



## A-3050 & A-3051 Retrofit Double X Transmissions

- Precision tooled, extra wide gears
- Tungsten carbide "hard balls"
- Grooved thrust bearing assembly
- Easy diff adjustment without disassembly
- Low drag coefficient
- 2.19:1 Ratio for buggies (A-3050), 2.61:1 Ratio for trucks (A-3051)

Thank you for purchasing the new "XX" transmission. With the development of slippers, we have been able to simplify this transmission taking advantage of our unequaled experience in hi-tech plastics and ultra high precision gears. You will find that the many unique features of the "XX" transmission give you increased performance while retaining the durability and ease of adjustment Team Losi has become famous for. Please take a moment and read through the following instructions thoroughly before starting assembly.

Good Racing,

**TEAM LOSI**

1. Remove the standard Team Losi transmission from your car/truck. 2. If the chassis on your vehicle has a recessed area below the transmission, go to Step 5. If you have an older chassis follow the next step to make it possible to mount the "Double X" transmission to your chassis.

3. Next, remove the rear bulkhead and all rear suspension components. Locate the template in this instruction manual and cut it out. Line up the holes in the template with the holes in the rear part of your chassis. Trace the square area on the template onto your chassis that your gearbox will mount to. Using a small grinding wheel (i.e. Dremel grinding stone) and a Dremel tool or a hand drill, grind a recess into the marked area of the chassis. You will need to remove 1/16" from the chassis. Be careful not to grind all the way through the chassis. If you do accidentally grind all the way through, you will still be able to use the chassis, but some strength may be lost. You should tape the seam on the bottom of the transmission if it will be exposed through the bottom of the chassis.

4. Replace the rear bulkhead and rear suspension pieces.

### DIFF ASSEMBLY

5. Locate one of the outdrive/diff halves (1). Insert the diff tube (2) from the outside of the outdrive/diff half, small side first. Be sure that the diff tube (2) is inserted all the way into the

outdrive/diff half (1), and is straight. The handle side of an X-Acto knife or the top of a pen can be used to push it into place. Fig. 1

6. Insert the diff nut (3) into the diff nut carrier (4). Be sure and push the nut (3) all the way into the carrier (4). Fig. 1

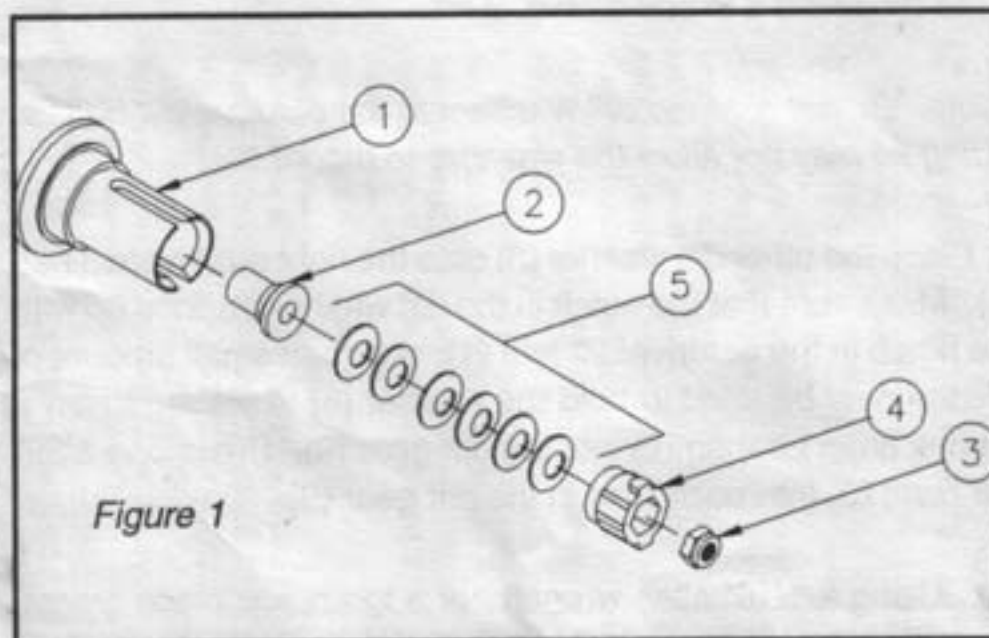


Figure 1

Note: Insert nut "hex side" first

7. Locate the six beveled washers (5). These washers need to be inserted into the outdrive/diff half (1) from the outside. To do this use the 4-40 x 1 3/4" screw (6) (\* Note: this screw is not used in this location, it is only used to aid in the assembly of this step). Place the six beveled washers (5) onto the screw so that they **open away** from the head of the screw. (\* All 6 washers are stacked in the same direction) While holding the outdrive/diff half (1) so that the diff tube (2) is pointing down, insert the screw and washers into the outside of the outdrive/diff half (1) and remove the screw (6). With the beveled washers (5) in place, insert the diff nut carrier (4) into the outdrive/diff half (1) and push it all the way in. Be sure that the diff nut (3) is to the outside. The diff nut carrier (4) should now hold the beveled washers (5) in place. This assembly will be referred to as the right outdrive/diff half. Set this assembly aside for a moment. Fig. 1

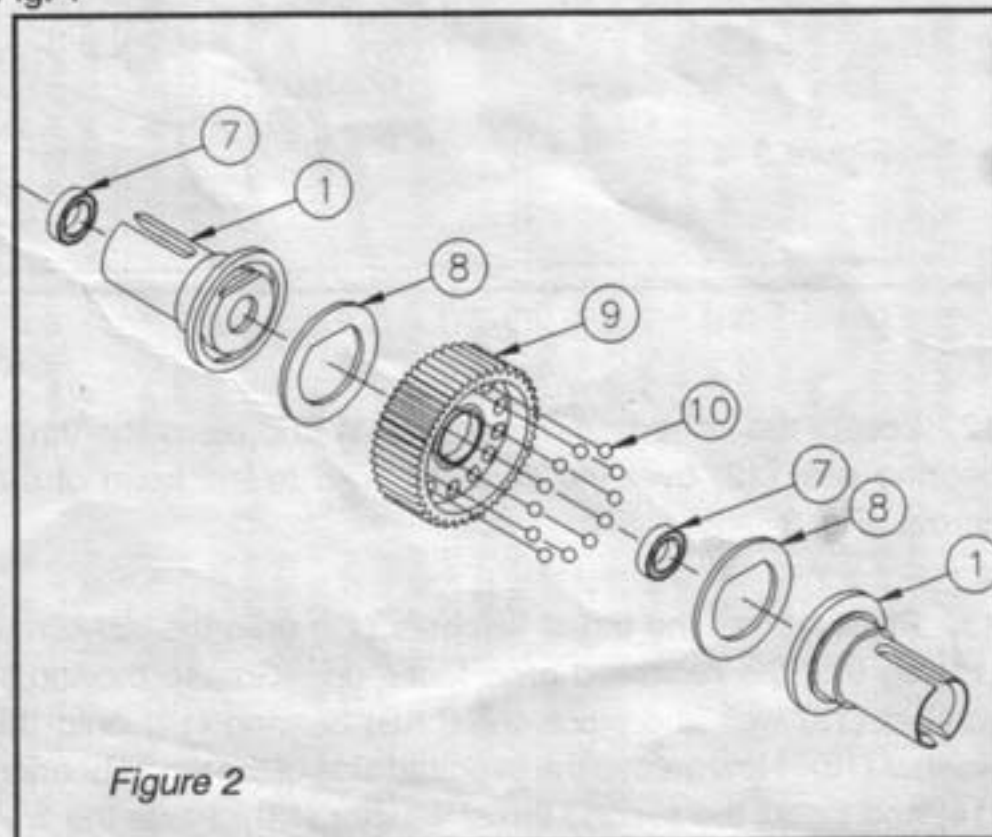


Figure 2



15. Press the idler gear shaft (16) into the right gear box half (17) and tap it all the way in. Insert a 3/16" x 3/8" bearing (18) into the top bearing seat of the right gear box half (17) and a 3/16" x 5/16" bearing (19) into the top bearing seat of the left gear box half (20). Fig. 5

16. Insert an outdrive bearing shield (21) followed by a 1/2 x 3/4" bearing (22) into the bottom bearing seat of both left and right gear box halves (20), (17). Fig. 5

17. Attach the motor plate (23) to the right gear box half (17) by threading two 4-40 x 7/16" screws (24) from the inside of the gear box half (17) into the two bottom holes in the motor plate (23). Fig. 5

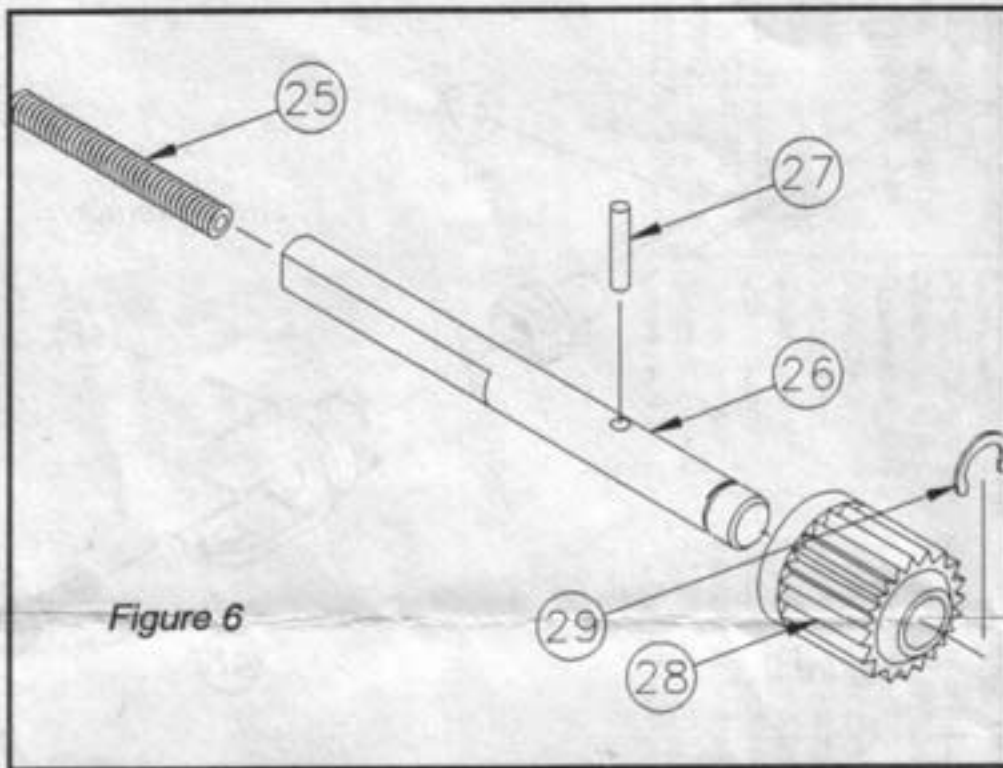


Figure 6

18. Thread the 4-40 set screw (25) into the end of the top gear box shaft (26). Assure that the set screw (25) is tight. Fig. 6

*Note: To be sure screw does not work free, place a small amount of thread lock compound onto threads before assembling.*

19. Press the 1/16" x 5/16" roll pin (27) into the top shaft (26) so that it extends evenly from both sides of shaft (26). Slide the top gear (28) over the top shaft (26) from the side away from the set screw (25) and line up the roll pin (27) with the slot in top gear (28). Secure the top gear with a 'C' clip (29) in the slot in the top shaft (26). Fig. 6

20. Place the top shaft spacer (30) over the top shaft (26) from the side with the set screw (25) and slide it up against the gear (28). Insert the top gear assembly into the right gear box half (17) threaded side first. Insert the differential, diff nut side first, into the bottom of the right gear box half (17). Fig. 7

21. Insert a 1/8" x 3/8" bearing (31) into each side of the idler gear (32) and place the gear onto the idler shaft (16). Be sure to align the gears, don't try to force the idler gear into place. Fig. 7

22. Attach the left gear box half (20) to the right gear box half (17). Secure the gear box halves (17), (20) with two 2-56 x 5/8" screws (33) in the bottom two holes of the left gear box half (20) and one 4-40 x 1 1/8" screw (34) into the top rear hole. The top forward hole is left open for attachment to the rear bulkhead. Fig. 7

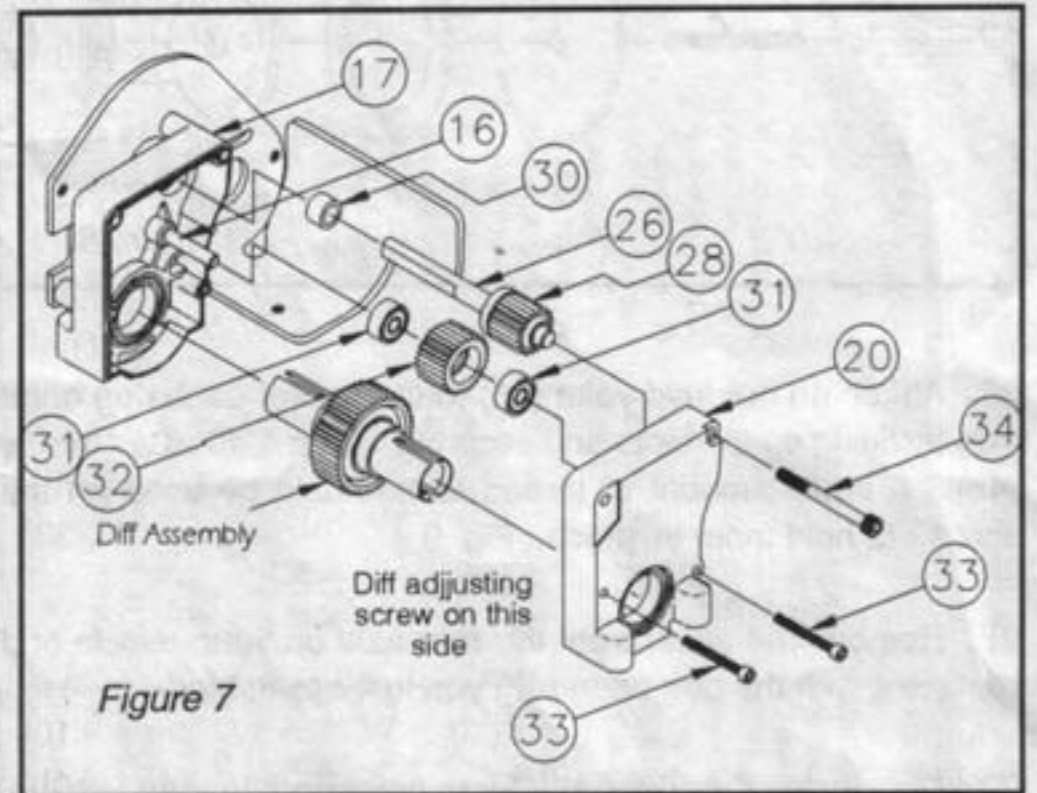


Figure 7

23. Slide the back plate (35) over the top gear shaft (26), aligning the flat sections of the shaft (26) with the flat sections of the back plate (35). Place the slipper pad (36) on the gear plate (37), and align the notches on the gear plate (37) with the notches on the slipper pad (36). Place the slipper pad (36) and the gear plate (37) over the top gear shaft (26), pad side first. Try to get this assembly as close to center on the shaft (26) as possible. Fig. 8 (Next Page)

24. Press a 3/16" x 5/16" bearing (19) into the center of the spur gear (38). The bearing will only go in about half way. *Do not try to force it further.* Carefully install the spur gear (38) with bearing side out. Lightly rotate the spur gear until the three posts line up with the holes in the gear plate (37). Snap into place being careful to keep the slipper pad (36) aligned. Fig. 8

25. Place the cup (39), open end out, over the shaft (26). Insert one thrust washer (40) then the thrust bearing (41) followed by the second thrust washer (40). These should all sit in the cup (39). Slide the slipper spacer (42), long side first, onto the shaft (26). The slipper spacer (42) should line up with the flat spots on the shaft (26) and sit in the center of the thrust bearing assembly. Place the spring (43) over the shaft (26), followed by the outer spring retainer (44) and secure with a 4-40 lock nut (45). Tighten the nut until it slightly compresses the spring (43). While doing so be sure that the slipper pad (36) stays aligned with the gear plate (37). Fig. 8

*\* Final slipper adjustment should be made after the transmission is installed.*

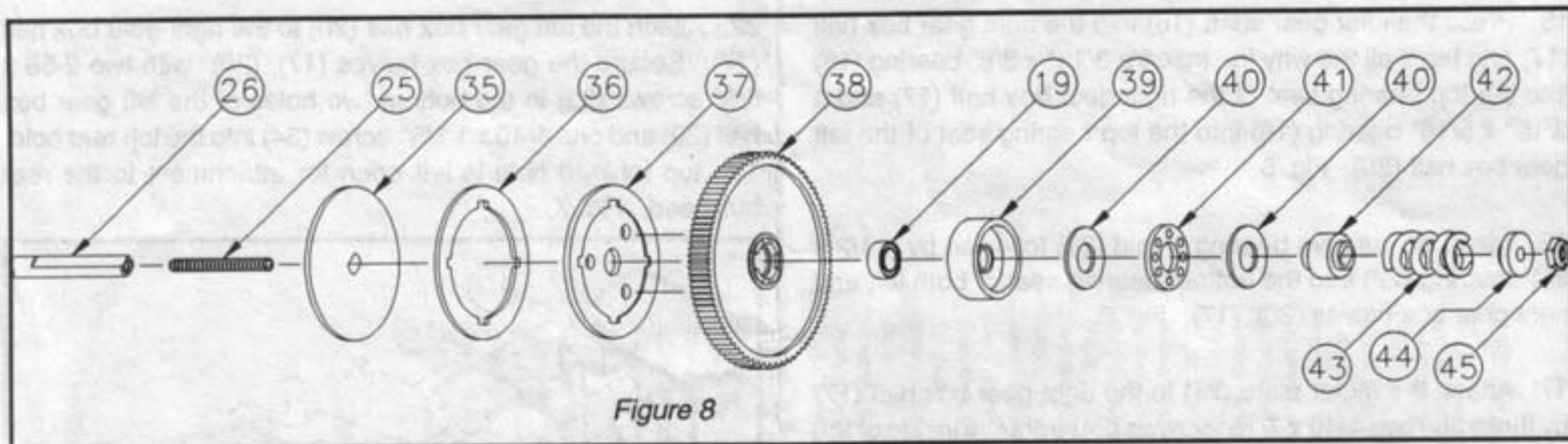


Figure 8

26. Attach an outdrive yoke (46) to the end of each dog bone (47) by lining up the slots and securing with a 4-40 x 3/8" screw (48). A small amount of thread lock should be used on the screws to hold them in place. Fig. 9

27. Remove the slider from the rear axle on your vehicle and replace it with the dog bone (47) you just assembled.

28. Now install the "Double X" transmission into your vehicle. Be sure and insert the dog bone (47) on each side, into the outdrive on each side of the transmission. Attach the transmission to the chassis with the same screws that held the stock transmission in place. Place the 4-40 x 1 3/4" screw (6) through the rear bulkhead and the transmission, and into the motor plate. (\* Note: If you had to grind the slot in your chassis, make sure that the slot is deep enough, and the transmission is all the way down and straight).

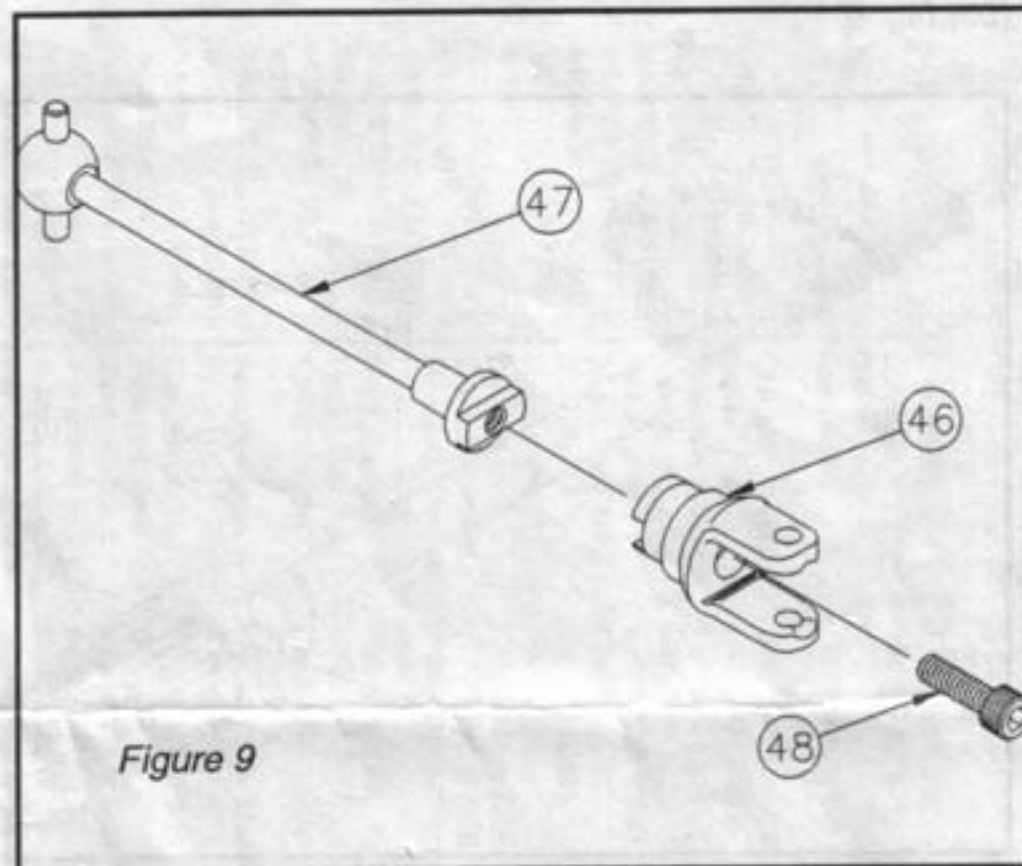


Figure 9

## Double X Retro Tranny Tips

### DIFF ADJUSTMENT

The differential adjustment on the Double X transmission is a very simple procedure. It requires no disassembly or removing of parts. On the left diff outdrive, line up the slot in the screw with the groove in the outdrive. Insert a small allen wrench through both the screw and the outdrive. This will keep the screw from turning. Now simply turn the right tire slowly. Remember a slight adjustment makes a big difference. Turn the tire clockwise to tighten the diff, and counterclockwise to loosen the diff.

Be sure that the diff is properly adjusted before running your vehicle. Never run the diff too loose! The diff is not designed to be a slipper. If the diff is set too loose and it slips excessively during operation, damage to the diff gear, diff balls and rings may result.

### DIFFERENT FINAL DRIVE RATIOS

The Double X transmission is offered in two different versions. The 2.61:1 ratio is designed for trucks while the 2.19:1 is designed for buggies. Both the car and the truck can use either ratio, but the best performance will be attained if the recommended ratio is used. (Note: The car uses a different length dog bone than the truck)

The transmissions final drive ratio can be changed if you desire. Such an adjustment makes the Double X transmission truly versatile. This change requires different gears and a different transmission housing. Simply changing to the different gears is not sufficient due to gear spacing. All parts are available from your local dealer.

### DIFF REBUILD

If the differential becomes rough or "gritty" feeling, it should be rebuilt. When rebuilding the diff, follow these recommendations. 1) Before removing any gears, mark one side of all the gears. When you re-assemble the transmission, install the gears with the marks on the same side as before. This assures

proper gear mesh. 2) Always replace the diff nut when rebuilding the diff. This makes for a better adjustment and keeps the diff adjustment from changing. 3) If only one side of the diff rings (large ones) have been used, flip them over to the fresh side. If both sides have been used, the rings should be replaced for best performance. 4) Check the outdrives for excessive wear. If the grooves where the dog bone pins ride have excessive wear, they should be replaced. These pieces are made from a very hard material and will last a long time. When they do start to wear out they can effect the handling of your car or truck, and should be replaced. 5) Clean the diff gear thoroughly. Clean out all of the diff ball holes and check the gear teeth for wear. If the teeth on the gear are becoming sharp on the edges, the gears in the tranny should be replaced. For maximum efficiency and to insure dependability, replace diff and idler gears between 40 to 45 charges. 6) Clean the diff balls. Use motor spray or a good parts cleaner to clean the diff balls. Be sure to regrease the diff balls before reassembling the diff. The diff balls in the Double X tranny are "Hard Balls". These diff balls last much longer than standard balls and should last through several rebuilds. 7) Re-grease the thrust bearing. The thrust bearing included with the Double X tranny is a high performance thrust bearing. This assembly should last a very long time if kept properly greased. 8) Change the thrust bearing dirt seal. The dirt seal on the end of the diff screw should be replaced when the diff is rebuilt. This will ensure proper sealing and help keep the diff clean. 9) Make sure that the bevelled washers are installed correctly. Refer to the instruction manual to ensure that these washers are reinstalled properly when rebuilding. If they are not installed right, the diff may be much more sensitive to adjustment.

## CLEANING THE SLIPPER

Occasionally, you should clean the slipper back plate. This will keep your slipper functioning properly and make it perform much better. To do this simply use a fine Scotch-Brite pad or a piece of extra fine sand paper (i.e. 600 or finer). Clean off any build up from the surface of the slipper back plate. The Team Losi slipper was designed so that only one side of the slipper pad will slip against the surface. Before reassembling, flip the slipper pad over so the fresh side will be used. If both sides have been used, the slipper pad should be replaced with a new one.

## HYDRA-DRIVE

The Team Losi Hydra-Drive slipper unit will bolt directly on to the Double X friction slipper. By adding the Hydra-Drive unit to the Double X transmission, even better handling characteristics can be achieved. See your local dealer for more info on the Hydra-Drive.

# GEAR CHART

The following are recommended gear ratios for the Double X transmission for both the car and the truck. Select your motor, gearbox ratio under car/truck and determine the pinion/spur gear combination:

TEAM LOSI MOTORS	CAR		TRUCK	
	2.19:1	2.61:1	2.19:1	2.61:1
24° Stock Motor	27 / 88	32 / 88	19 / 88	23 / 88
36° Stock Motor	25 / 88	30 / 88	17 / 88	20 / 88
45° Stock Motor	24 / 88	29 / 88	16 / 88	19 / 88
MTM (18 Turn)	25 / 88	29 / 88	18 / 88	21 / 88
Jr's Choice (17 Turn)	24 / 88	28 / 88	17 / 88	20 / 88
Big Ed (15 Turn)	22 / 88	26 / 88	15 / 88	18 / 88
Off Road Special (14 Turn)	21 / 88	25 / 88	14 / 88	17 / 88
Motown Missile (12 Turn)	19 / 88	20 / 88	13 / 92	14 / 88
Super Insane (11 Turn)	18 / 88	21 / 88	12 / 92	14 / 90

No.	Item No.	Description	No.	Item No.	Description
1	A-3073	Outdrive/Diff Half	26	A-3056	Top Gearbox Shaft
2	A-3072	Diff Tube	27	A-3075	1/16" x 5/16" Roll Pin 2.19:1
3	A-3078	Diff Nut		A-3077	1/16" x 5/16" Roll Pin 2.61:1
4	A-3078	Diff Nut Carrier	28	A-3075	Top Gear 2.19:1
5	A-3078	Beveled Washers		A-3077	Top Gear 2.61:1
6	A-6202	4-40 X 1/3/4" Screw	29	A-6103	.187 C-Clip
7	A-6907	5mmX8mmX2.5mm Bearing	30	A-3056	Top Shaft Spacer
8	A-3070	Diff Washer	31	A-6909	1/8" X 3/8" Bearing
9	A-3074	2.19:1 Diff Gear	32	A-3079	Idler Gear 2.19:1
	A-3076	2.61:1 Diff Gear		A-3080	Idler Gear 2.61:1
10	TL-4016	3/32" Hard Balls	33	A-3057	2-56 X 5/8" Screw
11	A-3078	Diff Adjustment Screw	34	A-3057	4-40 X 1-1/8" Screw
12	A-3078	Thrust Bearing Seal	35	A-3121	Slipper Backplate
13	A-3071	Thrust Washer (Small)	36	A-3123	Slipper Pad
14	A-3071	Thrust Bearing (Small)	37	A-3122	Gear Plate
15	A-6230	1/4" Shim	38	A-3908	88 T Spur Gear
16	A-3075	Idler Gear Shaft 2.19:1	39	A-3124	Slipper Cup
	A-3077	Idler Gear Shaft 2.61:1	40	A-3125	Thrust Washer (Large)
17	A-3054	Right Gearbox Half - 2.19:1	41	A-3125	Thrust Bearing (Large)
	A-3055	Right Gearbox Half - 2.61:1	42	A-3124	Slipper Spacer
18	A-6903	3/16" X 3/8" Bearing	43	A-3124	Slipper Spring .500 Long
19	A-6905	3/16" X 5/16" Bearing	44	A-3124	Outer Spring Retainer
20	A-3054	Left Gearbox Half - 2.19:1	45	A-6305	4-40 Locknut
	A-3055	Left Gearbox Half - 2.61:1	46	A-3083	Outdrive Yoke
21	A-3078	Outdrive Shield	47	A-3081	Dogbone (Buggy)
22	A-6908	1/2" X 3/4" Bearing		A-3082	Dogbone (Truck)
23	A-3002	Motor Plate	48	A-6206	4-40 X 3/8" Screw
24	A-3057	4-40 X 7/16" Screw			
25	A-3056	4-40 x 1" Set Screw			

**TEMPLATE FOR REMOVING CHASSIS MATERIAL  
FOR TRANSMISSION CLEARANCE**

GRIND  
1/16" DEEP  
IN SHADED  
AREA

FRONT  
OF  
CAR/TRUCK

