

Denso PA90 Starters

Parts & Unit Solenoid Repair Tools



Metro Auto Industrial Inc.

Toll Free: 1-800-263-8761

[illegible]



This exploded view diagram illustrates the assembly of a mechanical component, possibly a pump or valve. The parts are arranged in a vertical sequence from top to bottom:

- Housing/Body:** A large, light blue, cast metal component at the top.
- Valve Seat/Plug:** A black, circular component with a central hole.
- Spring:** A coiled metal spring.
- Piston/Plunger:** A cylindrical metal component with a central rod.
- Valve Seat/Plug:** A black, circular component with a central hole.
- Spring:** A coiled metal spring.
- Base/Flange:** A circular metal component with a central hole and a flange.

The diagram shows the relative positions and assembly order of these components.

Denso PLGR Series Starter can replace to:

- **Bosch EV PLGR Starters**
- **Delco 28MT Starters**
- **Denso OSGR Medium/Heavy Duty (90mm/100mm) Starters**
- **Leece Neville M93, M93R PLGR Starters**
- **Mitsubishi M8T Series Starters**

Features:

- **All Oil Seal/Water Proof Design**
- **Fits to most popular Industrial, Farming, Trucking, Bus and various vehicles**
- **Planetary Gear Reduction**
- **Service Parts available**

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Starter Unit



19029N
Starter
12V, 3.0kw, CW, 13T
Battery Post M10

For: Dodge Ram, Sterling

Replace:

Application: Dodge Ram 2500, 3500

Dim:

Lester: 19029, 19183

OE: 428000-3330, 428000-3331, 428000-6110

Ref: 190-799C, 190-799D, 190-799E

Note: Can replace to 17548 (ND OSGR), 17892 (ND OSGR).



19201N
Starter
12V, 3.0kw, CCW, 11T
Battery Post M10

For: Isuzu, Chevy-GMC Truck

Replace:

Car: 2008 Isuzu NPR, NQR & NRR Applications with 5.2L Engines

Dim:

Lester: 19201

OE: 428000-586

Ref: 190-9073

Note: Can replace to 18500 (Denso OSGR, CCW).



19336N
Starter
12V, 3.0kw, CW, 11T
Battery Post M10

For: Hino HD Truck

Replace:

Car: Hino HD Trucks 2009-2013

Dim:

Lester: 19336

OE: 428000-6980, 428080-6981

Ref: 190-6308

Note:



19120N
Starter
12V, 2.7kw, CW, 11T
Battery Post M10

For: Bluebird, Capacity, Ottawa

Replace:

Application: 2007 Bluebird, Capacity & Ottawa Applications with Cummins ISB Engines

Dim:

Lester: 19120

OE: 428000-512

Ref: 190-9060

Note: Can replace to 16990 (Denso OSGR).



19335N
Starter
12V, 2.7kw, CW, 11T
Battery Post M10

For: Thomas Built

Replace:

Car: Thomas Bus Applications with Cummins ISB Engines

Dim:

Lester: 19335

OE: 428000-5230, 428000-5310

Ref: 190-9062

Note: 428000-5230 (19808) same unit.



30483N
Starter
12V, 4.8kw, CW, 10T
Battery Post M10

For: Various w/Cummins Engine

Replace:

Car: Cummins ISB 6.7L

Dim:

Lester: 30483

OE: 428000-711, 428000-994

Ref: 190-6344, 190-9220

Note:

Starter Unit



**33334N
Starter
12V, 3.0kw, CW, 11T
Battery Post**

For: D
Replace:
Application:
Dim:
Lester: 33334
OE: 428000-4610, 428000-4611, 428000-4612
Ref: 190-6435
Note:



**19808N
Starter
12V, 3.0kw, CW, 11T
Battery Post M10**

For: Denso PA90S
Replace:
Car: Freightliner Custom Chassis, Work-horse w/Cummins ISB 6.7L Engine
Dim:
Lester: 19808
OE: 428000-523, 428000-5310
Ref: 190-9061
Note: DE Stud M
428000-5310 (19335) same unit.



**30691N
Starter
12V, 3.0kw, CCW, 13T
Battery Post M10**

For: Denso PA90S
Replace:
Car: Isuzu, Chevrolet, GMC Truck 2008 up w/MT Isuzu 4HK1-TC 5.2L
GM: 98092464
Isuzu: 8980924640, 8980924641, 428980924642
Lester: 30691
OE: 428000-5930, 428000-5931, 428000-5932
Ref: 190-9074
Note: Can replace to Denso 18407 OSGR, but dependon the location.



**428000-4661N
Starter
12V, 3.0kw, CW, 11T
Battery Post**

For: Denso PLGR PA90
Replace:
Application:
Dim:
Lester:
OE: 428000-466
Ref: 190-
Note:



**428000-5740N
Starter
12V, 4.8kw, CW, 10T
Battery Post M12**

For: Denso PA90L
Replace:
Car: John Deere w/4045 4.5L, 6068 6.8L, 6090, 90L Engines.
Dim:
John Deere: RE539696, RE549229
Lester: 30692
OE: 428000-5740, 428000-5741
Ref: 190-6387
Note: DE Stud M12



**19856N
Starter
12V, 3.0kw, CW, 10T
Battery Post M10**

For: Denso PA90S
Replace:
Car: Case/New Holland Loaders & Tractors 432T/M3, 445T/M3 Engines.
New Holland: 87638510
Dim:
Lester: 19856
OE: 428000-6030, 428000-9910
Ref: 190-6318
Note:

Starter Unit



**10955N
Starter
12V, 2.7kw, CW, 11T
Battery Post M10**

For: Denso PA90S
Replace:
Application: JLG Equipment w/Cummins QSB 3.3L
Cummins: 5256155
Lester: 10955
OE: 428000-6800
Ref: 190-6470
Note: DE Stud M10



**16096N
Starter
12V, 2.7kw, CW, 10T
Battery Post**

For: Denso PA90L
Replace:
Car: Various use w/Cummins ISF 2.8L, 3.8L, QSB 5.9L, 6.7L Engines.
Cummins: 4996706
Lester: 16096
OE: 428000-709
Ref: 190-6307
Note: Also can replace to Delco 35MT 8200959
DE Stud M



**16020N
Starter
24V, 7.8kw, CW, 10T
Battery Post M12**

For: Denso PA90L
Replace:
Car: Ingersoll Rand XP825-W w/Cummins 6CTA 8.3L Engines.
Cummins: 4996709
Lester: 16020
OE: 428000-7120, 438000-3730
Ref: 190-6346
Note: Unit same as 438000-3730.
DE Stud M



**16014N
Starter
24V, 7.8kw, CW, 10T
Battery Post M12**

For: Denso PLGR PA90
Replace:
Application: John Deere w/4045 4.5L, 6068/6.8L, 6090 9.0L Engines
John Deere: RE537519, RE538685, RE549230, SE502559, SE502823
Lester: 16014
OE: 428000-6900, 428000-9920
Ref: 190-6313, 190-6313A, 190-6313B
Note: DE Stud M
428000-9920 same unit.



**33321N
Starter
24V, 4.8kw, CW, 10T
Battery Post M10**

For: Denso PA90S
Replace:
Car: Various w/Cummins ISB 6.7L Engines.
Cummins: 4996707
Lester: 33321
OE: 428000-7100
Ref: 190-002
Note: DE Stud



**428000-7140N
Starter
24V, 7.8kw, CW, 10T
Battery Post M12**

For: Denso PA90L
Replace:
Car: Various w/Cummins ISC 8.3L Engines.
New Holland: 87638510
Dim:
Lester: 30419
OE: 428000-7140, 438000-3740 (Lester 30502)
Ref: 190-6354, 190-9258
Note: 438000-3740 same unit.
DE Stud M

Starter Unit

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Coming Soon

428000-7160N
Starter
24V, 7.8kw, CW, 10T
Battery Post M12

For: Denso PA90L
Replace:
Application:
Cummins: 4995643
Lester:
OE: 428000-7160, 438000-3220
Ref:
Note: DE Stud M
438000-3220 (190-9254) same unit.

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19334N
Starter
12V, 4.8kw, CW, 10T
Battery Post M

For: Denso PA90
Replace:
Car: Various w/Cummins ISC 8.3L, 8.9L
Engines.
Lester: 19334
OE: 428000-715, 428000-7870
Ref: 190-169, 190-6357
Note: Dry Clutch, similar to 428000-7150, but 428000-7150 is Wet Clutch.
DE Stud M

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438000-0560
Starter
12V, 3.0kw, CW, 12T
Battery Post M

For: Denso PA90S
Replace:
Car:
Lester:
OE: 438000-0560
Ref:
Note:

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428000-7340N
Starter
12V, 2.7kw, CW, 10T
Battery Post M12

For: Denso PLGR PA90S
Replace:
Application: John Deere 4.5L
Lester:
OE: 428000-7340
Ref:
Note: DE Stud M12



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19340N
Starter
12V, 2.7kw, CW, 10T
Battery Post M

For: Denso PA90S
Replace:
Car: Freightliner M2-106, -112, -108SD, -114SD w/Cummins ISB 6.7L Engines.
Lester: 19340
OE: 428000-9340
Ref:
Note: with IMS
DE Stud M

438000-2920N
Starter
12V, 5.0kw, CW, 13T
Battery Post M

For: UPS Truck
Replace:
Car: V
Dim:
Lester:
OE: 438000-2920
Ref:
Note:

Starter Unit



428000-4620N
Starter
12V, 3.0kw, CW, 11T
Battery Post M

For: Denso PA90S
Replace:
Application: Hino 300/Toyota Coaster Mid Bus
Hino:
Lester:
OE: 428000-4620
Ref:
Note:

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428000-9120N
Starter
24V, 7.0kw, CW, 10T
Battery Post M

For: Denso PA90
Replace:
Application: Caterpillar
Hino:
Lester:
OE: 428000-9120, 428000-9121
Ref:
Note: PIC 190-6519, 190-6519A
DE Stud M

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428000-9950N
Starter
12V, 4.8kw, CW, 10T
Battery Post M

For: Denso PA9
Replace:
Application: Caterpillar
Hino:
Lester: 30832
OE: 428000-7130, 428000-9950
Ref: PIC 190-6347, 190-9221
Note: 428000-7130 same unit, please use 428000-7130
DE Stud M



428000-7150N
Starter
12V, 4.8kw, CW, 11T
Battery Post M

For: Denso PA90S
Replace:
Application:
Lester:
OE: 428000-7150
Ref: PIC 190-6357
Note: Wet Clutch.
Similar to 428000-7870 (19334), but 428000-7870 is Dry Clutch.
DE Stud M

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30832N
Starter
12V, 4.8kw, CW, 10T
Battery Post M

For: Denso PA90
Replace:
Application: Caterpillar
Hino:
Lester: 30832
OE: 428000-7130, 428000-9950
Ref:
Note: PIC 190-6347, 190-9221
428000-9950 same unit.
DE Stud M



438000-3740
Starter
24V, 7.8kw, CW, 10T
Battery Post M12

For: Denso PA90
Replace:
Application:
Hino:
Lester:
OE: 428000-7140, 438000-3740 (Lester 30502)
Ref:
Note: PIC 190-9258, 190-6354
428000-7140 same unit,
Please use 428000-7140N.

Starter Unit

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428000-7370

Starter
12V, 3.0kw, CW, 10T
Battery Post M

For: Denso PA90S
Replace:
Application: John Deere 4.5L
Lester:
OE: 428000-7370, 428080-7370
Ref: 190-9245
Note:

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428000-9790

Starter
24V, 4.8kw, CW, 10T
Battery Post M

For: Denso PA90
Replace:
Application: John Deere
Lester:
OE: 428000-9790, 428080-9790
Ref:
Note:

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428000-8730

Starter
12V, 3.0kw, CW, 13T
Battery Post M

For: Denso PA9
Replace:
Application: John Deere RE537513
Lester:
OE: 428000-8730, 428080-8730
Ref: PIC 190-9247
Note:

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428000-8680

Starter
24V, 4.8kw, CW, 10T
Battery Post M

For: Denso PA90S
Replace:
Application:
Lester:
OE: 428000-8680, 438000-3480
Ref: PIC 190-9255
Note: DE Stud M

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428000-8760

Starter
12V, 3.0kw, CW, 13T
Battery Post M

For: Denso PA90
Replace:
Application: John Deere# RE531501
Lester:
OE: 428000-8760, 428080-8760
Ref: PIC 190-9248
Note:

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428000-7960N

Starter
12V, 4.8kw, CW, 10T
Battery Post M12

For: Denso PA90
Replace:
Application: John Deere 4.5L, 6.8L
Lester:
OE: 428000-7960, 428000-7961, 428080-7961
Ref:
Note: Similar to 428000-5740, but different DE Housing.

Starter Unit

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428000-8400

Starter

12V, 3.0kw, CW, 13T

Battery Post M

For: Denso PA90S

Replace:

Application: Cummins ISB 5.9L

Lester:

OE: 428000-8400

Ref: 190-9215

Note:

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428000-2170

Starter

12V, 3.0kw, CW, 13T

Battery Post M

For: Denso PA90

Replace:

Application: Cummins ISV

Lester:

OE: 428000-2170, 428080-2170

Ref:

Note:

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428000-9780

Starter

24V, 4.8kw, CW, 10T

Battery Post M

For: Denso PA9

Replace:

Application: John Deere

Lester:

OE: 428000-9780, 428080-9780

Ref:

Note: DE Stud M

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428000-8470

Starter

12V, 3.0kw, CW, 11T

Battery Post M

For: Denso PA90S

Replace:

Application:

Lester:

OE: 428000-8470

Ref: PIC 190-9216

Note:

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428000-8670

Starter

12V, 2.7kw, CW, 10T

Battery Post M

For: Denso PA90

Replace:

Application: Cummins ISB

Lester:

OE: 428000-8670, 438000-3550

Ref: PIC 190-9256

Note:

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428000-1150

Starter

24V, 7.8kw, CW, 10T

Battery Post M12

For: Denso PA90

Replace:

Application:

Lester:

OE: 428000-1150, 438000-1150

Ref:

Note: DE Stud M12

Starter Unit

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428000-9930N

Starter

24V, 7.8kw, CW, 10T

Battery Post M12

For: Denso PA90S

Replace:

Application:

Lester:

OE: 428000-7970, 428080-7971, 428000-9930

Ref: PIC 190-9219

Note: 428000-7970, 428000-7971 same unit.

DE Stud M12

DE Housing



51-826001
DE Housing
12V, 2.7kw

For: Denso PLGR PA90 Starters
Used:
Replace: 428400-3331
Dim:
OE: 428000-333, 428000-611
Lester: 19029, 19183
Note: Ref SZ-03116, 190-799C, 190-799D
(with or without Seal & Bushing)



51-826004
DE Housing
12V, 4.8kw, 7.8kw

For: Denso PLGR PA90 Starters
Used:
Replace: 428400-6900
Dim:
OE: 428000-574, 428000-690, 428000-992
Lester: 16014, 30692
Note: Ref 190-6313, 190-6387, 190-9244
wo/Ground Stud Hole.



51-826007
DE Housing
12V, 3.0kw

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-603, 428000-991
Lester: 19856
Note: Ref 190-6318, 190-6318A



51-826002
DE Housing

For: Denso PLGR PA90 Starters
Used:
Replace: 428400-5121
Dim:
OE: 428000-512, 428000-523, 428000-531
Lester: 19120, 19335, 19808
Note: Ref 190-9060, 190-9061, 190-9062
DE w/Ground Hole M12 x 1.75



51-826005
DE Housing
12V, 3.0kw

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-586, 428000-593
Lester: 19201
Note: Ref 190-9073, 190-9074
Used on CCW unit.



51-826008
DE Housing
12V, 3.0kw

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-698
Lester: 19336
Note: Ref 190-6308



51-826003
DE Housing
12V, 4.8kw

For: Denso PLGR PA90 Starters
Used:
Replace: 428400-7870
Dim:
OE: 428000-714, 428000-715, 428000-787
Lester: 19334
Note: Ref 190-169, 190-6354, 190-6357



51-826006
DE Housing
V, kw

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-462
Lester:
Note:



51-826009
DE Housing

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-4661
Lester:
Note: Ref

DE Housing



**51-826011
DE Housing
12V, 2.7kw**

For: Denso PLGR PA90 Starters
Used: JLG Equipment
Replace:
Dim:
OE: 428000-680
Lester: 10955
Note: 190-6470
 DE w/Ground Stud Hole M12 x 1.75



**51-826015
DE Housing
V, kw**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-461
Lester: 33334
Note: 190-6335



**51-826013
DE Housing
12V, 2.7kw**

For: Denso PLGR PA90 Starters
Used: Cummins Engine
Replace:
Dim:
OE: 428000-7090, -7091, -7092,
 428000-712
Lester: 16020, 16096, 30483, 33321
Note: 190-6307, 190-6307A
 DE w/Ground Stud Hole M12 x 1.75

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**51-826014
DE Housing
24V, 4.8kw**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-710, 438000-006
Lester: 33321, 33335
Note: 190-002, 190-9251

CE Housing



**52-82503
CE Plate**

For: Denso PLGR PA90 Starters
Used:
Replace: 128501-1350, 128501-1840
Dim:
OE: 428000-603, 428000-680, 428000-709, 428000-710, 428000-934, 428000-991; 438000-006, 438000-311; 512800-0980
Lester: 10955, 16096, 19856, 33321
Note: Ref



**52-82505
CE Plate**

For: Denso PLGR PA90 Starters
Used:
Replace: 128501-0470
Dim: 89.5mm OD, 65mm Height
 Drain hole 5.6mm ID, 2.7mm Wall Thickness
OE: 428000-333, 428000-523, 428000-531, 428000-611
Lester: 19029, 19183, 19335, 19808
Note: Ref SZ-04116



**52-82506
CE Plate**

For: Denso PLGR PA90 Starters
Used:
Replace: 128501-1080
Dim:
OE: 428000-512
Lester: 19120
Note: Ref

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**52-82507
CE Plate**

For: Denso PLGR PA90 Starters
Used:
Replace: 128501-1820
Dim:
OE: 428000-787
Lester: 19334
Note: Ref



**52-82508
CE Plate**

For: Denso PLGR PA90 Starters
Used:
Replace: 128501-1600
Dim:
OE: 428000-698
Lester: 19336
Note: Ref

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**52-82509
CE Plate
4.8kw, 7.8kw**

For: Denso PLGR PA90 Starters
Used:
Replace: 128501-1670
Dim:
OE: 428000-574, 428080-574, 428000-690, 428000-714, 428000-734, 438000-374, 428000-992
Lester:
Note: Ref



**52-82510
CE Plate
24V, 7.8kw**

For: Denso PLGR PA90 Starters
Used:
Replace: 128501-1780
Dim:
OE: 428000-711, 428000-712, 428000-994; 438000-373
Lester: 16020, 30483, 30693
Note: Ref 190-6344, 190-6346, 190-9220, 190-9257



**52-82511
CE Plate**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE:
Lester:
Note: with Ground Stud Hole

Lever Housing

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**53-82512
Lever Housing
(Center Housing)**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-333, 42800-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: Ref SZ-23116

Drive Assy



**54-8533
Drive Assy
11T, CCW**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-586, 428000-593, 428080-586
Lester: 19201
Note: CCW Drive
 Gear use 54-82558

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**54-8535
Drive Assy
10T, CW**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-7110, 428000-9940
Lester: 30483
Note: Gear use 54-82555



**54-82030
Clutch Assy
CCW**

For: Denso PA90 Starters
Used:
Replace:
Dim: 428000-586, 428000-593, 428080-586
Lester: 19201
Note: Clutch assemble with Sleeve & Bearing.



**54-82031
Clutch Assy
CW**

For: Denso PA90 Starters
Used:
Replace:
Dim:
OE:

Lester:
Note:

Drive Parts



54-82553
Pinion Gear
11T, CW, 16-SPL

For: Denso PA90
Used:
Replace: 028371-9050
Dim: 39.8mm Gear OD, 16.4mm ID
18mm Gear OD, 19.8mm OAL
OE: 428000-512, 428000-523, 428000-531, 428000-698
Lester: 19120, 19335, 19336, 19808
Note:



54-82554
Pinion Gear
13T, CW, 16-SPL

For: Denso PA90
Used:
Replace: 028371-8810
Dim: 39.8mm Gear OD, 16.65mm ID
19.8mm OAL
OE: 428000-3330, 428000-3331, 428000-6110, 428000-8400, 428000-8760
Lester: 19029, 19183
Note: SZ-07116A



54-82555
Pinion Gear
10T, CW, 16-SPL

For: Denso PA90
Used:
Replace: 028371-9210
Dim: 40mm Gear OD
OE: 428000-603, 428000-690, 428000-710, 428000-711, 428000-712, 428000-714, 428000-787, 428000-992
Lester: 16020, 19334, 19856, 30483,
Note: 33321



54-82556
Pinion Gear
11T, CCW, -16SPL

For: Denso PA90
Used:
Replace: 39.8mm Gear OD
OE:
Lester: 19201
Note: Clutch Assemble use 54-82030



54-82557
Pinion Gear
12T, CW, 16-SPL

For: Denso PA90
Used:
Replace: 44.9mm Gear OD, 16mm Gear
OE: Length, 19.8mm W
Lester:
Note:



54-82558
Pinion Gear
11T, CCW, 16-SPL

For: Denso PA90
Used: Isuzu Truck
Replace: 40.3mm Gear OD, 17mm Gear
Dim: Length, 21.35mm W
OE: 428000-5930, -5931, -5932
Lester: 30691
Note:



54-82857
Shaft-Drive
CW, 12-SPL

For: Denso PA90
Used:
Replace: 20mm OD, 120mm OAL
Dim: 428000-333, 428000-512, 428000-531, 428000-603, 428000-611, 428000-680, 428000-690, 428000-709, 428000-710, 428000-712, 428000-714, 428000-787, 428000-992
OE:
Lester: 16020, 16096, 19029, 19120, 19183, 19856, 19334, 19335, 33321
Note: use with Sleeve 54-82858

Drive Parts



54-82859 Spacer-Shift Lever

For: Denso PLGR PA90 Starters
Used: Shift Lever
Replace:
Dim: 35.8mmODx20.4mmIDx1.5mmT
OE: 428000-333, 428000-611
Lester: 19029
Note:



54-82860 Spacer-Shift Lever

For: Denso PLGR PA90 Starters
Used: Shift Lever
Replace:
Dim: 28mmODx20.45mmIDx1mmT
OE: 428000-333, 428000-611
Lester: 19029
Note:



54-82861 Spring-Drive

For: Denso PLGR PA90 Starters
Used: Drive
Replace:
Dim: 17mm ID, x 20mm OD, x 1.5mm T
OE: 428000-333, 42800-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: Ref SZ-07116AS



54-82862 Roller Pin-Clutch

For: Denso PLGR PA90 Starters
Used: Drive
Replace:
Dim: 8mm OD x 18mm L
OE: 428000-333, 42800-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: Ref SZ-07116L



54-82863 Spring-Clutch

For: Denso PLGR PA90 Starters
Used: Drive
Replace:
Dim: 6.2mm x 17.65mm x 11.8mm L
OE: 428000-333, 42800-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: Ref SZ-07116L



54-82864 Cover-Drive

For: Denso PLGR PA90 Starters
Used: Drive
Replace:
Dim: 20mm ID, 36mm OD, 6.75mm Thickness
OE: 428000-333, 42800-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: Ref SZ-07116C

Photo Coming Soon

54-82865 Spring-Drive

For: Denso PLGR PA90 Starters
Used: Drive
Replace: 028303-5040
Dim:
OE: 428000-690, 428000-710, 428000-712, 428000-714, 428000-787, 428000-992
Lester: 16020, 19334, 33321
Note:

Shift Lever



**55-82009K
Shift Lever Kit**

For: Denso PLGR PA90 Starters
Used: 12V / 24V
Replace:
Dim:
OE:
Lester:
Note: Ref SZ-13116K
 Parts Includes:
 55-82009A Shift Lever
 55-82009B Front Sheave
 55-82009C Back Sheave
 54-82859 Spacer
 (35.8mmODx20.4mmIDx1.5mmT)
 54-82860 Spacer
 (28mmODx20.45mmIDx1mmT)



**55-82009A
Shift Lever**

For: Denso PLGR PA90 Starters
Used: 12V / 24V
Replace:
Dim:
OE: 428000-3330, 428000-3331,
 428000-512, 428000-586, 428000-
 603, 428000-611, 428000-680,
 428000-690, 428000-698, 428000-
 709, 428000-710, 428000-712,
 428000-714, 428000-787, 428000-
 992
Lester: 10955, 16020, 19029, 19120,
 19183, 19201, 19029, 19334,
 19336, 19856, 16096, 33321
Note: Please use 55-82009, we don't sell
 Shift Lver only.



**55-82009C
Back Sheave-Shift Lever**

For: Denso PLGR PA90 Starters
Used: 12V / 24V
Replace:
Dim:
OE: 428000-3330, 428000-3331,
 428000-512, 428000-586, 428000-
 603, 428000-611, 428000-680,
 428000-690, 428000-698, 428000-
 709, 428000-710, 428000-712,
 428000-714, 428000-787, 428000-
 992
Lester: 10955, 16020, 19029, 19120,
 19183, 19201, 19029, 19334,
 19336, 19856, 16096, 33321
Note: Please use 55-82009, we don't sell
 Shift Lver only.



**55-82009
Shift Lever**

For: Denso PLGR PA90 Starters
Used: 12V / 24V
Replace: 028740-5350
Dim:
OE: 428000-3330, 428000-3331,
 428000-512, 428000-586, 428000-
 603, 428000-611, 428000-680,
 428000-690, 428000-698, 428000-
 709, 428000-710, 428000-712,
 428000-714, 428000-787, 428000-
 992
Lester: 10955, 16020, 19029, 19120,
 19183, 19201, 19029, 19334,
 19336, 19856, 16096, 33321
Note: Parts includes:
 55-82009A Shift Lever
 55-82009B Front Sheave
 55-82009C Bach Sheave



**55-82009B
Front Sheave-Shift Lever**

For: Denso PLGR PA90 Starters
Used: 12V / 24V
Replace:
Dim:
OE: 428000-3330, 428000-3331,
 428000-512, 428000-586, 428000-
 603, 428000-611, 428000-680,
 428000-690, 428000-698, 428000-
 709, 428000-710, 428000-712,
 428000-714, 428000-787, 428000-
 992
Lester: 10955, 16020, 19029, 19120,
 19183, 19201, 19029, 19334,
 19336, 19856, 16096, 33321
Note: Please use 55-82009, we don't sell
 Shift Lver only.

Field Case Assy



57-8255
Field Case Assy
24V, CW, 4.8kw

For: Denso PLGR PA90S Starters
Used:
Replace: 128100-0211
Dim:
OE: 428000-710, 438000-006
Lester: 33321
Note: Lip for O-Ring 85mm OD



57-8258
Field Case Assy
24V, CW, 4.8kw, 7.8kw

For: Denso PLGR PA90L Starters
Used:
Replace: 128100-0240
Dim:
OE: 428000-690, 428000-712, 428000-714, 428000-992; 438000-374
Lester: 16014, 16020
Note: Lip for O-Ring 85mm OD

Photo
Coming Soon

57-8260
Field Case Assy
12V, 3.0kw, CCW

For: Denso PLGR PA90S Starters
Used:
Replace:
Dim:
OE: 428000-586, 428080-586, 428000-593
Lester: 19201
Note: This is CCW Field Case Assy



57-8257
Field Case Assy
12V, CW

For: Denso PLGR PA90S Starters
Used: 2.7kw, 3.0kw
Replace: 128100-7681, 128100-0160
Dim: 90mm OD, 73mm L
OE: 428000-333, 428000-512, 428000-523, 428000-531, 428000-603, 428000-611, 428000-680, 428000-709, 428000-934, 428000-991, 438000-311, 512800-0980
Lester: 10955, 16096, 19029, 19120, 19183, 19335, 19808, 19856
Note: w/Case, Fields, Pole Shoes, Insulated Brushes, & Field Lead w/ Grommet.
Ref SZ-02116

Photo
Coming Soon

57-8259
Field Case Assy
12V, CW, 3.0kw, 4.8kw

For: Denso PLGR PA90 Starters
Used:
Replace: 128100-0190
Dim:
OE: 428000-698, 428000-715, 428000-787, 428000-996
Lester: 19334, 19336
Note: Lip for O-Ring 85mm OD



57-8261
Field Case Assy
12V, 4.8kw, CW

For: Denso PLGR PA90L Starters
Used:
Replace:
Dim:
OE: 428000-574, 428080-574, 428000-711, 428000-994
Lester: 30483
Note:

Bearing & Bushing

Photo
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**6-
Bearing-Planetary Gear**

For: Denso PLGR PA90 Starters
Used: Planetary
Replace:
Dim: 8mm ID, x 12.6mm OD, x 10mm L
OE: 428000-333, 428000-611
Lester: 19029
Note: SZ-30116B



**6-9034-1
Bearing- Armature Front**

For: Denso PLGR PA90 Starters
Used: Armature Front
Replace:
Dim: 17mm ID x 30mm OD x 7mm W
OE: 428000-333, 428000-611
Lester: 19029
Note: 69032RS, 6-903-4



**6-2004
Bearing- Armature Rear**

For: Denso PLGR PA90 Starters
Used: Armature rear
Replace: 949100-2590
Dim: 10mm ID x 30mm OD x 9mm W
OE: 428000-333, 428000-611
Lester: 19029
Note: #6200, 62002RS, 6-200-4



**62-82005
Bushing-DE Housing**

For: Denso PLGR PA90 Starters
Used: DE Housing
Replace:
Dim: 21mm ID x 23mm OD x 15.5mm W
OE: 428000-333, 428000-611
Lester: 19029, 19183
Note: Used on Metro DE# 51-826001

Armature & Commutator



**61-82506
Armature
12V, 4.8kw, CW**

For: Denso PLGR PA90L Starters
Used:
Replace:
Dim: 19 Bars, 9T Straight Spline
 34.40mm Commutator OD
 38.5mm Commutator Length
 10mm DE Shaft, 10mm CE Shaft
 59mm OD
 178mm OAL
OE: 428000-5740, 428080-5740,
 428000-711, 428000-734, 428000-
 994
Lester: 30483
Note: with both side Bearing



**61-82508
Armature
24V, 7.8kw, CW**

For: Denso PLGR PA90L Starters
Used:
Replace: 028200-9100
Dim: 9T Straight Spline
 19 Bars, 34.50mm Commutator
 OD
 38.5mm Commutator Length
 10mm DE Shaft, 10mm CE Shaft
 59mm OD
 178.25mm OAL
OE: 428000-6900, 428000-7120,
 428000-7140, 428000-9920,
 438000-374
Lester: 16014, 16020
Note: with both side Bearing

**Photo
Coming Soon**

**61-82510
Armature
12V, 3.0kw, 4.8kw**

For: Denso PLGR PA90L Starters
Used:
Replace: 028200-9070
Dim:
OE: 428000-698, 428000-787
Lester: 19334, 19336
Note:



**61-82507
Armature
12V, 3.0kw, CW**

For: Denso PLGR PA90S Starters
Used:
Replace: 028200-8650
Dim: 23 Bars, 9T Straight Spline
 60.2mm OD, 156.5mm OAL
 DE OD 10mm, CE OD 10mm
OE: 428000-3330, 428000-
 3331, 428000-5120, 428000-
 5230, 428000-5310, 428000-
 5311, 428000-5312, 428000-
 5860, 428000-5861, 428000-
 5862, 428000-5863, 428000-
 603, 428000-6110, 428000-680,
 428000-698, 428000-709, 428080-
 586, 428000-934, 428000-991,
 438000-311
Lester: 10955, 16096, 19029, 19120,
 19183, 19201, 19335, 19336,
 19808, 19856
Note: SZ 01116
 with both side Bearing



**61-82509
Armature
24V, CW, 4.8kw**

For: Denso PLGR PA90S Starters
Used:
Replace: 028200-9190
Dim: 9T Straight Gear
 23 Bars, 36.30mm Commutator
 OD
 33.9mm Commutator Length
 10mm DE Shaft, 10mm CE Shaft
 60mm OD
 156.5mm OAL
OE: 428000-7100, 438000-006
Lester: 33321
Note: with both side Bearing

Solenoid Assy



66-82668
Solenoid Assy
12V, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace: 153400-9931
Dim: Batt. Term M10 x 1.60
Motor Term M10 x 1.50
Switch Term M5 x 0.8
OE: 428000-512
Lester: 19120
Note: Cap Assy use 66-82668C
Use w/Lower Stationary Gear



66-82670
Solenoid Assy
24V, 7.8kw, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace: 253400-0870
Dim: Batt. Term M12 x 1.75
Motor Term M10 x 1.50
Switch Term M5 x 0.8
OE: 428000-712, 428000-714
Lester: 16020
Note: Use w/Lower Stationary Gear

Photo
Coming Soon

66-82672
Solenoid Assy
24V, 4.8kw, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace: 253400-1170
Dim: Batt. Term M10 x 1.50
Motor Term M10 x 1.50
Switch Term
OE: 428000-461, 428000-710, 438000-006
Lester: 33321, 33334
Note: Use w/Lower Stationary Gear



66-82669
Solenoid Assy
12V, 2.7kw, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace: 153400-9262
Dim: Batt. Term M10 x 1.50
Motor Term M10 x 1.50
Switch Term Spade
OE: 428000-3330, 428000-3331, 428000-611
Lester: 19029, 19183
Note: Use w/Lower Stationary Gear



66-82671
Solenoid Assy
12V, 3.0kw, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: Batt. Term M10 x 1.50
Motor Term M10 x 1.50
Switch Term Spade
OE: 428000-523
Lester: 19808
Note: Use w/Lower Stationary Gear



66-82673
Solenoid Assy
12V, 3.0kw, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace: 253400-0820
Dim: Batt. Term M10 x 1.50
Motor Term M10 x 1.50
Switch Term
OE: 428000-603, 428000-698, 428000-991
Lester: 19336, 19856
Note: Use w/Lower Stationary Gear.
For Higher Stationary Gear, please use 66-82673A.

Solenoid Assy

Photo
Coming Soon

66-82673A Solenoid Assy 12V, 3.0kw, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace: 253400-0820
Dim: Batt. Term M10 x 1.50
 Motor Term M10 x 1.50
 Switch Term
OE: 428000-603, 428000-698, 428000-991
Lester: 19336, 19856
Note: Use w/Higher Stationary Gear.
 For Lower Stationary Gear, please use 66-82673.



66-82674 Solenoid Assy 24V, 7.8kw, 3-Terminals

For: Denso PLGR PA90L Starters
Used:
Replace: 253400-2030
Dim: Batt. Term M12 x 1.75
 Motor Term M10 x 1.50
 Switch Term
OE: 428000-690, 428000-992
Lester: 16014
Note: Use w/Higher Stationary Gear.

Photo
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66-82675 Solenoid Assy 12V, 4.8kw, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace: 253400-1340
Dim: Batt. Term
 Motor Term M10
OE: 428000-715, 428000-787, 428000-992
Lester: 19334
Note: Use w/Lower Stationary Gear.



66-82678 Solenoid Assy 12V, 2.7kw, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: Batt. Term M12 x 1.75
 Motor Term M10 x 1.50
 Switch Term
OE: 428000-680, 428000-709, 428000-711, 428000-934, 428000-994, 512800-0980
Lester: 10955, 16096, 30483
Note: Use w/Lower Stationary Gear.



66-82680 Solenoid Assy 12V, 3.0kw, CCW 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: Batt. Term M10 x 1.50
 Motor Term M10 x 1.50
 Switch Term
OE: 428000-593
Lester: 19201, 30691
Note: This is used on CCW unit.
 Use w/Lower Stationary Gear.

Solenoid Cap Assy & Parts



66-82668C
Solenoid Cap Assy
12V, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: Batt. Term M10
Motor Term M10
OE: 428000-512
Lester: 19120
Note: PIC
Includes Cap, B+ & Motor Studs w/
Hardware, Gasket, & Contact



66-82669C
Solenoid Cap Assy
12V, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: Batt. Term M10
Motor Term M10
OE: 428000-3330, 428000-3331,
428000-611
Lester: 19029, 19183
Note: PIC
Includes Cap, B+ & Motor Studs w/
Hardware, Gasket, & Contact



66-82671C
Solenoid Cap Assy
12V, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: Batt. Term M
Motor Term M10
OE: 428000-5230
Lester: 19808
Note: PIC
Includes Cap, B+ & Motor Studs w/
Hardware, Gasket, & Contact



66-82673C
Solenoid Cap Assy
12V, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: Batt. Term M
Motor Term M10
OE: 428000-6030, 428000-6980,
428080-6980, 428080-6981
Lester: 19336, 19856
Note: PIC
Includes Cap, B+ & Motor Studs w/
Hardware, Gasket, & Contact



66-82678C
Solenoid Cap Assy
12V, 3-Terminals

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: Batt. Term M10
Motor Term M10
OE: 428000-6800, 428000-7090,
428000-7091, 428000-7092
Lester: 10955, 16096
Note: PIC
Includes Cap, B+ & Motor Studs w/
Hardware, Gasket, & Contact



66-82669G
Gasket-Solenoid

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-3330, 428000-3331,
428000-611
Lester: 19029, 19183
Note: used with 66-82669C.
SZ-09116G

Photo
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66-82549
Field Coil Assy-Solenoid
24V, 4.8kw

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-710
Lester: 33321
Note:



7966-82007
Plunger Kit

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE:
Lester:
Note: Parts Includes:
66-82563 Plunger
65-82566 Clip-Plunger
66-82211 Insulator-Plunger
85-82517 Washer-Plunger

Solenoid Parts



**66-82563
Plunger**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: 109.2mm OAL
OE:
Lester:
Note:



**66-82566
Clip - Plunger**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: 10.4mm OD x 1.5mm Thickness
OE:
Lester:
Note:



**66-82211
Insulator - Plunger**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: 6.5mm ID x 15.5mm OD x 1mm T
OE:
Lester:
Note:



**85-82517
Washer - Plunger**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: 6.4mm ID x 12mm OD x 1.5mm Thickness
OE:
Lester:
Note:



**66-82209
Coil-Solenoid
12V, kw**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE:
Lester:
Note:



**66-82210
Coil-Solenoid
24V, kw**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE:
Lester:
Note:



**66-82562
Contact-Solenoid**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: 14.7/23.9mm W x 45.8mm L x 3mm T
OE: 428000-3330, 428000-3331, 428000-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: Ref SZ-08116C used on Solenoid Cap for Motor Terminal.



**66-82564
Bracket-Solenoid Coil**

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE:
Lester:
Note:



**69-82518
Spring-Plunger Rod**

For: Denso PA90 Starters
Used:
Replace:
Dim: 29.1mm ID x 32.8mm OD x 65mm L 1.9mm Wire Dia.
OE:
Lester:
Note:



**69-82519
Spring-Plunger Stick**

For: Denso PA90 Starters
Used:
Replace:
Dim: 6.4mm ID x 9.5mm OD x 26.5mm L 1.5mm Wire Dia.
OE:
Lester:
Note:



**72-82515
Insulator-Plunger Contact**

For: Denso PA90 Starters
Used:
Replace:
Dim: 6.2mm ID x 23.3mm OD x 5.8mm Thickness
OE:
Lester:
Note:

Brush



68-82039 Brush-Positive (Field)

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: 8mm T x 25mm W x 21mm L x 39mm LL
OE: 428000-333, 428000-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: Ref SZ-05116A



68-82040 Brush-Negative (Ground)

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: 8mm T x 25mm W x 21mm L x 36mm LL
OE: 428000-333, 428000-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: Ref SZ-05116B

Brush Holder Assy



69-82509
Brush Holder Assy
CW, 12V, 2.7kw/3.0kw

For: Denso PLGR PA90S Starters
Used:
Replace: 028510-6840
Dim: 79.1mm OD
OE: 428000-3330, 428000-3331, 428000-512, 428000-531, 428000-586, 428000-603, 428000-611, 428000-680, 428000-698, 428000-709
Lester: 10955, 16096, 19029, 19120, 19183, 19201, 19335, 19336, 19856,
Note: SZ-06116



69-82510
Brush Holder Assy
24V, 7.8kw, CW

For: Denso PLGR PA90L Starters
Used:
Replace: 028510-6810
Dim:
OE: 428000-710, 428000-7120
Lester: 16020, 33321
Note: May interchange with 69-82509.

Photo
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69-82511
Brush Holder Assy
24V, CW, 4.8kw

For: Denso PLGR PA90S Starters
Used:
Replace: 028510-6830
Dim:
OE: 428000-690, 428000-7140, 428000-9920
Lester: 16014, 30419
Note: May interchange with 69-82510

Photo
Coming Soon

69-82512
Brush Holder Assy
12V, CW, 4.8kw

For: Denso PLGR PA90L Starters
Used:
Replace: 028510-6800
Dim:
OE: 428000-7870
Lester: 19334
Note:



69-82516
Brush Holder Assy
12V, CCW, 3.0kw

For: Denso PLGR PA90S Starters
Used:
Replace: 028510-6770
Dim:
OE: 428000-5861, -5862, -5863
Lester: 19201
Note: May interchange with 69-82510

Brush Holder Parts

**Photo
Coming Soon**

69-82513 Return Spring-Plunger

For: Denso PLGR PA90 Starters
Used: Plunger
Replace:
Dim: 9.6mm OD, X 25mm L
OE: 428000-333, 428000-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: SZ-08116SR

**Photo
Coming Soon**

69-82514 Spring-Plunger

For: Denso PLGR PA90 Starters
Used: Plunger
Replace:
Dim:
OE: 428000-333, 428000-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: SZ-08116S

O-Ring, Seal, Drain Tube



71-82117 Drain Tube-CE Plate

For: Denso PLGR PA90 Starters
Used: CE Plate
Replace: 028065-0290
Dim: 2.2mm Gap x 6mm OD x 28.5mm OAL
 For 6mm Hole w/2mm Thick Wall
OE: 428000-333, 428000-611
Lester: 19029
Note: Ref ST-29107, 71-82312, W485-96
 We have the same style but different design.



71-82513 O Ring-Field Case

For: Denso PLGR PA90 Starters
Used: Field Case
Replace: 028901-5821
Dim: 61mm OD x 59.2mm ID x 1.8mm T
OE: 428000-333, 428000-512, 428000-531, 428000-586, 428000-603, 428000-611, 428000-680, 428000-690, 428000-698, 428000-709, 428000-710, 428000-714, 428000-787, 428000-992
Lester: 19029, 19120, 19183, 19201, 19335
Note: Also can use 71-82171 (62mmIDx64mmODx1.6mmT)



71-82171 O Ring-Field Case

For: Denso PLGR PA90 Starters
Used: Field Case
Replace:
Dim: 62mm OD x 64mm ID x 1.6mm T
OE:
Lester:
Note: Similar type use to the PA90 Field Case.
 Can be use instead of 71-82513.



71-82514 Seal-DE Housing

For: Denso PLGR PA90 Starters
Used: CE Plate
Replace:
Dim: 21mm ID x 22.5mm OD x 3.8mm T
OE: 428000-333, 428000-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: Rubber Material



71-82515 Drain Plug-CE & DE

For: Denso PLGR PA90 Starters
Used: CE Plate
Replace: 028062-6010
Dim: 11mm OD
OE: 428000-333, 428000-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: SZ-29116



71-82501 O Ring-Terminal

For: Denso PLGR PA90 Starters
Used: Battery & Motor Terminal
Replace:
Dim: 9.8mmID x 13.8mmOD x 1.9mmW
OE:
Lester:
Note: Also can use 71-82141(7.6mm ID x 11.2mm OD x 1.8mm W).



71-82195 Insulator-Field Case

For: Denso PA90 Starters
Used:
Replace:
Dim:
OE:
Lester:
Note: Rubber material.

Misc. Parts



76-82523 Planetary Gear 15T, Straight Gear

For: Denso PLGR PA90 Starters
Used:
Replace: 028630-5180
Dim: 8mm ID, 25.5mm OD, 12.5mm Thickness
OE: 428000-333, 428000-512, 428000-586, 428000-603, 428000-611, 428000-680, 428000-690, 428000-698, 428000-709, 428000-710, 428000-712, 428000-714, 428000-787, 428000-992
Lester: 10955, 16096, 19029, 19120, 19201, 19334, 19336, 19856, 33321
Note: SZ-30116G
 This is for Lower Stationary Gear use.



76-82524 Planetary Gear Track 39T

For: Denso PLGR PA90 Starters
Used:
Replace: 028635-5220
Dim: 73.4mm OD, 57.5mm ID, 12.75mm Thickness
OE: 428000-333, 428000-512, 428000-586, 428000-603, 428000-611, 428000-680, 428000-709
Lester: 19849
Note: Deep drawing steel. This is after market design, used with 66-82670 Solenoid.
 Ref SZ-30116
 This is for Lower Stationary Gear use.

**Photo
Coming Soon**

76-82524A Planetary Gear Track 39T

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: 22.8mm OD x 18.7mm ID x 1.2mm Thickness
OE:
Lester:
Note: Similar to 76-82524.
 Steel material;



76-82525 Retainer Ring-Armature

For: Denso PLGR PA90 Starters
Used:
Replace: 90557-20000
Dim: 22.8mm OD, 18.7mm ID, 1.2mm Thickness
OE: 428000-333, 428000-586, 428000-603, 428000-611, 428000-680, 428000-690, 428000-698, 428000-709, 428000-710, 428000-712, 428000-714, 428000-787, 428000-992
Lester: 10955, 16020, 16096, 19029, 19201, 19336, 19856, 33321
Note:



76-82526 Planetary Drive

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: 65.3mm OD, 10.4mm ID, 32.2mm Thickness, 8mm OD each Pin
OE: 428000-333, 428000-611
Lester: 19029
Note: w/6 Clutch Roller Pin & 6 Clutch Spring



76-82527 Support-Armature Bearing

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: 85.9mm OD, 30mm Inner ID, 26.65mm Outer OD, 2.35mm Plate Thickness, 9.2mm Total Thickness
OE: 428000-333, 428000-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: SZ-23116C



76-82528 Cover-Gear Track

For: Denso PLGR PA90 Starters
Used:
Replace: 028452-5130
Dim: 77.3mm OD, 20mm ID, 1mm Thickness
OE: 428000-333, 428000-512, 428000-531, 428000-586, 428000-603, 428000-611, 428000-680, 428000-690, 428000-709, 428000-710, 428000-712, 428000-714, 428000-787, 428000-992
Lester: 10955, 16020, 16096, 19029, 19120, 19183, 19201, 19334, 19335, 19856, 33321
Note: Ref SZ-30116C



76-82529 Retainer Ring-Pinion

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim: 14.5mm ID, x 17.7mm OD, x 1.6mm T
OE: 428000-333, 42800-512, 428000-531, 428000-586, 428000-611
Lester: 19029, 19120, 19183, 19201, 19335
Note: Ref SZ-1501

Misc. Parts



76-82522 Stop Collar-Drive

For: Denso PLGR PA90 Starters
Used:
Replace: 128952-0590
Dim: 16.5mm ID, x 22mm OD, x 4.5mm Thickness
OE: 428000-333, 428000-512, 428000-586, 428000-603, 428000-611, 428000-680, 428000-690, 428000-698, 428000-709, 428000-710, 428000-712, 428000-714, 428000-787, 428000-992
Lester: 10955, 16020, 16096, 19029, 19120, 19183, 19201, 19334, 19335, 19856, 33321
Note: Ref SZ-2001



76-82243 Connector-Field Case

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE:
Lester:
Note: Long type



76-82244 Connector-Field Case

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE:
Lester:
Note: Short type

**Photo
Coming Soon**

76-82530 Relay

For: Denso PLGR PA90 Starters
Used:
Replace:
Dim:
OE: 428000-9340
Lester:
Note: Ref PIC 190-6530



76-82531 Connector-Motor Terminal

For: Denso PLGR PA90 Starters
Used: Motor Terminal
Replace:
Dim: 10mm ID
OE:
Lester:
Note: used on Solenoid Cap for Motor Terminal.



76-82532 Connector-Motor Terminal

For: Denso PLGR PA90 Starters
Used: Motor Terminal
Replace:
Dim: mm ID
OE:
Lester:
Note: used on Solenoid Cap for Motor Terminal.

Hardware



84-82532 Thru Bolt Hex Head (Short)

For: Denso PLGR PA90 Starters
Used: DE Housing to CE Plate
Replace: 128950-0980
Dim: M7x1.0, 194mm L, 201mm OAL,
 35mm Thread Length
 Drive: 10mm
OE: 428000-333, 428000-512, 428000-586, 428000-603, 428000-611, 428000-680, 428000-709, 428000-710
Lester: 10955, 16096, 19029, 19120, 19201, 19856, 33321
Note: SZ-12116



84-82533 Thru Bolt Hex Head (Long)

For: Denso PLGR PA90 Starters
Used: DE Housing to CE Plate
Replace:
Dim: M7x1.0, 213.5mm L, 220.6mm OAL,
 26.5mm Thread Length
 Drive: 10mm
OE:
Lester:
Note:



84-82013 Screw-Brush Holder Phillips Round Washer Head

For: Denso PLGR PA90 Starters
Used:
Replace: 128960-0040
Dim: M5x0.8, 16mm L
OE:
Lester: 19029 etc
Note:



84-82194 Screw-DE to Solenoid Hex Head

For: Denso PLGR PA90 Starters
Used:
Replace: 128950-0970
Dim: M5 x 0.8 x 30mm L, 35mm OAL
 Drive: 8mm
OE:
Lester: 19029 etc
Note:



84-82523 Ground Stud-DE Housing

For: Denso OSGR, PA90 Starters
Used: DE Housing
Replace: 128950-0550
Dim: M12x1.75x22mmL
 M10x1.50x22mmL
OE: 428000-523, 428000-934, 428000-680, 428000-709, 428000-710, 428000-994; 438000-311
 10955, 16020, 16096, 19029, 19120, 19808, 30483, 33321
Lester:
Note: Copper



84-82518 Ground Stud-DE Housing

For: Denso OSGR, PA90 Starters
Used: DE Housing
Replace: 128950-0140
Dim: M12x1.75x22mmL
 M12x1.75x22.8mmL
OE: 428000-714, 428000-787, 428000-992
Lester: 16020, 19029, 19120, 19334, 19808
Note: Copper

Hardware



84-82530 Terminal Post

For: Denso OSGR, PA90 Starters
Used: Battery, Motor
Replace:
Dim: M10 x 1.50 x 34mm L
 41mm OAL
OE:
Lester:
Note: Copper



84-82529 Terminal Post

For: Denso OSGR, PA90 Starters
Used: Battery, Motor
Replace:
Dim: M10 x 1.50 x 48mm L
 55mm OAL
OE:
Lester:
Note: Copper



84-82531 Terminal Post

For: Denso OSGR, PA90 Starters
Used: Battery, Motor
Replace:
Dim: M12 x 1.75 x 48mm L
 55.1mm OAL
OE:
Lester:
Note: Copper



85-82503 Split Lock Washer

For: Denso PLGR PA90 Starters
Used: M10 Solenoid Batter & Motor Terminal
Replace: 902581-0001
Dim: 10mm ID x 17.5mm OD, 2.2mm Thickness
OE: 428000-333, 428000-611
Lester: 19029 etc
Note: Used on all PA90 Solenoid with M10 Battery & Motor Terminal Post



85-82112 Split Lock Washer

For: Denso PLGR PA90 Starters
Used: Solenoid Cap to Solenoid Housing
Replace:
Dim: 5.3mm ID x 8.8mm OD, 1.3mm Thickness
OE: 428000-333, 428000-611
Lester: 19029 etc
Note:



85-82519 Flat Washer

For: Denso PLGR PA90 Starters
Used: M10 Battery & Motor Terminal
Replace:
Dim: 10.5mm ID x 20mm OD, 1.4mm Thickness
OE: 428000-333, 428000-611
Lester: 19029 etc
Note:



85-82501 Hex Nut

For: Denso PLGR PA90 Starters
Used: M10 Batter & Motor Stud
Replace: 901701-0061
Dim: M10x1.50, 6mm Thickness
OE: 428000-333, 428000-611
Lester: 19029 etc
Note: MN-1017, 85-2503



85-82520 Flat Washer

For: Denso PLGR PA90 Starters
Used: M12 Batter & Motor Stud
Replace:
Dim: 12.5mm ID x 20mm OD x 2.10mm Thickness
OE:
Lester:
Note:



85-82521 Split Lock Washer

For: Denso PLGR PA90 Starters
Used: M12 Batter & Motor Stud
Replace:
Dim: 12.4mm ID x 18.5mm OD x 3.2mm Thickness
OE:
Lester:
Note:



85-82522 Hex Nut

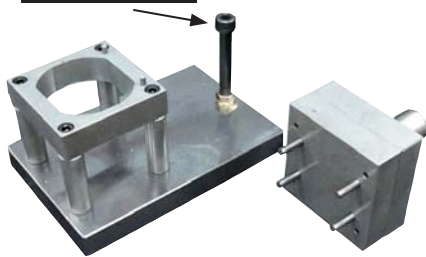
For: Denso PLGR PA90 Starters
Used: M12 Batter & Motor Stud
Replace:
Dim: M12 x 1.75 x 7.8mm Thickness
OE:
Lester:
Note:

Solenoid Repair Tools

DENSO PA90 SOLENOID SWITCH REMOVE & INSTALL FIXTURE USE WITH HYDRAULIC MACHINE

need help, please call 800-263-8761 or info@metroautoinc.com

Adjusting Bolt



Remove Fixture

TL66-002



remove Solenoid cap



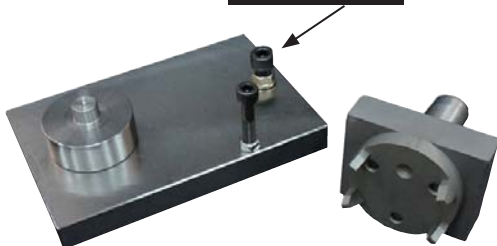
place on the base



align top fixture,
one pin to each bracket hole

Install Fixture TL66-003

Adjusting Bolt



place bracket & Coil
on base



cover with
Solenoid Housing



press in with fixture



66-82564
Bracket

BRUSH HOLDER TOOL

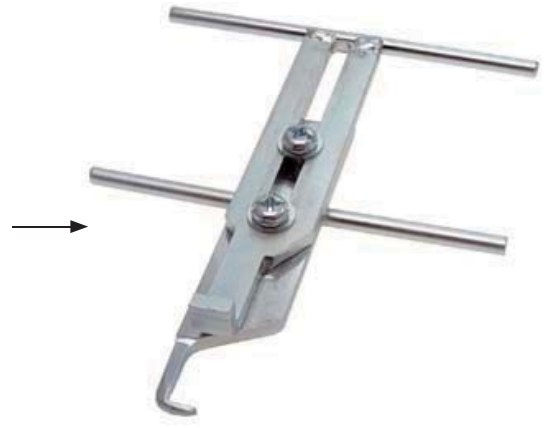
FOR MOST HEAVY DUTY STARTERS USE

TL69-001

**Brush Holder Spring Puller
CW Brush Holder use**

*Can used on Bosch, Delco,
Denso, Ford, Hitachi,
Mitsubishi, Nikko, Sawafuli
all type heavy duty Brush
Holder.*

\$25.00/ea



TL69-002

**Brush Holder Spring Puller
CCW Brush Holder use**

*Can used on Bosch, Delco,
Denso, Ford, Hitachi,
Mitsubishi, Nikko, Sawafuli
all type heavy duty Brush
Holder.*

\$25.00/ea

Features:

- **Safety use**
- **Easy use**
- **Steel material, limited lifetime warranty**
- **See our web video for demenstration, [press here](#)**

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