# POWERTRAIN TECHNOLOGY

RACING CLUTCHES & DRIVETRAIN PRODUCTS

# APPLICATION GUIDE

*TECHNICAL INFORMATION & PART NUMBERS*

***CLUTCHES - STARTERS - FLYWHEELS***
***FLEXPLATES - BELLHOUSINGS***
***HYDRAULIC RELEASE***
***BEARINGS***


***5.5" Super Lightweight Clutch with aluminum pressure plate, drilled floater plates and drilled button flywheel.***

# CLUTCH SPLINE SIZES

| Spline Number | O.D. x No. of Teeth | Applications |
|---|---|---|
| 12 | .740" (18.8mm) X 18 tooth | Ford Festiva, Suzuki Swift |
| 20 | 13/16" X 18 tooth | Nissan A series (Datsun A), Skoda |
| 28 | 20.5mm X 18 tooth | Peugeot, Citroen Metro K |
| 32 | 13/16" (20.6mm) X 24 tooth | Porsche, Alfa Romeo, Volkswagen, Vauxhall |
| 36 | 7/8" (22.2mm) X 28 tooth | Volkswagen Bug, Gulf, Jetta (VR6 Engine) |
| 40 | 7/8" (22.22mm) X 10 tooth | MG Midget, Imp, Triumph, Quaife, 750 MC, Lada |
| 41 | 7/8" (22.22mm) X 20 tooth | Hewland, Ford, Porsche, Mitsubishi Eclipse |
| 50 | 15/16" (23.5mm) x 21 tooth | Toyota (small), Lotus |
| 53 | 7/8" (23.1mm) X 21 tooth | Renault, Peugeot |
| 60 | 1" (25.4mm) X 10 tooth | Volvo, Alfa Romeo, Triumph |
| 61 | 1" (25.4mm) X 14 tooth | Chevy Vega & Monza, Pontiac Sunbird & Fiero, Buick Skyhawk, Opel, Getrag Manta, Calibra T |
| 62 | 1" (25.4mm) X 22 tooth | Mazda RX7 & Miata |
| 63 | 1" (25.4mm) X 23 tooth | Ford Rocket, Cosworth, MGB, Talbot, Austin Healy, Porsche, Xtrac, Quaife, Healy, Mitsubishi EVO |
| 64 | 1" (24.7mm) X 24 tooth | Nissan (Datsun), Honda (small), Rover, Skyline, Lotus Elan |
| 70 | 1-1/16" (26.9mm) X 10 tooth | Ford T5 |
| 72 | 1" (26.2mm) X 24 tooth | Honda (big), Integra '92 & up |
| 78 | 1-1/8" (28.5mm) X 10 tooth | Getrag metric, BMW, Moss, Cosworth |
| 80 | 1-1/8" (28.5mm) X 10 tooth | BMW, Chevrolet, Cosworth, Getrag, Jaguar, Muncie |
| 81 | 1-1/8" (28.9mm) X 21 tooth | Toyota Supra RWD |
| 89 | 29mm X 22 tooth | BMW |
| 90 | 1-5/32" (28.5mm) X 26 tooth | Borg Warner T10 & Super T10, Chevrolet, Hewland, Jerico |
| 94 | 1-3/16" (30mm) x 18 tooth | G-Force, Mopar, Chrysler |
| 96 | 1-3/8" (35mm) x 26 tooth | BMW M-3 V-8 |
| 97 | 1-3/8" (35mm) X 10 tooth | BMW, Getrag |
| 99 | 1-3/8" (35mm) X 10 tooth | Ford |

All PTT clutches are modular. This means that any spline size can be put into any clutch combination. See page 3 and 4 for PTT's complete clutch and clutch pack part numbering systems, or call PTT at 847.458.2323 for product assistance.

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# Racing Clutch Terminology

CLUTCH COVER ASSEMBLY – The main body of the clutch which all the other clutch parts fit into. The fasteners securing the diaphragm spring should never be disassembled by the end user. The diaphragm spring(s) are installed under load at the factory and cannot be removed or serviced in the field.

PRESSURE PLATE – Steel ring with a 'hump' on one side which contacts the diaphragm spring. The pressure plate is flat on the opposite side which clamps down on the clutch discs.

In a stock clutch, the term pressure plate often refers to the stamped steel clutch cover / pressure plate / diaphragm spring assembly. These components are permanently fastened together in a stock clutch.

FLOATER PLATE – A flat steel separator plate that goes between the clutch discs. Floater plates are available in solid steel or lightweight versions.

CLUTCH PACK or CLUTCH DISCS – Friction disc with steel hub riveted in the center that matches the spline on the transmission input shaft.

BUTTON FLYWHEEL – A 'button style' flywheel is roughly the same diameter as your clutch. It is used in combination with a lightweight flexplate to replace the heavy stock flywheel with the ring gear on it. You can also use a button flywheel in a reverse starter mount bellhousing set up with a small diameter reverse mount ring gear bolted to the top of the clutch.

REVERSE MOUNT RING GEAR (RMRG) – This ring gear is bolted on top of the clutch and is engaged by the starter from the transmission side of the bellhousing. It is used with a reverse starter mount bellhousing. Advantages are: 1) The starter is mounted away from the heat of the headers; 2) The small diameter of the ring gear allow the drivetrain to be mounted lower in the chassis; 3) The smaller overall physical size is more easily packaged in a racecar; 4) Relocating the starter closer to the racecar's polar moment of inertia results in quicker handling and faster turn-in response.

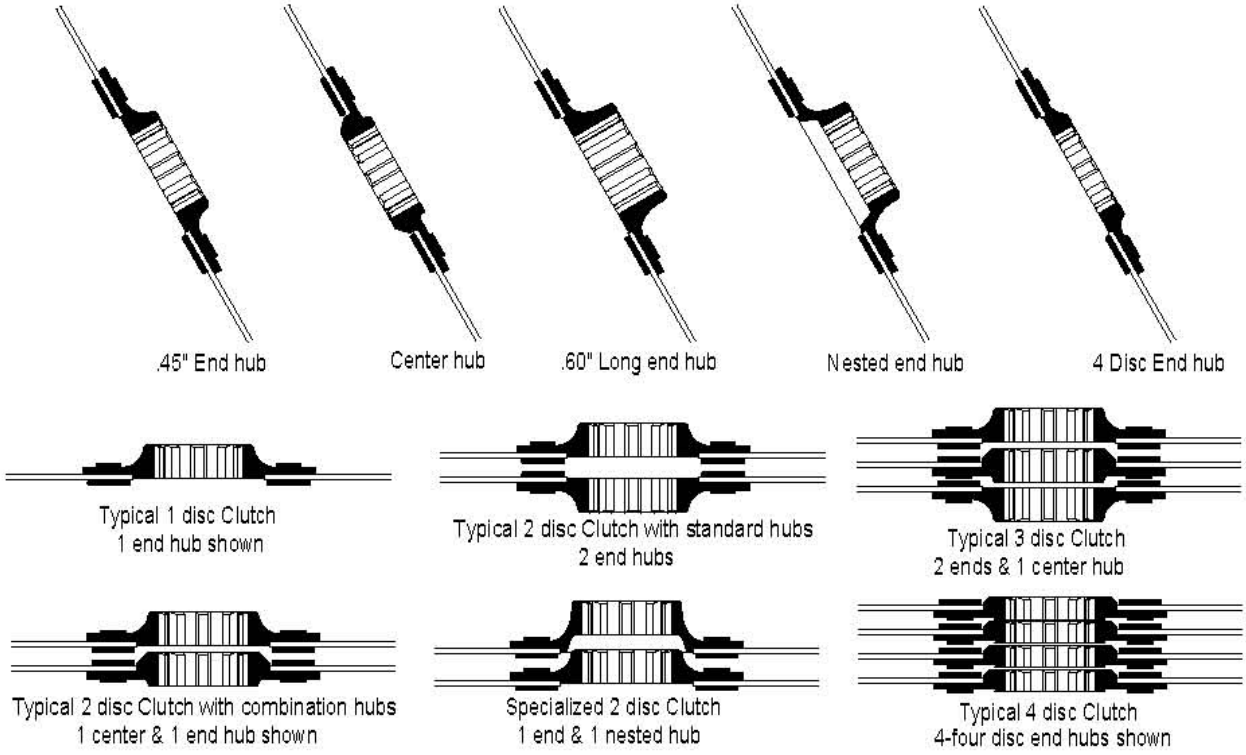
FLEXPLATE – a Low Moment of Inertia (MOI) flexplate is an excellent way of getting a lightweight racing clutch and button flywheel mounted on your engine while using a starter located in the stock location.

HYDRAULIC RELEASE BEARINGS – A hydraulic release bearing (HRB) (also known as an annular slave cylinder) is used to actuate the clutch in most race and street applications. The HRB is located in the bellhousing, between the transmission face and the clutch spring fingers. HRB's used with small diameter racing clutches work best with a 5/8" or 3/4" master cylinder. Street style clutches will typically use a slightly bigger diameter master cylinder.

MOMENT OF INERTIA (MOI) – MOI is a measure of an object's angular acceleration. The reduction of MOI in your racecar's drivetrain will pay big dividends in your car's performance. For more information, see PTT's complete discussion of MOI on page 11.

Spline-A-Lign - SPLINE ALIGNMENT TOOL – A spline alignment tool is a lightweight splined shaft which simulates the input shaft of your transmission. It is used to align the splines of the individual clutch discs during the installation of a multi disc clutch. Using a spline alignment tool ensures that the clutch discs are aligned properly so that the transmission input shaft goes smoothly into the clutch hubs when the transmission is installed. Spline-A-Ligns come in a variety of common spline sizes.

# Clutch Hub Types *




# Clutch Hub Usage Table *

| | | NUMBER OF DISCS & DISC THICKNESS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Hub** | **Description** | **1 x .105** | **2 x .105** | **3 x .105** | **1 x .200** | **2 x .200** | **3 x .200** | **1 x .250** | **2 x .250** |
| **A** | **Standard Hubs** | 1 - .45" end hub | 2 - .45" end hubs | 2 - .45" end hubs & 1 center hub | 1 - .45" end hub | 2 - .45" end hubs | 2 - .45" end hubs & 1 center hub | 1 - .45" end hub | 2 - .45" ends |
| **C** | **Combination Hubs** | 1 Center | 1 - .45" end hub & 1 center hub | 1 center & 1 - .4" end & 1 - .60" nested | 1 - center hub | 1 - .45" end & 1 - center hub | 1 center & 1 - .45" end & 1 - .60" nested | 1 - center hub | 1 - .45" end & 1 - center |
| **L** | **Long End Hubs** | 1 - .60" end hub | 1 - .40" end hub & 1 - .60" end hub | | 1 - .60" end hub | 1 - .60" end & 1 - .45" end hub | | 1 - .60" end hub | 1 - .60" end & 1 - .45" end |
| **N** | **.60" Nested Hubs** | 1 - .60" nested hub | 1 - .40" end hub & 1 - .60" nested | | 1 - .60" nested hub | 1 - .45" end & 1 - .60" nested | | 1 - .60" nested hub | 1 - .45" end & 1 - .60" nested |
| **T** | **.60" Nested w/ .1" c'bore** | | | | 1 - .60" T-nested hub | 1 - .45" end & 1-.60" T-nested | | 1 - .60" T-nested hub | 1 - .45" end & 1-.60" T-nested |

* These charts are not all inclusive. Please call PTT for other available combinations.

Every digit of PowerTrain Technology (PTT) part numbers represents something. The part numbering chart shown below can be used to identify the correct clutch part number for your application. Please note that not all combinations are available and the following charts are not all inclusive. There may be some additional clutch combinations that are not represented in these charts. Please call PTT at 847.458.2323 for assistance finding your correct part number.

# CLUTCH ASSEMBLY PART NUMBERING SYSTEM

**C = CLUTCH ASSEMBLY** — **C H 3 1 8 A 1 A 80**

**CLUTCH STYLE**

| | |
|---|---|
| C = 4.5" Open Style | H = 7.25" Open Style |
| S = 4.5" 5-Bolt O. S. | J = 7.25" Rally Style |
| E = 5.5" Open Style | N = 10.5" Street |

**NUMBER OF DISCS - 1, 2, 3, or 4**

**FRICTION MATERIAL**

| | |
|---|---|
| 1 = Metallic Lining, .105" thick | 7 = Organic Lining, .200" thick |
| 2 = Metallic Lining, .200" thick | 8 = Organic Lining, .250" thick |
| 3 = Metallic Lining, .250" thick | A = 10.5" Metallic Lining |
| 4 = Hi-Torque Lining, .125" thick | C = 10.5" Organic Lining |
| 5 = Hi-Torque Lining, .105" thick | |

**NUMBER OF HUB RIVETS**

| | |
|---|---|
| 0 = Sprung Hub | 8 = 8 rivets are for extreme torque applications |
| 6 = 6 rivets are standard | |

**CLUTCH HUB TYPE - see Hub Usage Chart on page 2 for other combinations**

| **A = Standard Hubs** | **C = Combination Hubs** |
|---|---|
| 1 disc = 1 end hub | 1 disc = 1 center hub |
| 2 discs = 2 end hubs | 2 discs = 1 end hub & 1 center hub |
| 3 discs = 2 end hubs & 1 center hub | 3 discs = ctr.& .4" end & .60" nested |
| 4 discs = 2 end hubs & 2 center hubs | 4 discs = 1 end hub & 3 center hubs |

**PRESSURE PLATE**

| | |
|---|---|
| 1 = Standard P. Plate (steel) | 7 = Steel, Hi-Torque, .515" thick |
| 2 = Hi Torque P. Plate (steel) | 8 = Alum. P.Plt. w/ Super LtWt Floaters |
| 3 = Alum. P. Plate w/ LtWt. Floaters | 9 = Steel, Hi-Mass |
| 5 = Std. P.Plate, LtWt Floaters | |

**SPRING CLAMP FORCE**

X = AAAA = Highest Clamp Force Available for Extreme Torque Applications
Y = AAA = Higher Clamp Force
Z = AA = High Clamp Force - Standard for racing clutches
A = Above average clamp force, with reduced pedal effort
B = Average clamp force for moderate horsepower usage
C = Low clamp force
D = Lowest clamp force

**SPLINE SIZE**

12 = .740" (18.8mm) X 18 - Ford Festiva, Suzuki Swift
20 = 13/16" X 18 - Nissan A series (Datsun A), Skoda
28 = 20.5mm X 18 - Peugeot, Citroen Metro K
32 = 13/16" (20.6mm) X 24 - Porsche, Alfa Romeo, Volkswagen, Vauxhall
36 = 7/8" (22.2mm) X 28 - Volkswagen Bug, Gulf, Jetta (VR6 Engine)
40 = 7/8" (22.2mm) X 10 - MG Midget, Imp, Triumph, Quaife, 750 MC, Lada
41 = 7/8" (22.2mm) X 20 - Hewland, Ford, Porsche, Mitsubishi Eclipse
50 = 15/16" (23.5mm) x 21 - Toyota (Small), Lotus
53 = 15/16" (23.2mm) X 21 - Renault, Peugeot
60 = 1" (25.4mm) X 10 - Volvo, Alfa Romeo, Triumph, MGA
61 = 1" (25.4mm) X 14 - Chevy Vega, Monza; Pontiac Sunbird, Fiero; Buick Skyhawk, Opel; Getrag Manta, Calibra T
62 = 1" (25.4mm) X 22 - Mazda RX7, Miata
63 = 1" (25.4mm) X 23 - Ford Rocket, Cosworth, MGB, Talbot, Austin Healy, Porsche, Xtrac, Quaife, Mitsubishi Evo
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70 = 1-1/16" (26.9mm) X 10 - Ford T5
72 = 1" (26.2mm) X 24 - Honda (big), Integra '92 & up
78 = 1-1/8 (28.5mm) X 10 - Getrag metric, BMW, Moss, Cosworth
80 = 1-1/8" (28.5mm) X 10 - BMW, Chevrolet, Cosworth, Getrag, Jaguar, Muncie
81 = 1-1/8" (28.9mm) X 21 - Toyota Supra RWD
89 = 29mm X 22 - BMW
90 = 1-5/32" (28.5mm) X 26 - Borg Warner T10 & Super T10, Chevrolet, Hewland, Jerico
94 = 1-3/16 (30mm) x 18 - G-Force, Mopar, Chrysler
96 = 1-3/8" (35mm) x 26T - BMW M-3 V-8
97 = 1-3/8" (35mm) X 10 - BMW, Getrag
99 = 1-3/8" (35mm) X 10 - Ford

Every digit of PTT's part numbers represents something. The part numbering chart shown below can be used to identify the correct clutch pack part number for your application. Please note that not all combinations are available and the following charts are not all inclusive. There may be some additional clutch combinations that are not represented in these charts. Please call PTT at 847.458.2323 for assistance finding your correct part number.

# REPLACEMENT CLUTCH PACK PART NUMBERING SYSTEM

**P = CLUTCH PACK** — **P H 3 1 6 A 80**

**DISC SIZE**

| | |
|---|---|
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| E = 5.5" O.D. | N = 10.5" Street |
| H = 7.25" O.D. | |

**NUMBER OF DISCS - 1, 2, 3, or 4**

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| 5 = Hi-Torque Lining, .105" thick | |

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**CLUTCH HUB TYPE - see Hub Usage Chart on page 2 for other combinations**

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| 3 discs = 2 end hubs & 1 center hub | 3 discs = ctr & .4" end & .60" nested |
| 4 discs = 2 end hubs & 2 - 4 disc hubs | 4 discs = 1 end & 3 centers |

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97 = 1-3/8" (35mm) X 10 - BMW, Getrag
99 = 1-3/8" (35mm) X 10 - Ford

# Clutch Component Wear Limits

Every small diameter racing clutch PTT manufactures has a usable friction material wear limit of 0.030" (0.75mm). This friction material wear limit is for ***all*** friction material in the clutch. So… the only disc in a single disc clutch would be allowed to wear a maximum of 0.030" (0.75mm). At that point, the clutch disc's service life is over. The clutch disc will need to be replaced.

The clutch discs on a 2 disc clutch are allowed to wear a maximum of 0.015" (0.38mm) ***each*** (0.015" x 2 = 0.030" [0.75mm] total clutch pack wear.) When each clutch disc has worn 0.015" (0.38mm) from their new thickness, their service life is over. The clutch pack needs to be replaced.

The clutch discs on a 3 disc clutch pack are allowed to wear a maximum of 0.010" (0.25mm) ***each*** (0.010" x 3 = 0.030" [0.75mm] total clutch pack wear.) When each clutch disc has worn 0.010" (0.25mm) from their new thickness, their service life is over. The clutch pack needs to be replaced.

Yes, if you are running a three disc clutch, and you know a fellow racer who is running a two disc, or a single disc clutch, that racer can make further use of your worn-out clutch discs.

One last thing to consider when discussing wear limits: If the floater plate(s), pressure plate, or flywheel step are worn, the wear amount for these parts must be added to the overall clutch pack wear. Any amount they are worn below the New Thickness shown below will reduce the amount of wear available to the clutch discs. For example, if your floater plate only measures 0.176" (4.47mm) it has 0.004" (0.10mm) of wear. This means that if you are running a 2 disc clutch you should replace the discs when they are worn down to .092" (2.34mm) instead of the normal .090" 2.28mm) per the table below. The easy engagement friction material, which is proprietary to PTT clutches, does not normally wear the mating surfaces of the pressure plate or floater plate(s), but their thickness and flatness must be checked every time the clutch is inspected.

Inspect your clutch at frequent intervals. This interval will vary depending on driver skill level. Replace the clutch disc(s) when they are worn to the minimum thickness. This avoids clutch slippage which leads to excess heat that can permanently damage your clutch. Clutch component wear limits are as follows:

| Number of Discs: | Thickness New | Thickness Worn |
|---|---|---|
| 1 | 0.105" (2.67mm) | 0.075" (1.90mm) |
| 2 | 0.105" (2.67mm) | 0.090" (2.28mm) |
| 3 | 0.105" (2.67mm) | 0.095" (2.41mm) |
| 4 | 0.105" (2.67mm) | 0.097" (2.46mm) |
| 1 | 0.125" (3.18mm) | 0.095" (2.41mm) |
| 1 | 0.200" (5.08mm) | 0.170" (4.32mm) |
| 2 | 0.200" (5.08mm) | 0.185" (4.70mm) |
| 3 | 0.200" (5.08mm) | 0.190" (4.83mm) |
| 1 | 0.250" (6.35mm) | 0.220" (5.59mm) |
| 2 | 0.250" (6.35mm) | 0.235" (5.97mm) |
| Floater Plate | 0.180" (4.57mm) | for all PTT clutches |
| Pressure Plate | 0.535" (13.59mm) | for most PTT clutches |
| Pressure Plate | 0.515" (13.08mm) | for Extreme-Torque clutch |

# HOW TO SELECT A RACING CLUTCH

Circle track racing clutches are designed to be as light in moment of inertia (MOI) as absolutely possible. You always want to select the lightest clutch and drivetrain components which the rules you race under will allow. The only exception to this has to do with durability. In order to finish first, first you must finish!

The clutch you select will be a fine balance of lightweight and low moment of inertia performance combined with enough durability for your particular car/engine/driver combination. Too heavy, and you will not be competitive. Too light and you might not finish the race. The clutch that you ultimately select is based upon several factors. Here is a step by step guide to selecting the correct clutch for your application. First, let's talk about some clutch basics.

## Clutch Basics

The reason for selecting a multi-disc racing clutch is increased torque capacity. If you want to double the torque capacity of a one disc clutch, simply add another clutch disc. Do you want triple the torque capacity? Use three clutch discs. Adding clutch discs is a great way to increase torque capacity, without increasing the diameter (or MOI) of the clutch or increasing the pedal effort

The only other way to increase the torque capacity of a clutch would be to increase the diameter. Increasing the diameter is usually impractical due to size limitations. Doubling the diameter of a clutch will double the torque capacity, but the clutch will have four times the moment of inertia.

## CLUTCH SELECTION GUIDE

### 1. Ensure the clutch you are considering conforms to the rules

The sanctioning body which governs your type of racing usually has a 'clutch rule'. Generally sanctioning bodies like to spell out minimum clutch disc diameters, or limit you to a single disc clutch.

### 2. Select a clutch with the right torque capacity

The minimum break-away torque capacity of the clutch you select is based upon how much peak torque your engine develops. Clutches only care about torque, NOT horsepower. The rule of thumb PTT uses to properly size a clutch to your application is as follows:

Multiply your engine's peak torque by 1.25 (minimum) and select a clutch that has at least as much or more, torque capacity. For instance, if your engine has a peak torque of 400 lb.ft. multiply 400 by 1.25 (400 x 1.25 = 500). Therefore, in this example, you would select a clutch which has a torque capacity of at least 500 lb.ft. For all wheel drive (AWD) cars, you should use a 1.5 multiplier.

Engines that have unusually high harmonic vibration, such as some inline 4 cylinders, or inline 6 cylinders or engines with extremely light rotating/reciprocating assemblies (light cranks and pistons, titanium rods, no harmonic damper, etc.) should be rated using a 1.5 multiplier. **Please see "Clutch Torque Capacity Conversion Guide" (Table #1) on page 7 to quickly determine how much torque capacity your PTT clutch requires.**

Too much clutch torque capacity can be just a harmful as too little clutch torque capacity. Think of your clutch as a fusible link between your drive wheels and your engine. If the drive wheels rub up against another car (or the wall) or come to an abrupt stop for whatever reason (collision) the clutch will slip and not transmit a harmful torque spike from the drivetrain to the engine. This can save valuable engine components, saving you a considerable amount of money.

# TABLE # 1
# Clutch Torque Capacity Conversion Guide

| Your Car's Engine Torque | Minimum Clutch Torque Capacity (1.25 multiplier) | AWD, 4 cylinder or inline 6 cylinder Clutch Torque Capacity (1.50 multiplier) | Extreme Application Clutch Torque Capacity (1.75 multiplier) | Do not Exceed this Clutch Torque Capacity (2.00 multiplier) |
|---|---|---|---|---|
| 100 | 125 | 150 | 175 | 200 |
| 150 | 188 | 225 | 263 | 300 |
| 200 | 250 | 300 | 350 | 400 |
| 250 | 313 | 375 | 438 | 500 |
| 300 | 375 | 450 | 525 | 600 |
| 350 | 438 | 525 | 613 | 700 |
| 400 | 500 | 600 | 700 | 800 |
| 450 | 563 | 675 | 788 | 900 |
| 500 | 625 | 750 | 875 | 1000 |
| 550 | 688 | 825 | 963 | 1100 |
| 600 | 750 | 900 | 1050 | 1200 |
| 650 | 813 | 975 | 1138 | 1300 |
| 700 | 875 | 1050 | 1225 | 1400 |

**Remember**

It is important to always specify a clutch with more torque capacity than needed. Always *round up* when it comes to selecting a clutch with the proper torque capacity. This avoids the possibility of slippage, which will quickly destroy a racing clutch due to excessive heat buildup. Avoid using a clutch with a torque capacity of 2.0 or more times the engine's peak torque rating (see PTT Clutch Facts: *Maximum Clutch Release Load Limits* on page 10).

### 3. Select a clutch size matched to your racecar overall weight

Lightweight cars (formula cars, small 4 cylinder cars, etc.) can use the smallest clutches (4.5".) Heavier cars have more kinetic energy, and will need to go up in clutch diameter. Bigger diameter clutches have more mass. This extra clutch mass is needed for cars with more kinetic energy.

### 4. Gear Ratios

If your racecar has a tall first gear, or a tall final drive ratio (or both), you might want to consider going to a larger diameter clutch than you would normally install. The increased amount of clutch slippage needed to get the car rolling, due to high gear ratios, will generate increased heat in the clutch. More clutch mass is needed to offset this increased slippage.

### 5. Durability vs. Performance

The primary consideration in selecting the diameter of the clutch comes down to balancing durability against performance. A smaller clutch will give the car better performance. A bigger clutch will give extra durability. All things being equal, a 4.5" clutch has approximately half the MOI of a 5.5" clutch. A 5.5" clutch has about half the MOI of a 7.25" clutch. The performance benefits with a clutch that has half (or one fourth!) the MOI of larger clutches help immensely on the track. **For an estimated clutch size recommendation, see "Clutch Size Selection Guide" (Table #2) on page 9. Please note: For best results, each application must be individually evaluated.**

## A word about clutch heat

It is important to understand that the smaller the clutch is, the more sensitive it is to excessive heat build-up. The driver must be very careful and always drive the smaller clutch within its limits. Just as conserving your tires or your brakes is important, so is conserving your clutch!

To help you understand how critical this is, think of a 4.5" clutch as a cup of water, and think of a 5.5" clutch as a quart of water, and a 7.25" clutch as a gallon of water. If you put a cup of water and a gallon of water on the stove to boil, which one will boil sooner? The cup of water boils sooner, due to its lower mass. Think of slipping the clutch as being equivalent to putting the water on the hot stove. Lower mass can be a great help in getting around the race track faster due to lower MOI, BUT you have to be careful to *not overheat the clutch!*

With a small clutch you should always *push* your car around in the pits, *never drive the car on the trailer*, and *avoid slipping the clutch*. In the heat of the battle (leaving the pits under a green flag pit stop, or spinning out in the in-field, it is always better to break the tires loose to get the car going, rather than excessively slipping the clutch.

## 6. Driver Skill Level

Getting maximum life out of your clutch is an acquired skill. First you must ask yourself, "How good is my driver?" Does he/she have multi-disc racing clutch experience? Can he/she make a racing clutch pack last a full season or longer? If the answer is yes, select the smallest clutch you can afford that meets the torque requirements, vehicle weight, and gear ratio guidelines specified above.

If you have a newer, less experienced driver, here is a trick we often recommend. You may want to add an additional disc to your selected clutch assembly. This will help the clutch withstand more heat abuse (because it now has a little more mass), while still improving the racecar's performance over what is achievable with a larger diameter clutch. If you have the choice of adding a disc to a small diameter clutch or going to the next size larger clutch, adding the extra disc to the smaller size clutch will give you much better performance than the larger clutch *and* give you the extra durability required. Generally the next bigger size clutch roughly doubles the clutch MOI. As the driver's performance (skill with the racing clutch) improves, it is inexpensive to get a shorter clutch cover, and remove one clutch disc and floater plate.

## Heat is a racing clutch's mortal enemy

**Every time you are slipping the clutch, the clutch friction surfaces are generating heat. You should always try to conserve your equipment by keeping the heat build-up in your racing clutch to an absolute minimum. This is best accomplished by using the minimum engine RPM necessary to get the car launched, and/or slipping the clutch for the shortest amount of time needed to get the car moving. Get your crew to push the car off when leaving the pits or paddock area. Once the car is rolling, and the driver's foot is completely off the clutch (clutch is fully engaged), you can do whatever you want with the throttle.**

## NEVER drive the car onto the trailer. Use a winch.

**Matching engine RPM on downshifts also helps reduce clutch heat build-up (and excessive wear) immensely. You should NEVER slide or 'fan' the clutch coming off a slow corner to make up for a wrong gear ratio. The amount of heat generated doing this to a small multi-disc clutch will damage it in a short time.**

# TABLE #2
## Clutch Size Selection Guide

NOTE: This chart is a preliminary guideline. For best results, each application must be individually evaluated.

| Car Weight with Driver | Driver Skill Level | Gear Ratio | Clutch Torque Capacity from Chart 1 | Clutch Recommendation | | |
|---|---|---|---|---|---|---|
| | | | | 4.5" | 5.5" | 7.25" |
| 1,000 to 1,500 pounds | New Driver | Tall 1st gear or Tall final ratio | 100 lb.ft. | NO | 2 disc | 1 disc |
| | | | 150 lb.ft. | NO | 2 disc | 1 disc |
| | | | 200 lb.ft. | NO | 2 disc | 1 disc |
| | | | 250 lb.ft. | NO | 2 disc | 1 disc |
| | | Appropriate Gear Ratios | 100 lb.ft. | 2 disc | 1 disc | 1 disc |
| | | | 150 lb.ft. | 2 disc | 1 disc | 1 disc |
| | | | 200 lb.ft. | 2 disc | 2 disc | 1 disc |
| | | | 250 lb.ft. | 2 disc | 2 disc | 1 disc |
| | Highly Skilled Driver | Tall 1st gear or Tall final ratio | 100 lb.ft. | 1 disc | 1 disc | 1 disc |
| | | | 150 lb.ft. | 1 disc | 1 disc | 1 disc |
| | | | 200 lb.ft. | 2 disc | 2 disc | 1 disc |
| | | | 250 lb.ft. | 2 disc | 2 disc | 1 disc |
| | | Appropriate Gear Ratios | 100 lb.ft. | 1 disc | 1 disc | 1 disc |
| | | | 150 lb.ft. | 1 disc | 1 disc | 1 disc |
| | | | 200 lb.ft. | 1 disc | 1 disc | 1 disc |
| | | | 250 lb.ft. | 1 disc | 1 disc | 1 disc |
| 1,501 to 2,500 pounds | New Driver | Tall 1st gear or Tall final ratio | 200 lb.ft. | NO | 2 disc | 2 disc |
| | | | 300 lb.ft. | NO | 2 disc | 2 disc |
| | | | 400 lb.ft. | NO | 3 disc | 2 disc |
| | | | 500 lb.ft. | NO | 3 disc | 3 disc |
| | | Appropriate Gear Ratios | 200 lb.ft. | 2 disc | 2 disc | 1 disc |
| | | | 300 lb.ft. | 3 disc | 2 disc | 2 disc |
| | | | 400 lb.ft. | 3 disc | 2 disc | 2 disc |
| | | | 500 lb.ft. | 3 disc | 3 disc | 3 disc |
| | Highly Skilled Driver | Tall 1st gear or Tall final ratio | 200 lb.ft. | 3 disc | 2 disc | 2 disc |
| | | | 300 lb.ft. | 3 disc | 2 disc | 2 disc |
| | | | 400 lb.ft. | 3 disc | 3 disc | 2 disc |
| | | | 500 lb.ft. | 3 disc | 3 disc | 2 disc |
| | | Appropriate Gear Ratios | 200 lb.ft. | 2 disc | 1 disc | 1 disc |
| | | | 300 lb.ft. | 2 disc | 1 disc | 1 disc |
| | | | 400 lb.ft. | 3 disc | 2 disc | 2 disc |
| | | | 500 lb.ft. | 3 disc | 2 disc | 2 disc |
| 2,501 to 3,500 pounds | New Driver | Tall 1st gear or Tall final ratio | 300 lb.ft. | NO | 3 disc | 2 disc |
| | | | 400 lb.ft. | NO | 3 disc | 3 disc |
| | | | 500 lb.ft. | NO | 3 disc | 3 disc |
| | | | 600 lb.ft. | NO | 3 disc | 3 disc |
| | | | 700 lb.ft. | NO | 3 disc | 3 disc |
| | | Appropriate Gear Ratios | 300 lb.ft. | 3 disc | 2 disc | 2 disc |
| | | | 400 lb.ft. | 3 disc | 3 disc | 2 disc |
| | | | 500 lb.ft. | 3 disc | 3 disc | 3 disc |
| | | | 600 lb.ft. | 3 disc | 3 disc | 3 disc |
| | | | 700 lb.ft. | 3 disc | 3 disc | 3 disc |
| | Highly Skilled Driver | Tall 1st gear or Tall final ratio | 300 lb.ft. | 3 disc | 2 disc | 2 disc |
| | | | 400 lb.ft. | 3 disc | 2 disc | 2 disc |
| | | | 500 lb.ft. | 3 disc | 3 disc | 2 disc |
| | | | 600 lb.ft. | 3 disc | 3 disc | 3 disc |
| | | | 700 lb.ft. | 3 disc | 3 disc | 3 disc |
| | | Appropriate Gear Ratios | 300 lb.ft. | 2 disc | 1 disc | 1 disc |
| | | | 400 lb.ft. | 2 disc | 2 disc | 2 disc |
| | | | 500 lb.ft. | 3 disc | 2 disc | 2 disc |
| | | | 600 lb.ft. | 3 disc | 3 disc | 2 disc |
| | | | 700 lb.ft. | 3 disc | 3 disc | 3 disc |

NOTE: This chart is a preliminary guideline. For best results, each application must be individually evaluated.

NOTE: Other factors to take into consideration for clutch selection include: Type of racing; Tires; Standing starts; and Event length. This table is not all inclusive.

# PTT CLUTCH FACTS

## Clutch torque improves over the life of the clutch

The torque capacity of all PTT clutches increase as the clutch wears. As the clutch wears, the clutch will transmit more torque! Once you understand this little known fact, you can rest easy in the knowledge that if the clutch does not slip when it is initially installed then, like a fine wine; it will only get better with age.

## Custom torque capacity

PTT clutches can be custom tailored for a lower clutch release force by installing a lighter diaphragm spring. This is frequently done for a couple of reasons. It reduces pedal effort to the driver and it reduces the force on the engine's crank thrust bearing. This helps reduce driver fatigue in longer endurance events, while improving engine durability. Some smaller 4 cylinder engines cannot withstand the excessively high release loads imparted from some aftermarket racing clutches. PTT's clutches with lower release loads eliminate the chance of expensive engine rebuild costs due to 'crank walk'. See our article on crank walk at www.PowerTrainTech.com.

**THE TORQUE CAPACITY OF A PTT CLUTCH CAN BE CHANGED IN THREE WAYS:**

**1. Install a high-torque pressure plate instead of a standard pressure plate.** This pressure plate has a reduced diameter fulcrum. Installing a high-torque pressure plate will increase the torque capacity of a clutch with NO increase in spring clamp load or pedal effort.

**2. Select a different diaphragm spring.** PTT diaphragm springs are rated from 'X' to 'D'. Standard clutches come with 'A' rated springs. Changing from an 'A' spring to a 'Z' spring will increase the torque capacity as well as pedal effort and thrust bearing load. Conversely, changing from an 'A' spring to a 'B' spring will reduce the torque capacity, pedal effort, and thrust bearing 'stress'. Typically clutch diaphragm springs are changed to accommodate pedal effort requirements just as much as for peak torque capacity fine tuning.

**3. Select a different friction material.** PTT offers bronze metallic, organic and iron metallic based friction materials. Different friction materials offer different coefficients of friction (Cf). An alternative friction material might be selected for its drivability as well as its ultimate torque capacity.

## Maximum clutch release load limits

All PTT clutches are designed to never exceed 800 pounds of force during clutch disengagement (clutch release). Some unknowledgeable clutch manufacturers will install two standard diaphragm springs into a 7.25" clutch cover and call it 'high performance.' This is irresponsible, and demonstrates a lack of good engineering judgment (or no engineering at all!) Although this doubles the torque capacity of the clutch, it also doubles the load on the engine's thrust bearing, causing its early failure and expensive replacement. This 'trick' will also double the force needed to disengage the clutch, causing driver fatigue.

# FRICTION MATERIALS

**SINTERED BRONZE METALLIC** - PTT's standard friction material is a proprietary sintered metallic material that has been custom blended to meet a variety of different requirements. It is also ground to an extremely fine surface finish. This eliminates excessive clutch wear the first time the clutch is used. It also doesn't require bedding-in when first installed. Standard thicknesses available in this material are 0.105", 0.200", or 0.250" thick. The thickness of the disc for use in your clutch is determined by the type of use it is put to. Generally, a thicker disc would be selected if the clutch is going to be consistently subjected to higher operating temperatures brought about by lots of slippage. Thinner discs are selected for their lighter MOI, resulting in faster shifting, and longer transmission part life.

Under normal conditions, each 7.25" disc provides 300 lb.ft. of torque capacity. PTT metallic friction materials stand up to extreme heat abuse better than organic friction materials, and do not drop as much Cf as organic materials as the lining temperature goes up.

**ORGANIC** - Organic friction materials have a softer, more forgiving engagement characteristic. PTT organic discs have a higher coefficient of friction (Cf) than some metallic linings offered. Using a clutch cover with the same clamp load (diaphragm spring), the organic material will deliver a higher clutch torque capacity. GENERALLY, you can plan on approximately 400 lb. ft. of torque per 7.25" disc. Organic friction materials lose Cf as the lining temperature goes up. If you get an organic clutch hot, and it slips, let the clutch cool down to avoid costly damage to the rest of the clutch components due to excessive heat. Organic discs are designed mainly for street driving. Organic clutch discs should not be used in applications over 400 hp or other extreme applications, such as drag racing.

**SINTERED IRON METALLIC** – PTT's highest Cf friction material. If you have a difficult application, and need every last lb.ft. of torque capacity then this is the material for you! When used in a single disc 7.25" clutch this iron material has a torque rating in excess of 600 lb. ft. In many situations, this clutch will allow you to go from a standard 2 disc clutch to a 1 disc clutch in order to reduce static weight and MOI. This material drops Cf moderately with increased lining temperature. It is also 'grabbier' than our velvety smooth bronze material. Most drivers will find iron material more difficult to drive at first.

## MOMENT OF INERTIA

Moment of inertia, (MOI) or more properly called angular moment of inertia as it applies to rotating parts (racecar drivetrain parts) deserves important consideration. The reduction of MOI in your racecar's drivetrain will pay big dividends in your car's performance. First let's consider how MOI is calculated. The MOI of rotating parts can be solved by the formula $\frac{1}{2} MR^2$ where M = mass and R = radius. This means that one half the mass of a rotating part times the radius (squared) of the rotating part will give us the MOI of the part expressed in lb./in.$^2$. Let's solve for the MOI of a simple flywheel:

Let's say we have a flywheel that weighs 12 pounds and is 10" in diameter.

**Mass (M) = 12 lbs. and Radius (R) = 5"**

**$\frac{1}{2}$ x 12 x $5^2$ = 150 lb./in.$^2$**

Now let's take our 12 pound flywheel and put it on a diet. Let's turn 4 pounds off of it to reduce its weight down to 8 pounds. (That is a full 1/3 reduction in weight!)

**Now, M = 8 lbs. and R = 5"**

**$\frac{1}{2}$ x 8 x $5^2$ = 100 lb./in.$^2$**

This shows that a 1/3 reduction in weight results in a 33% reduction in MOI. OK. Good. 1/3 lighter MOI will result in a good performance increase on-track.

To illustrate how important MOI is, let's look at this problem a little differently. Let's reduce the size of the flywheel to a 6" diameter but for comparison sake we will say that it still weighs 12 pounds (just as heavy as our original flywheel).

**Now, M = 12 lbs. and R = 3"**

**$\frac{1}{2}$ x 12 x $3^2$ = 54 lb./in.$^2$**

This shows that a 50% reduction in size results in a 64% reduction in MOI.

### If you reduce the size of the flywheel to a 6" diameter *and* reduce the weight to 6 pounds you have $\frac{1}{2}$ x 6 x $3^2$ = 27 lb./in.$^2$, a full 82% reduction in MOI!

This example illustrates that you get a bigger reduction in MOI by reducing the rotating diameter than by reducing the rotating weight. So… the next time you are shopping for a new clutch you should not ask how much it weighs. Instead, ask how much MOI does it have. This also clearly illustrates that the MOI of a 5.5", 3 disc clutch (39.4 lb./in.$^2$) will be significantly lower than a 7.25", 2 disc clutch (71.4 lb./in.$^2$).

## Reduced MOI shows up as a benefit in your race car in several different ways:

### Low MOI Advantage #1

On acceleration the engine's horsepower is more efficiently transmitted to the drive wheels. Due to the fact that this extra power is not being absorbed by having to spin up the excess inertia of the heavier clutch and flywheel, the racecar with the lower MOI driveline parts will out-accelerate a racecar with heavier MOI driveline parts.

### Low MOI Advantage #2

On braking when approaching a turn, the racecar with the lower MOI driveline parts decelerates harder, with less stress on the braking system. This is due to the fact that the engine has much less flywheel inertia trying to carry the car deeper into the corner. This increased engine braking can result in less brake pad wear and less stress on the rest of the brake system.

### Low MOI Advantage #3

Lower MOI parts take less horsepower to accelerate. This can result in lower fuel consumption. In an endurance event this can add up to a substantial fuel savings. Perhaps enough to alter your pit stop strategy.

### Low MOI Advantage #4

Low MOI rotating parts usually also have lower static weight. This allows the racecar designer to reduce the car's weight. If the class has a minimum weight and the car is already under that weight, it allows the designer to put the ballast where it will help the car's handling the most.

### Low MOI Advantage #5

Low MOI clutch disc(s) allow for quicker up-shifts and down-shifts. This is a measurable difference in reduced lap times on a road course.

### Low MOI Advantage #6

Low MOI clutch discs allow for reduced stress on transmission synchros or dog rings. Because the clutch disc(s) change RPM quicker there is less force applied to synchros or dog rings, resulting in longer life of these critical transmission components.

> **Q.** Is it more important to reduce the static weight of your racecar, or reduce the MOI of your car's rotating parts?
>
> **A.** It is generally recognized that there is about a ten to one advantage in favor of reducing rotating weight over static weight in a racecar. As an example…if you have the chance to remove just one pound of rotating weight from your flywheel, you will see an immediate and noticeable improvement in the racecar's acceleration. On the other hand if we put a ten pound brick in your racecar without your knowledge, you probably would not even realize it was there.

Every spinning part PTT engineers is built with an eye towards reduced MOI, while still paying critical attention to rugged reliability and quality. It is this low MOI that gives you the unfair advantage over your competition. You may be fast, but PTT racing products can allow you to go faster!

# 4.5" Open Style Clutch Units (no flywheel)

***xx*** *= spline size. See spline look-up chart inside front cover.*

| 4.5" Clutch (no flywheel) | | | 10-Bolt Clutch | | PowerSTAR 5-Bolt Clutch | |
|---|---|---|---|---|---|---|
| | | | Friction Material | | Friction Material | |
| Application | Number of Discs | Spline=**xx** | Metallic .105" Thick | Hi-Torque .105" Thick | Metallic .105" Thick | Hi-Torque .105" Thick |
| All | 1 | See List | CC116A1A**xx** | CC158A1A**xx** | CS116A1A**xx** | CS158A1A**xx** |
| All | 2 | See List | CC216A1A**xx** | CC258A1A**xx** | CS216A1A**xx** | CS258A1A**xx** |
| All | 3 | See List | CC316A1A**xx** | CC358A1A**xx** | CS316A1A**xx** | CS358A1A**xx** |
| All | 4 | See List | CC416A1A**xx** | CC458A1A**xx** | CS416A1A**xx** | CS458A1A**xx** |

All part numbers shown above are for standard clutch hub configuration.

For additional clutch options see "Clutch Assembly Part Numbering System" on page 3.

# 4.5" Open Style Clutch & LtWt Button Flywheel Kits

*Early Model = 1985 & earlier, 2 piece rear main seal. Late Model = 1986 to 1997, 1 piece rear main seal.*

| 4.5" Clutch & Button Fly | | | 10-Bolt Clutch | PowerSTAR 5-Bolt Clutch |
|---|---|---|---|---|
| Application | Number of Discs | Spline | Metallic .105" Thick | Metallic .105" Thick |
| Chevy SB V-8 Early Model | 2 | 10 Tooth | KC2128 | KS2128 |
| | | 26 Tooth | KC2129 | KS2129 |
| | 3 | 10 Tooth | KC3128 | KS3128 |
| | | 26 Tooth | KC3129 | KS3129 |
| Chevy SB V-8 Late Model | 2 | 10 Tooth | KC2828 | KS2828 |
| | | 26 Tooth | KC2829 | KS2829 |
| | 3 | 10 Tooth | KC3828 | KS3828 |
| | | 26 Tooth | KC3829 | KS3829 |
| Chevy SB V-8 LS1 | 2 | 10 Tooth | KC2028 | KS2028 |
| | | 26 Tooth | KC2029 | KS2029 |
| | 3 | 10 Tooth | KC3028 | KS3028 |
| | | 26 Tooth | KC3029 | KS3029 |
| Ford SB V-8 | 2 | 10 Tooth | KC2328 | KS2328 |
| | | 26 Tooth | KC2329 | KS2329 |
| | 3 | 10 Tooth | KC3328 | KS3328 |
| | | 26 Tooth | KC3329 | KS3329 |

# 4.5" Open Style Clutch Bellhousing Kit

*Early Model = 1985 & earlier, 2 piece rear main seal. Late Model = 1986 to 1997, 1 piece rear main seal.*

Kit includes: Clutch, LtWt Button Fly, Reverse Starter Mount Aluminum Bellhousing, Reverse Mount Starter, Hydraulic Release Bearing with External Bleeder, Reverse Mount Ring Gear, Clutch Bolts & Flywheel Bolts

**4.5" Clutch & Bellhousing Kits**

All Friction Material is Metallic .105" Thick.
Call PTT for other Friction Material options.

| Application | Number of Discs | Spline | HYDRAULIC RELEASE BEARING | | | |
|---|---|---|---|---|---|---|
| | | | Hydro-MAX | Tri-MAX | Hydro-MAX | Tri-MAX |
| | | | 10-Bolt Clutch | | PowerSTAR 5-Bolt Clutch | |
| Chevy SB V-8 Early Model | 2 | 10T | BC2118 | BC2128 | BS2118 | BS2128 |
| | | 26T | BC2119 | BC2129 | BS2119 | BS2129 |
| | 3 | 10T | BC3118 | BC3128 | BS3118 | BS3128 |
| | | 26T | BC3119 | BC3129 | BS3119 | BS3129 |
| Chevy SB V-8 Late Model | 2 | 10T | BC2818 | BC2828 | BS2818 | BS2828 |
| | | 26T | BC2819 | BC2829 | BS2819 | BS2829 |
| | 3 | 10T | BC3818 | BC3828 | BS3818 | BS3828 |
| | | 26T | BC3819 | BC3829 | BS3819 | BS3829 |
| Chevy SB V-8 LS1 | 2 | 10T | BC2018 | BC2028 | BS2018 | BS2028 |
| | | 26T | BC2019 | BC2029 | BS2019 | BS2029 |
| | 3 | 10T | BC3018 | BC3028 | BS3018 | BS3028 |
| | | 26T | BC3019 | BC3029 | BS3019 | BS3029 |

**If you don't see your application here, please call PTT at 847.458.2323 for additional information.**

# 4.5" Flywheels

*Early Model = 1985 & earlier, 2 piece rear main seal. Late Model = 1986 to 1997, 1 piece rear main seal.*

| | | |
|---|---|---|
| Universal | LtWt, Button Style Fly, BLANK (No crank bolt holes & small center bore) | FC001 |
| Chevy SB V-8 10-bolt | LtWt, Button Style Flywheel, Chevy SB V-8, Early Model | FC101 |
| | LtWt, Button Style Flywheel, Chevy SB V-8, Late Model | FC103 |
| | LtWt, Button Style Flywheel, Chevy SB V-8, LS1 | FC105 |
| Chevy SB V-8 5-bolt | LtWt, Button Style Flywheel, Chevy SB V-8 Early Model | FS101 |
| Ford SB V-8 | LtWt, Button Style Flywheel, Ford SB V-8, 10-bolt | FC301 |
| Flywheel Bolts | Chevy, Ford, Chrysler SB V-8 | NK407076 |

# 4.5" Clutch Bolt Kits

| | | |
|---|---|---|
| 4.5" 10-Bolt Clutch | Bolt Kit, 1 Disc x .105" thick | NK104140 |
| | Bolt Kit, 2 Disc x .105" thick | NK104160 |
| | Bolt Kit, 3 Disc x .105" thick | NK104180 |
| | Bolt Kit, 4 Disc x .105" thick | NK104200 |
| 4.5" PowerSTAR 5-Bolt Clutch | Bolt Kit, 1 Disc x .105" thick | NK104145 |
| | Bolt Kit, 2 Disc x .105" thick | NK104165 |
| | Bolt Kit, 3 Disc x .105" thick | NK104185 |
| | Bolt Kit, 4 Disc x .105" thick | NK104205 |

# 4.5" Replacement Clutch Spare Parts

| | | |
|---|---|---|
| 10-Bolt Cover Assembly (no discs, floater plates or pressure plate) | Clutch Cover Assembly, 1 Disc X .105" | CC101 |
| | Clutch Cover Assembly, 2 Disc X .105" | CC201 |
| | Clutch Cover Assembly, 3 Disc X .105" | CC301 |
| | Clutch Cover Assembly, 4 Disc X .105" | CC401 |
| 5-Bolt Cover Assembly (no discs, floater plates or pressure plate) | Clutch Cover Assembly, 1 Disc X .105" | CS101 |
| | Clutch Cover Assembly, 2 Disc X .105" | CS201 |
| | Clutch Cover Assembly, 3 Disc X .105" | CS301 |
| | Clutch Cover Assembly, 4 Disc X .105" | CS401 |
| Pressure Plates | Pressure Plate, Steel, Std. Fulcrum for 10-bolt clutch | CC031 |
| | Pressure Plate, Steel, Std. Fulcrum for 5-bolt clutch | CC037 |
| Floater Plates | Floater Plate - for 10-bolt clutch | CC041 |
| | Floater Plate - for 5-bolt clutch | CC046 |
| | Floater Plate, LightWeight Drilled - for 5-bolt clutch | CC047 |

# 4.5" Replacement Clutch Packs (discs) *xx = spline size. See spline look-up chart inside front cover.*

| **4.5" Clutch Discs** | | | Friction Material | |
|---|---|---|---|---|
| Application | Number of Discs | Spline=**xx** | Metallic .105" Thick | Hi-Torque .105" Thick |
| All | 1 | See List | PC116A**xx** | PC158A**xx** |
| All | 2 | See List | PC216A**xx** | PC258A**xx** |
| All | 3 | See List | PC316A**xx** | PC358A**xx** |
| All | 4 | See List | PC416A**xx** | PC458A**xx** |

All part numbers shown above are for standard clutch hub configuration.

For additional clutch pack options see "Replacement Clutch Pack Part Numbering System" on page 4.

# 5.5" Open Style Clutch Units ***xx** = spline size. See spline look-up chart inside front cover.*

| **5.5" Clutch Units (no fly)** | | | Friction Material | | | |
|---|---|---|---|---|---|---|
| | | | Metallic .105" Thick | | Met. .200" Thk | Org. .200" Thk |
| Application | Number of Discs | Spline=**xx** | Steel Pressure Plate | Alum. P.Plt. w/ LtWt Floaters | Steel Pressure Plate | Steel Pressure Plate |
| All | 1 | See List | CE116A1A**xx** | CE116A3A**xx** | CE126A1A**xx** | CE176A1A**xx** |
| All | 2 | See List | CE216A1A**xx** | CE216A3A**xx** | CE226A1A**xx** | CE276A1A**xx** |
| All | 3 | See List | CE316A1A**xx** | CE316A3A**xx** | CE326A1A**xx** | CE376A1A**xx** |
| All | 4 | See List | CE416A1A**xx** | CE416A3A**xx** | CE426A1A**xx** | CE476A1A**xx** |

All part numbers shown above are for standard clutch hub configuration.

For additional clutch options see "Clutch Assembly Part Numbering System" on page 3.

# 5.5" Open Style Clutch & LtWt Button Flywheel Kits

*Early Model = 1985 & earlier, 2 piece rear main seal. Late Model = 1986 to 1997, 1 piece rear main seal.*

| **5.5" Clutch & Button Fly** | All Friction Material is Metallic .105" Thick. Call for other Friction Material options. | | | | |
|---|---|---|---|---|---|
| Application | Number of Discs | Spline | Steel Pressure Plate | Alum. P.Plt. w/ LtWt Floaters | Alum. P.Plt. w/ LtWt Floaters & Super LtWt Drilled Btn Fly |
| Chevy SB V-8 Early Model | 2 | 10 Tooth | KE2128 | K52128 | K52128S |
| | | 26 Tooth | KE2129 | K52129 | K52129S |
| | 3 | 10 Tooth | KE3128 | K53128 | K53128S |
| | | 26 Tooth | KE3129 | K53129 | K53129S |
| Chevy SB V-8 Late Model | 2 | 10 Tooth | KE2828 | K52828 | K52828S |
| | | 26 Tooth | KE2829 | K52829 | K52829S |
| | 3 | 10 Tooth | KE3828 | K53828 | K53828S |
| | | 26 Tooth | KE3829 | K53829 | K53829S |
| Chevy SB V-8 Late Model Ext. Bal. (Crate Motor) | 2 | 10 Tooth | KE2928 | K52928 | K52928S |
| | | 26 Tooth | KE2929 | K52929 | K52929S |
| | 3 | 10 Tooth | KE3928 | K53928 | K53928S |
| | | 26 Tooth | KE3929 | K53929 | K53929S |
| Chevy LS1 V-8 | 2 | 10 Tooth | KE2028 | K52028 | K52028S |
| | | 26 Tooth | KE2029 | K52029 | K52029S |
| | 3 | 10 Tooth | KE3028 | K53028 | K53028S |
| | | 26 Tooth | KE3029 | K53029 | K53029S |
| Ford SB V-8 | 2 | 10 Tooth | KE2328 | K52328 | K52328S |
| | | 26 Tooth | KE2329 | K52329 | K52329S |
| | 3 | 10 Tooth | KE3328 | K53328 | K53328S |
| | | 26 Tooth | KE3329 | K53329 | K53329S |

# 5.5" Open Style Clutch Bellhousing Kit

*Early Model = 1985 & earlier, 2 piece rear main seal. Late Model = 1986 to 1997, 1 piece rear main seal.*

Kit includes: Clutch, LtWt Button Flywheel, Reverse Starter Mount Aluminum Bellhousing, Reverse Mount Starter, Hydraulic Release Bearing with External Bleeder, Reverse Mount Ring Gear, Clutch Bolts & Flywheel Bolts

| **5.5" Clutch & Bellhousing Kits** | | | All Friction Material is Metallic .105" Thk - Call for other Friction Material options. | | | | | |
|---|---|---|---|---|---|---|---|---|
| Application | No. of Discs | Spline | HYDRAULIC RELEASE BEARING | | | | | |
| | | | Hydro-MAX | Tri-MAX | Hydro-MAX | Tri-MAX | Hydro-MAX | Tri-MAX |
| | | | Steel Pressure Plate | | Alum. Pressure Plate w/ LtWt Floaters | | Alum. P.Plt, LtWt Floaters & Super LtWt Drilled Btn Fly | |
| Chevy SB V-8 Early Model | 2 | 10T | BE2118 | BE2128 | B52118 | B52128 | B52118S | B52128S |
| | | 26T | BE2119 | BE2129 | B52119 | B52129 | B52119S | B52129S |
| | 3 | 10T | BE3118 | BE3128 | B53118 | B53128 | B53118S | B53128S |
| | | 26T | BE3119 | BE3129 | B53119 | B53129 | B53119S | B53129S |
| Chevy SB V-8 Late Model | 2 | 10T | BE2818 | BE2828 | B52818 | B52828 | B52818S | B52828S |
| | | 26T | BE2819 | BE2829 | B52819 | B52829 | B52819S | B52829S |
| | 3 | 10T | BE3818 | BE3828 | B53818 | B53828 | B53818S | B53828S |
| | | 26T | BE3819 | BE3829 | B53819 | B53829 | B53819S | B53829S |
| Chevy SB V-8 Late Model Externally Balanced (Crate Motor) | 2 | 10T | BE2918 | BE2928 | B52918 | B52928 | B52918S | B52928S |
| | | 26T | BE2919 | BE2929 | B52919 | B52929 | B52919S | B52929S |
| | 3 | 10T | BE3918 | BE3928 | B53918 | B53928 | B53918S | B53928S |
| | | 26T | BE3919 | BE3929 | B53919 | B53929 | B53919S | B53929S |
| Chevy LS1 V-8 | 2 | 10T | BE2018 | BE2028 | B52018 | B52028 | B52018S | B52028S |
| | | 26T | BE2019 | BE2029 | B52019 | B52029 | B52019S | B52029S |
| | 3 | 10T | BE3018 | BE3028 | B53018 | B53028 | B53018S | B53028S |
| | | 26T | BE3019 | BE3029 | B53019 | B53029 | B53019S | B53029S |

**If you don't see your application here, please call PTT at 847.458.2323 for additional information.**

# 5.5" Flywheels

*Early Model = 1985 & earlier, 2 piece rear main seal. Late Model = 1986 to 1997, 1 piece rear main seal.*

| | | |
|---|---|---|
| Universal | LtWt, Button Style, Blank (No crank bolt holes & small center bore, .84" OAL) | FE001 |
| Chevy SB V-8 Early Model | LtWt, Button Style, Chevy SB V-8 Early Model | FE101 |
| | Super LtWt, Drilled, Button Style, SB V-8 Early Model | FE106 |
| Chevy SB V-8 Late Model | LtWt, Button Style, Chevy SB V-8 Late Model | FE103 |
| | Super LtWt, Drilled, Button Style, Chevy SB V-8 Late Model | FE107 |
| | LtWt, Button Style, Externally Balanced for Crate Motor (needs special bolt kit) | FE1031 |
| | Super LtWt, Drilled Btn, Ext. Bal. for Crate Motor (needs special bolt kit) | FE1071 |
| | Balance Weight Only (needs special bolt kit) | EB103 |
| Chevy LS1 V-8 | LtWt, Button Style, Chevy LS1 V-8 | FE105 |
| | Super LtWt, Drilled, Button Style, Chevy LS1 V-8 | FE108 |
| Chrysler | LtWt, Button Style, Chrysler, 6 Bolt | FE203 |
| Ford SB V-8 | LtWt, Button Style, Ford SB V-8 | FE301 |
| | Super LtWt, Drilled, Button Style, Ford SB V-8 | FE302 |
| Mazda | Button Style, Mazda 4-cylinder, Formula SCCA | 501-010-140SB |
| Flywheel Bolts | Chevy, Ford, Chrysler SB V-8 | NK407076 |
| | Chevy LS1 V-8 | NK400076 |
| | Mazda 4-cylinder | NK408076 |

# 5.5" Clutch Bolt Kits

| | | |
|---|---|---|
| All Applications | Bolt Kit, 1 Disc x .105" thick | NK105148 |
| | Bolt Kit, 2 Disc x .105" thick | NK105168 |
| | Bolt Kit, 3 Disc x .105" thick or 2 Disc x .200" thick | NK105188 |
| | Bolt Kit, 4 Disc x .105" thick | NK105208 |
| Chevy Crate Motor | Bolt Kit, 2 Disc x .105" thick for externally balanced flywheel | NK105168X |
| | Bolt Kit, 3 Disc x .105" thick for externally balanced flywheel | NK105188X |

# 5.5" Open Style Replacement Clutch Spare Parts

| | | |
|---|---|---|
| Cover Assembly (no discs, floater plates or pressure plate) | Clutch Cover Assembly, 1 Disc X .105" | CE101 |
| | Clutch Cover Assembly, 1 Disc X .200" | CE121 |
| | Clutch Cover Assembly, 2 Disc X .105" | CE201 |
| | Clutch Cover Assembly, 2 Disc X .200" | CE221 |
| | Clutch Cover Assembly, 3 Disc X .105" | CE301 |
| | Clutch Cover Assembly, 4 Disc X .105" (or 3 Disc X .200") | CE401 |
| Pressure Plates | Pressure Plate, Steel, Standard Fulcrum (5.0" diameter fulcrum) | CE031 |
| | Pressure Plate, Steel, Hi-Torque Fulcrum (4.9" diameter fulcrum) | CE032 |
| | Pressure Plate, Aluminum, Standard Fulcrum | CE035 |
| Floater Plates | Floater Plate | CE041 |
| | Floater Plate, LtWt drilled | CE042 |

# 5.5" Replacement Clutch Packs (discs) *xx = spline size. See spline look-up chart inside front cover.*

**5.5" Clutch Discs**

| | | | Friction Material | | |
|---|---|---|---|---|---|
| Application | Number of Discs | Spline=**xx** | Metallic .105" Thick | Metallic .200" Thick | Organic .200" Thick |
| All | 1 | See List | PE116A**xx** | PE126A**xx** | PE176A**xx** |
| All | 2 | See List | PE216A**xx** | PE226A**xx** | PE276A**xx** |
| All | 3 | See List | PE316A**xx** | PE326A**xx** | PE376A**xx** |
| All | 4 | See List | PE416A**xx** | - | - |

All part numbers shown above are for standard clutch hub configuration.

For additional clutch pack options see "Replacement Clutch Pack Part Numbering System" on page 4.

# 7.25" Open Style Clutch Units *xx = spline size. See spline look-up chart inside front cover.*

| 7.25" Clutch (no flywheel) | | | | Pressure Plate | | | |
|---|---|---|---|---|---|---|---|
| Application | No. of Discs | Friction Material | Spline=**xx** | Steel Pressure Plate | Alum. P.Plt. w/ LtWt Floaters | Hi-Torque Steel P.Plt. | Hi-Mass Steel P.Plt. |
| All | 1 | Metallic .105" Thick | See List | CH116A1A**xx** | CH116A3A**xx** | CH116A7A**xx** | CH116A9A**xx** |
| All | 2 | | See List | CH216A1A**xx** | CH216A3A**xx** | CH216A7A**xx** | CH216A9A**xx** |
| All | 3 | | See List | CH316A1A**xx** | CH316A3A**xx** | CH316A7A**xx** | CH316A9A**xx** |
| All | 4 | | See List | CH416A1A**xx** | CH416A3A**xx** | CH416A7A**xx** | CH416A9A**xx** |
| All | 1 | Hi-Torq | See List | - | - | CH148A7A**xx** | - |
| All | 1 | Metallic .200" Thick | See List | CJ126A1A**xx** | - | CJ126A7A**xx** | CJ126A9A**xx** |
| All | 2 | | See List | CJ226A1A**xx** | - | CJ226A7A**xx** | CJ226A9A**xx** |
| All | 3 | | See List | CJ326A1A**xx** | - | CJ326A7A**xx** | CJ326A9A**xx** |
| All | 1 | Metallic .250" Thk | See List | CJ136A1A**xx** | - | CJ136A7A**xx** | CJ136A9A**xx** |
| All | 2 | | See List | CJ236A1A**xx** | - | CJ236A7A**xx** | CJ236A9A**xx** |
| All | 1 | Organic .200" Thick | See List | CJ176A1A**xx** | - | CJ176A7A**xx** | CJ176A9A**xx** |
| All | 2 | | See List | CJ276A1A**xx** | - | CJ276A7A**xx** | CJ276A9A**xx** |
| All | 3 | | See List | CJ376A1A**xx** | - | CJ376A7A**xx** | CJ376A9A**xx** |
| All | 1 | Organic .250" Thk | See List | CJ186A1A**xx** | - | CJ186A7A**xx** | CJ186A9A**xx** |
| All | 2 | | See List | CJ286A1A**xx** | - | CJ286A7A**xx** | CJ286A9A**xx** |

All part numbers shown above are for standard clutch hub configuration.
For additional clutch options see "Clutch Assembly Part Numbering System" on page 3.

# 7.25" Open Style Clutch & LtWt Button Flywheel Kits

*Early Model = 1985 & earlier, 2 piece rear main seal. Late Model = 1986 to 1997, 1 piece rear main seal.*

| 7.25" Clutch & Button Fly | | All Friction Material is Metallic .105" Thick. Call for other Friction Material options. | | | |
|---|---|---|---|---|---|
| Application | Number of Discs | Spline | Steel Pressure Plate | Alum. P.Plt. w/ LtWt Floaters | Alum. P.Plt. w/ LtWt Floaters and Super LtWt Drilled Btn Fly |
| Chevy SB V-8 Early Model | 2 | 10 Tooth | KH2128 | K72128 | K72128S |
| | | 26 Tooth | KH2129 | K72129 | K72129S |
| | 3 | 10 Tooth | KH3128 | K73128 | K73128S |
| | | 26 Tooth | KH3129 | K73129 | K73129S |
| Chevy SB V-8 Late Model | 2 | 10 Tooth | KH2828 | K72828 | K72828S |
| | | 26 Tooth | KH2829 | K72829 | K72829S |
| | 3 | 10 Tooth | KH3828 | K73828 | K73828S |
| | | 26 Tooth | KH3829 | K73829 | K73829S |
| Chevy SB V-8 Late Model Ext. Bal. (Crate Motor) | 2 | 10 Tooth | KH2928 | K72928 | K72928S |
| | | 26 Tooth | KH2929 | K72929 | K72929S |
| | 3 | 10 Tooth | KH3928 | K73928 | K73928S |
| | | 26 Tooth | KH3929 | K73929 | K73929S |
| Chevy LS1 V-8 | 2 | 10 Tooth | KH2028 | K72028 | K72028S |
| | | 26 Tooth | KH2029 | K72029 | K72029S |
| | 3 | 10 Tooth | KH3028 | K73028 | K73028S |
| | | 26 Tooth | KH3029 | K73029 | K73029S |
| Ford SB V-8 | 2 | 10 Tooth | KH2328 | K72328 | K72328S |
| | | 26 Tooth | KH2329 | K72329 | K72329S |
| | 3 | 10 Tooth | KH3328 | K73328 | K73328S |
| | | 26 Tooth | KH3329 | K73329 | K73329S |

# 7.25" Open Style Clutch Bellhousing Kits

*Early Model = 1985 & earlier, 2 piece rear main seal. Late Model = 1986 to 1997, 1 piece rear main seal.*

Kit includes: Clutch, LtWt Button Fly, Reverse Starter Mount Aluminum Bellhousing, Reverse Mount Starter, Hydraulic Release Bearing with External Bleeder, Reverse Mount Ring Gear, Clutch Bolts & Flywheel Bolts

| **7.25" Clutch & Bellhousing Kits** | | | All Friction Material is Metallic .105" Thick. Call for other Friction Material options. | | | | | |
|---|---|---|---|---|---|---|---|---|
| Application | No. of Discs | Spline | HYDRAULIC RELEASE BEARING | | | | | |
| | | | Hydro-MAX | Tri-MAX | Hydro-MAX | Tri-MAX | Hydro-MAX | Tri-MAX |
| | | | Steel Pressure Plate | | Alum. Pressure Plate w/ LtWt Floaters | | Alum. P.Plt, LtWt Floaters & Super LtWt Drilled Btn Fly | |
| Chevy SB V-8 Early Model | 2 | 10T | BH2118 | BH2128 | B72118 | B72128 | B72118S | B72128S |
| | | 26T | BH2119 | BH2129 | B72119 | B72129 | B72119S | B72129S |
| | 3 | 10T | BH3118 | BH3128 | B73118 | B73128 | B73118S | B73128S |
| | | 26T | BH3119 | BH3129 | B73119 | B73129 | B73119S | B73129S |
| Chevy SB V-8 Late Model | 2 | 10T | BH2818 | BH2828 | B72818 | B72828 | B72818S | B72828S |
| | | 26T | BH2819 | BH2829 | B72819 | B72829 | B72819S | B72829S |
| | 3 | 10T | BH3818 | BH3828 | B73818 | B73828 | B73818S | B73828S |
| | | 26T | BH3819 | BH3829 | B73819 | B73829 | B73819S | B73829S |
| Chevy SB V-8 Late Model Externally Balanced (Crate Motor) | 2 | 10T | BH2918 | BH2928 | B72918 | B72928 | B72918S | B72928S |
| | | 26T | BH2919 | BH2929 | B72919 | B72929 | B72919S | B72929S |
| | 3 | 10T | BH3918 | BH3928 | B73918 | B73928 | B73918S | B73928S |
| | | 26T | BH3919 | BH3929 | B73919 | B73929 | B73919S | B73929S |
| Chevy LS1 V-8 | 2 | 10T | BH2018 | BH2028 | B72018 | B72028 | B72018S | B72028S |
| | | 26T | BH2019 | BH2029 | B72019 | B72029 | B72019S | B72029S |
| | 3 | 10T | BH3018 | BH3028 | B73018 | B73028 | B73018S | B73028S |
| | | 26T | BH3019 | BH3029 | B73019 | B73029 | B73019S | B73029S |

# 7.25" Flywheels

*Early Model = 1985 & earlier, 2 piece rear main seal. Late Model = 1986 to 1997, 1 piece rear main seal.*

| | | |
|---|---|---|
| Universal | LtWt, Button Style, Blank (No crank bolt holes & small center bore, .84" OAL) | FH001 |
| Chevy SB V-8 Early Model | LtWt, Button Style, Chevy SB V-8 Early Model | FH101 |
| | Super LtWt, Drilled, Button Style, SB V8 Early Model | FH106 |
| Chevy SB V-8 Late Model | LtWt, Button Style, Chevy SB V-8 Late Model | FH103 |
| | Super LtWt, Drilled, Button Style, SB V8 Late Model | FH107 |
| | LtWt, Button Style, Externally Balanced for Crate Motor | FH1031 |
| | Super LtWt, Drilled Button Style, Externally Balanced for Crate Motor | FH1071 |
| | Balance Weight Only | EB104 |
| Chevy LS1 V-8 | LtWt, Button Style, Chevy LS1 V-8 | FH105 |
| | Super LtWt, Drilled, Button Style, Chevy LS1 V-8 | FH108 |
| Chrysler | LtWt, Button Style, Chrysler, 6 Bolt | FH203 |
| Ford SB V-8 | LtWt, Button Style, Ford SB V-8 | FH301 |
| | Super LtWt, Drilled, Button Style, Ford SB V-8 | FH302 |
| Flywheel Bolts | Chevy, Ford, Chrysler SB V-8 | NK407076 |
| | Chevy LS1 V-8 | NK400076 |

# 7.25" Clutch Bolt Kits

| | | |
|---|---|---|
| All Applications | Bolt Kit, 1 Disc x .105" thick (or .200" thick, or .250" thick) | NK105126 |
| | Bolt Kit, 2 Disc x .105" thick | NK105146 |
| | Bolt Kit, 2 Disc x .200" (or 2 Disc x .250" thick) Mitsubishi | NK1051660 |
| | Bolt Kit, 3 Disc x .105" thick (or 2 Disc x .200", or 2 Disc x .250" thick) | NK105166 |
| | Bolt Kit, 4 Disc x .105" thick (or 3 Disc x .200" thick) | NK105186 |

# 7.25" Open Style Replacement Clutch Spare Parts

| | | |
|---|---|---|
| Cover Assembly (no discs, floater plates or pressure plate) | Clutch Cover Assembly, 1 Disc X .105" | CH101 |
| | Clutch Cover Assembly, 1 Disc X .200" | CH121 |
| | Clutch Cover Assembly, 1 Disc X .250" | CH1251 |
| | Clutch Cover Assembly, 2 Disc X .105" | CH201 |
| | Clutch Cover Assembly, 2 Disc X .200" | CH221 |
| | Clutch Cover Assembly, 3 Disc X .105" (or 2 Disc x .250") | CH301 |
| | Clutch Cover Assembly, 4 Disc X .105" (or 3 Disc x .200") | CH401 |
| Pressure Plates | Pressure Plate, Steel, Standard Fulcrum (6.2" diameter fulcrum, .535" tall) | CH031 |
| | Pressure Plate, Steel, Hi-Torque (6.0" diameter fulcrum, .535" tall) | CH032 |
| | Pressure Plate, Aluminum, Standard Fulcrum | CH035 |
| | Pressure Plate, Steel, Hi-Torque, .515" tall for 1 disc hi-torque clutch only | CH037 |
| | Pressure Plate, Steel, Hi-Mass, Standard Fulcrum | CH038 |
| Floater Plates | Floater Plate | CH041 |
| | Floater Plate, LtWt (round holes) | CH042 |
| | Floater Plate, Super LtWt (triangular holes) | CH043 |

## 7.25" Replacement Clutch Packs *xx = spline size. See spline look-up chart inside front cover.*

| **7.25" Discs** | | | Friction Material | | | | | |
|---|---|---|---|---|---|---|---|---|
| Application | Number of Discs | Spline=**xx** | Metallic .105" Thick | Hi-Torque Metallic .125" Thick | Metallic .200" Thick | Metallic .250" Thick | Organic .200" Thick | Organic .250" Thick |
| All | 1 | See List | PH116A**xx** | PH148A**xx** | PH126A**xx** | PH136A**xx** | PH176A**xx** | PH186A**xx** |
| All | 2 | See List | PH216A**xx** | - | PH226A**xx** | PH236A**xx** | PH276A**xx** | PH286A**xx** |
| All | 3 | See List | PH316A**xx** | - | PH326A**xx** | - | PH376A**xx** | - |
| All | 4 | See List | PH416A**xx** | - | - | - | - | - |

All part numbers shown above are for standard clutch hub configuration.
For additional clutch pack options see "Replacement Clutch Pack Part Numbering System" on page 4.

# 7.25" Mitsubishi AWD Twin Disc Clutch Kits

Kit includes 7.25" Clutch, Flywheel & Bearing with collar

| | | | Pressure Plate | |
|---|---|---|---|---|
| Application | Friction Material | Flywheel | Standard Torque Steel Pressure Plate | Hi-Torque Steel Pressure Plate |
| 7/8" x 20T Eclipse | Metallic .200" thick | 6-bolt | KJ2664 | KH2664 |
| | | 7-bolt | KJ2674 | KH2674 |
| | Organic .200" thick | 6-bolt | KJ6664 | KH6664 |
| | | 7-bolt | KJ6674 | KH6674 |
| **Request "OPTION1" to add heat treated spline teeth to any set-up** | | | | |

.250" thick discs are available upon request.
All part numbers shown above are for the standard Mistubishi clutch hub configuration.
For additional clutch options see "Clutch Assembly Part Numbering System" on page 3.

# 7.25" Mitsubishi Twin Disc Clutches

| | | Pressure Plate | |
|---|---|---|---|
| Application | Friction Material | Standard Torque Steel Pressure Plate | Hi-Torque Steel Pressure Plate |
| 7/8" x 20T Eclipse | Metallic .200" thick | CJ226T1X41 (8.9 #) | CJ226T2X41 (8.9 #) |
| | Organic .200" thick | CJ276T1X41 (8.2 #) | CJ276T2X41 (8.2 #) |
| 1" x 23T EVO | Metallic .200" thick | CJ226T1X63 (8.9 #) | CJ226T2X63 (8.9 #) |
| | Organic .200" thick | CJ276T1X63 (8.2 #) | CJ276T2X63 (8.2 #) |
| **Request "OPTION1" to add heat treated spline teeth to any set-up** | | | |

.250" thick discs are available upon request.
All part numbers shown above are for the standard Mistubishi clutch hub configuration.
For additional clutch options see "Clutch Assembly Part Numbering System" on page 3.

## Mitsubishi AWD Flywheels

| | |
|---|---|
| 7.25", 2.0 ltr. 4G63B engine, I4, 106t, 2 pc., 6 bolt (6.4 #) | FH540 |
| 7.25", 2.0 ltr. 4G63B engine, I4, 106t, 2 pc., 7 bolt (6.4 #) | FH541 |
| 7.25", EVO 4, 5, 6, 7, & 8 (7.3 #) | FH542 |

## Mitsubishi Bearing

| | |
|---|---|
| Mechanical Bearing w/ collar, 2D 7.25", Eclipse | RM2550 |

## 7.25" Mitsubishi Clutch Pack - set of 2 - 7.25" discs

| | Friction Material | | | |
|---|---|---|---|---|
| Application | Metallic .200" thick | Organic .200" thick | Metallic .250" thick | Organic .250" thick |
| 7/8" x 20T Eclipse | PJ226T41 | PJ276T41 | PJ236T41 | PJ286T41 |
| 1" x 23T EVO | PJ226T63 | PJ276T63 | PJ236T63 | PJ286T63 |
| **Request "OPTION1" to add heat treated spline teeth to any set-up** | | | | |

All part numbers shown above are for the standard Mistubishi clutch hub configuration.
For additional clutch pack options see "Replacement Clutch Pack Part Numbering System" on page 4.

# *10.4" Clutches*

10.4" Clutches hold 700 HP at rear wheels with metallic disc

| | | |
|---|---|---|
| Covers | Aluminum Pressure Plate (13#) | CN101 |
| | Nod. Iron Pressure Plate (17#) | CN102 |
| Discs | Metallic, 6 paddle, solid hub (3#), 10 tooth | PN1A8A80 |
| | Metallic, 6 paddle, solid hub (3#), 26 tooth | PN1A8A90 |
| | Organic, sprung hub (5.3#), 10 tooth | PN1C8S80 |
| | Organic, sprung hub (5.3#), 26 tooth | PN1C8S90 |
| Bolts | 10.4" Clutch Bolt Kit, ARP | NK106086 |

# *Hydraulic Release Bearings (HRB)*

## Hydro-MAX drop-in HRB

| All units come with an External Bleeder & Installation Kit. | No Supply Line | Supply Line Length | | | |
|---|---|---|---|---|---|
| | | 18" | 24" | 30" | 40" |
| Standard Height 2.28" to 3.03" Sleeve ID = 1.385" | RH7101 | RH710218 | RH710224 | RH710230 | RH710240 |
| Tall Height 2.78" to 3.53" Sleeve ID = 1.385" | RH7151 | RH715218 | RH715224 | RH715230 | RH715240 |
| Ford T5 Standard Height 2.28" to 3.03" Sleeve ID = 1.46" Use with spacer shown below | RH7121 | RH710218 | RH710224 | RH710230 | RH710240 |

# *Hydraulic Release Bearings (HRB) (Continued)*

## Hydro-MAX Accessories

| | | |
|---|---|---|
| All Hydro-MAX units | Installation Kit with shims, washers, studs & -3 to -4 union | RH7111 |
| | External Bleeder Kit, All HRB's (Bleeder line & union) | RH7112 |
| | Rebuild Kit, Hydro-MAX HRB (O-rings, retaining ring & unions) | RH7113 |
| | Replacement Bearing & Sleeve Assy.- Standard Height | RH7110 |
| | Replacement Bearing & Sleeve Assy. - Tall Height | RH7160 |
| | Replacement Bearing & Sleeve Kit - Tall - with shims | RH7161 |
| Ford T5 | Replacement Bearing & Sleeve Assy. - Standard Height - Ford T5 | RH7122 |
| | Spacer, Ford T5, 1.175" OAL | RH7020 |

## Stainless Steel Braided Clutch Supply Line

| | |
|---|---|
| Dash 3, Straight female ends, 8" long (bleeder) Teflon lined | RA3008 |
| Dash 3, Straight female ends, 18" long, Teflon lined | RA3018 |
| Dash 3, Straight female ends, 24" long, Teflon lined | RA3024 |
| Dash 3, Straight female ends, 30" long, Teflon lined | RA3030 |
| Dash 3, Straight female ends, 40" long, Teflon lined | RA3040 |

## Tri-MAX bolt-in HRB

Fit recomendations are for Reverse Mount Ring Gear (RMRG) set-up. If using a flexplate, order the next shorter Tri-MAX.

| All units come with an External Bleeder & Installation Kit. | No Supply Line | Supply Line Length | | | |
|---|---|---|---|---|---|
| | | 18" | 24" | 30" | 40" |
| 2.70" OAL w/ 1.65" piston Fits 3D Clutch with Chevy Flywheel & Flexplate | RT73271 | RT7327218 | RT7327224 | RT7327230 | RT7327240 |
| 2.85" OAL w/ 1.80" piston Fits 3D Clutch with Chevy Flywheel & RMRG | RT73281 | RT7328218 | RT7328224 | RT7328230 | RT7328240 |
| 3.00" OAL w/ 1.95" piston Fits 3D w/ Chevy Fly & 1/4" Engine Plate & RMRG | RT73301 | RT7330218 | RT7330224 | RT7330230 | RT7330240 |
| 3.15" OAL w/ 2.10 piston Fits 2D Clutch with Chevy Flywheel & RMRG | RT73311 | RT7331218 | RT7331224 | RT7331230 | RT7331240 |
| 3.30" OAL w/ 2.25" piston Fits 2D w/ Chevy Fly & 1/4" Engine Plate & RMRG | RT73331 | RT7333218 | RT7333224 | RT7333230 | RT7333240 |
| 3.45" OAL w/ 2.40" piston Fits 1D Clutch with Chevy Flywheel & RMRG | RT73341 | RT7334218 | RT7334224 | RT7334230 | RT7334240 |
| 3.60" OAL w/ 2.55" piston Fits 1D w/ Chevy Fly & 1/4" Engine Plate & RMRG | RT73361 | RT7336218 | RT7336224 | RT7336230 | RT7336240 |
| 3.75" OAL w/ 2.70" piston Fits 1D w/ Chevy Fly & 3/8" Engine Plate & RMRG | RT73371 | RT7337218 | RT7337224 | RT7337230 | RT7337240 |

## Tri-MAX Replacement Bearing & Piston Assembly

| | |
|---|---|
| 1.65" Long (Fits Bearing # RT73271) | RT73116 |
| 1.80" Long (Fits Bearing # RT73281) | RT73118 |
| 1.95" Long (Fits Bearing # RT73301) | RT73119 |
| 2.10" Long (Fits Bearing # RT73311) | RT73121 |
| 2.25" Long (Fits Bearing # RT73331) | RT73122 |
| 2.40" Long (Fits Bearing # RT73341) | RT73124 |
| 2.55" Long (Fits Bearing # RT73361) | RT73125 |
| 2.70" Long (Fits Bearing # RT73371) | RT73127 |

# *Hydraulic Release Bearings (HRB) (continued)*

## Tri-MAX Accessories

| | |
|---|---|
| External Bleeder Kit, All HRB's (Bleeder line & union) | RH7112 |
| Rebuild Kit, Tri-MAX HRB (O-rings & unions) | RT7313 |
| Bolt Kit, Tri-MAX Installation Kit w/ -3 to -4 union | NK203053 |
| Union, Dash 3AN (All HRB's) | NA001 |
| Bleeder Screw (All HRB's) | NA010 |

## Stainless Steel Braided Clutch Supply Line

| | |
|---|---|
| Dash 3, Straight ends, 8" long (bleeder), Teflon lined | RA3008 |
| Dash 3, Straight ends, 18" long, Teflon lined | RA3018 |
| Dash 3, Straight ends, 24" long, Teflon lined | RA3024 |
| Dash 3, Straight ends, 30" long, Teflon lined | RA3030 |
| Dash 3, Straight ends, 40" long, Teflon lined | RA3040 |

# *Street-MAX Hydraulic Release Bearings (HRB)*

For use with 10.4" Street Stock Clutches.

## Chevy Street-MAX HRB

| | | |
|---|---|---|
| Fits Chevy 1-3/8" trans snout | Street-MAX, Chevy, w/ external bleeder & installation kit, no supply line | RS7201 |
| | Street-MAX, Chevy, w/ ext. bleeder & installation kit & 18" supply line | RS720218 |
| | Street-MAX, Chevy, w/ ext. bleeder & installation kit & 24" supply line | RS720224 |
| | Street-MAX, Chevy, w/ ext. bleeder & installation kit & 30" supply line | RS720230 |
| | Street-MAX, Chevy, w/ ext. bleeder & installation kit & 40" supply line | RS720240 |
| | Installation Kit, Street-MAX, Chevy (Anti-spin studs & shims) | RS7111 |
| | External Bleeder Kit, All Street HRB's (Bleeder line & bleeder screw) | RS7112 |
| | Rebuild Kit, Street-MAX, Chevy (O-rings & unions) | RS7113 |

## Ford Street-MAX HRB

| | | |
|---|---|---|
| Fits Ford 1-7/16" trans snout | Street-MAX, Ford, w/ external bleeder & installation kit, no supply line | RS3101 |
| | Street-MAX, Ford, w/ ext. bleeder & installation kit & 18" supply line | RS310218 |
| | Street-MAX, Ford, w/ ext. bleeder & installation kit & 24" supply line | RS310224 |
| | Street-MAX, Ford, w/ ext. bleeder & installation kit & 30" supply line | RS310230 |
| | Street-MAX, Ford, w/ ext. bleeder & installation kit & 40" supply line | RS310240 |
| | Installation Kit, Street-MAX, Ford (Anti-spin studs, shims & spacer) | RS3111 |
| | Spacer, Anti-Spin, 1.4375"ID x .7" Thk, Ford | RS3008 |
| | External Bleeder Kit, All Street HRB's (Bleeder line & bleeder screw) | RS7112 |
| | Rebuild Kit, Street-MAX, Ford (O-rings & unions) | RS3113 |

## Chrysler Street-MAX HRB

| | | |
|---|---|---|
| Fits Chrysler 1-1/4" trans snout | Street-MAX, Chrysler, w/ external bleeder & installation kit, no supply line | RS3301 |
| | Street-MAX, Chrysler, w/ ext. bleeder & installation kit & 18" supply line | RS330218 |
| | Street-MAX, Chrysler, w/ ext. bleeder & installation kit & 24" supply line | RS330224 |
| | Street-MAX, Chrysler, w/ ext. bleeder & installation kit & 30" supply line | RS330230 |
| | Street-MAX, Chrysler, w/ ext. bleeder & installation kit & 40" supply line | RS330240 |
| | Installation Kit, Street-MAX, Chrysler (Anti-spin studs, shims & spacer) | RS3311 |
| | Spacer, Anti-Spin, 1.25"ID x .86" Thk, Chrysler | RS3009 |
| | External Bleeder Kit, All Street HRB's (Bleeder line & bleeder screw) | RS7112 |
| | Rebuild Kit, Street-MAX, Chrysler (O-rings & unions) | RS3313 |

## Bearings, Mechanical, with Collar

| | | |
|---|---|---|
| Chevy / GM | 1 Disc x .105" thick, Long, 7.25" Chevy/GM | RM1050 |
| | 1 Disc x .105" thick, 7.25" Chevy/GM | RM1100 |
| | 2 Disc x .105" thick, 7.25" Chevy/GM | RM2100 |
| | 3 Disc x .105" thick, 7.25" Chevy/GM | RM3100 |
| | 4 Disc x .105" thick, 7.25" Chevy/GM | RM4100 |
| Mitsubishi | 2 Disc x .200" thick, 7.25" Mitsubishi | RM2550 |
| Jaguar-D | 3 Disc x .105" thick, 7.25 (or 2 disc x .250" thick) | RM2500 |

## Bearing only

| | |
|---|---|
| 1.600" contact diameter (40mm ID) | RM001 |
| 1.750" contact diameter (40mm ID) | RM002 |
| Street, Flat Face (45mm ID) | RM006 |

## Bellhousings

| | |
|---|---|
| Aluminum, Chevy SB V-8, for use with Reverse Mount Starter | BR100 |
| Magnesium, Chevy SB V-8, for use with Reverse Mount Starter | BR110 |
| Fork, Clutch, GM | RM010 |

## Flexplate *Early Model = 1985 & earlier, 2 piece rear main seal. Late Model = 1986 to 1997, 1 piece rear main seal.*

| | | |
|---|---|---|
| Standard Flexplate | Standard Chevy SB V-8 Early Model | FF100 |
| | Standard Chevy SB V-8 Late Model | FF102 |
| | Standard Chevy SB V-8 Late Model with Balance Weight | FF1021 |
| Low MOI Flexplate | Low MOI Chevy SB V-8 Early Model, 153 tooth | FF105 |
| | Low MOI Chevy SB V-8 Late Model, 153 tooth | FF106 |
| | Low MOI Chevy LS1 V-8, 168 tooth | FF107 |
| | Low MOI Ford SB V-8 157 tooth | FF300 |

## Flywheel Bolt Kits *(Crank bolts)*

Torque crank bolts according to crank manufacturer's recommendation. Typically between 60 - 80 lb. ft.

| | |
|---|---|
| Chevy, Ford, Chrysler SB V-8 (7/16"-20 x 7/8") | NK407076 |
| Chevy LS1 V-8 | NK400076 |
| Mazda, 4 cylinder | NK408076 |

## Ring Gear, Reverse Mount

| | | |
|---|---|---|
| 7.25" | 7.25", 1 Disc, 2 Disc & 3 Disc x .105" thick | FR010 |
| | Adapter Kit, 7.25" 1 Disc | FR007 |
| 7.25" Jaguar-D | 7.25" 3 Disc x .105" thick (or 2 Disc x .250" thick) | FR502 |
| 5.5" | 5.5", 2 Disc x .105" thick (or 3 Disc x 1.05" w/ 1/4" motor plate) | FR020 |
| | 5.5", 3 Disc x .105" thick | FR021 |
| | 5.5", 2 Disc x .105" thick with 1/4" motor plate | FR022 |
| 4.5" | 4.5", 2 Disc x .105" thick | FR030 |
| | 4.5", 3 Disc x .105" thick | FR031 |

## Starters

| | | |
|---|---|---|
| Reverse Mount | Nipon Denso - 8.0# | SR100 |
| | Hitachi - 9.8# | SR200 |
| Chevy | 153 tooth flywheel - 8.2# | SS100 |
| Ford | 289-302-351 3&4 spd - 8.8# | SS300 |
| Chrysler | Chrysler - 8.2# | SS200 |

## Spline-A-Lign Clutch Alignment Tools

| | |
|---|---|
| 7/8" x 20 spline | TH041 |
| 1" x 23 spline | TH063 |
| 1-1/16" x 10 spline | TH070 |
| 1-1/8" x 10 spline | TH080 |
| 1-5/32" x 26 spline | TH090 |

# About PowerTrain Technology

PowerTrain Technology (PTT) was formed in 2002 by Steven Fox. Steve was not new to racing clutches and drivetrain technology. Steve was the Manufacturing & Design Engineer for Quarter Master Industries for close to 20 years. He is a highly qualified machinist, a racer, top shelf mechanic, and has over 45 years of experience in the racing industry. Steve left Quarter Master a few years after the original owner sold the company in 1999. Steve then spent the next year designing and developing the next new generation in low Moment of Inertia (MOI) multi-disc racing clutches now sold by PTT.

All PTT products are engineered and designed with Computer Aided Design (CAD) software and then Computer Numerically Controlled (CNC) machined to exacting tolerances. PTT's prototype products go through rigorous in-house testing to validate the integrity of the design. They are then tested on the race track before being offered for sale.

PTT's manufacturing process begins with selection of only the highest quality raw materials. All raw materials are selected based on specific chemistry best suited for the part being made from it. PTT parts are machined to tolerances, frequently closer than 0.001" (0.025mm) and continuously checked for accuracy throughout the manufacturing process. After machining, parts are subjected to heat treat, or specific surface finishing designed to increase their toughness and longevity. Finally, every part PTT makes is labeled with PTT's logo, part number, and production batch code.

Parts are stored, in bulk, in a temperature and humidity controlled environment until they are sold. All clutches are assembled per order, again following rigid assembly and quality assurance procedures. All hydraulic release bearings are assembled in clean room like conditions. Each and every bearing assembly is pressure bled and then pressure tested to twice its normal operating pressure.

PTT clutch components are modular. This means PTT can assemble components in a wide variety of combinations to fit each specific racer's requirements. Individual, hand assembly per order means PTT can offer you the absolute best clutch for your application, while at the same time achieving a quality level which far surpasses the actual price paid.

Because PTT parts are manufactured to such exacting specifications they normally do not need to be spin balanced. Due to the tight parallelism and run-out tolerances PTT holds their parts to, they have what is called inherent balance.

Involute gear and spline design is a niche specialty at PTT. Properly designed gears transmit power in a very efficient manner with minimal parasitic losses. Properly designed involute gear teeth also provide superior strength. All of PTT's geared products feature high strength tooth forms to give you the advantage you seek on the race track.

PTT offers a complete line of automotive racing driveline products that deliver a competitive advantage. PTT's lightweight line of open style clutches in 4.5", 5.5" & 7.25" diameters are available in 1, 2, 3, or 4 disc configurations. They feature good linear engagement, good friction life and a positive feel. To put it simply: PTT builds racing drivetrain parts that are second to none. Listening to our customers and giving them what they ask for is what drives this company to excellence!

**PowerTrain Technology parts are proudly made in the USA!**

Printed in the USA

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