E I P

INSTRUCTIONS

ENGLISH

E-600-8 / E-600-8N

ADAPTER TO CONNECT YASKAWA R-SERIES OR DR2-SERIES SERVO-DRIVES TO E-600 OR N200 AXIS CONTROLLERS

The E-600-8 module fits into E-600 Base.
The E-600-8N into E-600 ND Base or N-200-600-8 box.

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Schematic :

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Subject to change
E.I.P. SA Release 8 june 1996

E I P

UNE GAMME COMPLETE DE CONTROLEURS D'AXES
EINE VOLLSTÄNDIGE PALETTE VON ACHSENSTEUERUNGEN
A COMPLETE RANGE OF MOTION CONTROLLERS

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ADAPTER: E-600 to YASKAWA SERVO-DRIVES

1. PURPOSE and DESCRIPTION

The E-600-8 Adapter allows efficient connection of a YASKAWA servo drive to the E.I.P: E-600 Motion Controllers or N-200. The adapter comes either as a module to be mounted in the module space of the compact E-600 controllers or as a "nacked" board to fit into the panel version E-600 ND (Type E-600-8N) or box N-200-600-8 for N-200-x Controllers.

The E-600-8 Adapter is intended to directly replace a stepper drive. Thus, a YASKAWA R-Series or DR2-Series amplifier with **position loop** is required. Up to 4 YASKAWA Adapters can be used within a E-600 controller. Up to 2 YASKAWA Adapters can be used within a N-200 controller. All combinations of stepper axes and YASKAWA axes are permitted.

The adapter contains the following functions:

- Signal conditionning for the **PULSE** and the **DIRECTION** signals
- Generation of the SERVO ON and ALARM RESET commands from the E-600 **BOOST** signal
- A latch circuit to effect a highly precise home positionning using the C-chanel of the motor encoder
- A source driver to actuate the mains relay as a function of the alarm outpout.

2. DETAILLED CIRCUIT DESCRIPTION

Please, refer to Schematics # 597 or # 852 and also to the YASKAWA leaflet "AC Servo Drives".

2.1. Position Command

The PULSE and DIR signals use differential line drivers for best noise immunity. It is recommended to have twisted pairs for this signals. Make sure that the option settings on the Yaskawa board are made according to section 4.

2.2. SERVO ON Command

This command is derived from the /BOOST signal normally used by the stepper axes. SERVO ON must become active soon after power-up and remain active during the normal function.

To recover from a YASKAWA alarm condition, the /ALM RST input must be pulled down. This can be done by switching the BOOST off for a short time.

If the E-600 Controller is under UNIPROG, the BOOST is controlled in the correct way at power-up, provided the configuration menu MGEN has **BOOST = 2**. The alarm reset is also done automatically as a result of the normal fault recovery procedure.

2.3. Servo Within the Position Zone, Servo Ready

When the axis is inside the position zone as defined by SW2 on the YASKAWA board, the signal COIN is activated. COIN is anded with SRDY (SERVO READY) and the result is conducted through the adapter to the LS(i+4) input of the E-600 controller. (i is the axis #). The user has to test LS(i+4) whenever proper positionning is important. LS(i+4) is active inside the position zone. The width of the position zone selected buy SW2 must be wide enough to allow proper detection of COIN.

(Remember that the LS(0) to LS(7) inputs of the E-600 controllers are simply called IN(0) to IN(7) by the UNIPROG language.)

(Remember that the LS(0) to LS(3) inputs of the N-200 controllers are simply called IN(0) to IN(3) by the N language.)

2.4. The Home Position

For the N-200 users, see The N-200 programming manuel to configure the homing potition. For the moment, it is not possible to use the Yaskawa's index with the buffered command REF.

As seen from the E-600 controller, the home positionning is done as usual with step motors: the axis moves toward the home switch, when the switch is reached it reverses and leaves the switch at very low speed for accuracy.

Here, to take advantage of the index pulse of the encoder (Chanel C), the home switch is latched before entering the controller; the latch is reset by the next occurence of an index pulse. The process is depicted in the figure below. (Please, notice that the Set input of the latch overrides the Reset input.)

The home switch may be a dedicated switch, connected to pin 2 of the 9 pol Sub-D connector, or one of the safety limit-switches of the axis.

When one of the limit switches - or the home switch - is not implemented, the corresponding pin of the 9 pol Sub-D connector must be tied to 0 V, pin 4 or 8.

If inductive proximity switches are used, choose n-p-n, normally closed types.

UNIPROG REF Configuration:

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REF. INPUT:   IN(i)
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IN(i) = axis number if the HOME SWITCH input is used.
IN(i) = 18 if the positive or negative limit switch gives the home position.

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SWITCH    NO=1 , NC=0: 1
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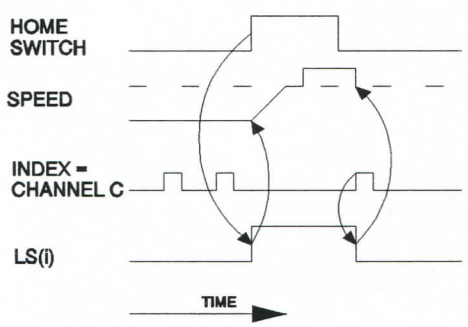


2.5. Alarm Handling

The FAULT signal to the E-600 or N-200 controller is activated whenever a limit switch is actuated or when an YASKAWA alarm condition exists. The fault condition handling by the UNIPROG utilities is described elsewhere but the screen messages will help the operator.

YASKAWA asks for a mains relay, which opens whenever an alarm condition exists. For this purpose, the adapter contains a source driver (1 A, 24 V) to control such a relay. The contacts are in the power inlets R and T, the logic supply (r and t) beeing tied directly to the mains.

A contact network, suggested by note 3 in the functional schematic, may be inserted in the coil of the relay. The diode 6 is needed only in the presence of such an network.

In a multi-axis system, a single mains relay is more practical. The R and T terminals of the YASKAWA amplifiers are tied together. When an alarm condition exists in one drive, all axis will be disconnected simultaneously. One adapter controls the relay and a daisy chain connection has to be made at the Faston terminals, note 5.

3. WIRING

The cable between the adapter (15 pol Sub-D) and the YASKAWA connector (designated 1CN) must be shielded. For long distances, twisted pairs will be preferable. Connect the shield at pin 18 at 1CN and at the connector housing in the Sub-D.

4. SETTINGS

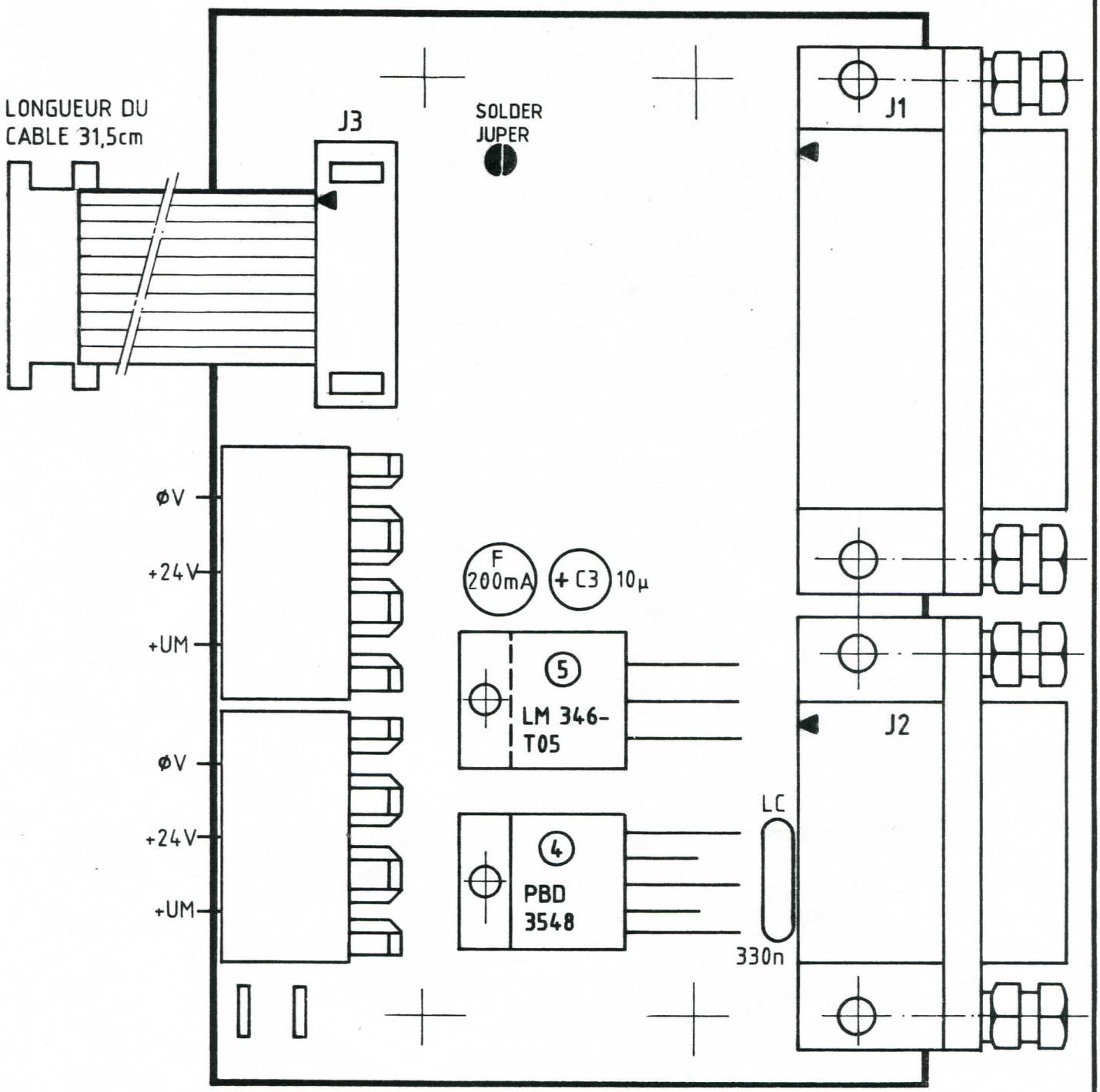
Some YASKAWA R-Series settings are mandatory when used with the E-600-8 Adapter:

SW2: 1 open
2 closed
3 closed (jumper plugged)

SEL1: jumper at 1-2

SEL2: jumper at 1-2.

The other settings depend upon the usage of the servo system and the reader must refer to the YASKAWA leaflet or to the vendor.



4.5.93

E 600 - 8 YASKAWA ADAPTER	601
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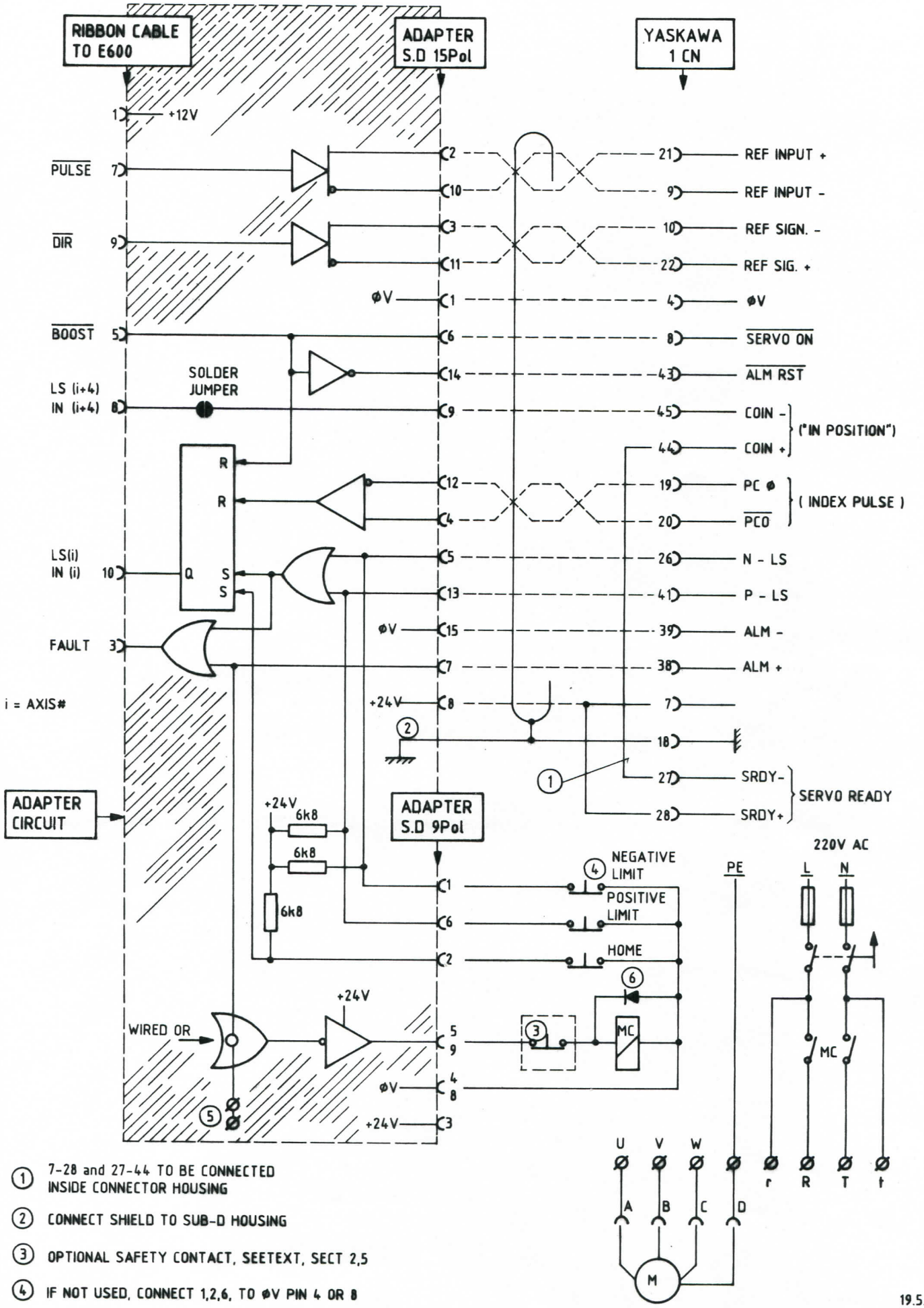

(1) 7-28 and 27-44 TO BE CONNECTED INSIDE CONNECTOR HOUSING

(2) CONNECT SHIELD TO SUB-D HOUSING

(3) OPTIONAL SAFETY CONTACT, SEETEXT, SECT 2,5

(4) IF NOT USED, CONNECT 1,2,6, TO øV PIN 4 OR 8

(5) FASTON TERMINAL, SEE SECT 2,5

(6) SEE SECT 2,5

19.5.93
23.4.93

E 600 - 8
ADAPTER E600 TO YASKAWA R - SERIES
597

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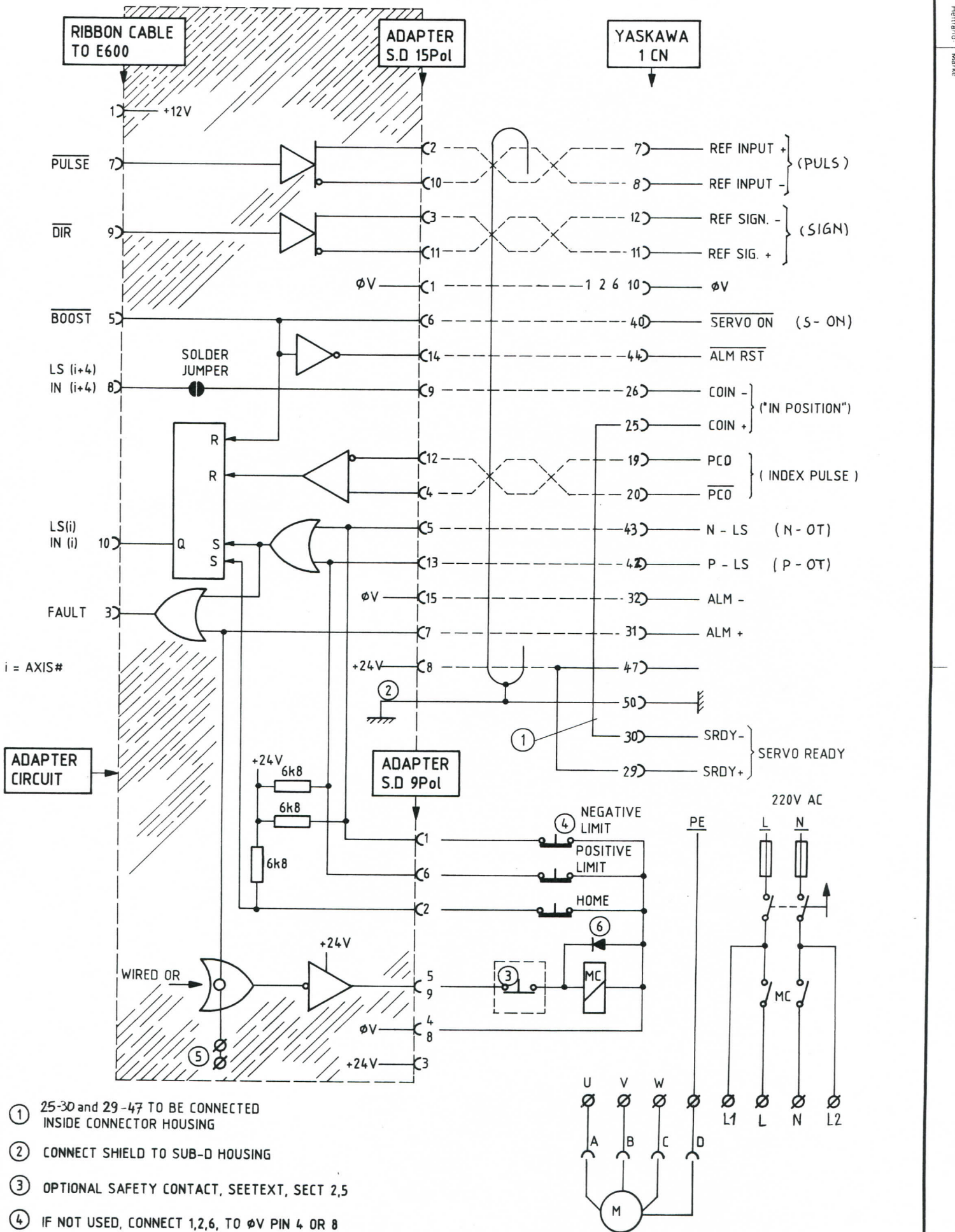

(1) 25-30 and 29-47 TO BE CONNECTED INSIDE CONNECTOR HOUSING

(2) CONNECT SHIELD TO SUB-D HOUSING

(3) OPTIONAL SAFETY CONTACT, SEETEXT, SECT 2,5

(4) IF NOT USED, CONNECT 1,2,6, TO ØV PIN 4 OR 8

(5) FASTON TERMINAL, SEE SECT 2,5

(6) SEE SECT 2,5

5.3.97

E 600 - 8
ADAPTER E600 TO YASKAWA DR2 SERIES

852

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