLER
SUBJECT ONLY TO THESE TERMS AND CONDITIONS:**

1. AGREEMENT AND MODIFICATION OF SALES TERMS. The agreement between Seller and Buyer ("Sales Contract") is with respect to the sale of goods described on the other side hereof (the "goods"). Any Terms and Conditions contained in any purchase order or other form of communication from Seller's customers which are additional to or different from these Terms and Conditions shall be deemed rejected by Seller unless expressly accepted in writing by Seller.

2. ACCEPTANCE OF ORDERS. Acceptance by Seller of Buyer's purchase order(s) is expressly conditioned upon Buyer's assent to these Terms and Conditions. Buyer will be deemed to have assented to such Terms and Conditions unless Seller receives written notice of any objections within 10 days after Buyer's receipt of this form or in all events prior to any delivery or other performance by Seller of Buyer's order if less than 10 days.

3. QUOTATIONS. Quotations by Seller shall be deemed to be offers by Seller to sell the goods described therein subject to these Terms and Conditions, and acceptance of such offers is expressly limited to acceptance by Buyer of all of these Terms and Conditions within 30 days from the date of the quotation or as specified. Purchase orders submitted by Buyer for the goods quoted by Seller shall be subject to and will be deemed to constitute acceptance of these Terms and Conditions. All purchase orders will be subject to approval by Seller.

4. TERMINATION OR MODIFICATION. The Sales Contract may be modified or terminated only upon Seller's express written consent, which consent will at all times be conditioned on Buyer's agreement to pay Seller's modification or termination charge including, but not limited to expenses and costs plus a reasonable profit, except that any goods completed on or before Seller's acceptance of termination shall be accepted and paid in full by Buyer.

5. PRICES AND TERMS. Fulfillment of Buyer's order is contingent upon the availability of materials. The price of the goods sold pursuant to the Sales Contract shall be based upon Seller's prices in effect at the time of shipment and any acceptance of the order will be on the basis of the freight rates now in effect. In the event of an increase or decrease in the applicable freight charges before the material is shipped, such changes in freight charges will be for the account of Buyer. Price advances, discounts, extras and terms and conditions are subject to changes without notice. Unless otherwise provided on the front side hereof, price is F.O.B. Seller's point of shipment, and terms of payment shall be net 30 days from date of invoice. Seller may assess a delinquency charge of 1-1/2 percent per month on invoices not paid within stated payment terms. Seller may require full or partial payment or payment guarantees in advance of shipment whenever, in its opinion, the financial condition of Buyer so warrants. In addition, Seller may, at any time, suspend performance of any order or require payment in cash, security or other adequate assurance satisfactory to Seller when, in Seller's opinion, the financial condition of Buyer warrants such action.

6. TAXES. Prices do not include sales, use or other similar federal, state or local taxes. Buyer shall pay to Seller, in addition to the price of the goods, all applicable taxes which may be invoiced separately at a later date.

7. DESIGN; EXTRA WORK; BUYER'S MATERIAL. (a) If any order accepted by Seller contemplates the preparation of special designs by Seller, Buyer issuing such order will have a responsible representative specifically approve all designs prepared by Seller. (b) If Buyer requests extra work not included in the quotation or original order, Buyer will pay for the extra work at reasonable rates as determined by Seller. (c) In the event spoilage/damage occurs on orders where Buyer furnishes the material, Seller shall not be liable for replacement of or damage to such material.

8. RISK OF LOSS, TITLE, SECURITY INTEREST. Delivery shall occur, and risk of loss shall pass to Buyer, upon delivery of the material to a carrier at the F.O.B. point of shipment. Transportation shall be at Buyer's sole risk and expense, and any claims for losses or damage in transit shall be against the carrier only. However, Seller retains title to all products until paid for in full in cash and Buyer agrees to perform all acts necessary to provide a fully perfected security interest in the goods in favor of Seller. Seller may, at Seller's option, repossess the same, upon Buyer's default in payment hereunder, and charge Buyer with any deficiency.

9. DELIVERIES AND QUANTITIES. (a) Delivery dates are not guaranteed but are estimated on the basis of immediate receipt by Seller of all information to be furnished by Buyer and the absence of delay, direct or indirect, resulting from or contributed to by circumstances beyond Seller's reasonable control. If the

goods are non-catalog goods, Seller may ship overages or underages to the extent of 10 percent of quantity ordered, and Buyer shall pay for such quantity based upon the unit price of the goods. Seller shall not be required to maintain closer control of quantity, unless specifically agreed to by Seller in writing. Quantities of all items may be determined by weight. Any claims for shortage must be within 10 days from the date of receipt of the goods by Buyer, and in every case the weights found in any particular shipment, including tare, must be given and Seller advised as to the method used by Buyer in computing the count of parts. (b) In the event that Buyer is unable to accept delivery of the goods at time of shipment, Seller shall invoice Buyer for the full purchase price as if shipment had been made and: (i) if Seller is able to store such goods in its own facilities, Buyer will pay Seller the reasonable handling and storage charges for the period of such storage, and (ii) if Seller is unable to store such goods at its own facility, Seller reserves the right to arrange handling and storage in a suitable bonded warehouse for the Buyer at Buyer's expense. In cases where handling and storage become necessary, it shall be Buyer's responsibility to notify Seller when shipment is to be made. Seller will make necessary arrangements for shipment at Buyer's expense.

10. RETURNED GOODS. Goods may not be returned. However, if Seller consents in writing or upon verbal authorization to the return of goods for any reason, transportation charges must be prepaid by Buyer, who also shall assume all risk of loss of such returned goods until actual receipt by Seller.

11. INSPECTION, ACCEPTANCE. Buyer shall inspect the goods immediately upon the receipt thereof. All claims by Buyer (including claims for shortages), except only those provided for under the WARRANTY AND LIMITATIONS OF LIABILITY and PATENTS clauses below, must be asserted in writing by Buyer within a 10 day period or they are waived. If this contract involves partial performances, all such claims must be asserted within a 10 day period for each partial performance. Rejection may be only for defects substantially impairing the value of products or work. Buyer's remedy for lesser defects shall be those provided for under the Warranty and Liability clauses. THERE SHALL BE NO REVOCATION OF ACCEPTANCE. If Buyer wrongfully rejects, revokes or delays acceptance of items or work tendered under this contract, or fails to make a payment due on or before delivery, or repudiates this contract, Seller shall, at its option, have a right to recover as damages, either the price as stated herein (upon recovery of the price, the items involved shall become the property of the Buyer) or the profit (including reasonable overhead) which the Seller would make from performance together with incidental damages and reasonable cost.

12. WARRANTIES AND LIMITATIONS OF LIABILITY. (a) Seller warrants to Buyer that the goods will conform to the following warranty: (i) for goods in Seller's Richmond Gear Hi Performance product line, the goods will be commercially free from defects in material and workmanship at the time of shipment of the goods by Seller; (ii) for goods in Seller's Ohio Gear, Electra Gear and Foote-Jones' product line, the goods will be commercially free from defect and workmanship upon normal use and service during the first 12 months of operation; a 6 month maximum shelf life is allowed; and (iii) for all other goods sold by Seller, the goods will be commercially free from defects in material and workmanship under normal use for a period of 1 year from the date of shipment of the goods by Seller and will conform at the date of shipment to applicable specifications, drawings and blueprints, except for departures therefrom with written approval of Buyer; provided that work performed by Seller upon blanks and other materials furnished by Buyer is excluded from this warranty. Seller shall have no liability to Buyer for cost of blanks furnished by Buyer which are damaged or spoiled during heat treat or machining operations; (b) In the case of drives, gears and reducers manufactured by Seller, Seller warrants only that such products, when shipped, shall be capable of delivering the service rating as indicated in Seller's written documents, including quotations and catalogs or as noted on such products, providing such equipment is properly installed and maintained, correctly lubricated, operating under normal conditions with competent supervision, and within the load limits for which it was sold, and provided further that the equipment is free from critical speed, torsional or other type vibration, no matter how induced; (c) If any model or sample was provided to the Buyer, it was used merely to illustrate the general type and quality of goods and not to warrant that goods shipped would be of that type or quality; (d) UNLESS AUTHORIZED IN WRITING BY A CORPORATE OFFICER OR VICE PRESIDENT, NO AGENT, EMPLOYEE OR REPRESENTATIVE OF SELLER HAS ANY AUTHORITY TO BIND SELLER TO ANY AFFIRMATION, REPRESENTATION OR WARRANTY CONCERNING THE GOODS SOLD UNDER THE SALES CONTRACT AND ANY SUCH AFFIRMATION, REPRESENTATION OR WARRANTY HAS NOT FORMED A PART OF THE BASIS OF THE BARGAIN AND SHALL BE UNENFORCEABLE; (e) Seller's sole obligation under the foregoing warranties is limited to either, at Seller's option, replacing or repairing defective goods (or defective parts thereof). This warranty does not

Terms & Conditions Con't

cover the cost of installation of the new or repaired goods or parts. Replacement goods or parts are warranted for the remainder of the warranty period applicable to the goods originally supplied by Seller. All claims for allegedly defective goods must be made within 10 days after Buyer learns of such alleged defects. All claims not made in writing and received by Seller within such 10 day period shall be deemed waived. Buyer shall return a sample of the alleged defective part for Seller's inspection, and no other goods shall be returned to Seller without Seller's written consent. This warranty shall not extend to goods subjected to misuse, abuse, neglect, accident or improper installation or maintenance, incorrect lubrication, or goods which have been altered or repaired by anyone other than Seller or its authorized representative; (f) THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND/OR ANY OTHER TYPE, WHETHER EXPRESS OR IMPLIED; (g) Products not manufactured and work not performed by Seller are warranted only to the extent and in the manner that the same are warranted to Seller by Seller's vendors, and then only to the extent that Seller is reasonably able to enforce such warranty. In enforcing such warranty, it is understood Seller shall have no obligation to initiate litigation unless Buyer undertakes to pay all costs and expenses therefor, including but not limited to Attorney's fees, and indemnifies Seller against any liability to Seller's vendors arising out of such litigation; (h) THE FOREGOING IS SELLER'S ONLY OBLIGATION AND BUYER'S EXCLUSIVE REMEDY FOR BREACH OF WARRANTY. BUYER'S FAILURE TO SUBMIT A CLAIM AS PROVIDED ABOVE SHALL SPECIFICALLY WAIVE ALL CLAIMS FOR DAMAGES OR OTHER RELIEF INCLUDING BUT NOT LIMITED TO CLAIMS BASED ON LATENT DEFECTS. IN NO EVENT SHALL BUYER BE ENTITLED TO INCIDENTAL, CONSEQUENTIAL, OR SPECIAL DAMAGES, NOR SHALL SELLER'S LIABILITY EXCEED THE PURCHASE PRICE OF THE GOODS. EVEN IF THE REPAIR OR REPLACEMENT REMEDY SHALL BE DEEMED TO HAVE FAILED OF ITS ESSENTIAL PURPOSE UNDER SECTION 2-719 OF THE UNIFORM COMMERCIAL CODE, THE MANUFACTURER SHALL HAVE NO LIABILITY TO BUYER FOR CONSEQUENTIAL DAMAGES. ANY ACTION ARISING HEREUNDER OR RELATED HERETO MUST BE COMMENCED WITHIN ONE (1) YEAR AFTER THE CAUSE OF ACTION OCCURS OR IT SHALL BE BARRED, NOTWITHSTANDING ANY STATUTORY PERIOD OF LIMITATIONS TO THE CONTRARY; and (i) In the event of the resale of any of the goods, in whatever form, Buyer will include the following language in a conspicuous place and in a conspicuous manner in a written agreement covering such resale: "THE MANUFACTURER MAKES NO WARRANTIES OR REPRESENTATIONS, EXPRESS OR IMPLIED, BY OPERATION OF LAW OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE GOODS SOLD HEREUNDER. BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE GOODS PURCHASED HEREUNDER WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. IN NO EVENT WILL MANUFACTURER BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL OR OTHER DAMAGES."

13. REMEDIES AND LIMITATIONS OF LIABILITY. In the event Buyer claims Seller has breached any of its obligations under the Sales Contract, whether of warranty or otherwise, Seller may request the return of goods and tender to Buyer, at Seller's option, a replacement shipment of goods. If Seller so requests the return of the goods, the goods will be redelivered to Seller in accordance with Seller's instructions and at Buyer's expense. Except as herein provided, Seller shall have no further obligation under the Sales Contract. The remedies contained in this paragraph and paragraph 12 hereof shall constitute the sole recourse of Buyer against Seller for breach of any of Seller's obligations under the Sales Contract, whether warranty or otherwise.

14. TECHNICAL ADVICE. Any technical advice furnished or recommendation made by Seller or any representative of Seller concerning any use or application of any of the goods is believed to be reliable, but SELLER MAKES NO WARRANTY, EXPRESSED OR IMPLIED, ON RESULTS TO BE OBTAINED. BUYER ASSUMES ALL RESPONSIBILITY FOR LOSS OR DAMAGE RESULTING FROM THE HANDLING OR USE OF ANY OF THE GOODS.

15. FORCE MAJEURE. Seller shall not be liable for failure to perform its obligations under the Sales Contract in whole or in part caused by the occurrence of any contingencies beyond the reasonable control either of Seller or of suppliers of Seller. If any such contingency occurs, Seller may allocate goods and deliveries among Seller's customers.

16. ASSIGNMENT AND DELEGATION. No right or interest in the Sales Contract shall be assigned by Buyer without Seller's prior written consent, and no delegation of any obligation owed, or to the performance of any obligation by Buyer shall be made without Seller's prior written consent. Any attempt at assignment or delegation shall be wholly void and totally ineffective for all purposes unless made in conformity with this paragraph.

17. PATTERNS AND TOOLING. Unless otherwise agreed to in writing with Buyer, Seller shall retain title to and possession of all special tooling, patterns and dies whether paid for by Buyer or not, but such special tooling, patterns and dies that are specifically paid for by Buyer will be held by Seller exclusively for the manufacture of Buyer's goods for not more than 2 years after the date of Buyer's last order requiring their use. Seller will exercise reasonable care in handling and storing any tooling, patterns or dies specifically paid for by Buyer, but Seller shall not be liable for damage or loss thereof.

18. PATENTS. SELLER MAKES NO REPRESENTATION OR WARRANTY WITH RESPECT TO THE PATENTABILITY OF THE GOODS OR THAT ANY OF THE GOODS WILL BE FREE FROM CLAIMS OF INFRINGEMENT. Buyer agrees to indemnify and defend Seller in any such suit, action or proceeding for any claim resulting from actual or alleged infringement of any domestic or foreign letters patent for (i) any feature, construction or design incorporated at Buyer's request in any goods or to adapt such goods to the particular use of Buyer or Buyer's customers or (ii) any additions, changes or adaptations made by Buyer or Buyer's customers after delivery of the goods.

19. CONFIDENTIAL INFORMATION. All drawings, diagrams, specifications, technical data and other materials furnished by Seller and identified by Seller as confidential are and shall remain the exclusive property of Seller and shall be returned to Seller upon request. Buyer agrees to treat such information and material as confidential and not to reproduce or disclose such information or materials without Seller's prior written consent. This paragraph does not apply to any information already known to and readily accessible in the trade or which may become so through no fault of Buyer.

20. CHANGES. Seller may, at any time, without notice, make changes (whether in design, material, improvements or otherwise) in any catalog goods, and may discontinue the manufacture of any catalog goods, all in its sole discretion, without incurring any obligations of any kind as a result thereof, whether for failure to fill an order of Buyer or otherwise.

21. INSTALLATION. Installation of the goods shall be by Buyer unless otherwise specifically stated in the Sales Contract.

22. SEVERABILITY. If any term or provision contained in the Sales Contract is declared or held invalid by a court of competent jurisdiction, such declaration or holding shall not affect the validity of any other term, clause or provision contained herein.

23. GOVERNING LAW AND LIMITATION. (a) The formation and performance of the Sales Contract shall be deemed to have been made and governed by the Uniform Commercial Code as adopted in the state of Seller's principal place of business; (b) Buyer hereby agrees to the jurisdiction of any state or federal court located in the county of Seller's principal place of business. Buyer waives any objection based on forum non conveniens and any objection to venue of any action instituted hereunder, and consents to the granting of such legal or equitable relief as is deemed appropriate by a court of competent jurisdiction. The rights and obligations of Seller and Buyer shall not be governed by the provisions of the United Nations Convention on Contracts for the International Sale of Goods; and (c) Seller represents that the goods will be produced in compliance with the Fair Labor Standards Act of 1938, as amended. (d) BUYER AGREES TO PAY ALL OF SELLER'S COSTS AND EXPENSES OF COLLECTION AND LITIGATION, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES AND COSTS.

Revised 1/05