



**INDUSTRIAL EQUIPMENT**

---

# **SERVICE MANUAL**

## **Pallet Trucks**

<b>8HBW30</b>	<b>36,001 and up</b>	<b>8HBE30</b>	<b>36,001 and up</b>
<b>8HBE40</b>	<b>36,001 and up</b>	<b>8HBC30</b>	<b>36,001 and up</b>
<b>8HBC40</b>	<b>36,001 and up</b>	<b>8TB50</b>	<b>36,001 and up</b>

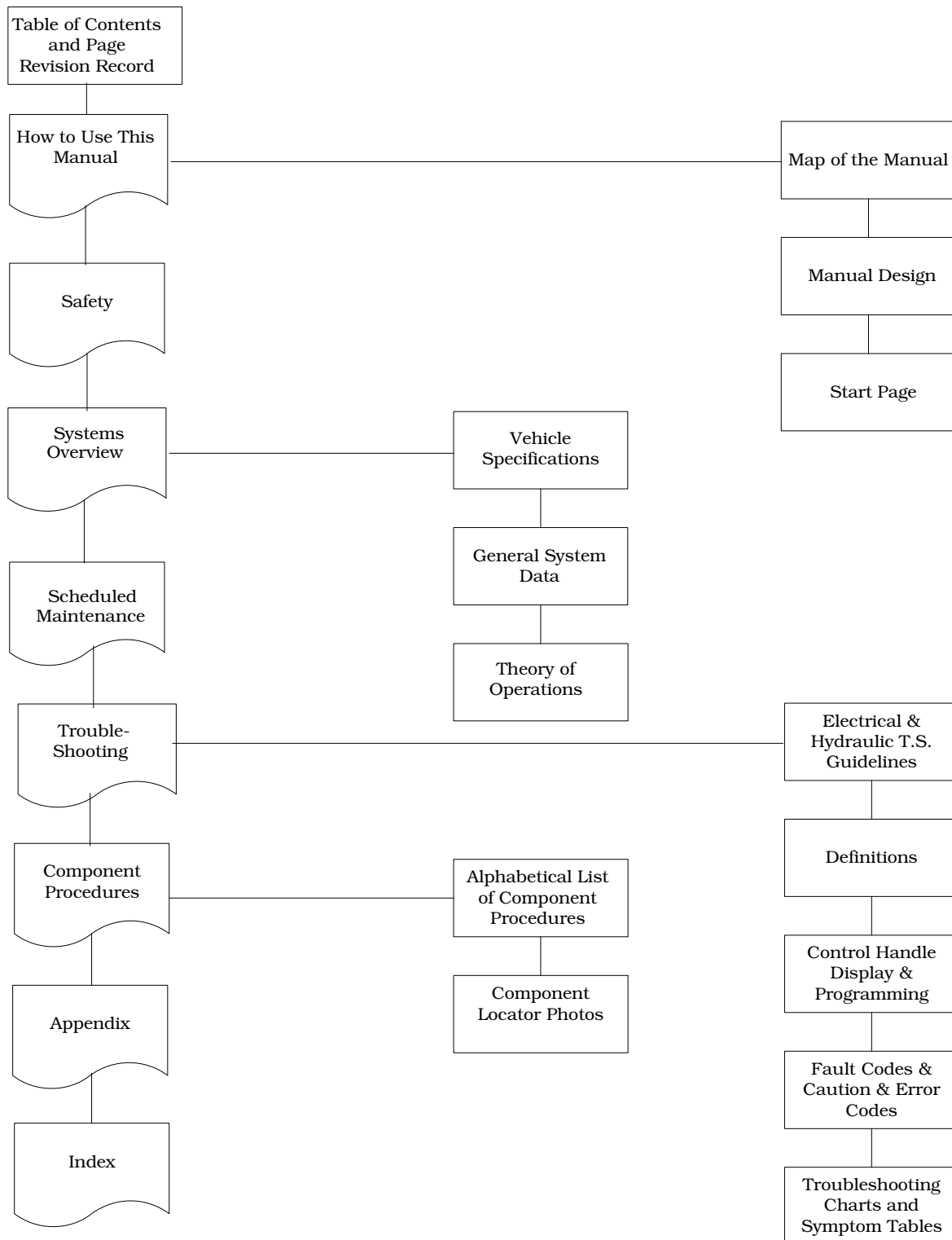
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# **Section 1. How To Use This Manual**

# Map of the Manual



## Manual Design

The *Toyota Pallet Truck Service Manual* is designed with the following objectives in mind:

- Provide technical coverage for expected levels of user expertise
- Anticipate your needs and reduce your decisions regarding maintenance
- Reduce page flipping thru a “one-stop shopping” approach

The two-line running page header at the top of each page tells you:

- Name of the manual (*Toyota Pallet Truck Service Manual*)
- Current section title (for example, this page *How to Use This Manual*)
- Current topic (for example, this page *Manual Design*)

We suggest you get in the habit of turning to the **START** page first when you use this manual.

- The **START** page asks a few questions to guide you to the correct section.

**How to Use This Manual** explains the manual format and contains the **START** page.

**Safety** explains warning and caution notes, general safety rules and safety rules for batteries, static, jacking, and welding.

**Systems Overview** includes truck specifications and theory of operation information.

**Planned Maintenance** outlines the recommended schedule of preventive services to keep your truck working most efficiently.

**Troubleshooting** is a set of fault, caution, and error codes, charts and tables designed to take you from a symptom to a specific sequence of actions in order to isolate a failing component.

- The chart “**Traction Power Amplifier Flash Codes**” on page 5-27 will guide you thru the flash codes displayed on the LED’s installed on the TA.

- The section “**Caution and Error Codes**” on page 5-33 defines the various codes displayed on the operator display.
- The chart “**TS1: START TROUBLESHOOTING**” on page 5-29 will guide you to the symptom chart you need.
- When you’re familiar with the symptoms listed, you may simply look up the symptom from the “**Troubleshooting**” on page 5-29.
- As you work with a troubleshooting chart, code, or table, you may be instructed to test various electrical connector pins. The pinout matrix chart lists information on functions and normal voltages of terminals and harness connector pins. See “**Pinout Matrix**” on page 5-69.
- When you complete a troubleshooting procedure, perform the steps in the “**END1: End of Troubleshooting Procedure**” on page 5-31.

**Component Procedures** gives step-by-step procedures for testing, removal, installation, and adjustment of individual truck components. Components are listed in an order that considers:

- Frequency of attention
- Physical attachment (for example, remove the brake before the traction motor)
- Functional relation (for example, traction motor and drive unit components are grouped together)

To find a component procedure, you may use one of three methods:

- Look up the component name in the “**List of Component Procedures**” on page 6-2.
- Find the component in the “**Component Locator Photos**” on page 6-5.
- Look up component name in the “Index”.

**Appendix** contains reference information such as torque values, lubricants, and schematics.

**Index** lists subjects alphabetically.

## Abbreviations &amp; Symbols

# Abbreviations & Symbols

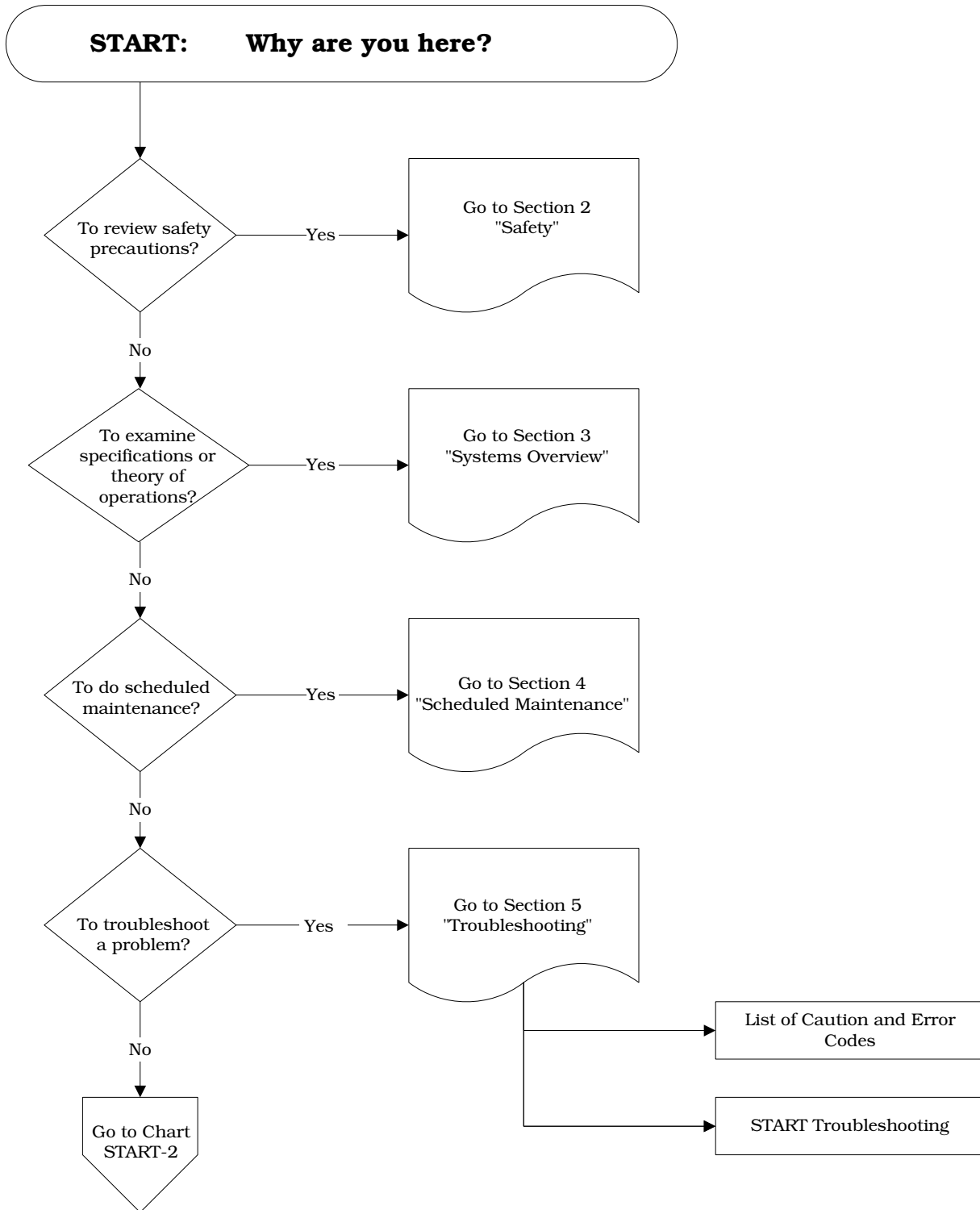
These abbreviations, acronyms and symbols are used in this manual.

<b>Term/Symbol</b>	<b>Definition</b>	<b>Term/Symbol</b>	<b>Definition</b>
A	Ampere	km/hr	kilometers per hour
AC	Alternating Current	kPa	kilo Pascal
amp	Ampere or amplifier	lb.	pound or pounds
ANSI	American National Standards Institute	LED	Light Emitting Diode
approx	approximately	L/H	Load Holding
aux	auxiliary	L/L	Lift/Lower
AWG	American Wire Gauge	mA	milliamper
BSOC	Battery State-of-Charge	mm	millimeter
CAN	Controller Area Network	mph	miles per hour
CCW	counterclockwise	ms	millisecond(s)
cm	centimeter	N/A	Not Applicable or Not Available
COP	Computer Operating Program	N•m	newton meter
CV	checkvalve	OD	Operator's Display
CW	clockwise	OSHA	Occupational Safety and Health Administration
DC	Direct Current	oz.	ounce
DGND	digital ground	pot	potentiometer
EE	UL Electric Truck Type Certification Rating where electrical equipment is completely enclosed	psi	pounds per square inch
ESD	Electrostatic Discharge	PWM	Pulse Width Modulation
ETAC	Electronic Tiller Arm Control ( <i>See</i> Vehicle Manager)	P/N	Part Number
ft.	foot or feet	RAM	Random Access Memory
gal.	gallon or gallons	RCFP	Relay Control Fuse Panel
Gnd	ground	ROM	Read Only Memory
HD	hours on deadman	RPM	Revolutions per Minute
in.	inch or inches	R/R	Remove and Replace
kg	kilogram(s)	SOL	Solenoid
		spec	specification
		SPI	Service Port Interface

<b>Term/Symbol</b>	<b>Definition</b>
TPA	Traction Power Amplifier
temp	Temperature
TM	Traction Motor
TS	troubleshoot
UL	Underwriters Laboratories, Inc.
V	Volt or Volts
VAC	Volts Alternating Current
VDC	Volts Direct Current
VM	Vehicle Manager (ETAC)
wrt	with respect to
@	at
™	trademark
©	copyright
+	plus or positive
-	minus or negative
±	plus or minus
°	degrees
°F	degrees Fahrenheit
°C	degrees Celsius
<	less than
>	greater than
%	percent
=	equals



# START Page



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