

## "ASK THE TECH"

### "BACK TO BASICS"

From time to time we have to drop back a step and look at the basic components and special terminology related to the electric forklifts. Most of the terminology is obvious for those seasoned technicians who have been around forklifts for a long time. Those just starting out may find the article helpful. Here are a few of those general terms and definitions.

#### *Basic Forklift Components*

**BATTERY:** Power Source, Counterweight, made up of separate cells - approx 2 volts/cell, 24 volt battery = 12 cells

**TRACTION MOTOR:** Typically Series Wound Type, Armature - movable power transfer device, Series Field - Magnetic attractor/repeller, Brushes make electrical connection to armature

**TRACTION (MOTOR) CONTROL:** Power Control - high currents; Types = Resistor/Contactor, SCR Panel, Transistorized Panel.

**ACCELERATOR:** Control Circuitry - low currents; Parts = Potentiometer, Micro-switches; Electronic or solid state types also available. Accelerator provides contactor energizing and smooth speed control, connects to traction control.

**DIRECTIONAL SELECTOR:** Control Circuitry - low currents; Parts = Micro-switches; controls Forward/Reverse direction, initiates plugging control.

**BRAKE:** Mechanical/Electronic (Micro-switch), stops voltage to motor by disabling directional contactors

**PUMP MOTOR:** Series Wound, controls Hydraulics for lifting/Tilting

**PUMP (MOTOR) CONTROL:** Types = Full Battery - Full Speed, Variable SCR/Transistorized Control

**CONTROL CIRCUITS:** *Coils* = Directional, 1A/Bypass, Field Weakening, Pump; *Switches* = Key, Seat, Brake, Deadman, Initial, 1A/Bypass

## Basic Forklift Control Features

**Creep Speed:** Slow or starting speed, usually adjustable

**Top Speed:** Fast or top SCR controlled speed, usually adjustable

**Current Limit:** Limits maximum current allowed in motor circuit, usually adjustable

**Plugging:** Controlled Reversal, allows directional reverse without slowing down, reversing speed is controlled by system control

**1A/Bypass:** Power Contactor which bypasses the control and allows full battery to be applied across the motor. Full speed, slightly faster than top SCR speed.

**Field Weakening:** Applies a small amount of resistance across the motor field to weaken its magnetic strength and allows a slightly higher running speed than 1A/Bypass. Less torque, higher speeds.

*“ASK THE TECH” columnist Bob Meyers has written a Training Manual entitled “Forklift Electronics”. Included are: over 70 pages of basic electronics, panel parts, directional circuits, how to use a VOM and much more. Over 60 diagrams are used to help explain the SCR cycle, basic control features and other aspects of maintenance and troubleshooting. The four color printing and comprehensive index make it a reference manual you’ll keep as long as you’re servicing electric forklifts. “Forklift Electronics” is now available through Flight Systems Industrial Products; or the web site listed below Call 1-800-333-1194 or visit Bobs' web site for more information or to place an order.*

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