

CROWN

Specifications

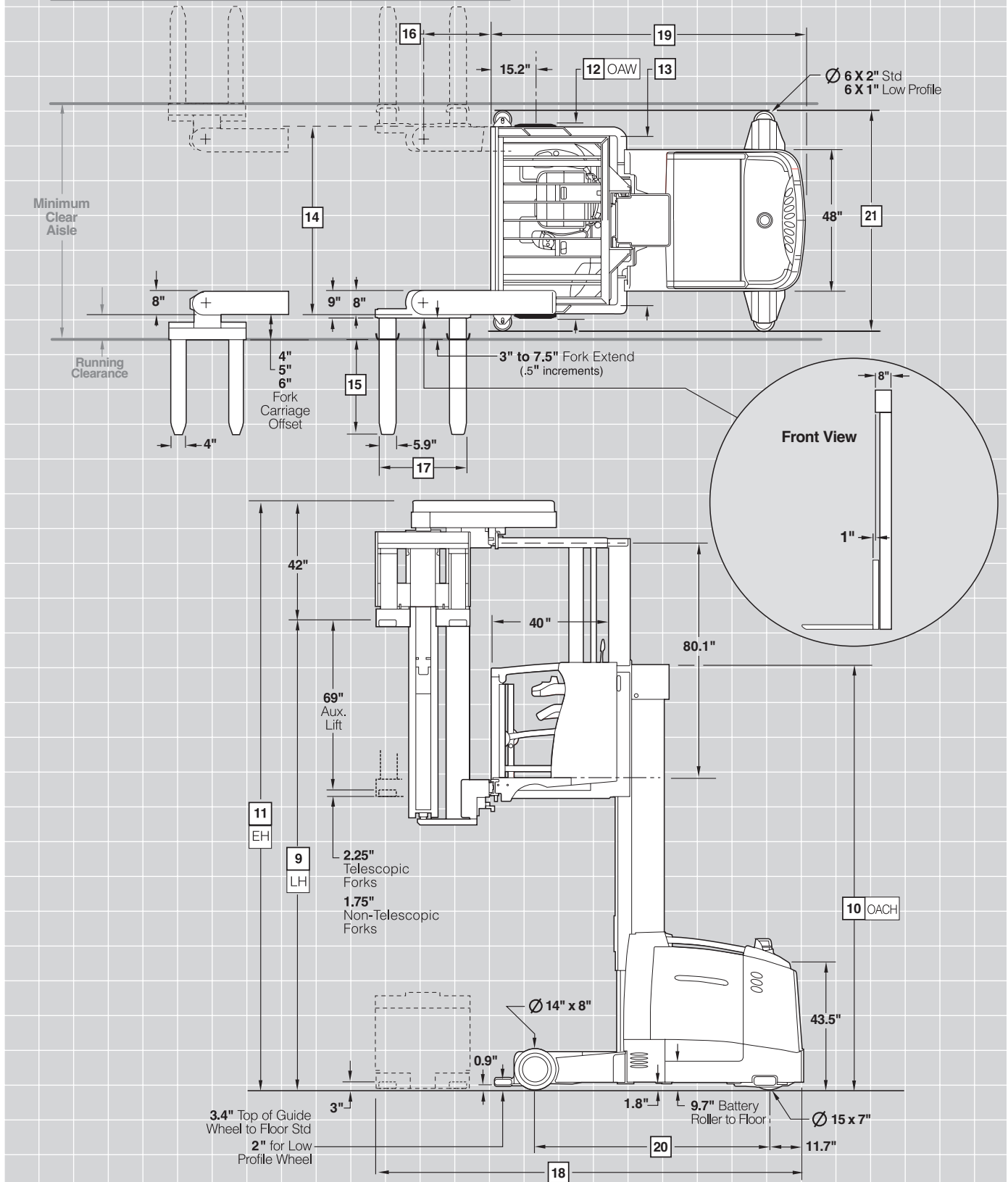
TSP 6000 Series

Turret
Stockpicker

TSP 6000 Series



	Non-Telescopic Forks	Telescopic Forks
Minimum Clear Aisle	Pallet Length + 8" + Fork Carriage Offset + Running Clearance + Running Clearance	Pallet Length + 9" + Running Clearance + Running Clearance
Running Clearance	Forks Carriage Offset	Fork Extend + 1"



TSP 6000 Series

Specifications

General Information	1	Manufacturer		Crown Equipment Corporation			
	2	Model		TSP 6000			
	3	Load Capacity, Max***	24" Load Center	lb	3000		
	4	Power	Electric		48 Volt		
	5	Operator Type	Sit/Stand Rider		Turret Stockpicker		
	6	Tire Type	Load/Drive		Poly/Poly		
	7	Wheels (x = driven)	Load/Drive		2/1x		
	8	Truck Weight	Less Battery	lb	13,500 to 15,500		
Dimensions	9	Lift Height	(LH)		See Chart		
	10	Overall Collapsed Height	(OACH)		See Chart		
	11	Extended Height	(EH)		See Chart		
	12	Overall Width (Load Wheel)	(OAW)	1" increments	48" to 72" See Chart		
	13	Cab Width		in	48, 52, 58		
	14	Traverse Frame Width	48" Cab	1" increments	48, 49, 50, 51		
			52" Cab	1" increments	52, 53, 54, 55, 56*, 57*		
			58" Cab	1" increments	58, 59, 60, 61, 62*, 63*		
			58" Cab**	1" increments	64, 65, 66, 67, 68, 69		
	15	Forks (Standard)	Telescopic L x W x T	in	36, 37.4, 42, 45.3, 48, 54 x 5.9 x 2.25		
			Non-Telescopic L x W x T	in	30, 36, 37.4, 42, 45.3, 48 x 4 x 1.75		
	16	Load Handler Length	Standard	in	23 or 27		
			Optional	in	30, 33, 36, 39, 42, 45, 48, 51, 54		
	17	Outside Fork Spread (Standard)			Carriage Width	Telescopic	Non-Telescopic
			23" to 54" Load Handler	in	30	21.5 to 30	15 to 30
			29" to 54" Load Handler	in	42	33.5 to 42	15 to 42
			35" to 54" Load Handler	in	54	45.5 to 54	15 to 54
	18	Overall Length (With 23" Load Handler)	"A" Battery Compartment	in	145.0		
			"B" Battery Compartment	in	148.4		
			"C" Battery Compartment	in	154.1		
19	Headlength	"A" Battery Compartment	in	107.0			
		"B" Battery Compartment	in	110.4			
		"C" Battery Compartment	in	116.1			
20	Wheelbase	"A" Battery Compartment	in	80.0			
		"B" Battery Compartment	in	83.5			
		"C" Battery Compartment	in	89.2			
21	Width Across Guide Roller	.25" increments	in	1.25 to 8.75 greater than OAW, Item 12			
Performance	22	Speed Travel, Max	Power Unit First, 90° Seat	mph	See Chart		
	23	Speed Lift (Standard) Speed Lift (High Performance)	Main Mast	Empty / Loaded	fpm	65 / 55	
			Main Mast	Empty / Loaded	fpm	80 / 70	
			Auxiliary Mast	Empty / Loaded	fpm	80 / 80	
	24	Speed Lower	Main Mast	Empty / Loaded	fpm	80 / 80	
			Auxiliary Mast	Empty / Loaded	fpm	65 / 80	
25	Speed Pivot	180° Rotation		sec	6 - 10		
26	Speed Traverse			ips	4 - 12		
27	Battery				See Chart		
	Brakes	Drive Unit Quantity			1		
		Brake Type			Mechanically Applied, Electrically Released		

* A 2" bolt-on platform extension will be added to both sides of the cab/platform.

** Actual cab is 58" wide with a 3" welded platform extension to each side, resulting in a 64" platform.

***Capacity at height may be subject to derating. Please consult the factory for exact values.

Mast Charts

9	Lift Height (LH)	in	193	207	219	231	243	255	267	279	291	303	315	327
	Free Lift TN*	in	72	72	72	72	72	72	72	72	72	72	72	72
	Free Lift TF**	in	na	83	89	95	101	107	113	119	125	131	137	143
10	Overall Collapsed Height (OACH)	in	118	125	131	137	143	149	155	161	167	173	179	185
11	Extended Height (EH)	in	235	249	261	273	285	297	309	321	333	345	357	369
12	Overall Width (OAW)	in	48 to 72" in 1" increments											

9	Lift Height (LH)	in	339	351	363	375	387	399	411	423	435	447	459	
	Free Lift TN*	in	72	72	72	72	72	72	72	72	72	72	72	
	Free Lift TF**	in	149	155	161	167	173	179	185	191	197	203	209	
10	Overall Collapsed Height (OACH)	in	191	197	203	209	215	221	227	233	239	245	251	
11	Extended Height (EH)	in	381	393	405	417	429	441	453	465	477	489	501	
12	Overall Width (OAW)	in	48 to 72" in 1" increments				56 to 72"				62 to 72"			

* Auxiliary Lift only

**Auxiliary Lift plus Free Lift

Travel Speeds	Seat Position		Maximum Speed*	
			Empty	Loaded
Forks First	Any Position	mph	6.5	6.0
Power Unit First	Forward Facing	mph	6.0	6.0
Power Unit First	Side Facing	mph	7.5	7.0

* In aisle, fully lowered, forks in the home position.

Batteries		"A"	"B"	"C"
Voltage	volts	48	48	48
Capacity at 48 volts	amp-hrs	875-1085	1000-1240	1250-1550
Total Capacity	kw-hrs	42-52.1	48-59.5	60-74.4
Number of Plates		15 or 17	17 or 19	21
Battery Length Max	in	44.50	44.50	44.50
Battery Width Max	in	24.69	28.12	33.75
Battery Height Max	in	31.00	31.00	31.00
Minimum Battery Weight	lb	2900	3140	3880

All batteries require 15" cable length in Position A.

Standard Equipment

1. 48-volt fused electrical system
2. AC lift and traction motors
3. Access 1 2 3® Comprehensive System Control
 - Fully interactive, four-line display
 - Battery discharge indicator with lift interrupt
 - Capacity Monitor
 - Start-up and run time diagnostics
 - Diagnostic history storage
 - Hour meters include traction motor, hydraulic motor, steer motor, and run time (increments if any of previous three are active).
 - Programmable speed curves and top travel speeds
 - Linear speed control for gradual reduction in speed as platform is raised
 - Programmable lift/lower cutouts with over-rides
4. Intelligent Braking System combines the optimum amount of friction and motor braking
5. Intelligent Steering System slows the travel speed when in a turn and provides smooth, electronic steering
6. MoveControl™ Seat
 - Fully integrated right and left hand controls
 - Allows -20, 0, 60, and 90 degree operating positions
 - Independent seat swivel
 - Sit or stand operation
 - 7.5" height adjustment (seat and armrests)
 - Armrest position adjustments
 - Integrated hand sensors
7. Mono-Mast for superior rigidity at height
8. Heavy-duty power unit
 - Easily removable steel doors and covers
 - Top battery access
 - Flashing light
 - Removable steer wheel cover
 - Manual lowering valve release located in power unit
 - 2-3/4" diameter battery rollers
 - SB 350 battery connector
 - Color-coded wiring

9. Heavy-duty platform
 - Sturdy front rail and hinged side gates
 - Smooth and blended control of travel, raise/lower, traverse and pivot
 - MoveControl™ Seat
 - Premium floor mat
 - Two-speed operator fan
 - Dual, overhead dome lights
 - Dual, adjustable, overhead work lights
 - Adjustable rear view mirror
 - Operator belt and lanyard
 - Key switch
 - Horn
 - 12-volt accessory outlet
 - Multiple storage bins
 - Partial overhead plexiglass shield
10. Infopoint® Quick Reference Guide and Maps

Optional Equipment

1. Wire and/or rail guidance
2. End-of-aisle control system
3. TF mast for extended free lift
4. Power unit / Main frame
 - "A", "B" or "C" battery compartments
 - Selectable overall width (OAW), in 1" increments
 - Non-marking drive and load wheels
 - Various strobe lights
 - Battery retainer switch
5. Standard or high performance lift system
6. Platform
 - Extended load handler lengths and carriage widths
 - Telescopic or non-telescopic forks
 - Tilting fork carriage (non-telescopic forks only)
 - Power source and mounting brackets for WMS terminal
 - Fire extinguisher
 - Narrow front rail
 - Zone select key switch
7. Environmental packages
 - EE
8. Work Assist™ Accessories
 - Fan
 - Work lights
 - Clip pad and hook
 - Plate (for RF mount)
 - Adjustable arm mounting system

Electrical

Heavy-duty 48-volt electrical power system provides unrivaled turret stockpicking performance. AC lift and traction motors provide excellent control at low speeds and industry leading performance at top speeds. All truck functions are monitored and controlled through the Access 1 2 3 Comprehensive System Control. Each of the eight microprocessor controlled modules, located throughout the truck, are in constant communication with each other providing an unparalleled degree of control. Long-life, solid-state encoders and hall effect sensors are utilized where appropriate to sense operating parameters. Only two contactors are needed, greatly reducing wearable items. Color-coded wiring and Crown's exclusive Infopoint System reduces downtime by providing clear direction for the service technician.

Operator Platform

The MoveControl™ Seat provides unprecedented levels of flexibility for the turret stockpicker operator. The seat can be positioned at -20, 0, 60, or 90 degrees, whichever is most productive for the operator. The seat bottom and backrest also swivel independently for an added degree of mobility. The seat bottom can be lifted up to provide a soft backrest for a standing operator. The seat also has 7.5 inches of height adjustability.

Controls for all operating functions are positioned smartly in the seat armrests. The controls are always positioned consistently for the operator, regardless of seat orientation. Armrests also pivot to permit free movement within the platform. Multi-task controls are arranged so that a wide array of blended functions can occur. The right hand controls travel, main raise and lower and traverse functions, while the left hand controls auxiliary lift/lower and pivot. Hands are sensed using infrared light beams, while feet activate large, flat sensors in the floor.

The spacious floorboard is covered with a premium floor mat for optimum comfort. Other operator comforts include a series of Work Assist Accessories such as a two-speed fan and two work lights that are located in the overhead guard. Other Work Assist Accessories can also be mounted to the vertical Work

Assist tube, or either of the tubes built into the overhead guard. Multiple storage compartments provide abundant room for personal items and tools.

The operator's feet and right hand must be in the proper operating position for the travel and main raise functions to work. For load handler functions, the left hand sensor must also be activated. The gates must also be closed during any powered truck movement. The truck can be stopped by activation of either of two foot-operated, positive action service brakes or by reversing the traction motor for smooth AC plugging.

Display

The four-line, alphanumeric display (Access 1) is conveniently mounted on the left upright for easy access. In addition to providing a full diagnostic and calibration interface, the display is capable of continuously displaying:

- Current event codes
- Battery discharge indication
- Steer wheel position
- On/off wire status
- Capacity Monitor
- Fork height
- Load weight
- Time of day and/or date

Interactive buttons, mounted to the face of the display, can be used to interrogate the truck or adjust parameters. State of the art diagnostics are standard equipment. Every sensor can be monitored in real time through the display and many of the output drivers can be tested as well. Menu structures are shared with other Crown Models, so technicians will quickly find their way around.

Power Unit

The heavy-duty power unit was designed to evenly disperse load stresses during pallet retrieval and put away. Steel doors and covers protect the electrical and hydraulic system components from the operating environment and intrusion. All covers can be easily removed with only a few tools. Sturdy skid bars are easily replaceable. Batteries are serviced through the top battery access panel, which lifts easily out of the way.

Mono-Mast

Elevated load sway and side bowing are minimized through the use of a closed cross-section mast construction. Rolled "I-beams" continuously welded to a formed plate create a full length, deep cross-section mast capable of resisting front and side loading equally well. Lift cylinders, hoses, cable and chain within the mast are protected from the operating environment, but are readily accessible for service. Built-in sensors in the primary mast detect chain slack and shut down primary lower, auxiliary lower, pivot and traverse functions. A glass window in the rear of the platform provides additional visibility above staging.

Access1 2 3®...

The Access 1 2 3 Comprehensive System Control is a modular based communications and control system. It monitors all on-board sensors, makes decisions based on the sensor readings, and subsequently, controls all system movements safely and smoothly. All eight modules are in constant communications with each other via a CAN (Control Area Network) bus so that real time information is accessible to the system at all times.

- Access 1
Interactive Display Module
- Access 2
Hydraulic Control Module
- Access 3
Traction Control Module
- Access 4
Vehicle Control Module
- Access 5
Steering Control Module
- Access 6
Guidance Control Module
- Access 7
Accessory Control Module
- Access 8
Operator Control Module

Simplified Hydraulic System

The hydraulic system has been designed to provide industry-leading performance with a simplified approach that incorporates fewer parts, fewer connections and fewer hoses. The mast/out-riggers (mainframe) can be completely separated from the power unit without disconnecting any hydraulic connections. Not only is it easier to tear down the truck for transport, but the hydraulic system is isolated from the electrical system so that oil and other contaminants will not affect operation. All hydraulic functions are controlled by only two manifold blocks – one in the main frame, and one in the load handler.

One large AC motor provides plenty of power for main lift, auxiliary lift, traverse, pivot and fork extension. The hydraulic and electrical systems work together to allow excellent control of the load handler for smooth and safe manipulation of loads. Acceleration rates and top functional speeds can be programmed to suit the application.

A manual lowering valve, positioned in the power unit, will allow the platform to be lowered from the ground. Forks can be returned to the home position prior to lowering.

Traction System

A massive AC traction motor and associated drive unit provides for unparalleled top travel speeds and precise control at low speeds. Acceleration and deceleration rates can be programmed to fit the application, while direction reversals are smooth and immediate. Many speed selectable programs can be chosen to maximize safety and productivity. Although many factors such as direction of travel, height of the platform, position of the forks, and whether operating in a guided mode will have a bearing on speed, top travel speed is

achieved in the power unit direction with the seat in the 90 degree position. Top speeds will be diminished gradually as the platform is raised.

Intelligent Braking

The patented Intelligent Braking System combines variable motor braking with a three-step friction brake to optimize safety and comfort for the operator. Operating conditions such as speed of the truck, direction of travel, height and weight on the forks and weight of the truck are taken into account when the brakes are applied. In addition, friction brake use is minimized, which prolongs brake life. Although the service brake is always available to the operator through two floor pedals, the operator can choose to bring the truck to a controlled stop by reversing the direction of travel (plugging).

Intelligent Steering

Full electronic steering provides smooth and easy maneuvering for the operator. Top travel speed of the truck is decreased when the steered wheel is greater than ten degrees. Further speed reductions occur as the amount of steering is increased. This intelligent approach provides a maximum degree of safety and comfort for the operator.

Load Handler

The fork carriage pivots (turrets) 180° permitting pickup and deposit from either side or front of the rack. Position of the forks is continually monitored to permit safe, smooth and productive operation. Fork handling functions can be blended together for simultaneous operation which will greatly improve productivity. The Auto-Pivot feature will automatically traverse and pivot the forks, all while keeping the pallet centered in the aisle. Forks spread is incrementally adjustable while two choices of forks are

available – telescopic or non-telescopic. Telescopic forks automatically extend during the traverse function or can be manually extended using the standard override button. Programmable height limits are also available for raise and lower. Lower and raise limits can be overridden by the operator, if desired.

Lift cylinder, hydraulic hoses and electrical cables are protected within the profile of the structure or behind removable covers. Vertical side alignment of the auxiliary mast is maintained by rack and pinion gears.

Wheels and Tires

Large, high-load capacity polyurethane press-on tires. Load wheels are 14" diameter x 8" wide, while the drive wheel is 15" diameter x 7" wide. Guide wheels for rail guidance are 6" diameter x 2" wide.

Other Options

1. Audible travel alarm
2. Contact factory for additional options

Safety considerations and dangers associated with audible travel alarms include:

- Multiple alarms can cause confusion.
- Workers ignore the alarms after day-in and day-out exposure.
- Operator may transfer the responsibility for "looking out" to the pedestrians.
- Annoys operators and pedestrians.

Dimensions and performance data given may vary due to manufacturing tolerances. Performance is based on an average size vehicle and is affected by weight, condition of truck, how it is equipped and the conditions of the operating area. Crown products and specifications are subject to change without notice.

Crown Equipment Corporation
New Bremen, Ohio 45869 USA
Tel 419-629-2311
Fax 419-629-3796
crown.com

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