CLUTCH MANUAL

CLUTCHES – PARTS – INFORMATION

JR. DRAGSTER

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! WARNING !

FAILURE TO FOLLOW THE FOLLOWING SAFETY PRECAUTIONS COULD RESULT IN SERIOUS INJURY

CLUTCH GUARD

FIRST AND FOREMOST, *NEVER* RUN THE ENGINE WITHOUT A CLUTCH GUARD INSTALLED

ENGINES ARE CAPABLE OF RUNNING 10,000 RPM. WHEN A FAILURE OCCURS, PIECES WILL BE TRAVELING AT A VERY HIGH VELOCITY ENDANGERING NOT ONLY THE DRIVER BUT ONLOOKERS AS WELL.

ALL CLUTCH GUARDS MUST BE CONSTRUCTED OF A MATERIAL CAPABLE OF CAPTURING ANY EJECTING PARTS OR PIECES IN THE EVENT OF A MALFUNCTION.

NEVER CONSIDER THE CLUTCH GUARD AS ONLY A BELT GUARD.

THE FOLLOWING ARE EXAMPLES AND PROBABLE CAUSES WHICH COULD CAUSE A CLUTCH TO COME APART

1. **DRIVE OR CONVERTER HAS BEEN DROPPED CAUSING UNSEEN CRACKS THAT COULD FAIL AT HIGH RPM.**
2. **BENT SHEAVES, CAUSING AN UNBALANCED EFFECT, COULD CAUSE A FAILURE.**
3. **BELT OR CHAIN FAILURE.**
4. **FIXING BOLT LOOSENS OR COMES OUT.**
5. **FOREIGN DEBRIS INTRODUCED TO COMPONENTS.**
6. **ENGINE CRANK BREAKS, DRIVE CLUTCH BECOMES UNATTACHED FROM THE CAR.**

THE ABOVE DOES NOT COVER EVERY PROBABILITY OF POTENTIAL PROBLEMS WHICH CAN OCCUR REQUIRING A QUALITY CLUTCH GUARD.

THE ABOVE PERTAINS TO ALL CLUTCHES AND AS SUCH SHOULD BE TAKEN VERY SERIOUSLY!

IMPORTANT!

BEFORE INSTALLATION read and understand the following information. Should any questions arise, contact HRD Racing LLC for clarification.

1 **BEFORE installation of the Drive Unit, a through inspection of the crank run out must be performed. This inspection is required to determine if the crank is out of true, bent or cracked. With an indicator, insure the crank does not exceed .003" out of true. Should the test indicate otherwise, the problem must be located and corrected before installation the Drive Unit can occur.**

2 **As with any metal to metal fit, usage is required to "seat" the mating parts. Because "seating" is taking place, constant torquing of the 5/16" Fixing bolt (threading into the crank which retains the clutch to the crank)into the crank which retains the clutch to the crank) must be performed. NOTE: The 5/16" fixingbolt MUST be grade 8 or better. Under no instance should this bolt be substituted for a lower quality bolt. The hollow 5/8" bolt (part #16, page 9) should stay tight after the initial torquing. <u>BOTH BOLTS MUST BE KEPT TORQUED TO MAINTAIN THE INTEGRITY OF THE DRIVE UNIT.</u> Torquing specifications are as follows: 5/8" = 40 ft lbs. 5/16" = 20 ft lbs. Should your crank require a 3/8"bolt, torque it to 30 ft lbs.**

After seating of the clutch has been achieved, apply a small amount of red Locktite to the threads of the fixing bolt and re-torque. This is extra insurance to keep the bolt tight during use.

CHECK TORQUE OF 5/16" FIXING BOLT AFTER EVERY RUN!
Cheap and quick insurance considering the alternative

3 **In the pits, while on the stand, NEVER run the engine RPMs up to the point of shifting the clutch out. Damage to the Belt and Clutch could occur**

BELT ADJUSTMENT

A properly adjusted belt is very *important*. For this reason, it is recommended that the belt be inspected frequently.

The suggested amount of sag in the belt is 3/4". The following is the suggested method for monitoring the sag in the belt.

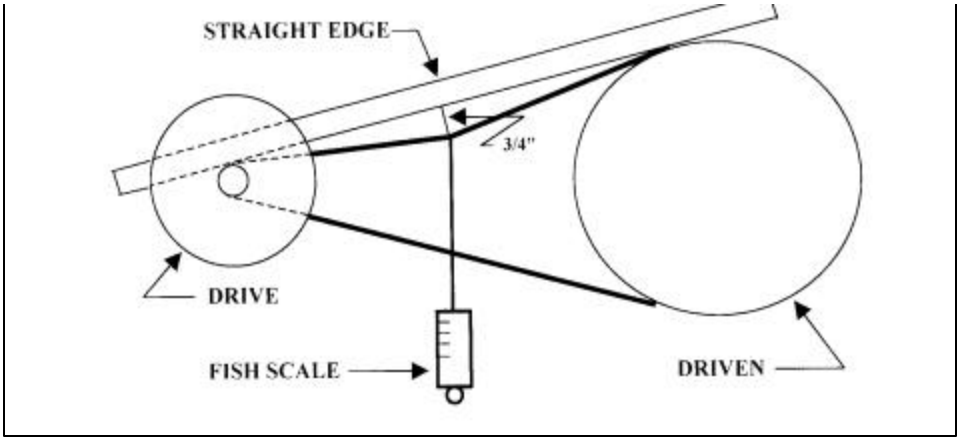
Lay a Straight Edge on top of the belt (as illustrated below). Using a Fish Scale, pull down on the center of the belt between the Drive and Driven. When approximately 4 lbs. has been achieved the belt should have pulled away from the Straight Edge 3/4".

Should the belt pull down greater than 3/4", a loss of lower gearing will be experienced. When this occurs following will take place: When the throttle is applied the belt will rise on the pulleys of the Drive Unit thus creating a higher gearing effect to take place. Another disadvantage of having a loose belt is the loss of top end ground speed. When the belt is loose it will not be allowed to go to the bottom of the Driven Unit thus creating a lower top end gearing effect and a loss of top end ground speed.

Another potential problem with a loose belt is the possibility of turning the belt over (up side down, inside out) while performing a burn out, getting in and out of the throttle during a run or coming off the throttle at the end of a run.

A tight belt will result in the car wanting to "creep" or pull through the lights during the staging process. Belt damage will also occur should the belt be to tight.

With the engine shut off, the car should be able to be pushed with very little belt drag present.



DRIVEN SPRING PRELOAD

PRELOAD TOO LOW PROBLEM:

After a burnout the belt does not return to the top of the Driven Unit pulleys. This leaves the car in a higher gear for the next run. This also results in a loose belt situation because the Driven Unit has not returned to the totally closed position. In turn, the loose belt could roll over (upside down, inside out) after the burn out, while wheel racing (in and out of the throttle) or after the completion of the run while letting off the throttle.

CAUSE:

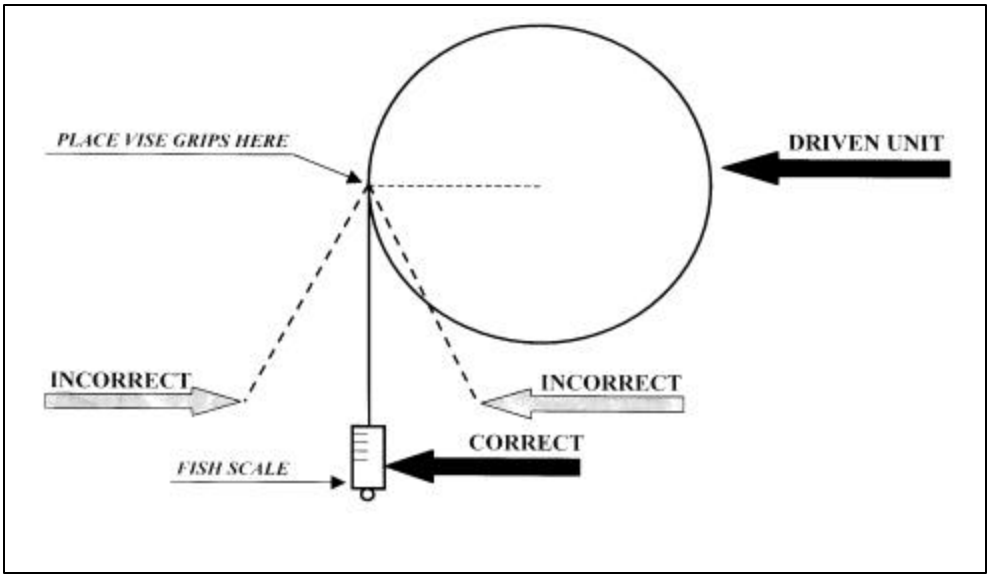
Preload on the Driven Unit is below 6 lbs

SOLUTION:

6 lbs of preload is the very minimum at which the Driven Unit will perform as intended. It is highly recommended that a higher degree cam be installed should less than 8 lbs of preload, with the black spring, be desired.

PRELOAD TEST:

To check preload the following is recommended. Remove the belt. Using Vise Grips, with softeners installed (hose, rubber) over the jaws to insure no damage occurs to the pulleys, grip the very outside of the sliding half pulley of the Driven Unit (see illustration below). Hook a fish scale to the Vise Grips at a point that equals the outside of the pulley. Be sure to pull at a straight 90 degree angle to insure an accurate reading.



GENERAL INFORMATION

The Jr. Dragster HRD/Powerbloc LLC clutching system is simple to tune, performance proven and a very reliable unit. As with any performance unit, information is required to obtain optimum performance and reliability. The following information is intended to provide you, the consumer, with a working knowledge of the HRD/Powerbloc LLC unit. Should any questions arise after *completely* reviewing the manual, PLEASE contact HRD RACING LLC immediately at (909) 875-4150. A few minutes on the telephone will insure you will realize the full potential of your purchase.

When you begin to drive with and tune your HRD/Powerbloc LLC unit, it would be to your advantage to forget everything that pertained to setting up your previous clutch. In the following information we will explain how to set-up and tune the unit to gain optimum performance. NOTE: Changes in gearing, tire pressures, carburetor adjustments, etc. may be necessary.

One of the large advantages you will notice, depending on changes in weather or track conditions, is that the HRD/Powerbloc LLC unit will provide very consistent runs over and over again.

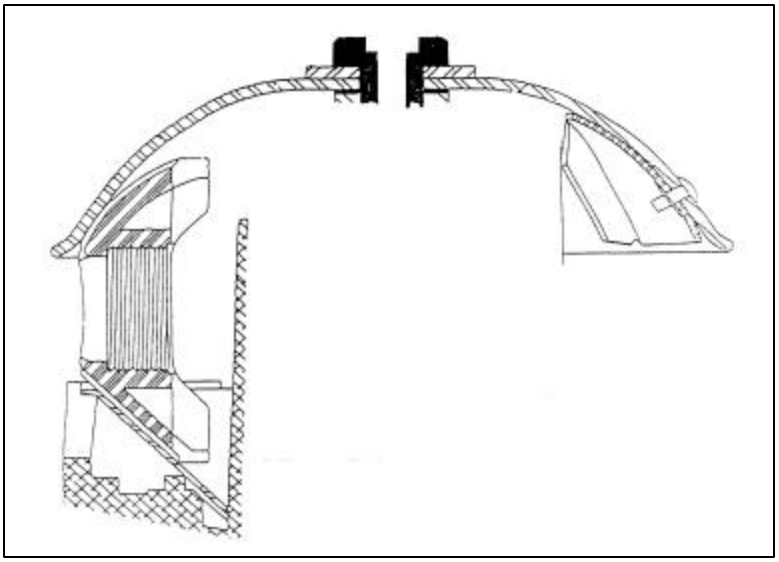
NEVER OPERATE THE ENGINE WITHOUT THE BELT INSTALLED ON BOTH THE DRIVE AND DRIVEN UNITS!!!

INSTALLATION

1. **Apply a thin layer of anti-seize lubricant to the crankshaft, crankshaft key and the inside of the drive unit where contact is made with the crankshaft.**

2. **Apply a thin layer of anti-seize lubricant to the jackshaft, jackshaft key and the inside of the driven (converter) where contact is made with the jackshaft. As in No. 1, the anti-seize will allow for easy removal of the units. DO NOT use force to remove the units should they become stuck. Damage will result. A puller kit is available in the event of a stubborn clutch.**

3. **The weight blocks are rounded on one end. When installing the blocks, make sure the rounded end is UP into the cap. If the blocks are installed upside down, an unbalanced condition will occur which could result in damage to the engine as previously stated. See drawing.**



4. **Using the washer (part #15) provided with your clutch, torque the 5/8" cap retainer bolt (part #16) to 40 foot pounds. DO NOT use a standard washer on this bolt. DO NOT use Loctite on this bolt!**

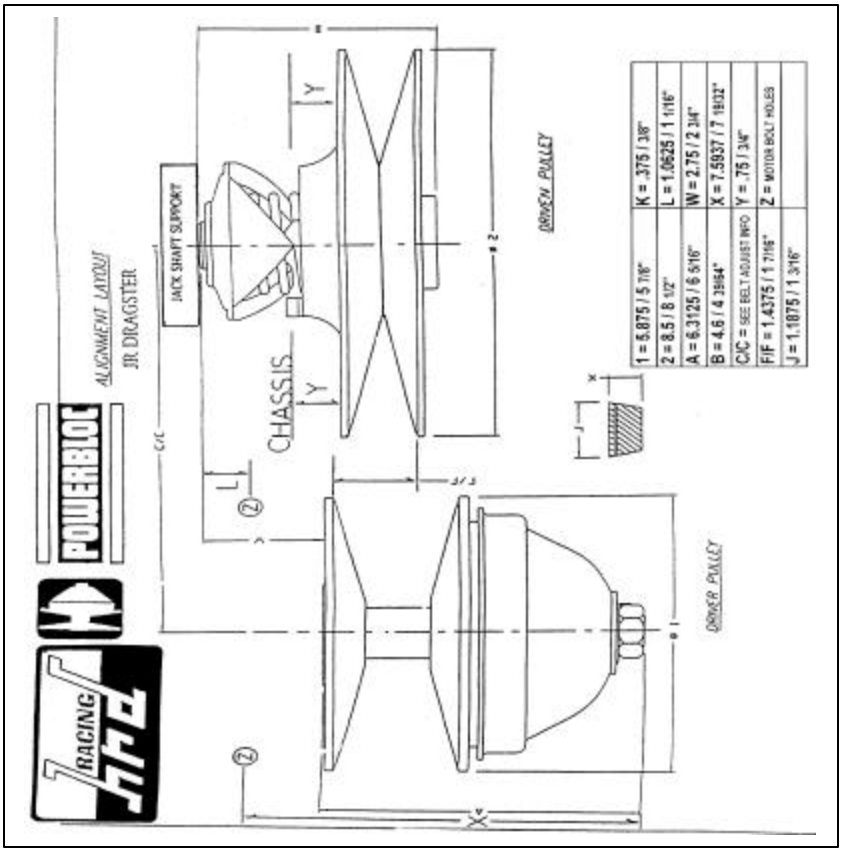
5. **Make sure your fixing bolt (the 5/16" bolt which holds the clutch to the crank) has at least ½" of thread inserted into the shaft. NOTE: Due to variations in applications, this bolt is not supplied with the clutch. The bolt should be Grade 8 as a minimum.**

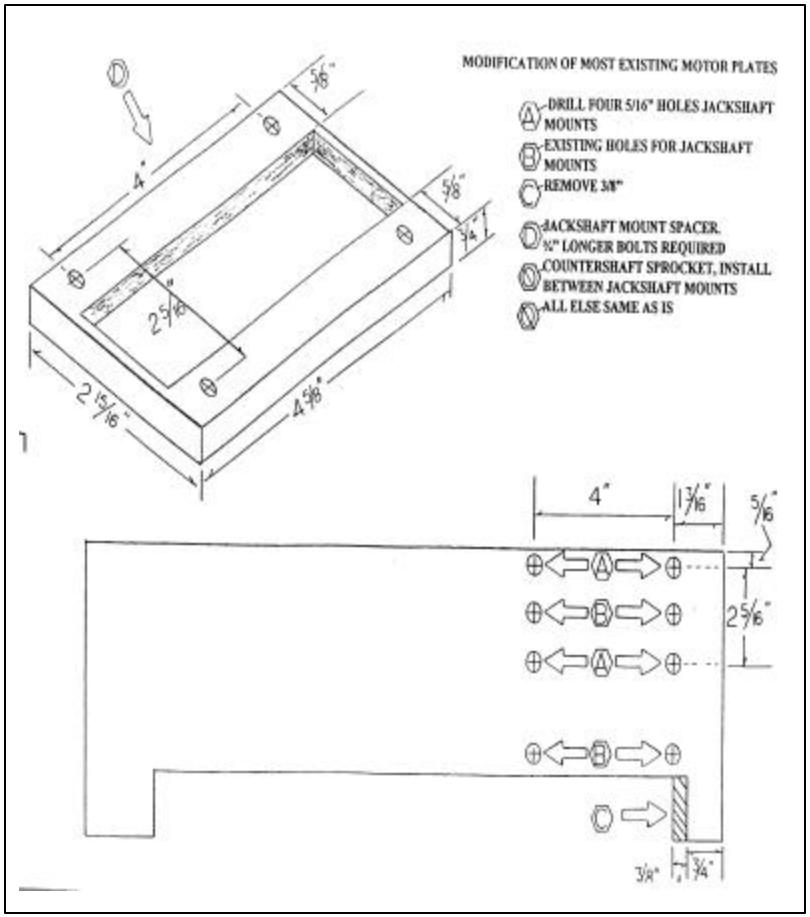
6. **After each time the engine has been ran the fixing bolt should be retorqued.**

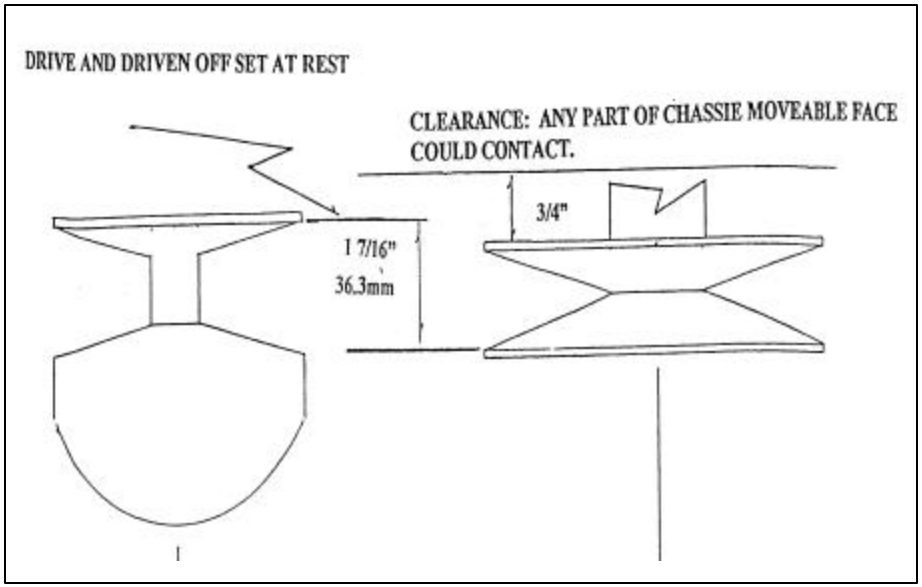
ANY QUESTIONS SO FAR? CONTACT HRD RACING AT (909) 875-4150. HELP IS JUST A PHONE CALL AWAY.

CLEAR DIMENSIONS FOR THE PAGE BELOW ARE AS FOLLOWS

1 = 5.875 *or* 5 7/8" **K = .375 *or* 3/8"**
2 = 8.5 *or* 8 ½" **L = 1.0625 *or* 1 1/16"**
A = 6.3125 *or* 6 5/16" **W = 2.75 *or* 2 ¾"**
B = 4.6 *or* 39/64" **X = 7.5937 *or* 7 19/32"**
C/C = See Belt Adjust Info **Y = .75 *or* ¾"**
F/F = 1.4375 *or* 1 7/16" **Z = Motor Bolt Holes**
J = 1.1875 *or* 1 3/16"




MODIFICATION OF MOST EXISTING MOTOR PLATES
A DRILL FOUR 5/16" HOLES JACKSHAFT MOUNTS
B EXISTING HOLES FOR JACKSHAFT MOUNTS
C REMOVE 3/8"
D JACKSHAFT MOUNT SPACER. ½" LONGER BOLTS REQUIRED
E COUNTERSHAFT SPROCKET, INSTALL BETWEEN JACKSHAFT MOUNTS
F ALL ELSE SAME AS IS
5/8"
4"
5/8"
3/4"
2 5/16"
2 5/16"
4 5/8"
4"
1 3/16"
5/16"
2 5/16"
3/8"
1 3/4"


DRIVE AND DRIVEN OFF SET AT REST
CLEARANCE: ANY PART OF CHASSIE MOVEABLE FACE COULD CONTACT.
3/4"
1 7/16"
36.3mm

BELT PART NUMBER: 1122V-8620

With proper care and maintenance, it will not be necessary to replace your belt often. However it is recommended to have a spare in the event of an unforeseen failure.

SPARE BELT STORAGE

Before you store you spare belt, put it on the car and make a few runs with it. A belt that has been broken in works better than a brand new belt. When you store your spare belt, place it in a black plastic bag with the opened end sealed off with a tie wrap. Try to keep the bag in a cool dry place, out of the sun. The same applies to the belt on the car. After each race day, remove the belt from the car and store it in the same manner. Following these instructions will help keep your belt from hardening thus loosing performance.

GENERAL BELT INFORMATION

Never allow fuel, oil or other chemical to come into contact with the belt. Never use belt dressing. Belt dressings do not work. If you feel you need to use belt dressing, there is a problem in the system that needs to be addressed.

Always install the belt so that it rotates in the same direction. A simple way to insure this happens is to have the lettering on the belt face out so it can be read, right side up, from the clutch side of the car.

To check a belt for cracks, remove the belt from the car, turn it inside out and look for cracks between the cogs. If any cracks are evident, it is time to replace the belt.

A new belt is 1 3/16" wide. As the belt is used it will get narrower which will not allow it to sit at the very top of the driven unit. This will effect the low side of the gearing spectrum. The lower the belt sits in the driven unit, the worst your car will perform out of the hole (unless you change your gear ratio). When this happens it is a good idea to replace your belt.

Clutch alignment (covered in another section) is a major concern for achieving long belt life.

When the engine is not running, you should be able to push your car with very little belt drag occurring. It is not necessary to remove your belt to tow the car. More damage can occur to your belt by removing it after every run and reinstalling it before each run than by leaving it on the car. Should the belt drag excessively while towing, it is adjusted too tightly.

CLUTCH ALIGNMENT INSTRUCTIONS

It is most important that the clutches be in perfect alignment. This applies not only when the engine is not running, but when it is running under a full load as well. Mis-alignment of the clutches causes excessive belt wear. An enormous amount of horsepower is also lost due to poor alignment, which causes unwanted friction.

CHECKING YOUR CLUTCH ALIGNMENT

1. **Using two straight edges, thin enough to be placed between the engine and the drive clutch, place one against the drive and one against the driven (see diagram). Adjust the engine or jackshaft mounts until the straight edges are parallel with each other.**

2. **To check vertical alignment, place the straight edges as shown on the diagram. To adjust, place a shim under the engine of jackshaft mounts. Repeat step one.**

3. **After the clutches are aligned parallel with each other, check for proper offset (FF alignment diagram 1.4375" or 1 7/16").**

PREVENTING THE JACKSHAFT FROM BENDING AND/OR FLEXING UNDER A LOAD

When the clutch system is under power, the jackshaft, even one made of 4130 chromium, can flex which causes misalignment in the clutches. This occurs as soon as the drive becomes engaged. HRD Racing LLC has developed a system designed to alleviate this problem. The following information will explain how to rid your system of jackshaft flex.

1. **When <u>all</u> the belt adjustments have been completed, install an outboard bearing with adjustable heim joints on the end of the jackshaft (mounts will be required for supports).**

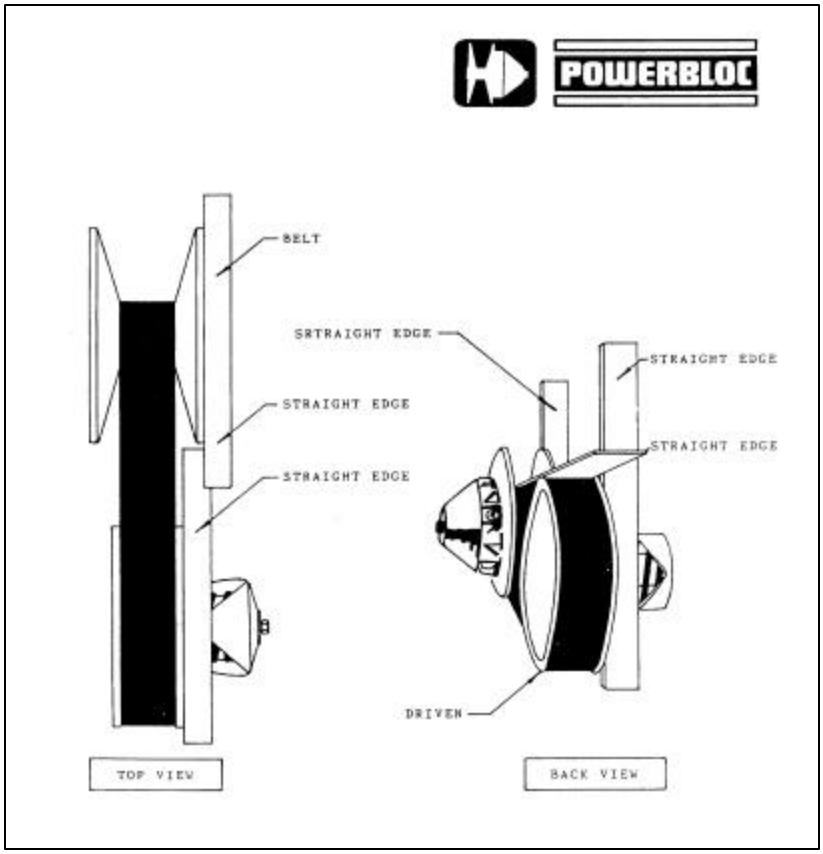
2. **Tighten the heim joints until the bearing is snug.**

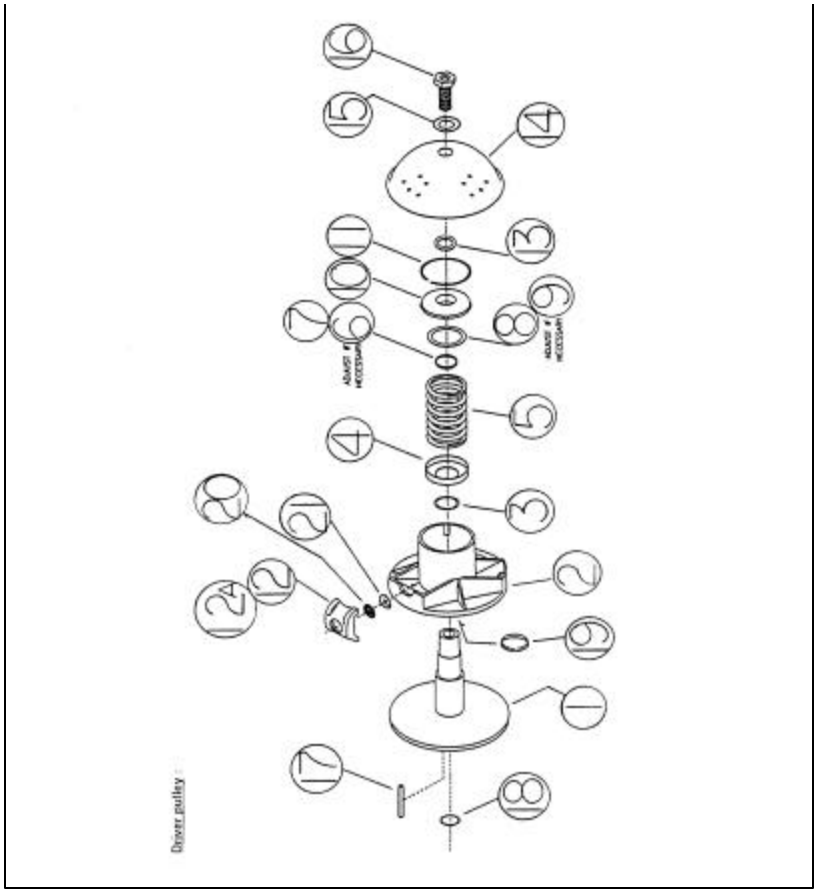
3. **Recheck all the belt adjustments one last time.**

When the above is complete, you can be assured the clutch will retain proper alignment and performance while under power.

A HRD Racing LLC jackshaft stabilizing kit is available to alleviate jackshaft flex. See webpage catalog.

<u>CLUTCH ALIGNMENT IS ONE OF THE MOST OVERLOOKED AND ABUSED ASPECTS OF JR. DRAGSTER RACING</u>





DRIVE CLUTCH – PARTS LIST AND DESCRIPTION

REFERENCE ABOVE DIAGRAM

1. **Fixed Half Pulley – Includes shive and shaft**

2. **Sliding Half Pulley – Includes bushing**

3. **Shim Washer 1.2 – Used under part number 4. Increases spring tension. *WARNING*: The use of too many of these shims will cause the spring to coil bind. Coil bind will not allow the clutch to shift out completely.**

4. **Spring Guide Washer – Keeps spring centered in the sliding half pully.**

5. **Spring 3 ¾", Black – Check spring length when new and document. When the spring begins to "sag out", the engagement RPM *decreases.***

6. **Shim Washer 1.2**

7. **Shim Washer 0.6 – Same as number 6, just a different thickness. These shims are used for fine tuning purposes. The shims will determine how close the fixed shive and the moveable shive are allowed to come together by using different thickness' and/or stacking of the shims. An example would be with a lower horsepower engine, a heavy car and driver, the car may not react in the proper manner when the clutch is allowed to shift all the way out (1 to 1 ratio) and the belt travels to the top of the shives. In this case, shims would be added, per the diagram above, so the belt is not allowed to travel to the very top of the shives when the clutch has completed it's shifting operation. *WARNING*: Never allow any part of the belt to rise *above* the shives. This will result in premature belt expiration. The shim washers are intended only for *very fine* clutch**

tuning procedures and should not be a substitute for gearing changes. The clutch is designed to shift all the way out and performs best when allowed to do so. Gearing changes will work best in all but the finest of tuning procedures.

8. **Shim Washer 1.2**

9. **Shim Washer 0.6 – Used to shim the spring the same way as part number 3. The same caution should be taken as in number 3. Too many shims installed in the Spring Guide Bushing (part number 10) will not allow the spring to be "captured" in the bushing. Should the spring come out of the Spring Guide Bushing, it will no longer be centered in the clutch. This will result in damage to the clutch.**

10. **Spring Guide Bushing – Serves two purposes. First, it is a spring guide. Second, it is the upper bushing for the sliding half bushing. During installation, care should be taken so that no harm will come to the bushing. Make sure the bushing is lined up and square so that no damage takes place during assembly. This is a very important component in the clutch. If damaged, it will need to be replaced.**

11. **Internal Snap Ring – Used to retain the spring and the spring guide bushing. Before releasing spring tension, be sure the snap ring is in the groove completely.**

12. **Red Centrifugal Block – Refer to Installation section, number 3 for proper installation. It is very important that these blocks are installed correctly. It is imperative that each block has the exact same amount of weight installed in it. Failure to do so will result in an unbalanced condition, which will cause harm to the engine and the clutch unit.**

12A. **Black Centrifugal Block – Same as above, high performance. Made out of a "slippery" material. Substantially higher cost. Never mix with red blocks.**

13. **Flat Washer – Mounts on the end of the shaft, under the cap. Acts as a wear washer for the cap**

14. **Cap**

15. **Heavy Duty 5/8" Washer – Should this washer become damaged or misplaced, do not replace it with a standard washer. Standard washers have been known to fail causing the clutch to come apart while turning high RPM. This is a dangerous occurrence to say the least.**

16. **5/8" Bolt Bored to 5/16" - Should your crank require a 3/8" fixing bolt, drill out the 5/16" hole to 3/8" in a lathe to insure the hole remains straight. It is not recommended to drill larger than 3/8". Torque to 40 foot pounds**

17. **Square Key**

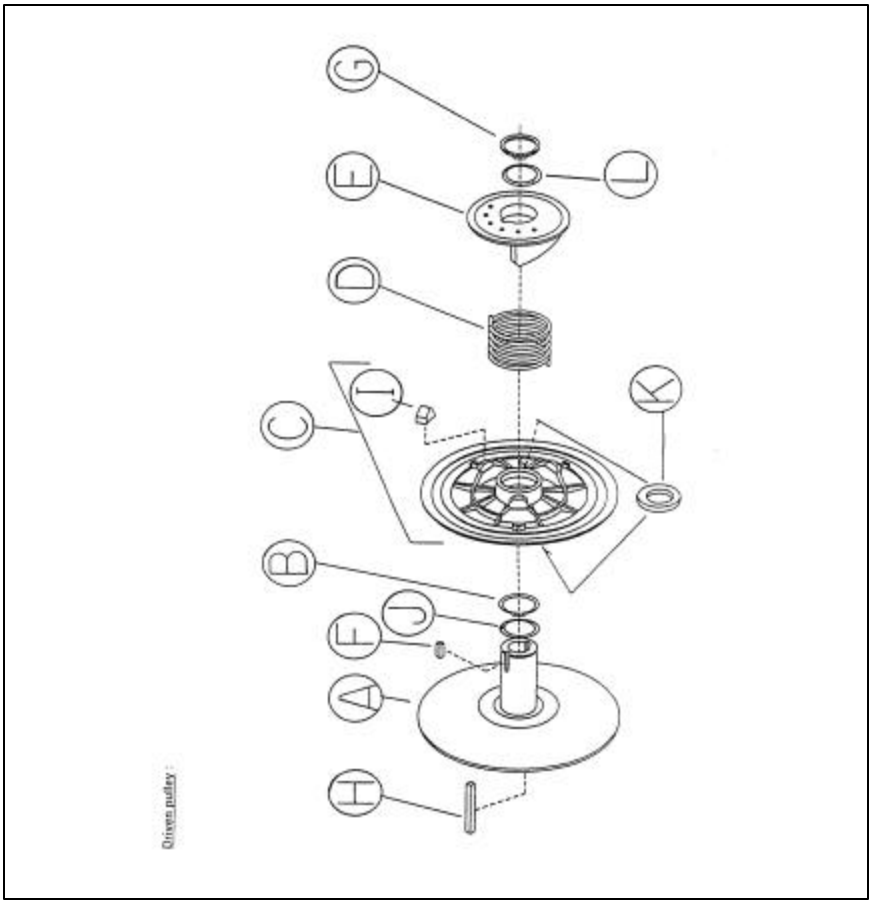
18. **Flat Spacer Washer – Used for adjusting the drive unit away from the engine. Can also be used to adjust the driven unit on the jackshaft.**

19. **Sliding Half Pulley Bushing – Like the Spring Guide Bushing (#10) careful clutch assembly is required. Should damage during assembly occur, replacement will need to take place at a machine shop.**

20. **Weights – The exact amount of weight in each weight block is imperative. This cannot be stressed enough.**

    Nylon Threaded Cap – Each Nylon Threaded Cap weighs 1.7 grams. Each weight (#20) weighs 3 grams. For fine tuning purposes, the use of two Nylon Threaded Caps in a block is

permissible. **EXAMPLE:** **Should two Weights be too much weight, and one Weight is not enough, use one Weight and two Nylon Threaded Caps in each block to achieve he desired performance.**



DRIVEN CLUTCH – PARTS LIST AND DESCRIPTION

REFERENCE ABOVE DIAGRAM

A. **Fixed Half Pulley – Includes shive and aluminum shaft.**

B. **External Snap Ring – Prevents shim movement.**

C. **Sliding Half Pulley – Includes shive, bushing and cam shoes.**

D. **Springs –**

Black	**.156 Wire Size**	**Weakest**
Yellow	**.162 Wire Size**	
Brown	**.177 Wire Size**	
Sky Blue	**.188 Wire Size**	
Grey	**.207 Wire Size**	**Strongest**

E. Fixed Cam - 40 Degree
45 Degree
50 Degree
55 Degree

F. Square Key – Cam Key

G. External Snap Ring – Cam retainer

H. Square Key – Fixed pulley key

I. Cam Shoe – Always replace all (3) shoes. Failure to do so will result in uneven contact between the shoes and all three points on the fixed cam (part E).

J. Pulley Shim – Used to adjust the space between the pulleys to insure the belt is at the top of the pulleys when the car is at rest.

K. Sliding Half Pulley (part C) Bushing – Two required – These bushings are made of a fiber type material which can easily be damaged during assembly and disassembly of the clutch. To avoid damage, make sure all sharp edges removed from the key way slot and the aluminum shaft.

L. Cam Shim – Should the cam points (very tip of the fixed cam) be resting on the cam shoes (part I) when the clutch is idle, place the cam shims between the snap ring (part B) and the fixed cam (part E). Add as many as is needed to remove the cam points from the cam shoes.

CLUTCH SET-UP INSTRUCTIONS

OBJECTIVE

1. **Simplify tuning procedures for the HRD/Powerbloc LLC clutch.**

2. **Explain how the clutch should react under a given condition to achieve maximum performance.**

3. **Provide a working knowledge of how to "tune" your clutch to perform under changing conditions.**

4. **How to make changes that will allow you to take full advantage of the powerband built into the engine you are working with.**

TERMINOLOGY

DRIVE – The clutch mounted on the engine.

CONVERTER/DRIVEN – the unit mounted on the jackshaft.

MOVEABLE FACE - The shive that moves in and out on the drive and driven.

ENGAGEMENT – Drive engages belt at a given RPM resulting in the car moving forward.

POWERBAND – The RPM range (Example: 5,000 RPM to 9,500 RPM) in which the engine produces the most horsepower.

BOG – Engine not reaching the powerband before the clutch engages. Engine not running to it's full potential.

OVER-REV – Engine RPM's are above and beyond the powerband.

LOOSE – Loss of traction, wheel spin.

HOOK-UP – Good traction, no wheel spin.

EXPLANATION

A properly tuned drive and converter will out-perform a manually operated clutch and transmission. However, as this may be your first experience with a drive and driven unit, a standard transmission and clutch will be used as a comparison.

If your engine were over revving, you would shift to a high gear. If your engine is bogging, you would shift to a lower gear. When leaving the starting line, the optimum situation would be to engage your manual clutch so your engine wouldn't bog and at the same time your tire wouldn't lose traction.

This can be accomplished by using the HRD/Powerbloc LLC drive and driven unit.

THE FOLLOWING IS A GUIDE TO ADJUSTING YOUR DRIVE AND DRIVEN UNITS TO OBTAIN THE MAXIMUM PERFORMANCE AVAILABLE FROM YOUR PURCHASE

TROUBLE SHOOTING

PROBLEM	SOLUTION
Engagement RPM too low	Remove equal amount of weight from each block.
Engagement RPM too high	Add an equal amount of weights to each block.
Engine over revving while accelerating	The blocks are too light. Add one or more weights to each block. Always add weight to the blocks in equal increments. Another option is to reduce torsion on the driven unit spring and/or change the cam to a higher degree. This will facilitate the belt movement along a greater radius in the clutch pulley, increasing the load.
Engine bogging while accelerating	The blocks are too heavy. Remove one or more weights from each one block in equal increments. Another option is to increase the spring torsion and/or change the cam to a lower degree. This will slow down the rise of the belt in the clutch which in turn will decrease the load on the engine.
Drive belt gums the pulley disks	The belt is slipping. Increase the tension on the driven spring. Add one or more weights to each block. Recheck alignment of clutches. Replace belt.
Uneven acceleration	Dirty belt. Driven unit is defective. Belt width is uneven. Check driven unit. Replace belt.
Clutch over heats on one side	Poor alignment of the clutch and converter.

TUNING PROCEDURE

Begin with adjusting the weight in each block of the drive unit to a point that when engagement occurs the engine does not bog and at the same time the car does not experience excessive wheel spin.

IMPORTANT! Add and remove weights equally. Each block must have the same amount of weights installed. Failure to do so will result in an unbalanced effect, which will cause severe damage to the engine and the drive unit.

After the engagement RPM has been established, you will need to find out where in the powerband you're your engine runs best. Some engines do not produce enough horsepower and/or torque to maintain speed when the clutches are shifted all the way out. In this case ground speed will be lost. Take note as to when the engine seems to start bogging during the run.

At this point you should have the engagement RPM dialed and you should know how far the clutch can shift out and remain in the powerband.

The drive and driven must be tuned as a unit. As you make changes in the driven unit, you may have to make changes in the drive. Take note of which engagement speed workied best and keep working back to that point. Also note at what point he engine worked best when shifting out and keep working back to that information.

DRIVEN UNIT

EXAMPLE: The car leaves the starting line running strong. After a few feet the engine boggs. This is an indication the driven unit is shifting out too soon. The solution is to add more tension to the spring of installing a lower degree cam.

For calibrating the converter there are 4 cams available. 40, 45, 50 and 55 degree. 5 different springs are available. The larger the wire the stronger the spring. There are 6 spring settings in each cam. To stay in a lower gear range longer, use a stronger spring and/or a lower degree cam.

There are many adjustments that can be made to this unit. When tuning the clutch, make small adjustments. This will insure your not adjusting the clutch in the wrong direction.

Once you have the driven unit tuned to your liking, only small adjustments to the drive unit (add/subtract weights) should be necessary as track conditions change. Add weight – shift out faster. Remove weight – shift out slower

When adjusting the spring tension in the driven unit, do not over wind the spring. Should the spring be in the number 6 position in the cam and more tension is necessary, replace the spring with the next stronger spring.

To check spring tension on the driven unit, perform the following: When the spring is new, remove the belt, place a pair of vise grips (with jaw softeners so no harm can come to the pulley) on the outer edge of the moveable face. Hook a fish scale to the vise grips, next to the pulley, and pull until the pulley begins to move. At this point record the pound reading on the fish scale. Log this reading and check periodically. When checking to determine if the spring is losing strength, all the settings must be the same as when the original test took place. The fish scale method is also used to check the amount of preload on the driven unit for tuning purposes. See " Driven Spring Preload" sheet at the beginning of manual for more details and diagram.

DRIVE UNIT

Weights weigh 3 grams each. The nylon cap, which holds the weights in place, weighs 1.7 grams. For fine tuning purposes, it is permissible to use more than one nylon cap in each block. Nylon caps are available through HRD Racing LLC.

The drive spring should be measured when new and the length recorded. As the spring sags (gets shorter) the clutch tuning will change. This will cause the engagement RPM to become lower. When this occurs the spring needs to be replaced. Springs do not last forever. To make your spring last longer, it is recommended to remove it from the clutch between race days.

All changes should be made one at a time. As each change is made, check the effect the change has made to your assembly. Each and every car will require it's own set-up. No two cars are the same. The tuner who takes the time to test several different settings will have the advantage at the track.

These instructions are not intended to cover all phases of clutch tuning. Our intent is to give the individual who is just coming into the sport, with no experience with a belt drive system, a working knowledge of the system.

There is no substitute for experience. The more you "play" with the clutches, the more information you will gain and retain. Much more so than reading volumes of technical manuals.

Make sure you keep a log of every result from every change made. Make your own log or use the one included in this package.

The HRD/Powerbloc LLC clutch can be tuned for a stock engine as well as a full race engine producing high horsepower.

Should any questions arise, please contact HRD Racing LLC. We are here to field your questions and help you in any way we can!

HRD RACING

JUNIOR DRAGSTER DATA

	RUN			RUN			RUN		
DATE									
DRIVE									
SPRING									
WEIGHTS									
ENGAGEMENT RPM									
CAP									
CONVERTER									
CAM									
SPRING									
PRELOAD									
GEARING									
JACKSHAFT									
AXEL									
PYROMETER									
REAR TIRE									
TIRE BRAND									
PRESSURE									
DIAMETER									
WIDTH									
	60'	330'	660'	60'	330'	660'	60'	330'	660'
ELAPSED TIME									
MPH									
RPM									
CARBURETOR									
MAIN JET									
NEEDLE JET									
PILOT JET									
SLIDE									
NEEDLE JET									
AIR DENSITY									
RELATIVE ALTITUDE									