



Stand Drive Tractor / Tugger

**T5Z 10,000 Lbs. and T7Z 15,000 Lbs.
Capacity Rolling Load**



T5Z



T7Z

Announcing updates for the Stand Drive Tractor / Tugger
November 2002.

Introduction

T5Z Standard Duty

- This product is a 10,000 lbs. capacity rolling load Tractor / Tugger truck utilizing proven components from the B60Z walkie / rider pallet truck.

T7Z Heavy Duty

- The range of products expands to include a 15,000 lbs. capacity rolling load offering. This new model will use proven components from the B80Z walkie / rider pallet truck.

Proven Components!

Applications

Tractor / Tugger trucks are primarily used for low-level order picking and horizontal transportation. These trucks are also used to load and unload trailers.

Truck	Shifts /Day	Hrs./Day	Trailers Moved/Day	Trailer Loads/Hr.
T5Z 10,000 lbs. Capacity Rolling Load	2	7 to 9 (2250 annual max)	181 to 270 (180 to 360 cases/day)	22 max
T7Z 15,000 lbs. Capacity Rolling Load	3	7 to 12 (3000 annual max)	271 to 480 (361 to 960 cases/day)	40 max

10,000 lbs. capacity rolling load = 200 lbs. normal, *700 lbs. maximum draw-bar pull.

15,000 lbs. capacity rolling load = 300 lbs. normal, *1,000 lbs. maximum draw-bar pull

***Maximum drawbar pull equals capacity rolling load.**

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T5Z application segment is described as operations where the trucks are used up to 2 shifts per day, typically 7 to 9 hours per day, with a maximum annual usage of 2250 hours.

These applications typically tow 181 to 270 trailers per day (180 to 360 cases per day), with a maximum of 22 trailer loads moved per hour.

T7Z application segment is described as operations where the trucks are used up to 3 shifts per day, typically 7 to 12 hours per day, with a maximum annual usage of 3000 hours.

These applications typically tow 271 to 480 trailers per day (361 to 960 cases per day), with a maximum of 40 trailer loads moved per hour.

Note: It is important to understand that the tractor/ tugger models have capacity ratings for Drawbar Pull. Drawbar Pull is the force required to tow trailers.

Key Features/Differences/Changes

Master Drive Unit

- Stationary traction motor
 - Wire Harness – minimal number wires and connections needed
 - Integrated pinion with a splined motor to MDU coupling
 - Integral steer bearings
- (T5Z) MDU115 with a 16:1 overall gear ratio
(T7Z) MDU150 with a 17.8:1 overall gear ratio



•Drive axle string guard

- 1) **Stationary traction motor** – eliminates the problem with rotating or flexing power cables from the traction motor to the traction controller
- 2) **Integrated pinion with a splined motor to MDU coupling** –
 - a) - the support bearings and pinion are integral to the MDU eliminating the potential of damaging the gears when assembling the motor to the MDU
 - b) - by integrating the pinion, the gear mesh can be better controlled resulting in a quieter MDU
 - c) - the splined coupling allows for quick removal and installation of the traction motor
- 3) **Integral steer bearings** – this new design utilizes tapered roller bearings which are internal to the MDU therefore sealed from environmental conditions; these bearing are lubricated by the MDU gear oil, thus periodic lubrication is not required
- 4) **Drive axle string guard** – a string guard has been added to reduce the potential for drive axle bearing seal damage due to shrink-wrap or banding tape, however, periodic removal of this debris is required, as the string guard cannot prevent damage to the seal!

Key Features/Differences/Changes

Traction Motor

- SEM Traction Control Technology
- 24V
- Class "H" insulation



T5Z

Motor Diameter: 5.945 in.



T7Z

Motor Diameter: 7.067 in.

This new series of trucks utilizes SEM technology for improved performance and productivity.

The traction motors have Class "H" insulation. Premium brush compound and constant force brush springs are used for increased brush and commutator life. The standard motor is equipped with enclosing bands providing IP20 level protection. Power ratings are as follows:

T5Z traction motor – 2.0 kW

T7Z traction motor – 2.8 kW

Key Features/Differences/Changes

SEM Traction Control Technology

- Separately Excited Motors provide improved speed and torque control throughout the range of operation, which improves productivity.
- The forward and reverse direction contactors have been eliminated.
- Auto Deceleration System braking



T5Z



T7Z

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Hyster's SEM transistorized drive controller gives smooth, stepless acceleration and infinitely variable speed control. Designed around one of the latest advances in semiconductors, the controller allows the truck to be more energy-efficient than conventional systems.

SEM provides improved speed and torque control throughout the range of operation, which improves productivity.

The forward and reverse direction contactors have been replaced by separate traction motor armature and field controllers.

Auto Deceleration System benefits – returns energy to the battery and reduces break wear as compared to resistor or series transistor controllers.

Key Features/Differences/Changes

SEM Traction Control Technology

Control Handle Serial Communication

- By the use of serial communications, the number of wire conductors at the control handle pivot and steering connection is minimized.

Benefit: Reduces flex at pivot point of handle, less likely for failure.

- less service
- improved reliability!



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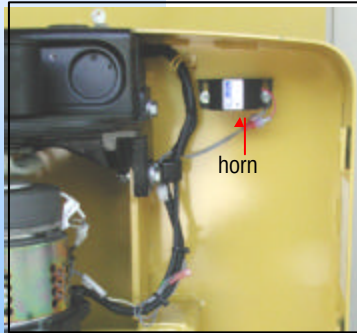
The number of conductors in the new tiller harness is 11.
The previous model had 12.

Key Features/Differences/Changes

SEM Traction Control Technology

Auxiliary Drivers

- The horn is electronically controlled by the traction control.



Key Features/Differences/Changes

Brakes

- Braking for this new series of trucks differs significantly from previous models. The Auto Deceleration System is the primary method for the service brake. The traction motor will retard, or decelerate the truck when the throttle is returned to the neutral position. "Plugging" functions are similar to that of the previous models.

- The parking brake is an electrically released, spring applied, electro-mechanical brake. The brake is released when the key is turned on and selecting a direction with the direction/throttle control.

The brake is applied when the floor mounted brake switch is pressed. The controller will first apply Auto Deceleration System braking. As the motor speed slows the electro-mechanical brake engages. The brake also applies in the event of a controller fault or malfunction.



Brake Override Harness

Brake override harness – In the event the electric brake needs to be released, you unplug the big connector on the main harness from the controller and then plug this override harness into that connector on the main harness and unplug the brake and plug it into the other end of the override harness. This powers the brake directly from the battery.

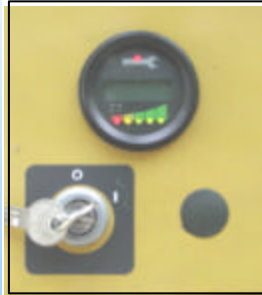
Key Features/Differences/Changes

Display (optional)

Mounted on the frame cowl for easy visibility from the operator's compartment.

Includes:

- BDI
- Hour Meter
- Fault Codes Message
- Lift Interrupt Warning



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- BDI and Hour Meter – Both the battery discharge indicator and hour meter calculations are performed by the traction controller. The signal is transmitted to the gage for display. The fact that the hours are registered in the controller, rather than the gage, ensures that the actual truck hours are always displayed, with the exception of a controller replacement.

Operator Controls

Adjustable top mounted tiller Head

- Provides optimal riding position
- Three position adjustable to operator without the use of tools – longer handle on the T7Z
- **Narrow width** - 17" or optional **Wide grip** - 25" is available.



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Operator Controls

- **Travel** - direction/speed control is full rotary grip
- **Steering** - Integral steer bearings for easy turns
- **Electric Brake** – Auto Deceleration System with electromagnetic parking brake
- **Rabbit speed control** in floor
- **Electronic Horn** – 93 dBA

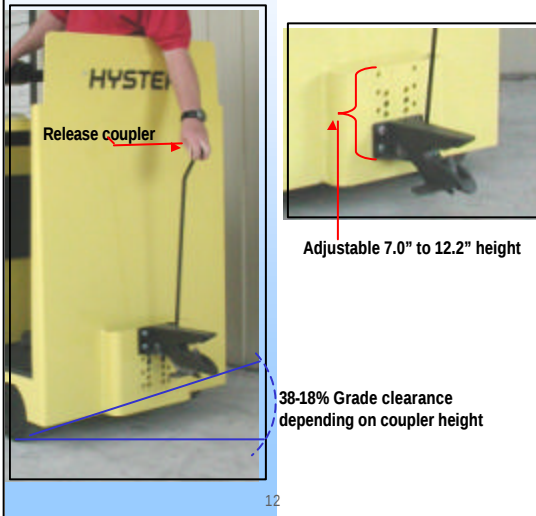


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- Auxiliary drivers – **The horn** is electronically controlled by the traction control.

Coupler

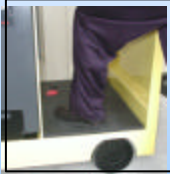
- Automatic latching, manual release jaw type



An automatically latching, manually released jaw-type coupler is standard. A lever located behind the operator's compartment unlatches the coupler. The tow height is adjustable between 7" and 12.2" from the floor. Maximum drawbar pull is achieved within this range of adjustment.

Operator's Compartment

- The operator's compartment is 20.8" deep and 32" wide.
- The forward bulkhead and operator's back plate are padded.
- The floor plate is padded with a 1" thick floor mat.
- The 1" thick floor mat is removable for cleaning or replacement.
- The compartment step height is 9.8" .
- Two floor-mounted switches are provided: 1) high speed or "rabbit" speed, and 2) brake switch.

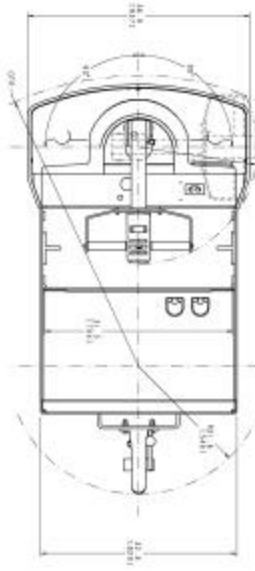


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Frame

- Welded steel construction
- The optional battery roller frame has provisions for battery removal from both sides, and can be added to the standard truck without modifying the frame!!

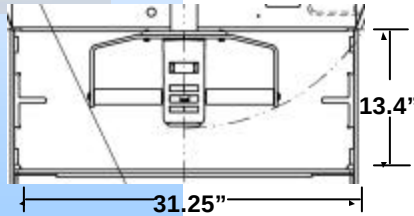
(Roller height to floor = 10.12")



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Battery Compartment

- Lateral battery spacers are standard
- Fore/Aft battery spacers are standard
- Improved, lower to ground, and rollers fit in easily
- No modification is required to add battery rollers!



The battery compartment is designed to accommodate batteries 13" long and 31" wide with provisions for both lateral and fore-and-aft battery shims.

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The battery compartment is designed to accommodate batteries 13" long and 31" wide with provisions for both lateral and fore-and-aft battery shims.

Battery rollers are available as an option.

Batteries

T5Z

700 Lbs. DBP Capacity Tractor/ Tugger									
No. of Cells	Cell Size	Plates per Cell	Capacity (6 hr rate)		"X" Dim	"Y" Dim	"Z" Dim	Max. Weight	
12	75	11	375	8.7	26.5"	13.0'	23.3'	825 lbs.	
12	85	11	425	9.9	26.1"	12.8'	23.3'	865 lbs.	
12	75	13	450	10.5	30.9"	13.0'	23.3'	987 lbs.	
12	85	13	510	11.9	30.9"	13.0'	23.3'	1035 lbs.	

- Notes:
- Steel tray with cover required for all batteries
 - Battery connector type is SB-175 Red for 24 volt (Gray is optional)
 - Cable lead position "B"
 - 16" cable length
 - Maximum cable gauge of 1/0

A battery mounted convenience tray is available as an option.



Batteries

T7Z

1,000 Lbs. DBP Capacity Tractor/ Tugger								
No. of Cells	Cell Size	Plates per Cell	Capacity (6 hr rate) Amp-Hours	KWH	"X" Dim.	"Y" Dim.	"Z" Dim.	Max. Weight
12	75	11	375	8.7	26.5"	13.0"	23.3"	825 lbs.
12	85	11	425	9.9	26.1"	12.8"	23.3"	865 lbs.
12	75	13	450	10.5	30.9"	13.0"	23.3"	987 lbs.
12	85	13	510	11.9	30.9"	13.0"	23.3"	1035 lbs.
12	100	13	600	14.0	30.9"	13.0"	26.2"	1140 lbs.
12	125	13	750	17.6	30.9"	13.0"	31.0"	1450 lbs.

- Notes:
- Steel tray with cover required for all batteries
 - Battery connector type is SB-175 Red for 24 volt (Gray is optional)
 - Cable lead position "B"
 - 16" cable length
 - Maximum cable gauge of 1/0

A battery mounted convenience tray is available as an option.



Standard Features and Options

Electrical:	T5Z	T7Z
24V SEPEX Traction Control	Standard	Standard
Separately Excited Traction System	Standard	Standard
UL Type "E" Classification	Standard	Standard
Auto Deceleration System Braking w/ Electromagnetic Parking Brake	Standard	Standard
Multi-function Display with Hour Meter and BDI	Optional	Optional
Red SB175 Battery Connector	Standard	Standard
Gray SB175 Battery Connector	Optional	Optional
Key Switch	Standard	Standard
Horn	Standard	Standard

Standard Features and Options

<u>Environmental Packages:</u>	T5Z	T7Z
Standard Construction (+100F to +30F)	Standard	Standard
Cold Storage / Freezer Construction (+30F to -15F)	Optional	Optional
Corrosion / Food Processing Construction (-15F to -40F)	---	Optional
UL Type "EE" Construction – Max 700 Lbs. DBP	---	Optional

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Temperatures and situations warrant which package is needed.

Cooler/Intermittent Freezer: Standard equipment.

Cold Storage/Freezer:

- 1: Sealed circuit board in tiller handle.
- 2: All exposed electrical connections sprayed with protective coating.
- 3: Low temperature hydraulic oil.

Corrosion/Food Processing:

- 1: Sealed circuit board in tiller handle.
- 2: All exposed electrical connections sprayed with protective coating.
- 3: Low temperature hydraulic oil.
- 4: Low temperature gear oil.
- 5: Enclosed electrical system control panel.
- 6: Enclosed Traction motor.
- 7: Enclosed Park brake.

UL Type EE: Applications requiring UL type "EE" construction such as paints, chemicals, etc.

Drive Tire		
Drive Wheel - secured to the drive axle with 5 bolts.	T5Z	T7Z
10" x 5" Poly Press-on	Standard	---
12" x 4.5" Poly Press-on	---	Standard
10" x 5" Rubber Press-on	Optional	Optional
12" x 4.5" Siped Poly Press-on	---	Optional
Trail Wheels:	T5Z	T7Z
8" Diameter x 5" Rubber	Standard	Standard
8" Diameter x 5" Poly	Optional	Optional

Drive Wheels

The drive tire for the **T5Z** is 10" x 5" x 6-1/2". Both 70 durometer rubber and 90 durometer, semi-crown profile polyurethane compounds are available. A crown profile poly is used to reduce steering effort. The drive wheel is secured to the drive axle with 5 bolts.

The drive tire for the **T7Z** is 12" x 4-1/2" x 8". A 90 durometer polyurethane compound is standard. The drive wheel is secured to the drive axle with 5 bolts.

Trail /Load Wheels

The standard load wheel configuration is a single load wheel with two roller bearings. The load wheel compound is molded over a steel wheel and measures 8.0" in diameter by 5.0" in length.

Additional Features

- Coast Control on handle
- Drive Unit Cover - The material is produced from an engineered thermoplastic elastomer which meets all UL flammability requirements for UL94 V2.



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Performance

Manufacturer	Hyster	Hyster	Hyster
Model	T5XT (old)	T5Z (new)	T7Z (new)
Capacity, rolling load lb. (kg)	10,000 (4,545)	10,000 (4,545)	15,000 (6,803)
Drawbar Pull, normal / *maximum lb. (kg)	200 (90) / 750 (340)	200 (90) / 700 (317)	300 (136) / 1,000 (453)
Voltage	24	24	24.00
Truck Width in. (mm)	32.6 (828)	36.9 (937)	36.9 (937)
Overall Length, with coupler in. (mm)	65.7 (1669)	69.3 (1760)	71.3 (1811)
Overall Length, without coupler in. (mm)	54.6 (1387)	58.3 (1480)	60.3 (1531)
Batt. Compt. Size, length x width in. (mm)	13.4 x 31.5 (340 x 800)	13.4 x 31.25 (340 x 794)	13.4 x 31.25 (340 x 794)
Max. Batt. Size, length x width in. (mm)	13.0 x 30.94 (330 x 785)	13.0 x 30.9 (330 x 785)	13.0 x 30.9 (330 x 785)
Size of tires, drive/steer in. (mm)	10 x 5 (254 x 127)	10 x 5 (254 x 127)	12 x 4.5 (304 x 114)
Size of tires, trail in. (mm)	5.5 x 5 (140 x 127)	8 x 5 (203 x 127)	8 x 5 (203 x 127)
Wheelbase in. (mm)	37.0 (940)	37.1 (942)	39.2 (995)
Turning Radius in. (mm)	45.0 (1143)	49.2 (1250)	51.9 (1318)
Grade Clearance, frame %	33	43	41
Travel Speed, no load mph (km/h)	7.3 (11.7)	7.8 (12.5)	8.4 (13.5)
Travel Speed, 200 lb. DBP mph (km/h)	4.4 (7.1)	4.4 (7.1)	N/A
Travel Speed, 300 lb. DBP mph (km/h)	N/A	N/A	4.2 (6.7)

*Maximum drawbar pull equals capacity rolling load.



Sales Training 11/02