PALMRA

Pennsylvania Lawn Mower Racing Association

WELCOME to the BUILD CLINIC

Presented by PALMRA, the Pennsylvania Lawn Mower Racing Association

In association with:

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Who We Are.....

We are a local chapter (LC) of the **USLMRA** (United States Lawn Mower Racing Association). As an LC, we travel across PA, Maryland, New Jersey, and West Virginia. Our races are on dirt and grass surfaces that can usually fit inside something the size of a football field. Although we build for speed,

SAFETY is our ultimate goal. We race for trophies and bragging rights, always remember, WE ARE DOING THIS FOR FUN! Also keep in mind when building, **"you have to FIRST FINISH to FINISH FIRST!"** There is no written book as to how to build your mowchine, there are however rules and guidelines to build by. This clinic book will provide suggestions and tips that are all in compliance with the **USLMRA** rule book. Questions are always welcome and in most cases there are plenty of racers to help answer them, most of them enjoy hearing new ideas anyway, as long as it fits in the rule book. The rule book we will be talking about can be found at **www.letsmow.com** or through the links page at **www.PALMRA.com** .

RULE NUMBER 1: REMOVE YOUR BLADES

THE RACE CLASSES

All mowers and participants must meet strict safety regulations, and all mower blades must be removed. Mowers must have once been an actual mowing machine and production engine.

STOCK: Just that, remove the blades, drive it out of the shed, and take it to the track. 3650 rpm max (no to low budget)

Kids Stock: Same mower as above, but for our younger members.

Prepared Classes: Full bodied mowers with allowed modifications and engine size rules. Engines may be modified

IMOW: Same RPM, limited chassis mods, no less than 8:1 gearing. The "IROC" of lawn mower racing. Engines up to 15hp valve in block. (low budget)

J/P: This can be dads IMOW, put junior in the safety gear and let him race!

A/P: 8hp limit. Usually older small mowers that came with engines under 8hp

S/P: 12hp flat head engine limit. Your more common late model lawn mowers.

C/P: Same frame as the B/P class, 20 hp and lower OHV engines and opposed twin cylinders.

B/P: 20hp block v-twin engines. This class sounds like a pack of Harley's. The v-twins can be built to over 40hp with aftermarket engine parts. They have lots of power, but are big, heavy, and a hand full to drive. Fast and loud.

F/X: (*Factory Experimental*) Engine is limited to a single cylinder up to 28cid (12-14hp). Must be a mower engine. Lots of modifications allowed. Trans-drive open. This class while restricted power wise, are usually very light and can have a kart clutch, or torque converter drive systems.

STEERING

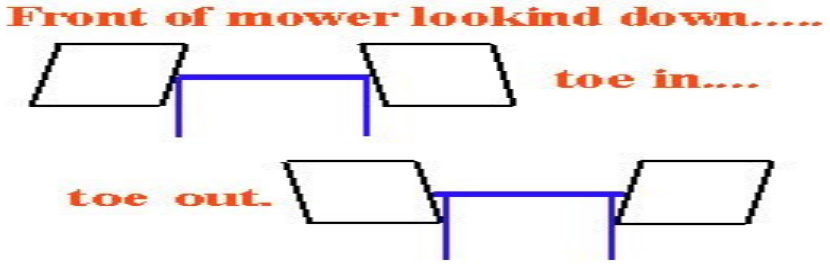
IMPROVED FOR SAFETY!!

Remember, stock is stock, NO MODS allowed!

Prepared class mowers have a live axle and want to go straight. We have to change the steering geometry…. On the prepared class mowers you will fabricate a new front axle to help widen and lower your mower. This is for all prepared classes including IMOW, JP and F/X. What you are doing is countering the forces of having a live rear axle. We will go over…….

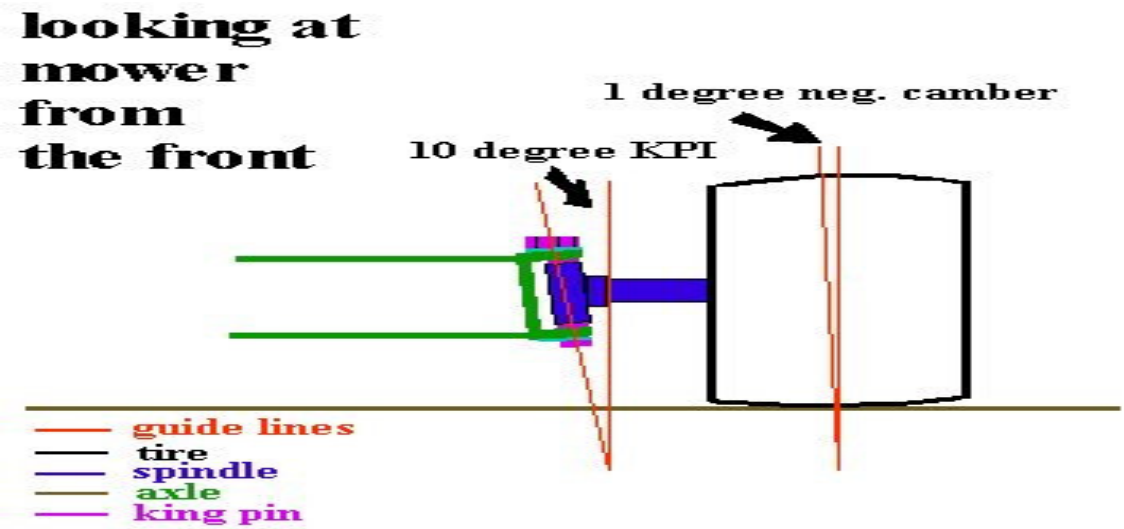
1. Toe Adjustment
2. Camber
3. King Pin Inclination
4. Caster
5. Weight Jacking

1. Toe Adjustment: *Toe in* or *toe out* is a measurement made when the mower is stationary and the steering is straight ahead. If the wheels are pointed in towards each other in the front it is known as *toe in*. If they are pointed away from each other it is *toe out*. The amount of toe is measured between the front of the wheel and the back. In our application we should have $1/16^{th}$ to $1/8^{th}$ toe out. This means the measurement between the front of the tires should be larger than the measurement of the rear. If the wheels *toe in*, you will have a mower that will wander from side to side. Always adjust both sides equally. When other adjustments are made always be sure to recheck your *toe*, as it will change.



Showing toe

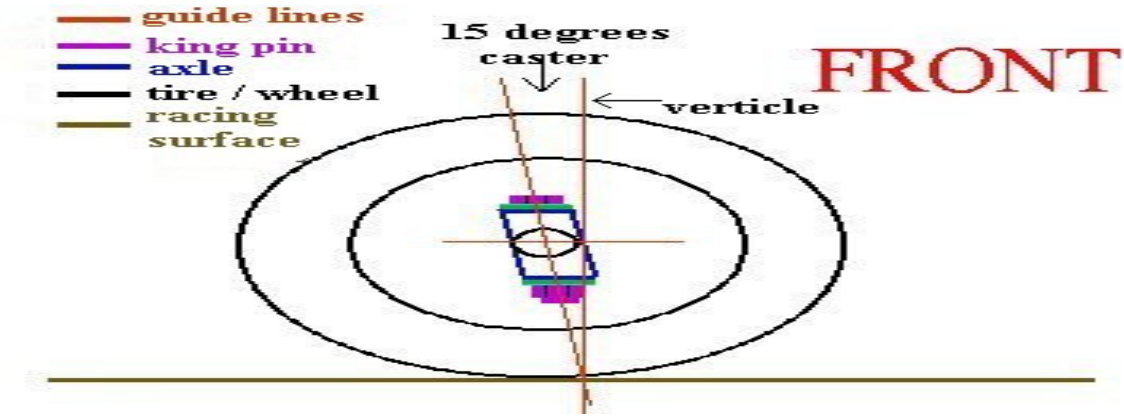
2. Camber: *Camber* is a very important angle. It is the angle that the tire will contact the racing surface. In our application we want to have *negative camber*. What this means is that the top of the tires will be closer together. This is easiest viewed from the front of the mower. We run *2 - 5 degrees of negative camber* on our mowers.



Showing Camber and king Pin Inclination

3. King Pin Inclination: Or *KPI*, is the angle of the king pin when viewed from the front of the mower. The king pin should be inclined toward the center of the mower at the top at a similar angle to the *CASTER* angle.

4. Caster: *Caster* is the angle of the king pin when viewed from the side. In our application *the king pin should always slope back at the top, we generally run 12 - 15 degrees*. This is called *positive caster*. *Caster* is an angle that will give stability to the mower in the straight ahead position and will contribute to *weight jacking* in the corners when the wheels are turned.

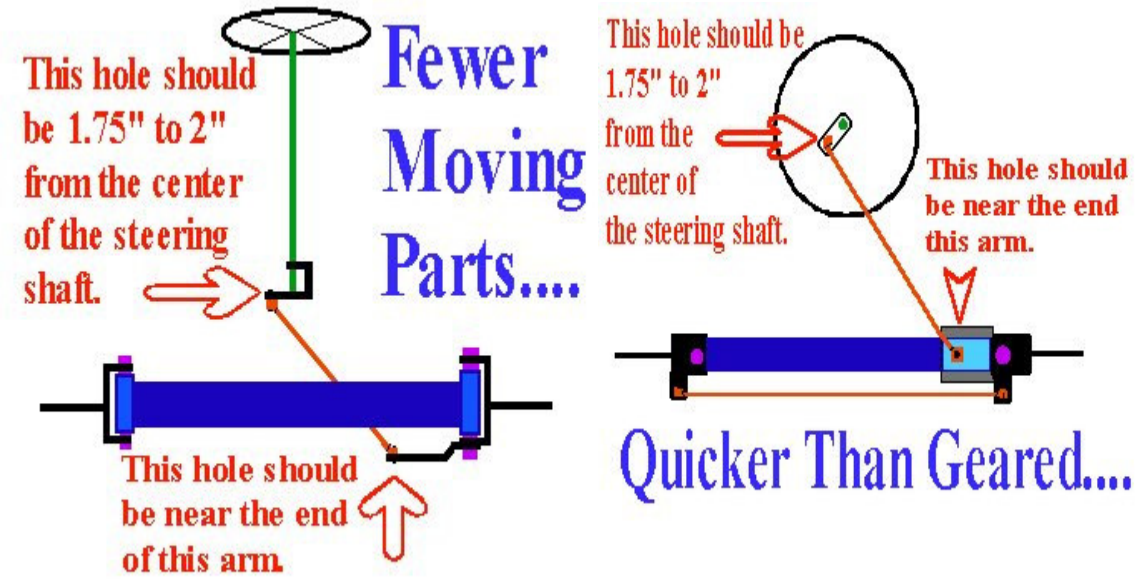


Showing caster

5. Weight Jacking: The effect of *caster* and *kpi* is to make the inside wheel "heavy" when the steering is turned. This means the inside front wheel is pushed down by the geometry and the outside front wheel raised. This *jacks the weight* diagonally across the mower, with the inside front and the outside rear taking most of the weight. Centripetal force will then transfer the weight to the outside front wheel, causing the inside rear to momentarily lift off the racing surface. This allows the mower to turn into the corner rather than push straight ahead. Remember both front wheels want to go straight ahead.

DIRECT STEERING

Direct steering uses fewer moving parts and is quicker than geared steering. On a direct steering setup, the steering shaft needs to extend beyond the bottom of the mower. If it does not, replace it with a longer shaft. It needs to be 2-3" below the bottom of the frame. Mount the shaft in bearings. The plate on the bottom that attaches the pitman arm to the front end will need to be a minimum of 2.5" long from the center. Build or use a drag link with adjustable ends to get the full left and right turning.



TROUBLE SHOOTING- if you are getting rollover in one or both directions make stops from angle or flat bar and weld them to the place on the frame just before rollover begins
TROUBLE SHOOTING- if you are getting more movement to the left, then shorten the drag link….more movement to the right, lengthen the drag link

Typical Geared Steering

Use better tie rod ends

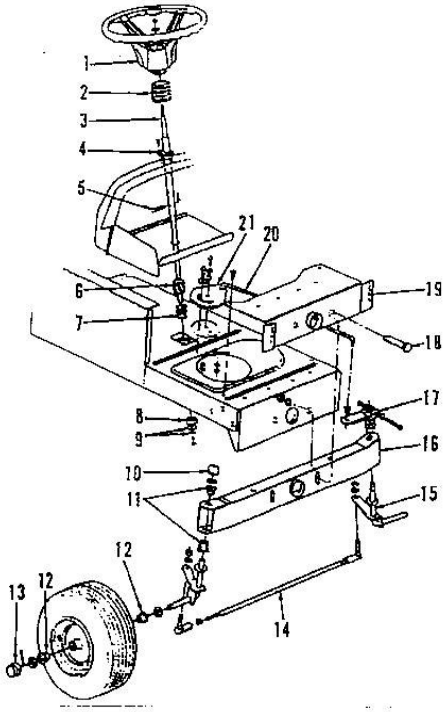


Fig. MTD3—Exploded view of front axle and steering system used on all 500-600 Series and Models 700-701-702 703-704-705-706-714-715

1. Steering wheel
2. Bellow
3. Steering shaft extention
4. Bushing
5. Clevis pin
6. Steering shaft & gear
7. Bushing
8. Spacer
9. Washers
10. Push nut
11. Spindle bushings
12. Wheel bushings
13. Hub cap
14. Tie rod
15. Spindle
16. Axle
17. Steering arm
18. Shoulder bolt
19. Pivot bracket
20. Drag link
21. Gear segment

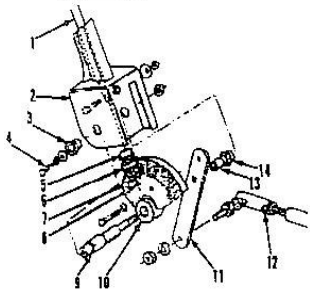


Fig. MTD4—Exploded view of steering gear assembly used on Model 966A.

1. Steering shaft
2. Bracket
3. Bushing
4. Cap screw
5. Bushing
6. Pinion gear
7. Washer
8. Nut
9. Shaft
10. Segment gear
11. Steering arm
12. Drag link end
13. Spacer
14. Nut

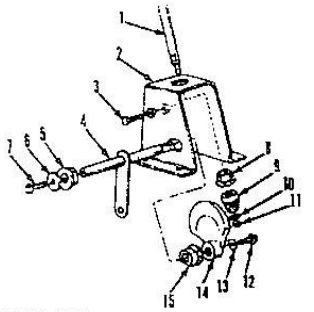


Fig. MTD5—Exploded view of steering gear assembly used on all 700-800 Series except Models 700-701-702-703-704-705-706-714-715.

1. Steering shaft
2. Bracket
3. Cap screw
4. Steering arm
5. Bushing
6. Washer
7. Cap screw
8. Bushing
9. Pinion gear
10. Washer
11. Nut
12. Cap screw
13. Washer
14. Segment gear
15. Bushing

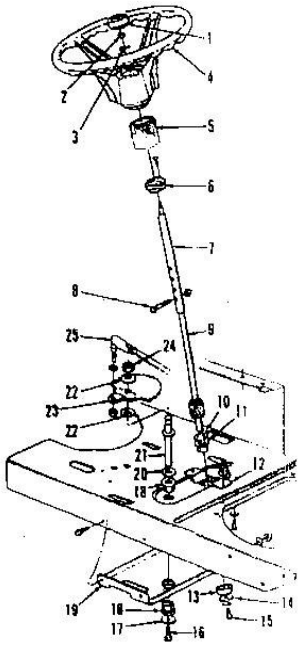
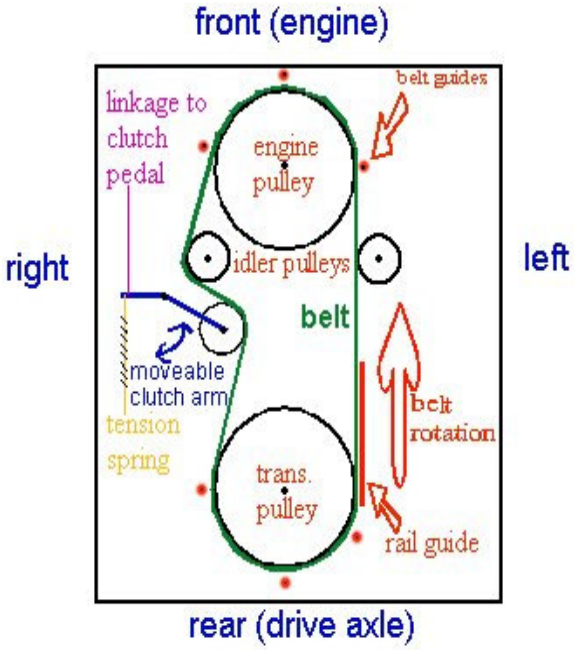


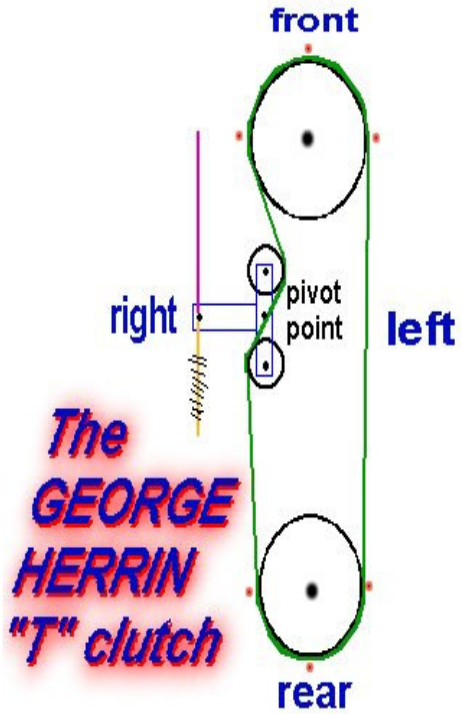
Fig. MTD6A—Exploded view of steering mechanism used on 800 Series Models 840 through 848

1. Cap
2. Nut
3. Belleville washer
4. Steering wheel
5. Bellows
6. Bearing
7. Upper steering shaft
8. Bolt
9. Lower steering shaft
10. Washer
11. Hex bushing
12. Support
13. Spacer
14. Washer
15. Screw
16. Screw
17. Washer
18. Bearing
19. Idler support bracket
20. Washer
21. Segment gear stud
22. Belleville washer
23. Segment gear
24. Nut
25. Drag link

CLUTCHES & BELT GUIDES

How do I make the pulleys work??????? KEEP IT SIMPLE!
Looking at the bottom of the mower, as if it were up on its rear wheels.





TIRES

tires

They must be lawn mower tires……(except the FX class) The following are a few popular tread patterns.

Ribbed

Turf Saver

Turf Mate

Turf Saver II

Popular sizes…..

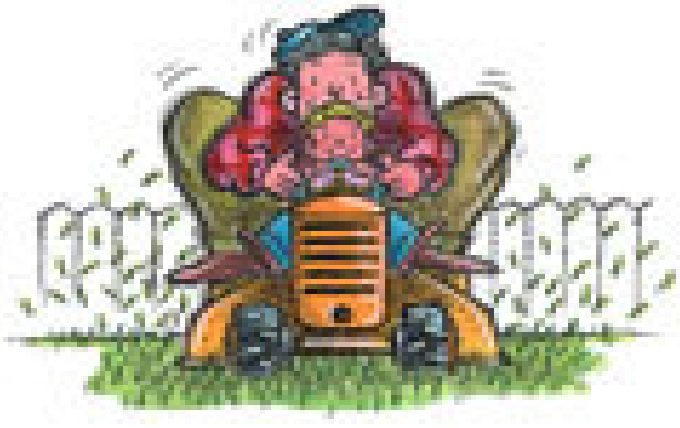
	B/P	C/P	S/P	A/P	JP/IMOW
Front	13x6.50-6	13x6.50-6	13x5-5	11x4.0-4	15x6.5-6
Rear	16x6.50-8	16x6.50-8	16x6.50-8	13x6.5-6	16x6.5-8

Refer to the rule book for specific IMOW and JP tire size.

BRAKES

Brakes MUST be improved….Most mowers run a kart style brake on the rear axle. It may be mechanical or hydraulic. Front brakes are allowed but can be expensive. Rear brakes can be found at racing kart suppliers, or on EBAY. Expect to pay more for hydraulic brakes ($100.00 to $200.00) than mechanical (up to $100.00 for a complete set-up).

All prepared class mowers must have a working axle brake, no engine brakes or transmission brakes are permitted.



TRANSMISSIONS

What type will work for you?

1. The gear box and chain driven axle……

Most racers run the peerless 700 style gear box with a kart type chain driven rear axle.

The following information was provided by George Herrin

Here's what I do to 700 series trannies, I find them in Junkers and pay as little as possible for them generally horse trade or whatever, Anyways here goes...

I first off clean all the benonite grease out of them that's that black muck that you find when you open them. Clean them thoroughly. Do not put the brass bushings in degreaser or spray them with carb cleaner, they are impregnated with oil and yes I use them. I do not put needle bearings on the shafts. Once everything is clean I inspect all parts, The shift keys get a good look at the engagement tips, if they are chipped or show signs of much wear REPLACE them. Everyone has their own opinion on how many shift keys to use, some like the 4 key shafts, which only come in the newer trannies, and if you order one for the older that's what you will get they don't make the two keys anymore. I use what's in them. I have run a two key shaft every since I started running the 700 series Tranny. I have never broken a key. Only had one dnf for a tranny and it wasn't a key I bounced real hard never lifting and ripped the input out but it was two years old. (Race wise). Now look at the inside of all gears off the shift shaft make sure all the corners are square and not chipped or rounded. If everything is in good shape great. If not you will need to replace the damaged gear.

Now check the input shaft for wear and the needle bearings, if all is good then I put some automotive grade bearing grease in the input shaft keeping a finger over one end I put the shaft back in which presses the grease into the bearings packing them well. I do not put the O-ring back in I replace it with an oil seal which can be gotten from Tecumseh or even a Napa store. I sometimes put an extra flat washer on before I put the snap ring back on to remove all the play. If you have to replace the input shaft bearings I use an old bearing and grind the ends down to make a spacer between the two bearings to keep them from walking towards each other. They have been known to do this on some cases once bearings have been replaced.

Now I do replace the input and bevel gear with steel gears, if the rest are not steel no biggie, that's what I use, I use what is in it, and have never broke but one gear and it was 5th gear the 19 tooth 5th gear counting the one on the shift key shaft. I also remove the reverse chain and sprockets. I do not put spacers back in their place. Everything will work fine without them.

Now I gear to race in third, which both gear's in most trannies especially a 5 speed will count 25 teeth each. If you forget which gear matches what, no worries the two from each shaft will always add up to 50 teeth.

Now I add a touch of the bearing grease on the ends of the shafts before I put the brass bushings on. This gives a little lube before the oil gets to them. Once everything is

assembled and before you put the top case on put some perma-gasket of your choice on the bottom case to seal the top to it. I also lift each shaft and put a little under each bushing and then a film on top of each, only if it's an open case type end though, this is one less place the oil can leak out.

While that's setting up add app. 8 ounces of gear lube, type and weight is your choice, I use 80/90 Wal-Mart brand. If you have no way of measuring the amount of oil, with the case level, simply add enough oil to cover the input gear.

Now I use all 6-mount holes to bolt it down and the whole I cut for the input shaft is a very snug fit. I only use 1/4-inch thick plate for a tranny plate.

Now for the do it yourselfer E.C. Distributing has a cnc precision cut trans plate that will fit most anyone's application in building their race mower. They sell for 45.00. They also have an idler sprocket bracket assy. Bolts to the bottom of the trans plate and can bolt a idler of your choice to it. They have two plates specific dimensions are 10.5 w x8 and 13w x8. The first being designed to be an exact fit for a Murray wide body and the second being a direct fit for the box frame MTD chassis. Both are universal and usable in many chassis setups. They come with a bushing that once you bolt the tranny in place it slides over the input shaft centering itself on it and supports it all the way to the base of case. You weld it in place and end result you have one heck of a tranny plate.

That pretty much sums what I do to them simple, cost efficient except the two gears that you replace, and works very well. I don't hot rod my mowers nor run them on pavement very much. If the motor is running, and I am not moving, the clutch is in. Look at it this way its less wear and tear on the tranny pulleys and belts, basically the whole drive train.

Now below is all the part numbers for everything I use in or on the tranny from Tecumseh.

700 series parts and no.
7 tooth sprocket 786077
8 tooth sprocket 786047
10 tooth sprocket 786076
12 tooth sprocket 786095
15 tooth sprocket 786111
Steel bevel gear 778154
Steel input gear 778153
Shifter key 792089A
Flanged Bushing 780105A
Input oil seal 788083
Input Needle Bearings 780086A
Input Shaft 776135

These are all Tecumseh part no. There is an after market oil seal also it is a Federal Mogul no. 340387 you can obtain at most car parts stores i.e. Napa etc

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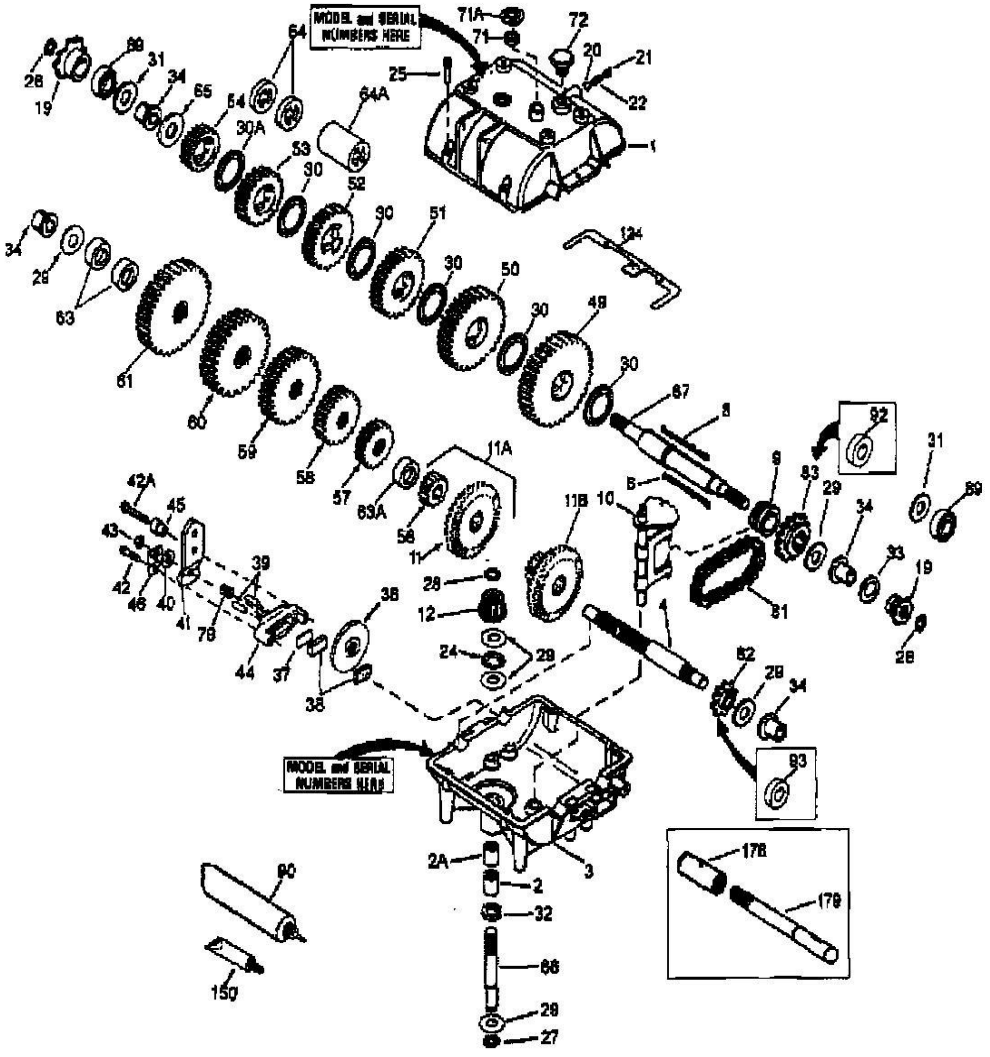
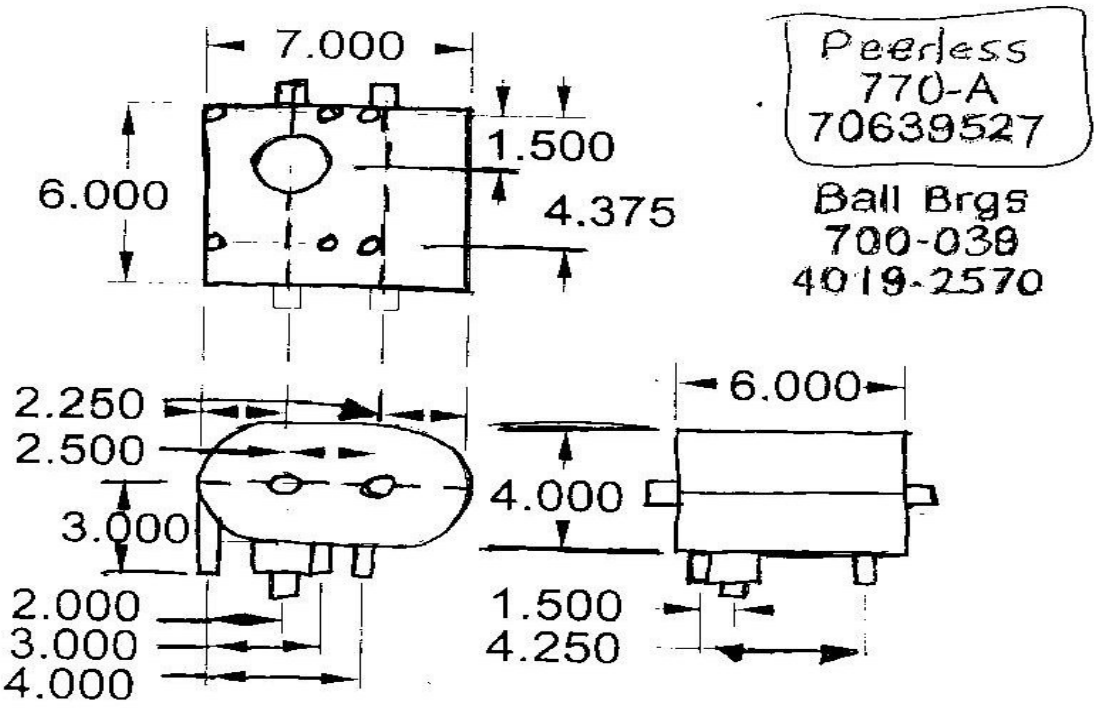
George Herrin BP#6 http://www.askec.net
2005/2004 BP USLMRA/Stabil National Points Champ http://www.eccarburetors.com/
2004 USLMRA Driver of the Year http://www.arcracing.com
2004 SP USLMRA/Stabil 2nd National points
Herrin Mower Sports Racing Team/Fat Boyz Racing
Hohenwald Tn. 38462
wk... 615-446-6807

ILLUSTRATION SHOWS TYPICAL PARTS ONLY. ORDER BY PART NUMBER. PARTS NOT LISTED ARE SUPPLIED BY OEM.



Ref #	Part Number	Qty	Description
1	772083A	1	Transmission Cover
2	780086A	1	Needle Bearing
2A	780142	1	Needle Bearing
3	770061A	1	Transmission Case
4	776134	1	Countershaft
8	792089A	4	Shift Key
9	784266	1	Shift Collar
10	784376	1	Shift Rod & Fork
11	778154	1	Bevel Gear (42 teeth)
12	778176	1	Bevel Pinion (14 teeth-steel)
20	792077A	1	Ball 5/16" Dia.
21	792078	1	Set Screw, 3/8-16 x 3/8"
22	792079	1	Spring
24	780071	1	Thrust Bearing
25	792073A	6	Screw, 1/4-20 x 1-1/4"
27	792035	1	Retaining Ring
28	788040	1	Retaining Ring
29	780072	6	Washer
30	780108	5	Washer
32	792001	2	"O" Ring
34	780105A	4	Flanged Bushing
49	778146A	1	Spur Gear (37 teeth)
50	778125	1	Spur Gear (35 teeth)
51	778239A	1	Spur Gear (32 teeth-steel)
52	778124A	1	Spur Gear (30 teeth)
53	778123A	1	Spur Gear (25 teeth)
56	778145	1	Spur Gear (12 teeth-steel)
57	778151	1	Spur Gear (15 teeth)
58	778240	1	Spur Gear (18 teeth-steel)
59	778126A	1	Spur Gear (20 teeth)
60	778127A	1	Spur Gear (25 teeth)
65	780139	1	Washer
66	776135	1	Input Shaft (3-11/16" long)
67	776402	1	Shifter & Brake Shaft
71	788069	1	Square Cut Ring
72	792074	1	Threaded Plug
81	786081	1	Roller Chain (No. 41 chain, 24 links)
82	786082	1	Sprocket (9 teeth)
83	786083	1	Sprocket (18 teeth)
90	788067B	1	Grease (32 oz. bottle Bentonite greas e)
150	510334	1	Gasket Eliminator (Loctite #515)
178	786176	1	Coupling (Optional)
179	776401	1	Connector Shaft (Optional)

Peerless



Showing peerless 700 measurements

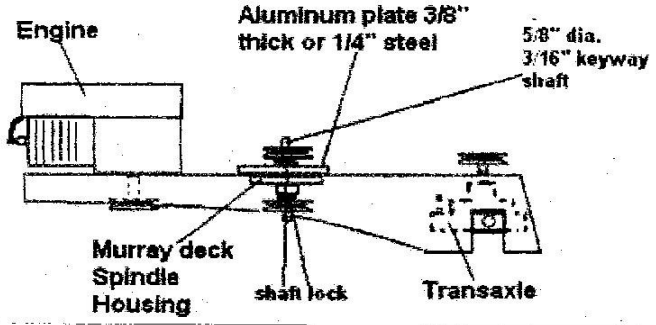
Or……

2. A Transaxle and Jackshaft

This option requires the use of a jackshaft. Keep in mind the axles must be “locked”.

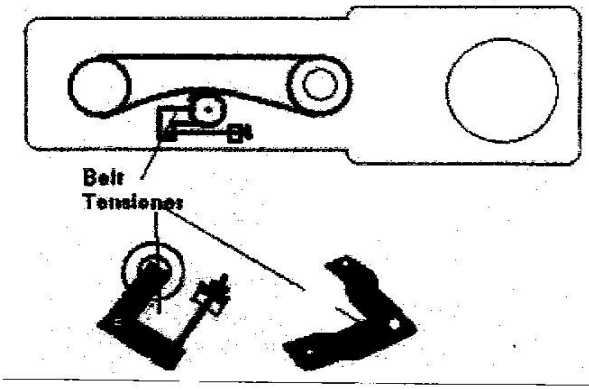
HOW TO BUILD A JACKSHAFT

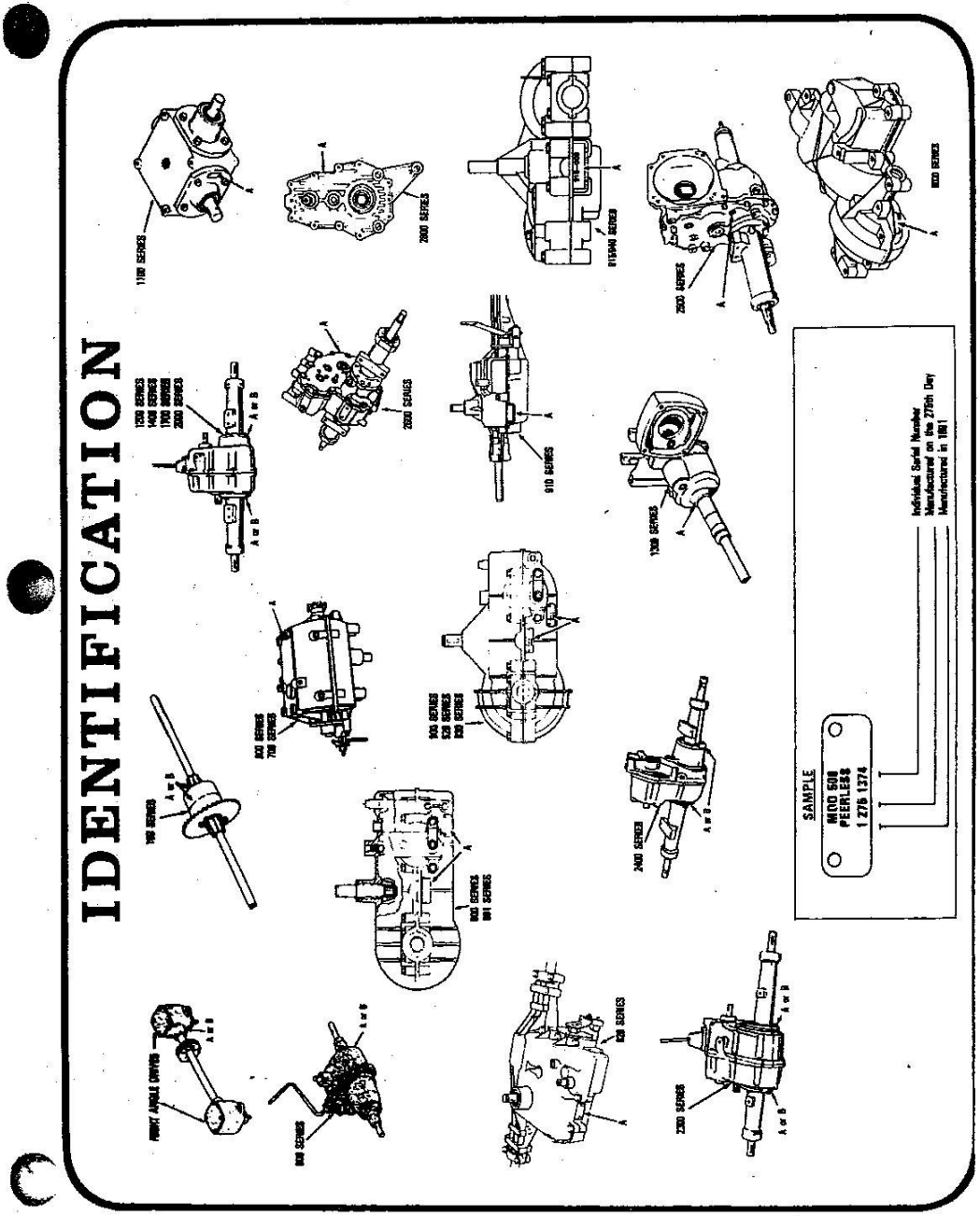
WHEN YOU RAISE THE TRANSAXLE UP TO LOWER THE MOWER THE PULLIES WILL NO LONGER LINE UP. YOU WILL NEED TO INSTALL A JACKSHAFT AND AN UPPER AND LOWER BELT SYSTEM. TO INSURE A RELIABLE SETUP FIRST STRENGTHEN YOUR FRAME WITH AN ALUMINUM OR STEEL PLATE. A MURRAY DECK SPINDLE (PART # 55962) OR 2 CAST FLANGE BEARINGS MAY BE USED TO SUPPORT THE JACKSHAFT. USE A 5/8"X 3/16"KEYWAY SHAFT.



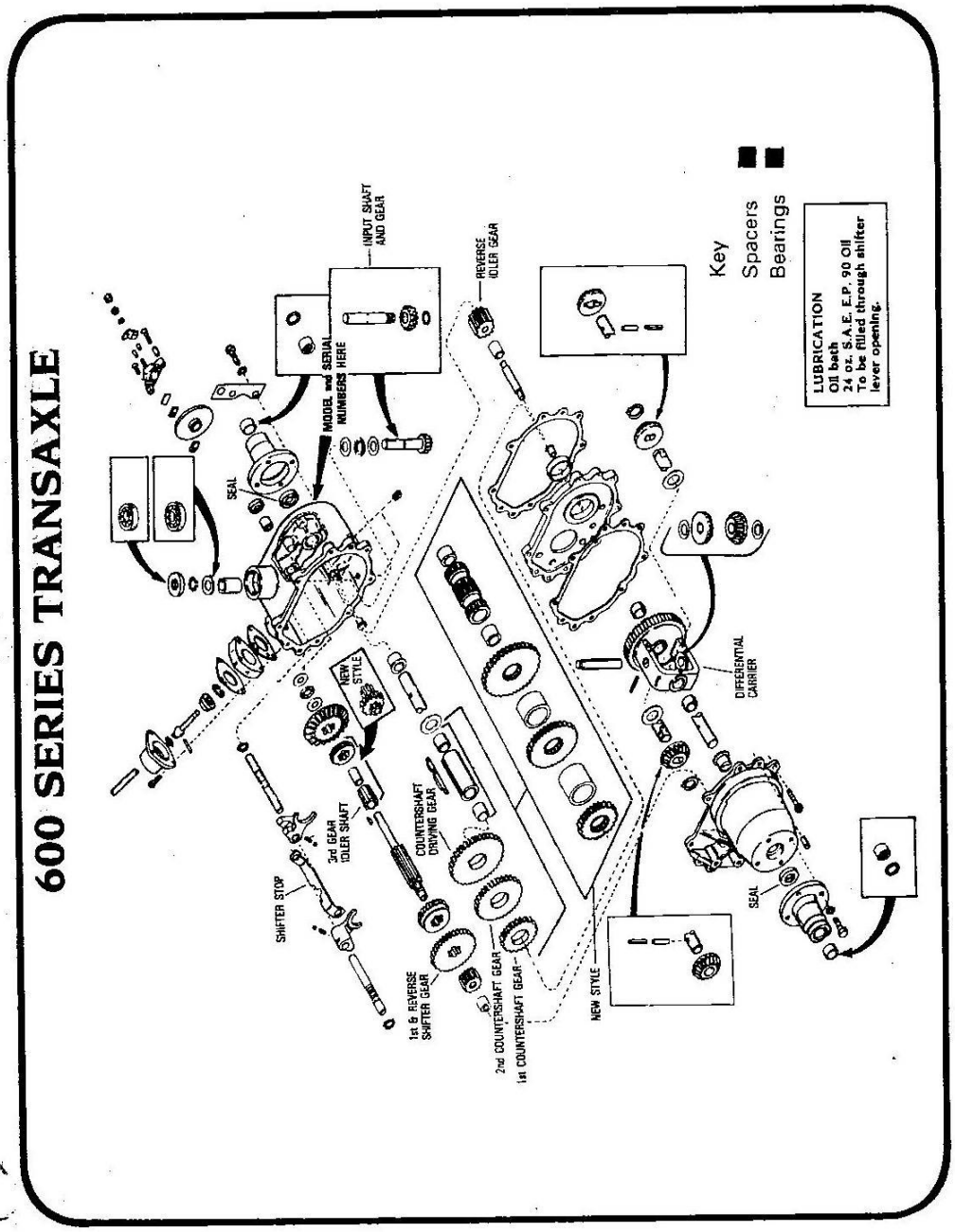
UPPER BELT TENSIONER

YOU NEED CONSTANT BELT TENSION ON THE UPPER (OR REAR) BELT. USE AN OLD MOWER CLUTCH ARM OR BUILD ONE SIMILAR TO THE DIAGRAM. ON THE LOWER OR FRONT BELT IS WHERE THE CLUTCH IDLER WILL BE LOCATED.




IDENTIFICATION
SAMPLE
M100 500
PEERLESS
1 275 1374
Individual Serial Number
Manufactured on the 275th Day
Manufactured in 1981

600 SERIES


600 SERIES TRANSAXLE
INPUT SHAFT AND GEAR
REVERSE IDLER GEAR
MODEL and SERIAL NUMBERS HERE
SEAL
NEW STYLE
3rd GEAR IDLER SHAFT
COUNTERSHAFT DRIVING GEAR
SHIFTER STOP
1st & REVERSE SHIFTER GEAR
2nd COUNTERSHAFT GEAR
1st COUNTERSHAFT GEAR
NEW STYLE
DIFFERENTIAL CARRIER
SEAL
Key
Spacers
Bearings
LUBRICATION
Oil bath
24 oz. S.A.E. E.P. 90 Oil
To be filled through shifter lever opening.

PEERLESS 800 SERIES TRANSAXLE

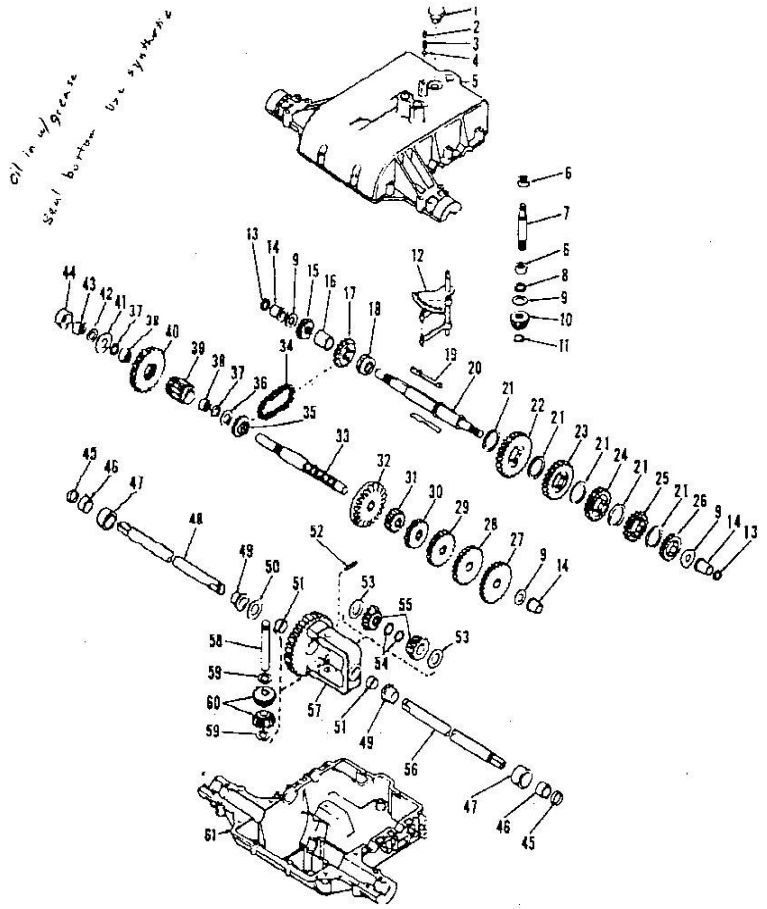


Fig. M18—Exploded view of transaxle used on all models except 39004.

1. Plug
2. Setscrew
3. Spring
4. Ball
5. Cover
6. Needle bearing
7. Input shaft
8. Square cut ring
9. Thrust washer
10. Input pinion
11. Snap ring
12. Shift fork assy.
13. Square cut ring
14. Bushing
15. Spur gear (15 T)
16. Spacer
17. Sprocket (18 T)
18. Shift collar
19. Key
20. Brake shaft
21. Thrust washer
22. Spur gear (37 T)
23. Spur gear (30 T)
24. Spur gear (25 T)
25. Spur gear (22 T)
26. Spur gear (20 T)
27. Spur gear (30 T)
28. Spur gear (25 T)
29. Spur gear (25 T)
30. Spur gear (20 T)
31. Spur gear (12 T)
32. Bevel gear (42 T)
33. Countershaft
34. Roller chain
35. Sprocket (9 T)
36. Flat washer
37. Square cut seal
38. Needle bearing
39. Output pinion
40. Output gear
41. Flat washer
42. Square cut seal
43. Needle bearing
44. Spacer
45. Oil seal
46. Needle bearing
47. Spacer
48. Axle shaft
49. Bushing
50. Washer
51. Bushing
52. Pin
53. Thrust washer
54. Snap rings
55. Bevel gear
56. Axle shaft
57. Differential gear & case assy.
58. Pinion shaft
59. Thrust washer
60. Bevel pinion
61. Case

Junior Prepared & IMOW

Same mower, different classes, different drivers……

This class is a prepared class for drivers 10-16 yours old (junior prepared) as well as their parents or anybody 16 years old and above (adult super stock).

Letter designation will be JP/IMOW

1. Type - mower will be a full size lawn tractor, 39" minimum unaltered wheelbase. Front engine, steering column behind engine. Stamped steel frame.

2. Engine - 1 cylinder valve in block (flathead), governed at 3650 RPM max, will be checked before and after the race. Engine MAY NOT be modified internally or externally except for an open exhaust and air filter.

3. Driveline - may use transaxle or shiftable mower transmission and chain drive. Live rear axle permitted.

Gear Ratio – 8 to 1

- We will measure the gear ratio with a marked distance on our tech drive thru board. You may not exceed the prescribed distance. These ratios will give the mowers equal speeds of 22-23 MPH.

4. Body - must be stock, original to make and model being entered. No external modifications. Hood must be secure.

5. Frame - discrete strengthening allowed. 5/8th minimum diameter front spindles. Front axle may be fabricated, substituted, or reinforced. Machine may be widened to 38" max width, 4" minimum ground clearance, deck 2.5" minimum ground clearance. Deck may be one piece or deck halves attached to running boards at least as wide as running boards. Not to exceed 2" beyond tire sidewall on each side. Decks must be secure.

6. Wheels - front - metal rims 6" diameter with 15" diameter tires
rear - metal rims 8" diameter with 16" diameter tires

15 PSI max tire pressure

Rims may be reinforced on the inside (back) only.

7. Mowers must be equipped with an automatic throttle closing device (dead mans throttle). It can be hand (mounted on steering wheel) or foot operated. All mowers must be equipped with a commercially available tethered kill switch, which will turn off the ignition if the driver leaves the mower. Lanyard will be no longer than 40" tip to tip in stretched out length. No

Velcro, and no kill switch by-passes permitted.
8. Modifications not listed are not allowed!
Intent: These machines are essentially a SP class mower with a restricted speed and fewer modifications allowed. This will allow our younger racers a low cost but very competitive class of racing. As experience is gained (and age 16 is reached), these machines can be upgraded to an SP class machine.

The JP class is not yet recognized at the national level.

1. Arrive a minimum of TWO hours before the listed race time.
2. GO TO THE REGISTRATION TABLE.
    A. sign waiver
    B. get wrist band - driver and one crew member admitted at no cost
        all others must purchase pit pass at a cost of $5.00
3. Sign up for class(es) you are running and draw pill for starting position
4. Unload mower(s) and prepare for tech inspection
5. Line up in designated tech line
    A. after you pass inspection you will get a sticker on your hood
6. Move mower back to your pit area or staging area
7. Check lineup board for running order of classes and where you start

BE READY WHEN YOUR CLASS IS CALLED

Ask how you can help with the running of the remaining events…..
    We are always looking for corner flaggers and lap counters

HAVE A SAFE RACE

ON TRACK RACING PROCEDURES

Be ready to race, have all safety equipment in place, and know your starting position and when class is called drive mower to designated starting position at the start/finish line.

The track official will line you up. Our local chapter races are rolling starts and line up like NASCAR… 1st 2nd
3rd 4th
5th 6th
And so on…

After you are lined up and the chief starter decides everything is set, you will be motioned to go. There will be two parade laps with the green flag waved at the end of the second lap. Stay in order and close together until the green flag waves.

FLAG RULES

GREEN FLAG: The green flag indicates the start or restart of the race.

YELLOW FLAG: The yellow flag indicates that there is a potentially hazardous situation on the racing surface. There are two types of cautions: a local caution is for a spin, or a stopped mower on the racing surface. A full course caution is for an accident involving one or more mowers. It requires that all drivers slow down immediately, exorcise caution, and maintain or resume their positions in the field. WATCH THE MAIN FLAGMAN FOR A FULL COURSE CAUTION. All mowers must assume their positions in the field as of the last completed green flag lap as designated by the officials. If the yellow flag is displayed during the first lap, there will be a complete re-start.

RED FLAG: The red flag requires all mowers to stop as soon as they can in a safe and cautious manner, and PULL THE TETHER/KILL SWITCH to kill the engine, due to an unsafe condition. If the red flag is displayed during the first lap there will be a complete restart.

BLACK FLAG: A mower receiving a black flag must go immediately to the pit area. The scoring of any mower in which the driver ignores the black flag will be discontinued.

PASSING FLAG: (blue with a yellow stripe) This is an advisory flag which indicates that a faster mower (or mowers) is overtaking the mower which is being signaled.

WHITE FLAG: The white flag indicates to each driver that he is starting his last lap.

CHECKERED FLAG: The checkered flag signifies the end of the event.

PALMRA

Pennsylvania Lawn Mower Racing Association

Technical Inspection Sheet

This section to be completed by registered driver prior to entering tech line. (please print)

Driver name:_____ Mower Type:_____

Circle one class per sheet: STOCK IMOW JP A/P S/P C/P B/P F/X

Racing Number:_____ Location:_____ Date:_____

Personal Safety Equipment	**Pass / Failed**
Helmet (full face, in good condition) DOT / Snell rated	/_____
Goggles or Shield	/_____
Neck Brace	/_____
Proper Apparel (long pants, long sleeves, over ankle leather footwear)	/_____
Fire Extinguisher (10bc) per pit	/_____

Mechanical Safety Equipment	**Pass/ Failed**
Secure Deck (complete for all STOCK classes) and blades removed	/_____
Legal Kill Switch (tether at 40"max.) (seat switch for stock)	/_____
Positive Throttle Return (non stock classes)	/_____
Brakes Work and Hold Properly	/_____
Fuel Line Clamps at all joints	/_____
Steering and Linkages tight and secure, no excessive play	/_____
Front Axle (one piece, not aluminum)	/_____
Proper Wheel Retainers on all Wheels	/_____
Positive Terminals Covered at all points	/_____
Battery Secured with Metal Strap	/_____
No Sharp or Protruding Objects	/_____
Exhaust Down and Away	/_____

General Rules Compliance	**Pass/ Failed**
Engine (size and mod's allowed by class)	/_____
Engine RPM according to Class___Pre race:_____PostRace:	/_____
Shift-able Drive Train(except F/X)	/_____
Gear Ratio According to Class	/_____
Tire and Wheel Size according to class and 20"max except for stock	/_____
Unaltered Wheelbase AP=34" SP=39" CP=42" BP=42" min. zero tolerance	/_____
Max. Width 38" sidewall to sidewall	/_____
STA-BIL Sticker on Front and Right side in Clear View	/_____
Sheet Metal Correct and Complete for Prepared Classes	/_____
Check Frame for Discreet Strengthening and Illegal Alterations	/_____
Frame Height 4"	/_____
Deck Height 2" and NO More Than 2" Beyond Tire Sidewalls	/_____
FX Sheet Metal Appearance Resembles a Mower	/_____
FX Requirements With-in Build Guidelines	/_____

Tech Results: Passed: pre -race_____ post-race_____ Failed:_____

Inspectors Name:_____ Comments for Racer:_____

_____

The PALMRA Tech Sheet will be used as a guide to promote safe and competitive racing. The Tech Sheet may also be used as a guide when building a racer.

MOW INFORMATION……

Some places to obtain mowers… front yards, back yards, dealer yards, and your yard. There are a ton of mowers out there just waiting to be racers. Check out these parts suppliers:

JC Specialty - Penns Creek PA 570-837-0042
www.jcspecialty.net

American Power Sports - Newbury Ohio 440-564-8100
www.apdkarting.com

Kart World - Painsville OH 440-357-5569
www.kartworld.com

Northern Tool and Equipment - Burnsville MN 1-800-556-7885
www.northerntool.com

Paul B. Zimmerman Inc. - Ephrata PA 717-738-7350
www.pbzinc.com

Try any industrial supply, go-kart shop, farm equipment, or hardware store. A good place to get belts is Tractor Supply Company. They carry Kevlar reinforced belts and lots of other useful items such as hardware, tires, etc…..

TRL Mowersports, I always have parts and mowers around, email me @ trlrace@webtv.net or toms580@yahoo.com

PALMRA has two websites to get info from, our main site is www.palmra.com and our forum site is http://sports.groups.yahoo.com/group/PALMRA/ . There are more links to parts and info at palmra.com, and also this is where you will find our schedule and directions to the tracks, the points standings, have your bio posted, check out pictures from previous races, and view this build booklet online. A rule book can be accessed from www.letsmow.com which is the USLMRA site. Another forum site is www.heymow.com . Don't be afraid to ask questions, whether it be online in a forum, or at a race, feel free to ask.

We would like to thank George Herrin for his info on the transmission build up. Also any other source and provider of information for this build clinic. Thanks to all who view this information, any comments can be addressed through our links page at www.palmra.com . Now, if you're ready…….

"**On your mark……**

Get set……

MOW!!!!!!!!!!!!!!!!!"