



# GPH Combination Starter Quick Start

With AC1 Run Rated Bypass Contactor

## INTRODUCTION

The **WEG GPH series of Combination Soft Starters** provides a complete system to start, run and monitor the operation of your AC motor. This Quick Start Guide provides key information to start-up and operate the GPH Combination Soft Starter. **For more complete information on the Soft Starter, please refer to the SSW03 Instruction Manual (50 – 150HP @ 230V and 100 – 300HP @ 460V) and the Wiring Diagrams that are provided.**

Before beginning the installation of the GPH, please review the documentation that has been shipped in an envelope inside the GPH enclosure. If you contact the machine manufacturer, distributor, or **WEG** Motors and Drives about this equipment, please refer to the following part numbers to help you identify the exact product that you are using.

Model No. \_\_\_\_\_ HP \_\_\_\_\_ Job No. \_\_\_\_\_ Serial No. \_\_\_\_\_

The GPH series Combination Soft Starter is comprised of a **WEG** SSW03 Soft Starter, Circuit Breaker, Run-Rated Bypass Contactor, Control Power Transformer, Start and Stop Pushbuttons, Run and Trip Pilot Lights, control logic, Motor output terminal block and optional remote Keypad.

## INSTALLATION

**Connect the incoming AC power** to the Circuit Breaker (CB-101) located in the top right side of the enclosure panel. The operator handle must be in the OFF position to open the front door of the enclosure. **Connect the ground wire** to the ground terminal block (GND-101) located next to the circuit breaker. **Connect the motor cables** to the output terminal block (TB-107) located on the lower right side of the enclosure panel.

## SET-UP

To simplify installation for the typical application, several parameters have already been set. As noted on the label on the inside of the enclosure door, **P22** and **P23** are set for the current rating of the Soft Starter and the input voltage, respectively. **P21** is set based on NEC motor FLA by HP. **P43 (ON)** is set for Bypass operation and **P61 (OFF)** for Starting and Stopping the unit via the terminal inputs (Start/Stop PB) instead of the keypad. **P53 (4)** allows “three wire” start/stop via the Start and Stop Pushbuttons on the enclosure door. The Start and Stop keys on the keypad are disabled.

The **motor overload relay** is only supplied on GPH Combination Soft Starters that are supplied with the AC3 Fully Rated Bypass contactor. On the units with the AC1, Run Rated Bypass contactors, the SSW03 Soft Starter provides the overload protection electronically.

The **AC1 Run Rated Bypass contactor** is designed to be used only after the SSW03 Soft Starter has started the motor and brought it up to full speed. The SSW03 then shuts off the conduction of the SCR's and closes the Bypass Contactor to provide power to keep the AC motor running.

To be able to use the Bypass Contactor to start the motor “across-the-line”, the GPH Combination Starter must be purchased with the **AC3 Fully Rated Bypass contactor**. This type of contactor can handle the higher currents required to start the motor from zero speed and bring it up to full speed. In addition to the AC3 Fully Rated Bypass contactor, these units also include the motor overload relay to provide motor overcurrent protection external to the SSW03. This is especially important if the SSW03 is malfunctioning.

Minimal set-up changes may be required to customize the GPH Combination Starter to meet the specific needs of your application. These will be explained on the following page.

**NOTE: To allow the changing of any parameter value, P00 must be changed to “ON”. 4/03**



# GPH Combination Starter Quick Start

*With AC1 Run Rated Bypass Contactor*

## **OPERATION**

Press the Start Pushbutton and the Soft Starter will provide control of the starting of the AC motor and accelerate it from zero to full speed. Upon reaching full speed, it will automatically switch power through the bypass contactor, and the Soft Starter will shut off. While running in Bypass Mode, there are external SSW03 CT's in the motor circuit so **P72** (% Current) and **P73** (Amps) will display motor current. The SSW04/03 will then provide electronic overload protection even when the motor is getting power from the bypass contactor

In the event of a Soft Starter fault, the GPH Combination Starter with the AC1 Run Rated Bypass contactor is not designed to be used for "across-the-line" motor starting. Starting the motor "across-the-line" with the bypass contactor results in the highest amp draw, immediately applying full voltage to the motor and providing the most mechanical shock to the load on the motor. This should only be attempted with GPH Combination Starters that come equipped with the AC3 Bypass Contactor.

### ***Voltage Ramp vs. Current Ramp***

There are two basic start-up modes, ***Voltage Ramp*** and ***Current Ramp*** that you can use to start the motor. In ***Voltage Ramp***, the time programmed in parameter **P02** will set the time it takes to for the voltage to ramp from the value set in **P01**, Initial Voltage, to the line voltage level. For example, 138V (30% of 460V) to 460V. The actual time to accelerate the motor up to full speed will depend on the load inertia and friction. The current draw will also depend on the load on the motor. Since torque increases as the V/Hz ratio increases, the applied motor torque will increase as the voltage increases. The default Accel time in **P02** is 20 seconds and can be extended to a maximum of 240 seconds.

In ***Current Ramp***, adjusting **P11** will accelerate the motor at the percentage of current programmed and the load will determine how fast the motor gets up to speed. For a 50HP GPH, 250% in **P11** will provide 250% of 60A or 150 Amps during the acceleration. The **P02**, Acceleration Time, is now a time check that will produce an E02 fault if the motor is not up to speed by the time set in **P02**. For example, if **P02** is 20 seconds and the load and current programmed does not allow the motor to reach full speed in 20 seconds, the E02 will trip the Soft Start. To correct this, either reduce the load, increase the current allowed in **P11** or extend the time programmed in **P02**.

***Adjusting P21, P25, P26 and P27 sets Motor Overload Protection.*** **P21**, Motor Current Setting, scales the motor to the Soft Starter. If the motor FLA is 80% of the rated current of the Soft Start, program 80 in **P21**. **P25** is the overload class, default is 30, but it can be programmed from 5 to 30. **P26** is the Service Factor of the motor and the default setting is 1.00. If the motor has a 1.15 Service Factor, program 1.15 in **P26**. The values programmed in **P21**, **P25** and **P26** all contribute to the scaling of the timed Overcurrent/overload protection of the motor. An E04 Motor Overload will trip the Soft Starter if the diagnostics determines that the Ixt current is excessive. **P27** is OFF in default and should be left OFF in most cases. **P27** provides a timed reset of the thermal protection.

There are other parameters that you may want to change, depending on your application. The default stop mode is coast-to-rest. If you want to have a controlled decel ramp, then program the **P04** Decel Ramp Time. **P12** through **P15** are the parameters for Immediate Overcurrent and Undercurrent trip levels and the time allowed before causing a fault trip. **P31** Phase Rotation monitors the AC input phasing and will trip the Soft Starter if the phase rotation is changed, preventing reverse operation. Please review the SSW03 Instruction Manual for specific applications and parameters.

***For additional information, contact WEG at 1-800-ASK-4-WEG***