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Installations Instructions & Diagrams

Hydraulic Drive Welder Models HW200F, HW200F.Man, HW400F, HW400F.Man

on the web @ www.ZENA™.net

Model HW200F Hydraulic Drive Welders are shipped with the following standard components:

a. ZENA open frame welder chassis with MORSE Silent Chain Drive and (mounted) 30HP hydraulic motor.
b. Standard ZENA 200A welding system cables with electrode holder controls (all welding controls built into the electrode holder) with a factory installed BJ150.4 quick disconnect cable kit.
c. A Model SR200.12F Power generator (with shaft coupler and spyder attached).
d. A Model WC.12B welding power control module (or optional WC.12RO welding power control module).

Model HW400F Hydraulic Drive Welders are shipped with the following standard components:

a. ZENA open frame welder chassis with MORSE Silent Chain Drive and (mounted) 38HP hydraulic motor.
b. Standard ZENA 400A welding system cables with electrode holder controls (all welding controls built into the electrode holder) with a factory installed BJ400.4 quick disconnect cable kit.
c. Two Model SR200.12F Power generators (each with shaft coupler and spyder attached).
d. A Model WC.12B welding power control module (or optional WC.12RO welding power control module) and a model WC.12S slave welding power control module.

Model HW200F.Man Hydraulic Drive Welders are shipped with the following standard components:

a. ZENA open frame welder chassis with MORSE Silent Chain Drive and (mounted) 30HP hydraulic motor.
b. Replacing the standard ZENA welding controls (allowing the use of common ordinary welding cable), a model PCIM.E welding power control interface module with panel mounted external power control dial **and** a model TS101 automatic electrode contact sensor switch which provides welding power switching signals to the PCIM.E module.
c. A Model SR200.12F Power generator (with shaft coupler and spyder attached).
d. A Model WC.12B welding power control module (or optional WC.12RO welding power control module) and a model WC.12S slave welding power control module.
e. A #275-226 30A Automotive Relay, 12V Coil (66 ohms), SPST, sealed with 1/4" male spade terminals.

Model HW400F.Man Hydraulic Drive Welders are shipped with the following standard components:

a. ZENA open frame welder chassis with MORSE Silent Chain Drive and (mounted) 38HP hydraulic motor.
b. Replacing the standard ZENA welding controls (allowing the use of common ordinary welding cable), a model PCIM.E welding power control interface module with panel mounted external power control dial **and** a model TS101 automatic electrode contact sensor switch which provides welding power switching signals to the PCIM.E module.
c. Two Model SR200.12F Power generators (each with shaft coupler and spyder attached).
d. A Model WC.12B welding power control module (or optional WC.12RO welding power control module) and two model WC.12S slave welding power control modules.
e. A #275-226 30A Automotive Relay, 12V Coil (66 ohms), SPST, sealed with 1/4" male spade terminals.

Optionally, you can also equip your ZENA hydraulic welder with a wide range of controls to support all types of automatic feed welding -- including DC TIG welding. This can be done at the time of order OR at any time in the future thanks to our unique modular control systems.

Open Frame Hydraulic Drive Installation

The welder is shipped with the power generator (or generators) unmounted. This is done to prevent damage during shipping and to make installation easier. We do not recommend mounting these components until you have completed a satisfactory Installation of the main chassis.

For a 200A welder you will need a mounting space that will accommodate the "Mounting Envelope" of the unit -- 16" W x 15" H x 10" D OR 16" W x 10" H x 15" D. For a 400A welder the "Mounting Envelope" of the unit is 26" W x 15" H x 10" D OR 26" W x 10" H x 15" D.

Preferably, the welder chassis should be located so that the bottom of the chassis is **above** the top of the main hydraulic fluid reservoir. If this is not possible, a 12V lubricating oil pump, filter, and a small fluid reservoir will have to be installed to provide lubrication for the welder's chain drive.

Mounting is accomplished by means of two supplied aluminum brackets which can be fixed to the main chassis of the welder in 4 different locations to accommodate installations on vertical, overhead, or horizontal surfaces. The surface to which the chassis is attached does not have to be a perfect 90° or 180° plane. Inclines of as much as 45° are acceptable, as long as the appropriate case drain location is selected to return lubricant/coolant to the hydraulic fluid reservoir.

NOTE: TWO case drain locations are provided on each end of the chassis. The drain location selected should be the one that is located in the lowest case position for your application. It is permissible, and sometimes advisable, to use BOTH drain locations on the "low" side of the drive case.

Hydraulic hookup is straightforward and follows conventional practices. **In all cases, however, it is of critical importance to insure that ALL return/drain lines are directed, in a completely unrestricted manner to the appropriate reservoir tank (free of filters, flow controllers, valves, line ID reductions, or restrictions to free fluid flow of any kind).**

Hydraulic hookup is simplest in applications where hydraulic fluid flow is switched on, or off, using an electric control valve actuated, simultaneously, with an engine throttle advance solenoid (as used in our model ASC3 speed control kit) by a relay switched on by the automatic speed control signal provided by the Green wire which extends from the welding control module (an "active ground" which can switch 1A max.). The engine throttle advance solenoid is set to advance the throttle to the point required for the proper engine speed to provide correct hydraulic fluid flow/pressure to the welder.

NOTE: In systems where large hydraulic flows (over 24 gpm) are (or may be) present, and/or where switching fluid flow to the welder on, or off, is impractical, or undesirable, for some reason a suitable flow control mechanism should be employed to insure that excessive hydraulic fluid flow is not directed to the welder.

The diagrams on the following pages illustrate acceptable positioning of the ZENA hydraulic drive welding system as well as typical hydraulic plumbing for main chassis installations where the chassis case is mounted both above and below the top of the hydraulic fluid reservoir.

Test running the hydraulic motor and chassis drive can be performed without the need to install/attach the welding power generator (or generators).

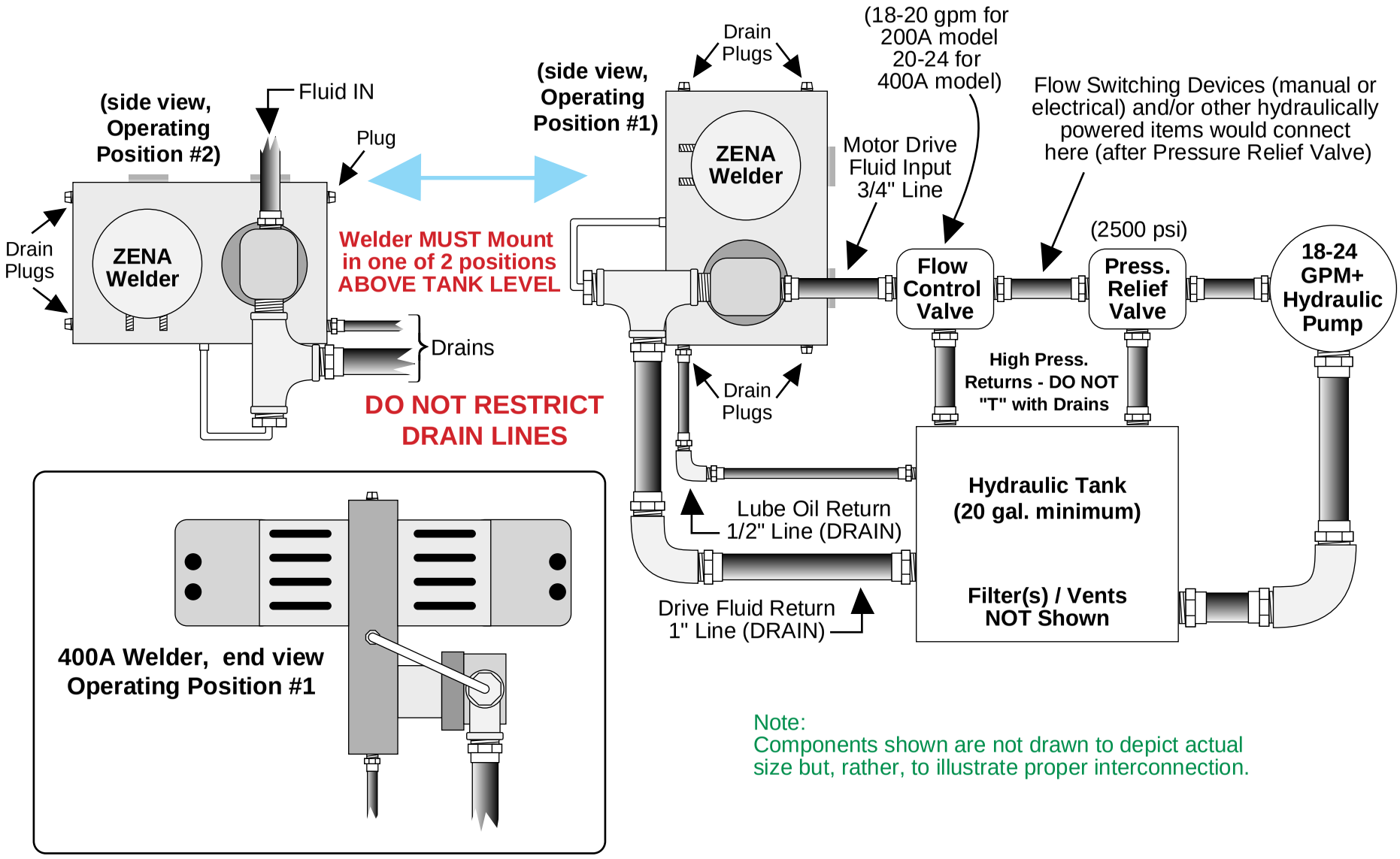
Generator Attachment After Chassis Installation

Once your chassis is in place and "plumbing" complete, you can install your welding power generator (or generators).

This is a simple task, requiring only an allen wrench. The welder is shipped with the stainless steel 1/4-20 cap screws that hold the generator in place loosely screwed into their corresponding mounting holes. Remove these screws, and carefully insert the generator's drive end into the mounting tube and slide the generator home -- while bring the couplers and spyder into alignment (a small screwdriver can help here), Rotate the generator until the welding cable terminals are in an acceptable location for your application, then reinstall and tighten the 1/4-20 cap screws.

That's it, you're ready for electrical hookup!

Typical ZENA™ Hydraulic Welder Hookup
Standard, Gravity Lube Oil Return Version
(Welder Drive Box ABOVE Hydraulic Reservoir Tank)

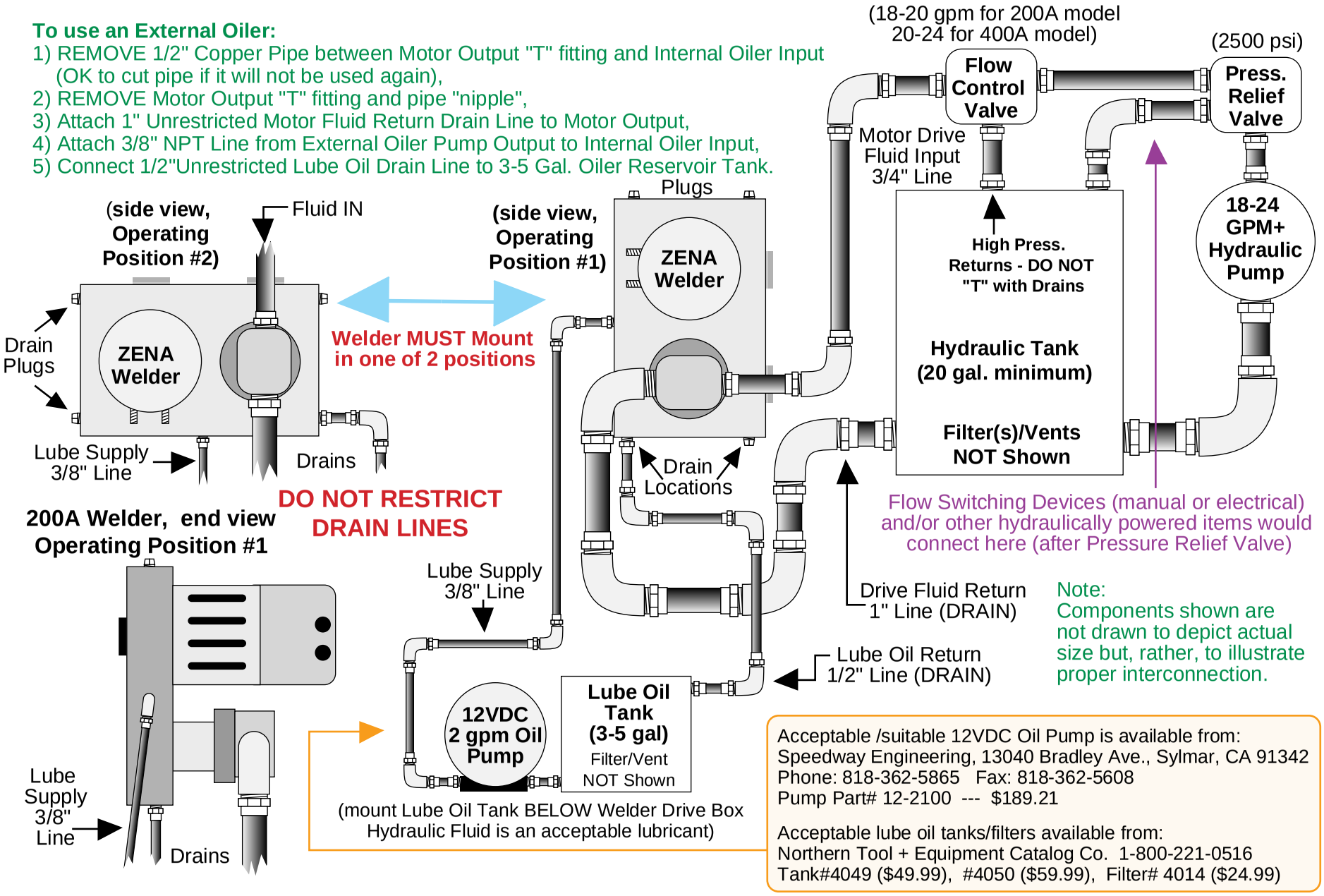


Note:
Components shown are not drawn to depict actual size but, rather, to illustrate proper interconnection.

Typical ZENA™ Hydraulic Welder Hookup -- External Oiler Version
(Welder Drive Box BELOW OR LEVEL with Hydraulic Reservoir Tank)

To use an External Oiler:

1) REMOVE 1/2" Copper Pipe between Motor Output "T" fitting and Internal Oiler Input (OK to cut pipe if it will not be used again),
2) REMOVE Motor Output "T" fitting and pipe "nipple",
3) Attach 1" Unrestricted Motor Fluid Return Drain Line to Motor Output,
4) Attach 3/8" NPT Line from External Oiler Pump Output to Internal Oiler Input,
5) Connect 1/2"Unrestricted Lube Oil Drain Line to 3-5 Gal. Oiler Reservoir Tank.



Acceptable /suitable 12VDC Oil Pump is available from:
Speedway Engineering, 13040 Bradley Ave., Sylmar, CA 91342
Phone: 818-362-5865 Fax: 818-362-5608
Pump Part# 12-2100 --- $189.21

Acceptable lube oil tanks/filters available from:
Northern Tool + Equipment Catalog Co. 1-800-221-0516
Tank#4049 ($49.99), #4050 ($59.99), Filter# 4014 ($24.99)

Electrical Hookup

Electrical hookup is also easy and quite straightforward. Color coded wiring diagrams are provided, on the following pages, that cover the most typical installations.

However, for those customers who have purchased their welders for non-standard applications, or who are using special features/options, we always provide a special color coded wiring diagram specific to their unique application. **Always use this diagram, when/if provided.**

NOTE: For those welders which are to be installed in Manlift applications we have designed the control system to allow you to take advantage of two or three existing "spare" wires in the lift's platform-to-base wiring. Shielded and/or special purpose wires are NOT required. If such spares are not available, any suitably durable and flexible #18 gauge, or larger, wires can be used

NOTE: Particularly for lift applications, a number of options exist for welder control and, often, our customers like to have their switches and other user accessible controls match those that came "stock" with the equipment to which they are retrofitting our welder. For this reason, most switching and most wiring components not directly related to the interconnection of the welder control components themselves are typically user supplied. To save on freight costs, welding cables and common connectors used to go from welder to basket are also not included in the basic welder package. However, if you should need suitable switches, or other wiring components -- or if you wish to have us custom fabricate a welding cable harness for you application, we stand ready to assist you.

Please follow the wiring diagrams carefully. Feel free to call us if you have any questions, or if you require any clarification to these instructions, or if you are, in any way, unsure of how to proceed.

If You Need Help/Support

We want you to get the most from your new equipment. To this end, we are committed to providing you with whatever level of support you may need (starting with this manual) to insure that when you take delivery of your new welder, or complete your welding system installation, your new equipment will be perfectly installed and ready to provide you with the best welding experience of your life.

A number of different support mechanisms are available to you:

a. **The Internet -- www.zena.net**
   Our web site is available 24 hours a day and contains our most up-to-date product information, photos and descriptions of typical installations, and other technical information that may be of assistance to you. A good starting point is our web site map: **http://www.zena.net/htdocs/Map.shtml**

b. E-Mail -- **support@zena.net**
   Feel free to send us e-mail at any time. We try to answer all e-mail within 24 hours.

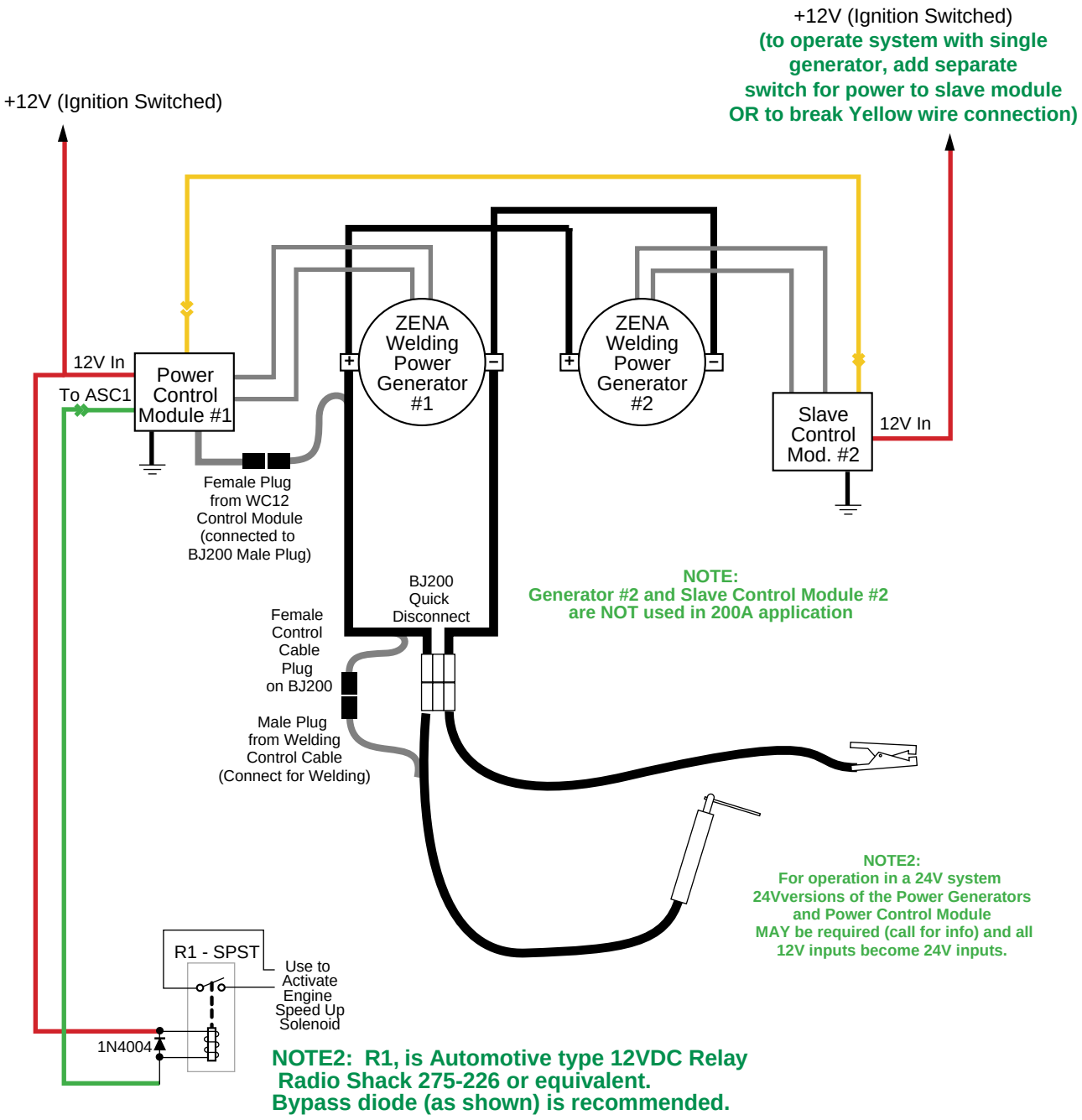
c. Fax -- **615-897-2023**
   Feel free to send us a fax at any time (include pictures and/or diagrams if possible). We make every effort to answer all faxes within 24 hours.

d. **Mail** ZENA, Incorporated, Technical Support
   330 Club Springs Road
   Elmwood, Tennessee 38560 U.S.A.

e. **Telephone Support**
   When all else fails, we can also provide you with help via telephone support. Telephone support is available during our normal business hours: 9:00 AM to 5:00 PM CST
   Toll Free in U.S.A. -- 877-ZENA INC (877-936-2462) Outside U.S.A. -- 615-897-2011

   NOTE: We do not use inexperienced people (often halfway around the world) who attempt to provide technical support by simply reading from a computer screen and/or a prepared script. Our web site, and this manual, already contain everything that would be included in such a script -- and more! Instead, all of our support personnel are individuals with extensive welding experience who also have extensive hands-on installation and service experience with our products. Bringing you a wealth of experience and knowledge which goes beyond the scope of this document.
   This means, however, that we don't have a support staff numbering many hundreds with a huge number of incoming phone lines -- so, depending on the time of day that you call, you may have to interact with our simple voice mail system, and wait a short period for a call back. Should this occur, please accept our apologies.

Wiring a dual generator 150A/300A (or 200A/400A) welding system with STANDARD ZENA welding controls



NOTE2: R1, is Automotive type 12VDC Relay Radio Shack 275-226 or equivalent. Bypass diode (as shown) is recommended.

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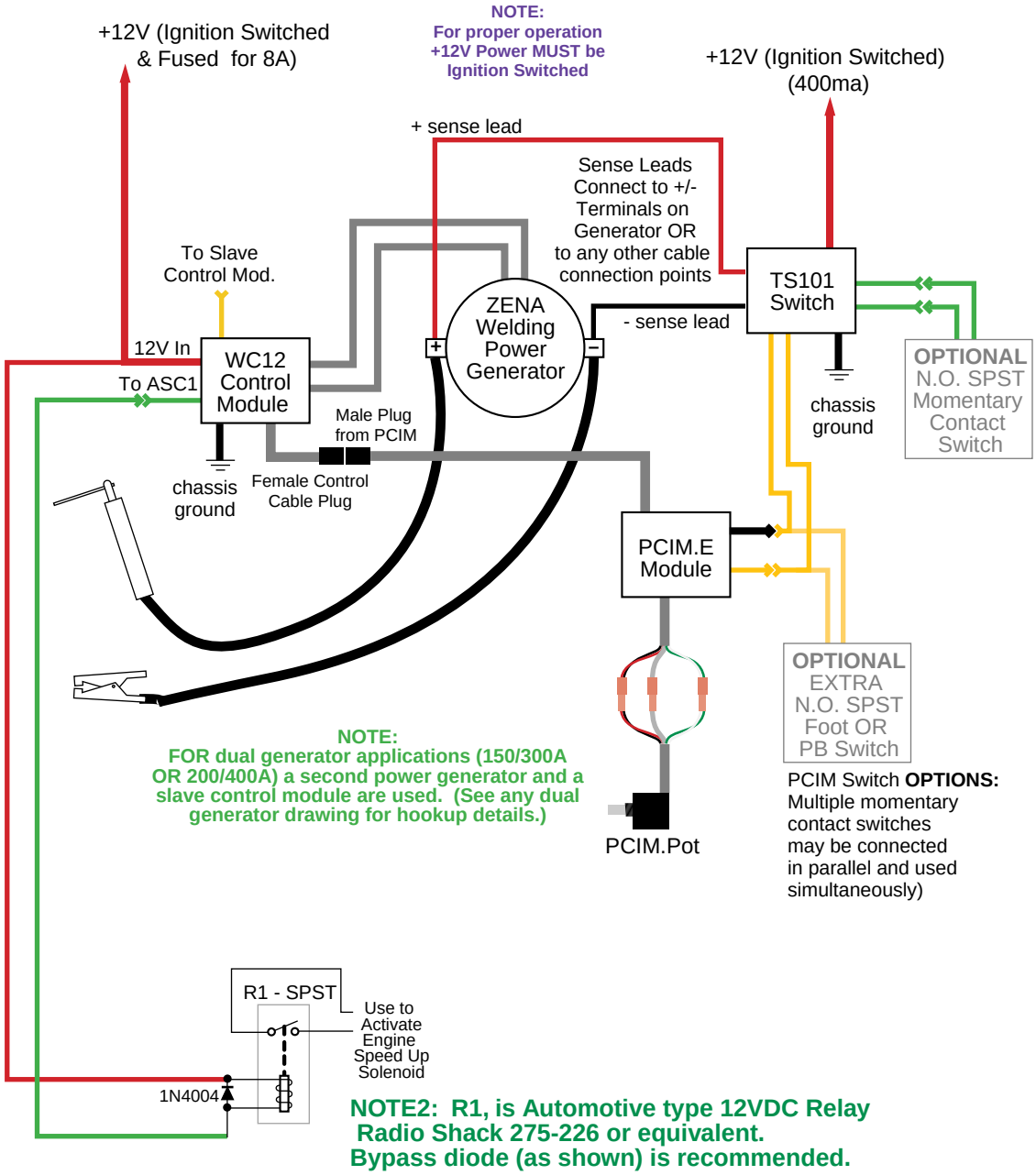
Using a ZENA™ TS101 Electrode Contact Sensor Switch with a PCIM.E Power Control Module, PCIM.Pot, & OPTIONAL normally open, momentary contact switch (PCIM.FS or PCIM.PB or Other)



NOTE2: R1, is Automotive type 12VDC Relay Radio Shack 275-226 or equivalent. Bypass diode (as shown) is recommended.

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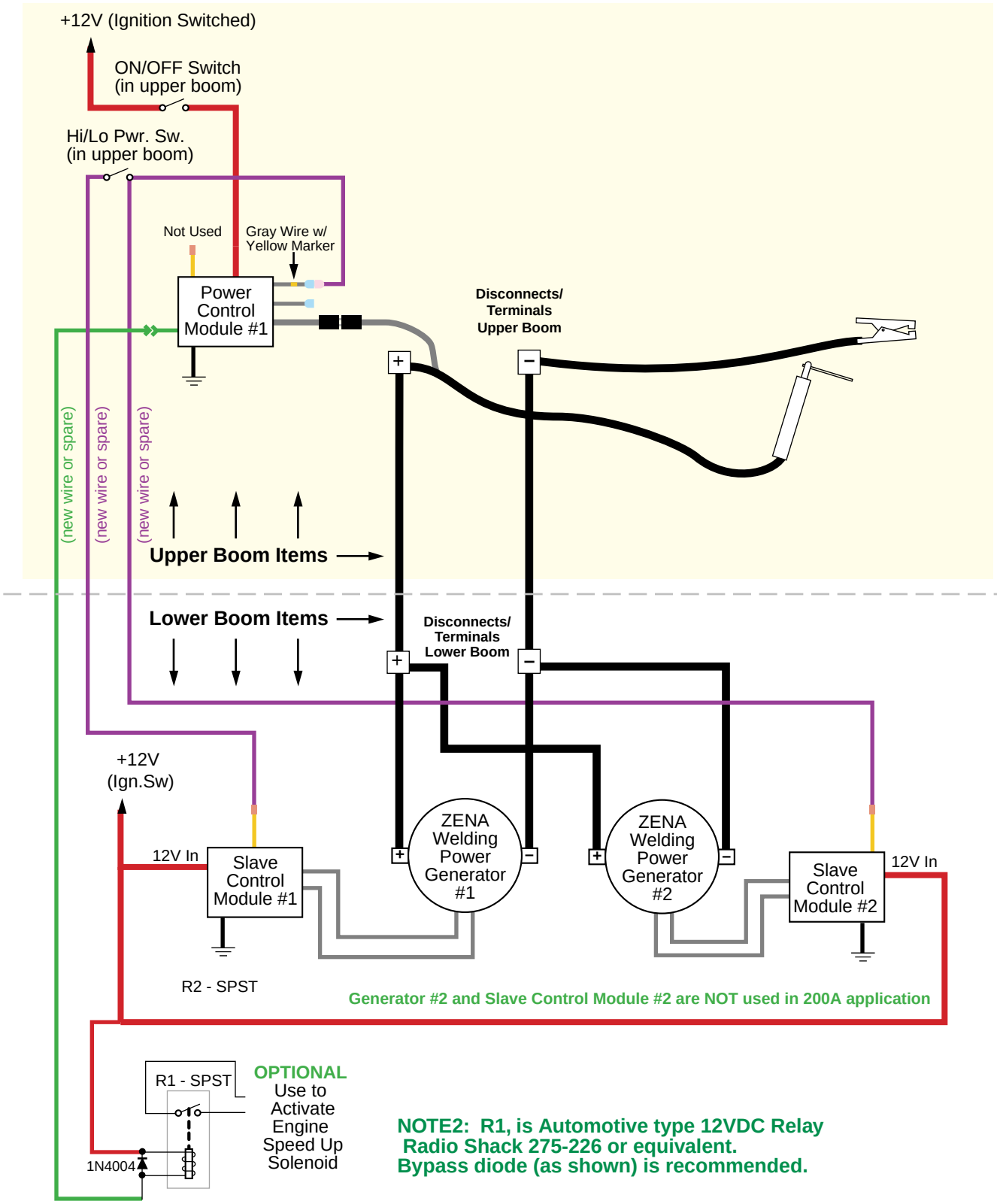
Wiring for a 150/300A or 200/400A welding system (engine driven or hydraulic), with STANDARD controls, for operation in a Manlift Application



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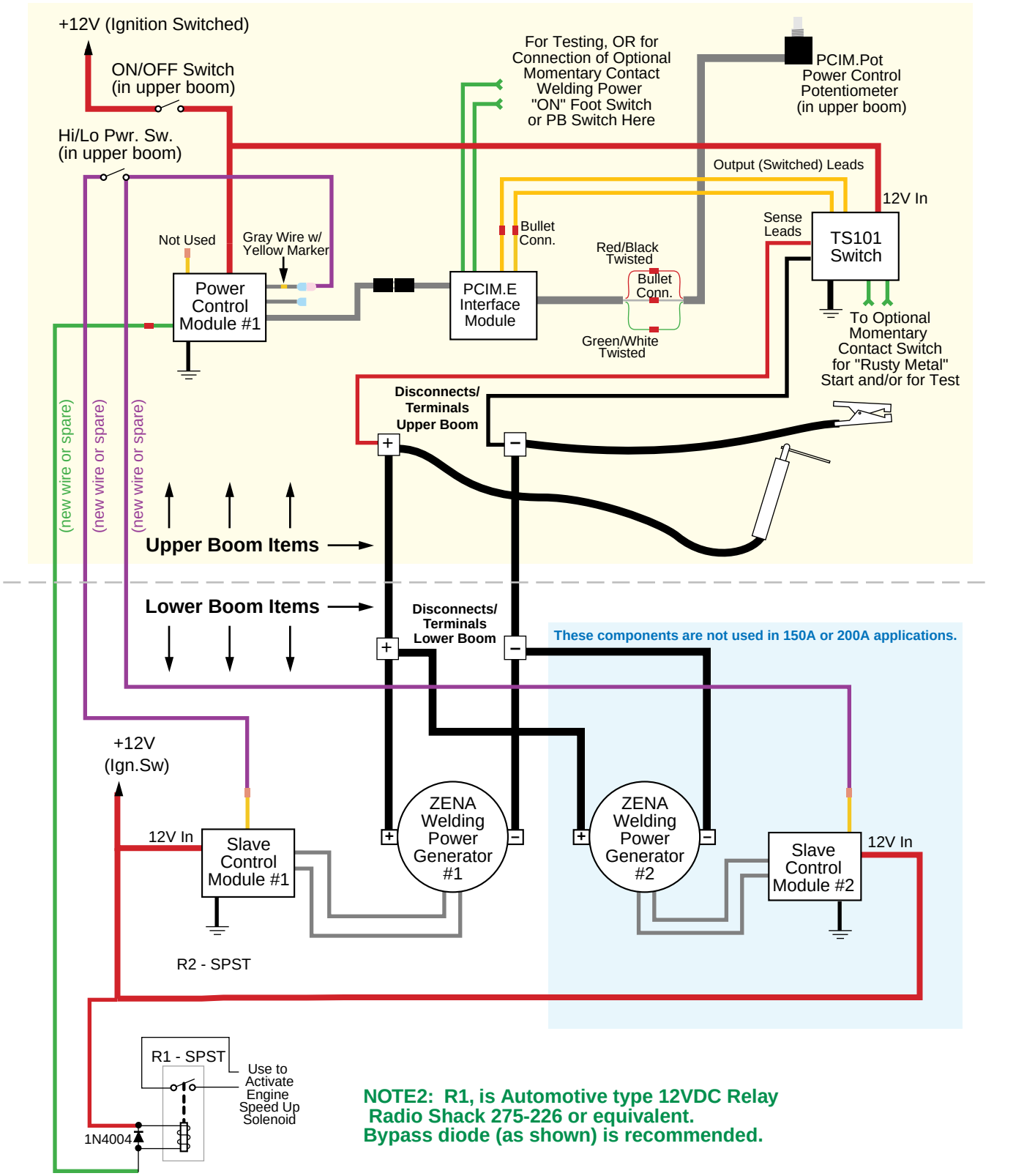
Wiring for a dual generator 150/300A or 200/400A welding system (engine driven or hydraulic) for operation in a Manlift Application



NOTE2: R1, is Automotive type 12VDC Relay Radio Shack 275-226 or equivalent. Bypass diode (as shown) is recommended.

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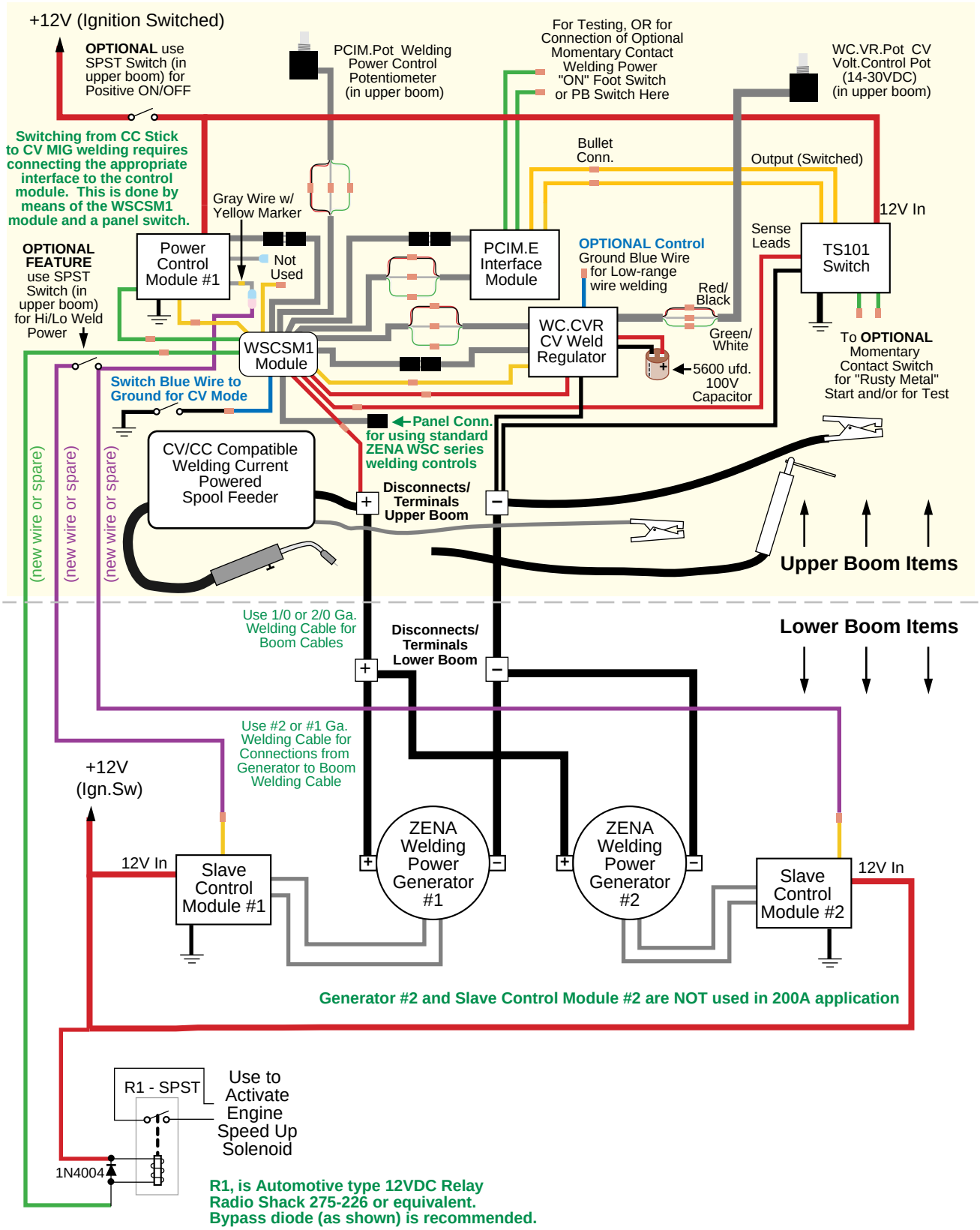
Wiring for a dual generator MULTI PROCESS 150/300A or 200A/400A welding system (engine driven or hydraulic) for operation in a Manlift Application



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