

T390/T400/T430/T450

SERVICE MANUAL

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Chapter 1 .Introduction

This tractor service manual is for qualified service personnel engaged in servicing and overhauling 3510/4110/T390(T400)/T430(T450) tractor. Use of this publication is not recommended for field operators since they usually do not have access to special tools and shop equipment essential for most servicing.

Servicing procedures outlined herein contain sufficient information to return all component parts of a tractor to new condition. In discussion of each component parts, it is assumed that a complete overhaul is been performed, consequently, complete disassembly and reassembly are outlined. The mechanic is relied upon to decide how far disassembly must be carried when complete overhaul is not required.

Study unfamiliar service procedures thoroughly and clearly understood before attempting disassembly. Specific data essential for proper overhaul, such as running clearances and torque values, have been provided in interline of Inspection and reassembly procedures of each group section.

This manual was compiled from latest information available at time of publication. Manufacturer reserves the right to make changes at any time without notice.

Whenever the terms "left" and "right" are used, They means as viewed by the operator when seated in the operator's seat.

SAFETY INSTRUCTION

ALWAYS PRACTICE SAFETY BY THINKING BEFORE ACTION

AVOID FIRE HAZARDS.

- Keep fire extinguishers easily available and in good operating condition.
All relevant personnel should know how to operate fire fighting equipment.
- Keep a first aid kit in an easily accessible location.
- Do not smoke while handling fuel, or other highly flammable material.
- Do not use an open pail for transporting fuel.
- Use of an approved fuel container.
- Dispose of all fuel-soaked rags in covered containers where cigarettes cannot be dropped carelessly.
- Do not smoke and avoid open flame when charging, jumping, or boosting batteries.
- Batteries give off gas which is flammable and explosive.
- Do not charge batteries in a closed area. Provide proper ventilation to avoid explosion of accumulated gases.

Avoid acid burns.

- Wear safety goggles when handling battery electrolyte. It contains sulfuric acid which is a poison and can cause blindness. Avoid it contacting eyes, skin, or clothing. Sulfuric acid will eat through clothing and can cause severe burns to skin.

AVOID HIGH-PRESSURE FLUIDS

- 1) Before beginning work on hydraulic system components, turn off engine and operate hydraulic control levers to relieve internal hydraulic pressure.
- 2) Oil under pressure can penetrate skin and lead to personal injury. Treat sources of oil pressure with extreme care, wearing safety goggles.
- 3) If hydraulic leak develops, correct immediately. Escaping hydraulic oil can have extremely high pressure. A stream of high pressure oil may easily penetrate skin just like modern needless vaccination equipment, but with the exception that hydraulic fluid may cause blood poisoning. It is imperative that connections are tight and that all lines and pipes should be in good condition. If injured by escaping hydraulic fluid, see a doctor at once.

STAY CLEAR OF PTO

- 1) Entanglement in rotating drive line can cause serious injury or death.
- 2) Keep tractor master shield and drive line shield in place at all times except for special applications as directed in the implement operator's manual.
- 3) Wear fairly tight fitting clothing. Stop the engine and be sure PTO driveline is stopped before making adjustment, connections, or cleaning out PTO drive equipment.

SERVICE TIRES SAFELY




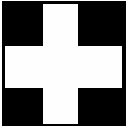
Tire changing can be dangerous and should be done by trained personnel using proper tools and equipment.

Do not re-inflate a tire that has been run flat or seriously under-inflated. Have it checked by qualified personnel.

Use wheel handling equipment adequate for weight involved when removing and installing wheels.

WARNING SIGNS IN THIS MANUAL

The following warning symbols in this manual draw additional attention to items of importance for the safe and correct operation of the tractor.

SIGN	MEANING OF SIGN
 DANGER	Serious hazard with a very high level of risk of either serious injury or death
 WARNING	Hazard or unsafe practice that can lead to severe injury or death.
 CAUTION	Hazard or unsafe practice that can lead in injury or death.
 IMPORTANT	Instructions for the correct operation of the machine which, if followed, will ensure that it performs at it's best

SAFETY SIGNS

RECOGNIZE SAFETY INFORMATION

This symbol, Safety-Alert Symbol, means **ATTENTION! YOUR SAFETY IS INVOLVED.** The message that follows the symbol contains important information about safety. Carefully read the message



SIGNAL WORDS.

A signal word—**DANGER, WARNING OR CAUTION**—is used with safety alert symbol. **DANGER** identifies the most serious hazards. Safety signs with signal Word—**DANGER OR WARNING**—are typically near specific hazards. General precautions are listed on **CAUTION** safety signs.



DANGER



WARNING

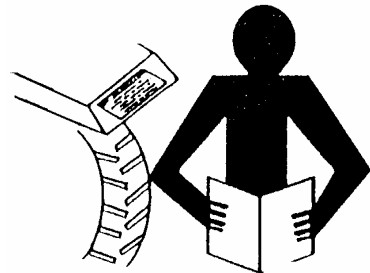


CAUTION

READ SAFETY INSTRUCTION

Carefully read all safety instructions given in this manual for your safety. Tempering with any of the safety devices can cause serious injuries or death. Keep all safety signs in good condition. Replace missing or damaged safety signs.

Keep your tractor in proper condition and do not allow any unauthorized modifications to be carried out on the Tractor, which may impair the function/safety and affect Tractor life.

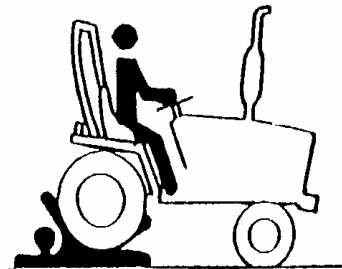


PROTECTION CHILDREN

Keep children and others away from the Tractor while operating.

BEFORE YOU REVERSE

- Look behind Tractor for children.
- Do not let children to ride on Tractor or any implement.

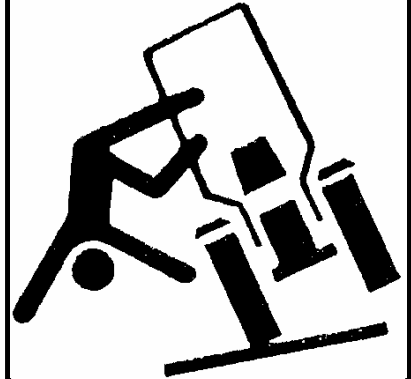


USE OF ROPS AND SEAT BELT

The Roll Over Protective Structure (ROPS) has been certified to industry and/or government standards. Any damage or alteration to the ROPS, mounting hardware, or seat belt voids the certification and will reduce or eliminate protection for the operator in the event of a roll-over. The ROPS, mounting hardware, and seat belt should be checked after the first 100 hours of Tractor and every 500 hours thereafter for any evidence of damage, wear or cracks. In the event of damage or alteration, the ROPS must be replaced prior to further operation of the Tractor.

The seat belt must be worn during machine operation when the machine is equipped with a certified ROPS.

Failure to do so will reduce or eliminate protection for the operator in the event of a roll over.



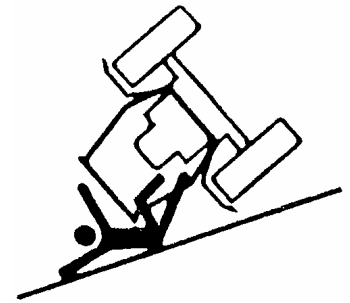
PRECAUTION TO AVOID TIPPING

Do not drive where the Tractor could slip or tip.

Stay alert for holes and rocks in the terrain, and other hidden hazards.

Slow down before you make a sharp turn.

Driving forward out of a ditch or mired condition could cause Tractor to tip over backward. Back out of these situations if possible

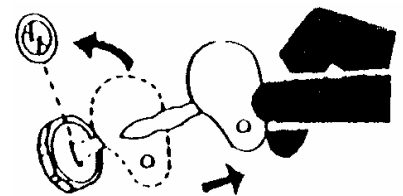


PARK TRACTOR SAFELY

Before working on the Tractor ;

Lower all equipment to the ground.

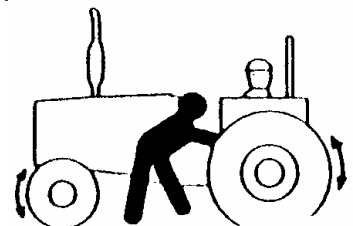
Stop the engine and remove the key



KEEP RIDERS OFF TRACTOR

Do not allow riders on the Tractor.

Riders on Tractor are subject to injury such as being stuck by foreign objects and being thrown off of the Tractor



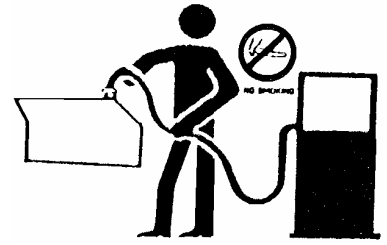
HANDLE FUEL SAFELY-AVOID FIRES

Handle fuel with care; it is highly flammable. Do not refuel the Tractor while smoking or near open flame or sparks.

Always stop engine before refueling Tractors.

Always keep your tractor clean of accumulated grease, and debris.

Always clean up spilled fuel.



STAY CLEAR OF ROTATING SHAFTS

Entanglement in rotating shaft can cause serious injury or death.

Keep PTO shield in place at all times.

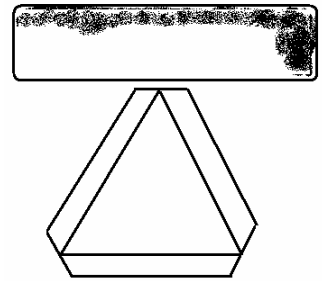
Wear close fitting clothing. Stop the engine and be sure PTO drive is stopped before making adjustments, connections, or cleaning out PTO driven equipment.



ALWAYS USE SAFETY LIGHTS AND DEVICES

Use of hazard warning lights and turn signals are recommended when towing equipment on public roads unless prohibited by state or local regulations.

Use slow moving vehicle (SMV) sign when driving on public road during both day & night time, unless prohibited by law



PRACTICE SAFE MAINTENANCE

Understand service procedure before doing work.

Keep the surrounding area of the Tractor clean and dry.

Do not attempt to service Tractor when it is in motion.

Keep body and clothing away from rotating shafts.

Always lower equipment to the ground. Stop the engine.

Remove the key. Allow Tractor to cool before any work repair is caused on it.

Securely support any Tractor elements that must be raised for service work.

Keep all parts in good condition and properly installed.

Replace worn or broken parts. Replace damage/missing decals.

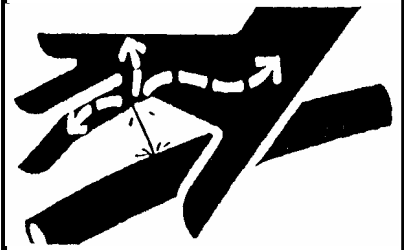
Remove any buildup of grease or oil from the Tractor.

Disconnect battery ground cable(-) before making adjustments on electrical systems or welding on Tractor



AVOID HIGH-PRESSURE FLUIDS

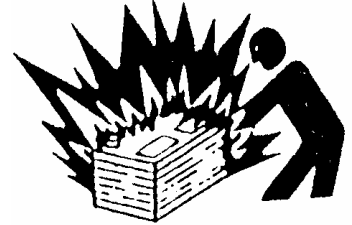
Escaping fluid under pressure can penetrate the skin causing serious injury. Keep hands and body away from pinholes and nozzles, which eject fluids under high pressure. If ANY fluid is injected into the skin. Consult your doctor immediately.



PREVENT BATTERY EXPLOSIONS

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

Never check battery charge by placing a metal object across the poles.



PREVENT ACID BURNS

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, cause holes in clothing and cause blindness if found entry into eyes.

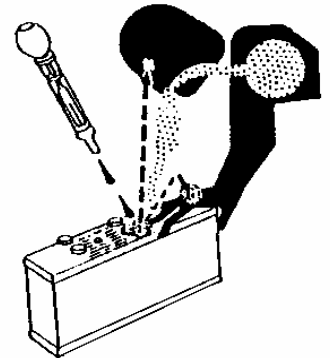
For adequate safety always;

1. Fill batteries in a well-ventilated area.
2. Wear eye protection and acid proof hand gloves
3. Avoid breathing direct fumes when electrolyte is added.
4. Do not add water to electrolyte as it may splash off causing severe burns.

If you spill acid on yourself;

1. Flush your skin with water.
2. Flush your eyes with water for 10-15 minutes.

Get medical attention immediately.



SERVICE TRACTOR SAFELY

Do not wear a necktie, scarf or loose clothing when you work near moving parts. If these items were to get caught, severe injury could result.

Remove rings and other jeweler to prevent electrical shorts and entanglement in moving parts.



WORK IN VENTILATED AREA

Do not start the Tractor in an enclosed building unless the doors & windows are open for proper ventilation, as tractor fumes can cause sickness or death. If it is necessary to run an engine in an enclosed area remove the exhaust fumes by connecting exhaust pipe extension.



TRACTOR RUNAWAY

1. The tractor can start even if the transmission is engaged position causing Tractor to runaway and serious injury to the people standing nearby the tractor.

For additional safety keep the pull to stop knob (fuel shut off control) in fully pulled out position. Transmission in neutral position, Foot brake engaged and PTO lever in disengaged position while attending to Safety Starter Switch or any other work on Tractor.

SAFETY STARTER SWITCH

- 1. Clutch operated safety switch is provided on all Tractors which allow the starting system to become operational only when the Clutch pedal is fully pressed.**
- 2. Do not By-pass this safety starter switch or work on it. Only Authorized Dealers are recommended to work on safety starter switch.**
- 3. On some models Safety Starter switch is provided on transmission High-low shifter lever and in PTO shifter lever. The tractor can be started only if High-low shifter lever is in neutral position.**



Safety Starter Switch is to be replaced after every 2000 hours/4 years, whichever is earlier

SAFETY DECALS

The following safety decals ARE INSTALLED ON THE MACHINE.

If a decal become damaged, illegible or is on the machine, replace it. The decal part number is listed in the parts lists.



WARNING

- Before starting and operating know the operating and safety instructions in the operators Manual and on the tractor.
- Clear the area of bystanders.
- Locate and know operation of controls.
- Start engine only from Operator's seat with depressed clutch pedal, transmission in the neutral, PTO disengaged and hydraulic control in lower position
- Slow down on turns, rough ground and slopes to avoid upset.
- Do not permit anyone but the operator to ride on the tractor.
There is no safe place for rider.
- Lock brakes together, use warning lights and SMV emblem while driving on roads.
- Lower equipment, place gear shift levers in neutral, stop engine, remove the key and apply parking brake before leaving the tractor seat.
- Air pressures are specified by the manufacturer.

FAILURE TO FOLLOW ANY OF THE INSTRUCTIONS ABOVE CAN CAUSE SERIOUS INJURY TO THE OPERATOR.

Location: On FENDER RH

Part No.: 1260-904-070-1A




WARNING

**TO AVOID POSSIBLE
PERSONAL INJURY, THIS GUARD MUST
BE KEPT IN PLACE**

Location: ON PTO guard

Part No.: 1260-904-069-0A


 **CAUTION**

TO PROTECT ENGINE AND HYDRAULIC COMPONENTS.

- Idle Engine for 1 minute before shut down or full load operation.
- **Do not exceed 1/2 throttle for first 5 minutes of operation**

Location: On Dash cover side RH


Part No.: 1260-904-064-0

 **WARNING**

KEEP HANDS AND CLOTHING AWAY FROM ROTATING FAN AND BELTS TO PREVENT SERIOUS INJURY

Location: On Radiator bracket side LH & RH


Part No.: 1260-904-061-0

 **CAUTION**

BEFORE OPERATE THE TRACTOR, READ THE OPERATOR'S MANUAL THOROUGHLY, TO UNDERSTAND THE IMPORTANT FUNCTIONS AND CONTROLS.

Location: On dash cover side LH

Part No.: 1260-904-067-0A

 **WARNING**

The cooling system operates under pressure.

- **It is dangerous to remove the radiator cap while the system is hot.**
- **Always turn the cap slowly to the first stop and allow pressure to escape before removing the cap completely.**
- **When operating below 32°F, use suitable anti-freeze solution as coolant**

Location: On Radiator bracket side LH&RH

Part No.: 1260-904-063-0



DANGER

**BLINDNESS CAN
RESULT FROM
BATTERY EXPLOSION.
KEEP SPARKS OR OPEN
FRAMES AWAY FROM
BATTERY.**

DO NOT JUMP START.

**BURNS CAN RESULT
FROM BATTERY ACID.**

**IN CASE OF CONTACT
FLUSH IMMEDIATELY
WITH WATER**

Location: On battery bracket RH

Part No.: 1260-904-066-0



WARNING

- **Pull only from drawbar. Pulling from any other point can cause rear overturn.**
- **Do not operate with unshielded PTO.**
- **Disengage PTO and stop engine before servicing tractor or attaching and detaching implements.**
- **When towing equipment use a Safety chain**

**FAILURE TO FOLLOW ANY OF THE
INSTRUCTIONS ABOVE CAN CAUSE SERIOUS
INJURY TO THE OPERATOR OR OTHER
PERSONS.**

Location: On rear frame

Part No.: 1260-904-065-0A



WARNING

- **Start engine only from operators seat. If safety start switch is bypassed engine can start with transmission in gear.**
- **Do not connect or short across terminal on starter solenoid.**

Attach booster cables as shown on battery decal and operator's manual.














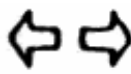















Starting in gear causing runaway can result in serious injury.

Location: On dash over side LH

Part no: 1260- 904-062-0A

UNIVERSAL SYMBOLS

Some of the universal Symbols have been shown below with an indication of their meaning.

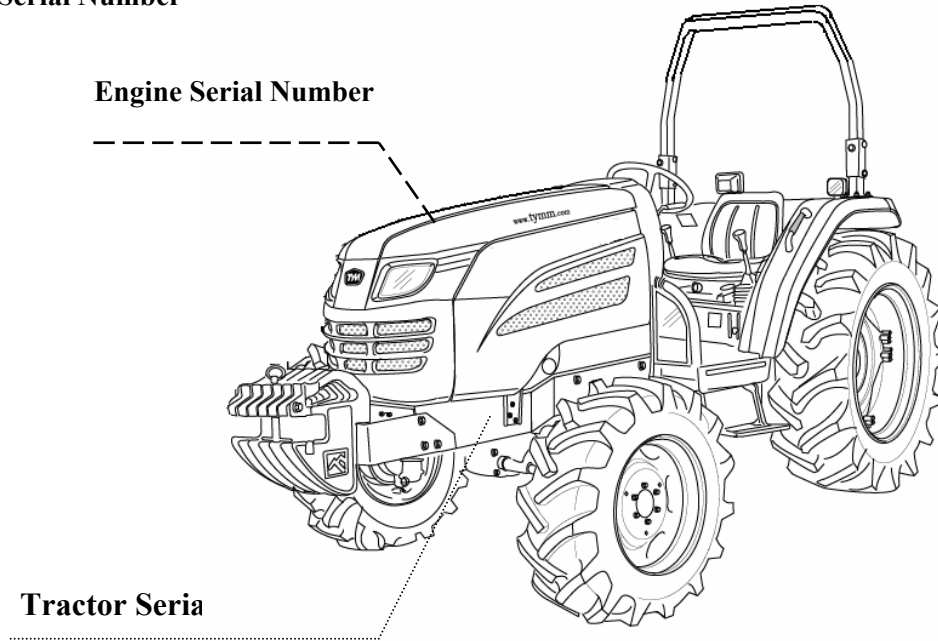
	Engine speed (rev/minX100)		Pressured- open slowly		Corrosive substance
	Hours, recorded		Continuous Variable		”Tortoise” slow or minimum setting
	Engine coolant temperature		Warning		”Hare” fast or maximum setting
	Fuel level		Hazard warning		Transmission oil pressure
	Engine stop control	N	Neutral		Turn signal
	Lights		Fan		Transmission oil temperature
	Horn		Power take off engaged		parking brake
	Engine oil pressure		Power take off disengaged		Work lamps
	Air filter		Lift arm/raise		Differential lock
	Battery charge		Lift arm/lower		See operator’s manual

SECTION 1. TRACTOR TYPES AND PUNCHED IDENTIFICATION MARKS

The tractor serial number is shown on the left hand side of the tractor as shown in the picture. The engine number is stamped on the top of the engine block.

Tractor Serial Number

Engine Serial Number



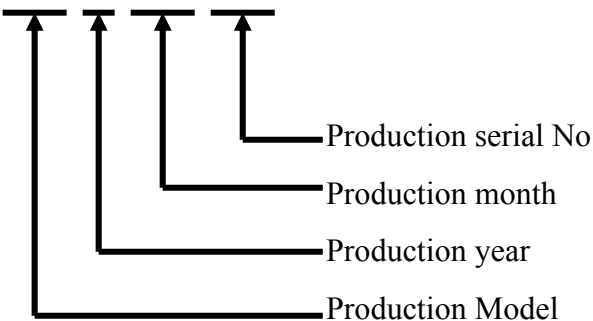
1.MODEL NAME PLATE

The plate indicates the model and type of the tractor.

- ① Model name
- ② Production I.D No.

The production I.D reference number is as shown below

39NC W 01 0001



TONG YANG	
MODEL	:AGRICULTURAL TRACTOR T390
TYPE	:4-CYCLE DIESEL
ENGINE: ps/rpm	:39ps/2800 rpm
SERIAL NO.	:39NC W 01 0001
MANUFACTURER:TONG YANG MOOLSAN CO.,LTD	
ADDRESS:#90,NON HYUN 2 DONG,KANGNAM KU	
SEOUL, KOREA	
TEL	:82-2- 3014-2780-86

3.Engine model and engine serial number plate on the head cover.



SECTION 2. SPECIFICATIONS

MODEL		T390/T400	T430/T450
Engine	Maker	KUBOTA	KUBOTA
	Model	V1903	V2203
	Type	Vertical,water cooled 4 cycle Diesel	
	Out put(ps/rpm)	39	43
	Rated Speed	2,800rpm	2600rpm
	Number of Cylinder	4	4
	Displacement(cc)	1,857	2,197
	Bore and Stroke	(80mmX92.4mm)	(87mmX92.4mm)
	Compression ratio	22:1	22:1
	Firing order	1-3-4-2	1-3-4-2
	Injection pump	Throttle type	
	Lubrication type	Forced	
	Cooling system	Water cooled,forced circulation	
	Coolant capacity	1.85US gal (7L)	
	Air cleaner	Dry type with paper element	
	Muffler	Horizontal Round	
	Fuel	Diesel	
	Fuel Tank capacity:litre	8.717 US gal (33L)	
Electrical	Battery	12V110AH	
	Starting system	Electronic with cell motor	
	Starter Capacity	12V-1.7KW	
Drive Train	Alternator	12V50A	
	Transmission	Constant mesh(Synchromeshed 3 rd and 4 th in main shift in both forward and reverse)	
	MFWD(4WD)	Standard	
	Differential lock	Bevel gears with diff-Lock	
	Brakes	Wet Disk	
	Steering	Hydrostatic Power	

MODEL		T390/T400	T430/T450	
Clutch	Main	Dry single disc,mechanic		
	PTO	Multiple wet disk		
Dimensions	Overall length	3531(139")	3531 (139")	
	Overall width	1475(58.1")	1490(58.7")	
	Overall Height	2228(87.7")	2288(90.1")	
	Wheel base (Distance between shafts)	1800 (70.8")		
	Min. Ground Clearance	308(12.1")	330(13")	
	Tire size	Front	8-16- 4PLY	8-16- 4PLY
		Rear	13.6-24-6PLY	13.6-24-6PLY
	Axle type	Front	Center pin	
Rear		Central axle		

Implement	Operation	Hydraulic
	Mounting method	3-Point hitch
	Drawing method	Draw bar
	3-Point hitch category	Category 1
	Hydraulic-control	Position ,draft control

Traveling speeds:Km/h (Mile/h)

Traveling Speed : km/hour					
MODEL		T390/T400		T430/T450	
Range shift	Main shift	Forward	Reverse	Forward	Reverse
L L	1	-	-	0.39	0.36
	2	-	-	0.55	0.50
	3	-	-	0.75	0.68
	4	-	-	0.98	0.89
L	1	1.14	1.09	1.02	0.93
	2	1.60	1.53	1.43	1.30
	3	2.17	2.07	1.93	1.77
	4	2.85	2.71	2.54	2.32
M	1	3.96	3.78	3.28	2.99
	2	5.56	5.30	4.60	4.20
	3	7.54	7.18	6.23	5.69
	4	9.89	9.43	8.18	7.47
H	1	10.63	10.14	9.48	8.66
	2	14.92	14.23	13.30	12.16
	3	20.21	19.27	18.03	16.47
	4	26.52	25.29	23.65	21.62

PTO shaft

Model	T390/T400	T430/T450
Speed(PTO rpm/Engine rpm)	599,977/2800	587,705,1057,1321/2600
Shaft Diameter.Spline teeth	1 3/8, 6 spline	