

DXL Clutch Manual

FORWARD

The Horstman Disc Clutch is engineered specifically for kart racing and should not be used for any other purpose. The instructions will help you install, adjust, and maintain your clutch properly so that you get maximum performance and value.

PRE-INSTALLATION PREPARATION

Before you install the clutch two important steps are recommended.

Step #1 Match the taper in the drive hub to the taper on the crankshaft. This can easily be accomplished in a compound and hand lapping until the two tapered surfaces are 100% seated. Be sure to clean of all lapping compound.

Step #2 The woodruff key may need to be filed if the clutch drive hub does not go all the way onto the taper.

INSTALLATION

1. Install spacer with chamfered side toward engine. (See Fig. 1)
2. Slide drum onto crankshaft.
3. Insert woodruff key into crankshaft.
4. Slide drive hub assembly onto taper of crankshaft. Be sure the keyway in the drive hub is aligned with the ears on the friction discs must align with the channels in the drum.
5. Install sleeve nut. Torque to 350 inch pounds.
6. Check side clearance (See Fig. 2) between sprocket and spacer.
7. Insert gasket into oil cover.
8. Slide oil cover onto clutch with all holes aligned.
9. Insert the eight screws 8-32 x 1/2" through oil cover and tighten with T handle wrench.
10. Remove one oil filler plug and fill clutch 1/2 full with Horstman clutch oil then replace plug.
11. Spin clutch by hand. If binding repeat step 6.

SIDE CLEARANCE

When the clutch is tightened securely to the shaft you should be able to spin the drum freely. If the drum does not spin freely the clutch must be removed and the spacer must be ground thinner or a thinner spacer can be purchased. The minimum clearance recommended is .010" and the maximum is .020".

CLUTCH ADJUSTMENT

Proper clutch adjustment will enable your engine to operate within its maximum power band, which should result in fastest lap time. A tachometer is helpful in establishing the ideal RPM to slip the clutch. Each clutch is preset at the factory with spring height adjustment of .310" from the bottom of the retainer to the top of the aluminum weight support (See Fig. 3). Run the clutch at this setting to evaluate how the clutch is working. Then come into the pits and make a clutch stall speed adjustment if necessary.

The basic engagement of this clutch is determined by levers that pivot in response to centrifugal force from engine rpm. Opposing force from compression springs restrain the levers. Adjusting the spring tension will change the stall speed of the clutch. The ideal stall speed adjustment is when the clutch locks up off the tightest turn on the track and the engine rpm only drops about 100.

HOW TO GET MORE SLIP

To get the clutch to slip more, you must increase the preload on the compression springs by turning the adjustment screws clockwise.

- Use caution as clutch will be hot.
- Turn clutch so that the oil plugs are at 12 o'clock and 6 o'clock. This will prevent oil loss. Remove the oil plug at 12 o'clock.
- Insert a 5/16" allen wrench into the sleeve nut that holds the clutch onto the engine. Rotate engine clockwise with the 5/16" allen wrench until the first available adjusting screw head is visible. This will be your starting point.
- With a 1/8" allen wrench, adjust this first screw by turning clockwise 1/8 of a turn (**See Fig. 4**).
- Then adjust all other screws the same amount (1/8 turn).
- Check oil level and add oil if necessary.
- Replace oil fill plug.

Go back onto the track and determine if you now have proper slip. If not, come back to the pits and repeat steps above until the clutch is dialed in to your requirement.

HOW TO GET LESS SLIP

If your clutch is over-slipping, go to the pits immediately and adjust the screws counter-clockwise 1/4 turn. Check oil level and go back onto the track and determine if clutch is hooking up better. If not, adjust the same screws counter-clockwise 1/4 turn. If the clutch still does not hook up correctly, it is necessary to remove the oil cover and check for a possible problem.

ADJUSTMENT LIMITS

The clutch is designed to work within specific adjustment limits. If you go above the .325" maximum adjust this is an indication that the friction discs is worn out or something in the clutch is loose or broken. If you adjust the spring height below the minimum of .250" the springs will coil bind during engagement of the clutch. Coil binding will damage the springs, as they will bottom out when the clutch is engaging. If the springs bottom out, the clutch can burn up due to excess slippage. **Fig 5**

INTERNAL CLEARANCE

It is very important that the clutch has between .040" minimum and .055" maximum clearance between the pressure plate and friction disc **when measured with a feeler gauge (See Fig. 6).**

Maintenance

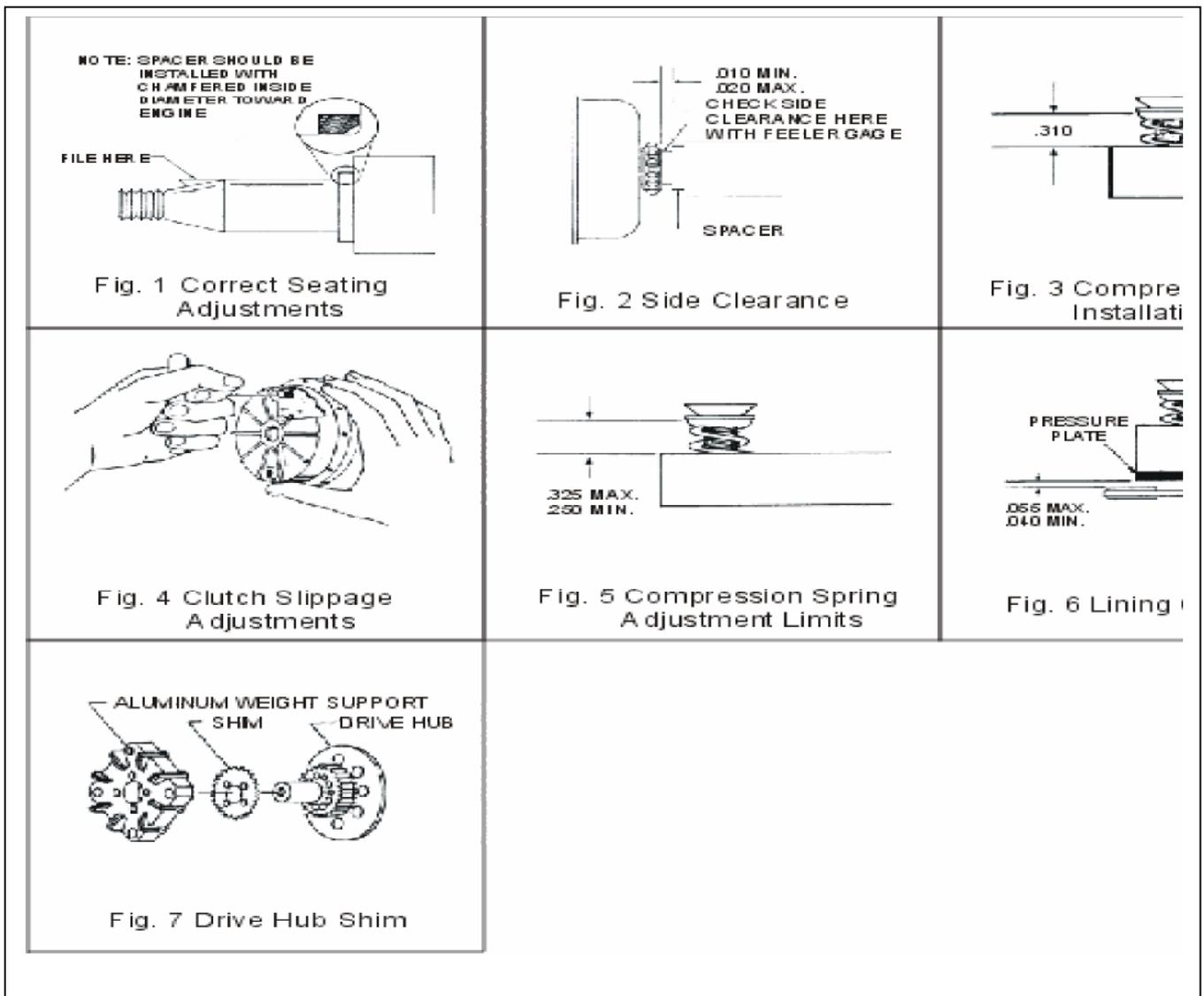
Change clutch oil after every race.

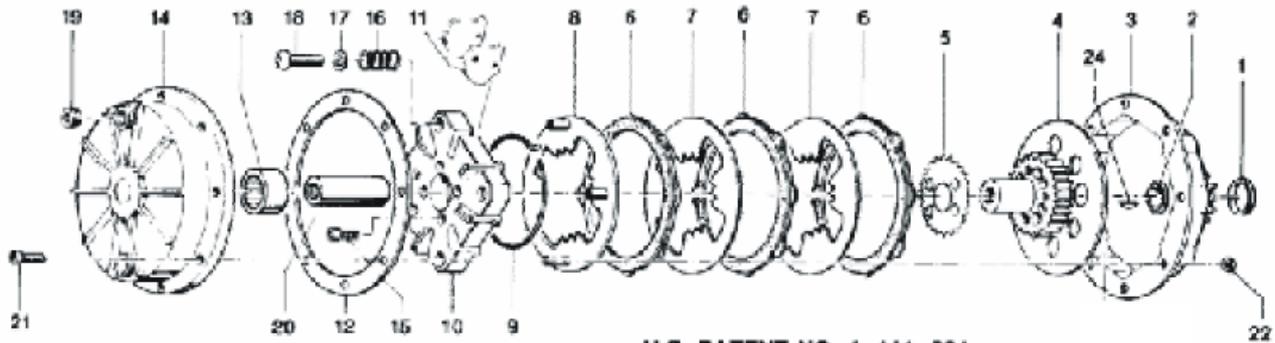
Remove clutch and inspect after every raceday

When clutch is removed, check the following items and replace if necessary:

- Friction discs, if worn below .080" overall thickness replace.
- Check internal clearance if above maximum and friction discs are still good, then remove the shim.
- Check floaters for warp.
- Check pressure plate for warp.
- Check for broken springs.
- Check for cracks in the drive hub or aluminum weight support.
- Check for wear on the sprocket and bushing
- Check part # 3129 flat head screws for tightness.

NOTE: Cap screws are very important, as they hold the drive hub assembly together. Never reuse these screws more than twice. Item #15





U.S. PATENT NO. 4, 111, 291

1	322200	SPACER, .665" OD x .105" WIDE USE WITH 10T #219 DRUM
	323600	SPACER, .740" OD x .125" WIDE USE WITH 9T #35 OR 11T #219 DRUM
	324600	SPACER, .830" OD x .125" WIDE USE WITH ALL DRUMS WITH NEEDLE BEARING
2	330132	BUSHING FOR 10T #219 DRUM
	300300	BUSHING FOR 9T #35 OR 1 1T #219 DRUM
	300400	NEEDLE BEARING fits 12T #219-15T #35 and #219
3		SEE CHART BELOW
4	390800	DRIVE HUB, STANDARD, FITS DXL-991 OR DXL-3000
	315500	DRIVE HUB, EXTENDED, FITS DXL-991 3B OR DXL-3000 3B
5	312000	SHIM, .017" THICK Optional
	312100	SHIM, .010" THICK Optional
	312200	SHIM, .005" THICK Optional
6	334000	DXL-10 HI TEMP FRICTION DISK
7	311000	FLOATER PLATE, .031" THICK
	311100	FLOATER PLATE, .040" THICK Optional
8	335000	PRESSURE PLATE, 4 SPRING MODEL
	334200	PRESSURE PLATE, 6 SPRING MODEL
9	334400	WEIGHT GUIDE RING
10	335100	ALUMINUM WEIGHT SUPPORT, 4 SPRING
	334500	ALUMINUM WEIGHT SUPPORT, 6 SPRING
11	335200	Lever
	335300	Lever WITH LIGHTENING HOLE, 4 SPRING MODEL
12	303800	GASKET
13	304200	BEARING FOR OIL COVER
	307400	RETAINING RING FOR OIL COVER
14	307000	BILLET OIL COVER
15	334900	SOCKET HEAD CAP SCREW, 10-32 x 3/8"
16	313000	SPRING
17	334700	RETAINER
18	334800	STALL SPEED ADJUSTING SCREW, 10-32 x 3/4"
19	306100	OIL FILL PLUG
20	703600	STARTER NUT, 10mm x 1.25 THREAD, FITS DXL-991 & DXL-3000
21	303900	SOCKET HEAD CAP SCREW, 8-32 x 1/2"
22	309200	NUT 8-32
23	312900	SCREW 10-32 x 5/16", FLAT SOCKET HEAD
24	309300	3MM WOODRUFF KEY
25	307500	COVER WASHER FOR STANDARD HUB CLUTCH

Item 3

#35 Chain		#219 Chain	
300900	DRUM9T	331000	DRUM 10T
301000	DRUM 10T	331100	DRUM 11T
301500	DRUM 15T	331200	DRUM 12T
		331300	DRUM 13T
		331400	DRUM 14T
		331500	DRUM 15T

Part #	Description
304400	Clutch Puller
333100	Spanner Wrench, Fits 4 Spring Clutch
333200	Spanner Wrench, Fits 6 Spring Clutch