

**CROWN**

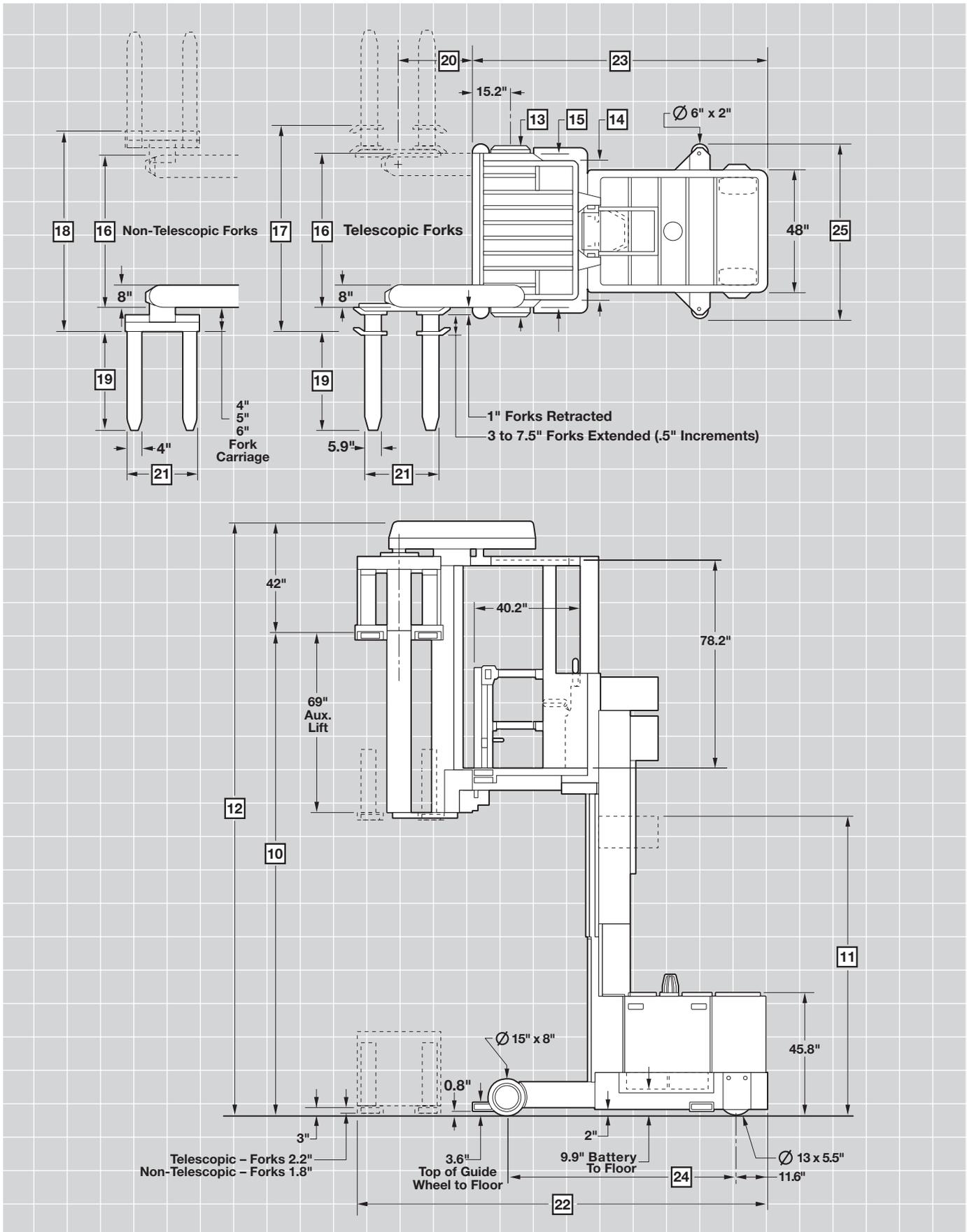
**Specifications**

**TSP Series**

Turret  
Stockpicker

# TSP Series





### Travel Speeds

Maximum travel speed on guidance is: 6 mph (528 fpm) to 156" fork elevation. Gradual speed reduction to 1 mph at 372", 1 mph above 372" fork elevation.

Travel speed is limited to 1 mph under any of the following conditions:

1. Forks are elevated above 31" on the auxiliary mast.
2. Forks are not at full pivot.
3. Load handler traverse-extend are not at clear-aisle travel position.

Travel speed is disabled under any of the following conditions:

1. Forks are not at full pivot and above 240".
2. Not on guidance and above 240".
3. Not on guidance, forks not at clear-aisle travel position above 93" and steering turned greater than 10°.
4. The TN travel speed is disabled, whenever out of guided aisle and primary lift is raised, unless otherwise specified.

Travel speeds not on guidance are less than those on guidance at elevated fork heights.

### Wheels and Tires

Large, high-load capacity polyurethane press-on tires.

Load wheels - 15" diameter x 8" wide x 10.5" dia hub.

Drive wheels - 13" diameter x 5.5" wide x 8" dia hub.

Guide wheels - 6" diameter x 2" wide molded-on hub, non-press-on.

### Suspension

Four-point solid suspension with long wheel base and wide spread of load and drive wheels improve truck capacity, reduce effect of uneven floors, and improve floor load distribution.

### Load Handler

Forks are incrementally adjustable. Fork carriage pivots through 180° permitting pickup and deposit from either side or front. Cylinders are equipped with hydraulic cushion stops to automatically reduce speed at end of pivot. Cross-over relief valves reduce excess pressure should forks be force pivoted. Pivot lock engages at full-rotated position to prevent drift.

Forks can be elevated on the auxiliary mast to permit stacking close to the ceiling. Lift cylinder, hydraulic hoses and electrical cables are protected within the profile of the structure, or behind removable covers. Vertical side alignment of the mast is maintained by gear racks and pinions. Traverse movement of the auxiliary mast and extend-retract movement of the telescopic forks are automatically sequenced, requiring only one operator control.

### Operator Cab and Controls

Seated and standing operator positions are ergonomically blended into one cab design. Operating mode is automatically set by the position of the operator. Seat pivots 15° toward either side and is powered up and down for comfort positioning. Lower seat cushion pivots upward to form a backrest for standing.

Hand control consoles are located at each side of the operator away from the pick rails to permit free operator movement. The left console levers permit infinite variable control of primary and auxiliary raise-lower, traverse-fork extend and pivot. Extend and retract of telescopic forks are automatically sequenced to the traverse control. Traverse and pivot can be simultaneously operated for pivoting the load in a minimum amount of aisle space. Steer wheel position indicator is located next to the steering arm.

Programmable fork height limits are available for raise and lower. Both lower and one raise limit can be overridden by the operator. The right console area includes a forward-reverse travel speed twist grip and control buttons for fork height limit override, horn, primary power emergency disconnect and power key. Controls permitting emergency fork movement and a storage compartment are located below the hinged console cover.

Truck can be stopped by activation of foot-operated brake, twist grip control of proportional plugging, parking brake, emergency disconnect or power key. Separate brake control as a sit-down and a stand-up type of truck are provided. Foot rest pedals for seated operator fold out of the way. Standing operator floor pedals are nearly flush for clear movement through the area. The gates must be closed and the palm-pressure button and foot pedals require the operator be in position during any load handling function.

A two-speed fan, cab light and two work lights are located in the overhead consoles. Other controls and feed-back include display indicators for load handler clear aisle travel position, master service-required light, open gate warning light, palm button and foot pedals light, service calibration, fork height limit override light, wire guidance field strength light (optional), parking brake release switch with status light, wire guidance switch and status lights (optional) and discharge indicator with low voltage lift interrupt to reduce truck and battery maintenance.

### Primary Mast

Elevated load sway due to mast twisting, plus forward and side bowing are minimized through the use of closed cross-section mast construction. Rolled "I" beams continuously welded to a flat and 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 readily accessible for service. Built-in sensors in primary mast detect slack chain and shut down primary lower, auxiliary lower, pivot and traverse functions.

### Drive Units-Steering

Steerable dual drive units with fixed mounted traction motors minimize wear and maintenance on electrical cables. Full electrical power steering uses servomotors for turning the drive wheels. Drive wheels are automatically centered on trucks equipped with aisle-guide rollers.

### Brakes

Two force levels of mechanical braking provide smooth stopping. This is achieved by the truck automatically switching from four wheel to two wheel braking at slower truck speeds. Braking can also be accomplished by proportional plugging which permits the operator to control rate of deceleration when a greater stopping distance is acceptable.

### Electrical

Heavy-duty 72-volt electrical power system reduces current requirements for improved efficiency. SCR controlled lift and drive motors. Each controller provides current limiting motor protection in addition to the fuses. Two on-board microcomputers are integrated into the truck to provide maximum load handling through-put and smooth truck

performance. Serial data link communications between the elevated cab and the lower power unit minimizes the number of electrical conductors through the mast. Long-life solid-state encoders and LVDT are used in place of potentiometers. Travel speed is sensed and regulated to precise rate. Height sensor provides input for a programmed gradual reduction in maximum allowable travel speed as the primary lift is elevated. Maximum lift and lower speeds are reduced near full lift and lower to provide a soft stop. On-board software includes truck calibration, system diagnostics and trouble isolation capabilities accessible by an optional plug-in terminal.

### Hydraulics

Maximum lowering speed is limited by pressure-compensating flow controls and velocity fuses. Integrated hydraulic cylinder cushions bottom stop when lowering. All lift cylinder rams are plated and retract into the hydraulic oil for additional corrosion protection when forks are lowered. Primary mast emergency lowering valve and load handler emergency power switch are located in the power unit.

### 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.*

# TSP Series

# Specifications

General Info	1	<b>Manufacturer</b>		<b>Crown Equipment Corporation</b>			
	2	<b>Model</b>		30TSP			
	3	<b>Load Capacity*</b>	24" Load Center	lb	3000		
	4	<b>Power</b>	Electric		72 Volt (2 x 36 Volt)		
	5	<b>Operator Type</b>	Sit/Stand Rider		Turret Stockpicker		
	6	<b>Tire Type</b>	Load/Drive		Poly/Poly		
	7	<b>Wheels (x = driven)</b>	Load/Drive		2/2x		
	8	<b>Truck Weight</b>	Less Battery	lb	11,000 - 14,200		
Dimensions	10	<b>Mast</b>	Lift Height		See Chart		
	11	<b>Collapsed Height</b>	Overall		See Chart		
	12	<b>Extended Height</b>	Overall		See Chart		
	13	<b>Load Wheel Overall Width (OAW)</b>	Available in 1" increments	in	52 - 72		
	14	<b>Cab Width</b>		in	<b>52</b>	<b>58</b>	<b>58</b>
	15	<b>Operator Compartment Width</b>	Standard/Optional**	in	52/56, 60	58/62, 66	64/N.A.
	16	<b>Traverse Frame Width</b>	In 1" increments	in	52 - 57	58 - 63	64 - 69
	17	<b>Clear Aisle Telescopic Forks</b>		in	60 - 74	66 - 80	72 - 86
	18	<b>Clear Aisle Non-Telescopic Forks</b>	4" Carriage	in	60 - 65	66 - 71	72 - 77
			5" Carriage	in	62 - 67	68 - 73	74 - 79
			6" Carriage	in	64 - 69	70 - 75	76 - 81
	19	<b>Forks</b>	Telescopic L x W x T	in	36, 42, 48, x 5.9 x 2.25		
			Non-Telescopic L x W x T	in	30, 36, 37, 42, 45, 48, x 4 x 1.75		
	20	<b>Load Handler Length</b>	Standard	in	23 or 27		
			Available in 3" increments*	in	From 30 to 54		
	21	<b>Outside Fork Spread</b>	Fork Type		<b>Telescopic</b>	<b>Non-Telescopic</b>	
			For Load Handler from 27 to 54	in	21.5 to 30	15 to 30	
			For Load Handler from 36 to 54	in	33.5 to 42	15 to 42	
			For Load Handler from 48 to 54	in	45.5 to 54	15 to 54	
	22	<b>Overall Length with 23" Load Handler</b>	"B" Battery Compartment	in	149.3		
			"C" Battery Compartment	in	154.6		
			"D" Battery Compartment	in	158.1		
	23	<b>Headlength</b>	"B" Battery Compartment	in	110.1		
			"C" Battery Compartment	in	115.3		
			"D" Battery Compartment	in	118.8		
24	<b>Wheelbase</b>	"B" Battery Compartment	in	83.3			
		"C" Battery Compartment	in	88.5			
		"D" Battery Compartment	in	92			
25	<b>Width across Guide Roller</b>	Available in .25" increments	in	1.25 - 8.75 greater than item 13			
Performance	30	<b>Speed Travel</b>		mph	See Technical Information		
	31	<b>Speed Lift</b>	Primary Mast	Empty/Loaded	fpm	77/64	
			Auxiliary Mast	Empty/Loaded	fpm	77/60	
	32	<b>Speed Lower</b>	Primary Mast	Empty/Loaded	fpm	80/80	
			Auxiliary Mast	Empty/Loaded	fpm	33/55	
	33	<b>Pivot Speed</b>	180 degree rotation			8 seconds	
	34	<b>Traverse Speed</b>	Inches per second			8	
40	<b>Battery</b>				See Chart		
50	<b>Brakes</b>	Number Load/Drive			2/2		
		Load Wheel Brakes			Dual Disc		
		Drive Unit Brakes			Dual Drum		

\*Contact factory. Capacity may be subject to derating.

Derating is dependent upon a combination of: load center, load wheel spread, clear aisle width, battery compartment size, lift height and travel speed.

\*\*With bolt-on extensions.

## TSP Series

## Specifications

Mast	10	<b>Lift Height</b>	in	207	219	231	243	255	267	279	291	303	315	327	339	351	363	
		<b>Free Lift (TN)**</b>	in	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
		<b>Free Lift (TF)***</b>	in	83	89	95	101	107	113	119	125	131	137	143	149	155	161	
	11	<b>Collapsed Height</b>	in	125	131	137	143	149	155	161	167	173	179	185	191	197	203	
	12	<b>Extended Height</b>	in	249	261	273	285	297	309	321	333	345	357	369	381	393	405	

Mast	10	<b>Lift Height</b>	in	375	387	399	411	423	435	447	459	471	483	495	507	519	531
		<b>Free Lift (TN)**</b>	in	72	72	72	72	72	72	72	72	72	72	72	72	72	72
		<b>Free Lift (TF)***</b>	in	167	173	179	185	191	197	203	209	215	221	227	233	239	245
	11	<b>Collapsed Height</b>	in	209	215	221	227	233	239	245	251	257	263	269	276	282	288
	12	<b>Extended Height</b>	in	417	429	441	453	465	477	489	501	513	525	537	549	561	573

		72 Volt - 2 x 36 Volt					
Battery Compartment Size		"B"		"C"		"D"	
Ampere Hours		775		930		1085	
Battery Weight Min Each	lb	1610		1770		2085	
Number of Plates		11		13		15	
Total Kwh		54		64.4		75.2	
Battery Length Max Each	in	13.50		15.88		18.00	
Battery Width Max Each	in	38.44		38.38		38.69	
Battery Height Max Each	in	31.00		31.00		31.00	

\* Not available above 423" lifting height.

\*\* Auxiliary lift only.

\*\*\* Including auxiliary lift.

Note: Battery removal from left side.

## TSP Series

## Technical Information

### Standard Equipment

- 72-volt fused electrical system
- SCR controlled lift and drive motors
- Electric power steering
- Microprocessor controlled
- 350 amp battery connector
- Emergency power disconnect
- Color-coded wiring
- Chain slack sensors
- Hour meters independently recording key on, traction, lift, steer and accessories
- Start-up time and run time diagnostics
- Diagnostic history with optional service terminal

- Battery discharge indicator with lift interrupt
- Maximum travel speed programmed to meet the application's specs
- Gradual reduction in maximum travel speed as primary lift is increased
- Seated or standing operation automatically selected by operator's position
- Swivel seat which pivots up for standing operation
- Powered seat height positioning
- Hinged side gates
- Key switch
- Horn

- Two-speed fan
- Cab light
- Work lights
- Rear view mirror
- Flashing light
- Infinite hydraulic control of raise/lower, traverse and pivot
- Manual lowering valve located in power unit
- Solid four-point suspension
- Rigid tubular mast
- Third mast chain
- 2-3/4" diameter battery rollers
- Dual drive units
- Four-wheel braking automatically switched to two-wheel at slower speeds
- Operator belt and lanyard

### Optional Equipment

- Wire guidance
- Rail guidance
- End of aisle control system
- Extended load handler lengths and carriage widths
- Extending or non-extending forks
- Programmable fork height limits with overrides
- Non-marking tires
- Power source and mounting brackets for CRT
- Fire extinguisher
- Service Terminal
- Tilting fork carriage, non-telescopic forks only
- Hydraulic fork position, non-telescopic forks only



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