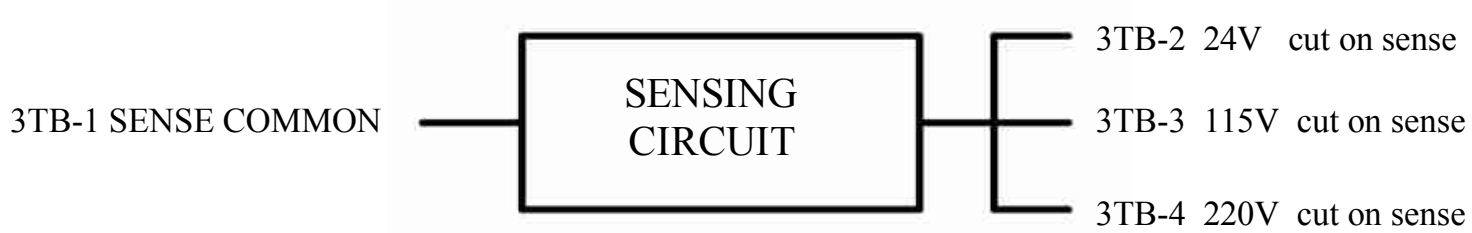
MACH.5 PLASMA CUTTING MACHINES

MACH.5.1 PLASMA ARC-ON SENSE INPUT (Plasma arc on sensing)



This input is used for sensing when the ARC has transferred to the plate and motion along the cut can begin. It operates such that it must be in the "OFF" state before the PLASMA CIRCUIT is enabled. Since some PLASMA UNITS do not have a "ARC ON" contact output, the SENSE input is connected so that it receives an input when the plasma system is started. A timer function is provided that delays motion by a specific time after this input receives the "ON" signal. This PLASMA ON DELAY time is set with the "SD01-ARC ON DELAY" parameter described in this manual.

MACH.5.2 CUT ENABLE CONTACT (Plasma cutting (Station B) Selected)

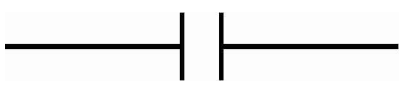
ENABLE CONTACT –PINS 11 AND 12 OF 3TB

3TB-12  3TB-11 (4CR ON INTERCONNECTION CARD)

This contact is typically connected in series with the Plasma stop circuit such that it can open to stop the cut BUT CLOSURE DOES NOT INITIATE THE CUT. The enable contact does not close until the "ARC ON" input is sensed as being "OFF". Once it has closed to enable a PLASMA cut, it remains closed for the entire cut path and then opens when it is finished. It also opens if either the "CYCLE STOP" or "BACKUP" key is pressed.

MACH.5.3 PLASMA START CONTACT (Plasma cutting (Station B) Selected)

PLASMA START CONTACT 3TB-15 AND 3TB-16

3TB-15  3TB-16 (3CR ON INTERCONNECTION CARD)

This contact should be connected to the PLASMA control circuitry such that it can close to initiate the PLASMA CUT, but the cut can still be stopped either by the "PLASMA ENABLE CONTACT" opening, or by the operator pressing the PLASMA STOP key. This contact only operates when "AUTO" PLASMA cutting is selected and remains closed during the entire PLASMA ARC. If "MANUAL" cutting is selected, this contact remains open.

MACH.5.4 PLASMA HEIGHT CONTROL (Plasma cutting (Station B) Selected)

CONTACT –PINS 19 AND 20 OF 3TB

3TB-19  3TB-20 (2CR ON INTERCONNECTION CARD)

This contact is connected to the PLASMA'S HEIGHT SENSING SYSTEM such that when activated, the HEIGHT SENSOR is disabled and the torch is "FROZEN" at the existing height. When the contact is released, the height sensor regains control of the torch height. The normal (Non-activate) state of this contact is selectable by "SD28-HEIGHT RELAY" parameter for either normally open or closed operation.Thus it can be set to accommodate the various height sensing systems. The contact maintains the "NORMAL" condition as long as the machine is running at the speed set by the operators speed dial. However, when the machine is slowed for a corner, this contact switches and maintains the activated condition until the machine has re-accelerated back to the normal cutting speed. This prevents the height sensor from lowering the torch due to the reduced cutting speed in the corner.

MACH.5.5 CUT CONTROL RELAY OUTPUT SEQUENCING DIAGRAMS

DNC2.8 CUT CONTROL RELAY OUTPUT SEQUENCING DIAGRMS

*** INTIAL POWER UP AND RECYCLE CONDITIONS ***

	1A POWER OFF -----	1B AFTER POWER UP	1C PRESS RECYCLE -----
PLASMA ENABLE CONTACT	OPEN -----	OPEN -----	OPEN -----
PLASMA START CONTACT	OPEN -----	OPEN -----	OPEN -----
PLASMA SENSOR DISABLE CONTACT	OPEN -----	OPEN -----	OPEN -----
MARKER CONTACT	OPEN	OPEN	OPEN

*** The PLASMA HEIGHT DISABLE contact is shown assuming that the contact is set for normally "OPEN" operation where the contactis open for normal cutting and "CLOSED" when the machine decelerates when approaching a corner. If the contact is set for normally "CLOSED" operation, reverse the state of the information in the diagrams.

MACH.5.6 PLASMA CUTTING – "MANUAL CUT" RELAY SEQUENCING (SD61=10)

*** PLASMA CUTTING – "MANUAL CUT" RELAY SEQUENCING ***

	4A RECYCLE SELECT PGM	4B PRESS CYCLE START MOVING TO NEW PIERCE POINT	4C ARRIVE AT PIERCE POINT WAIT FOR ARC-ON SENSE TO BE OFF	4D ENABLE PLASMA CUTTING OPERATOR STARTS PLASMA WAIT TILL ARC-ON IS SENSED	4E DELAY MOTION FOR PURGE DELAY TIME (SD01)	4F BEGIN MOTION ALONG CUT PATH WHEN PURGE DELAY TIMER =0.00 GOTO 4B	4G THEN CUTTING PATH IS COMPLETE OR IF CYCLE STOP IS PRESSED GOTO 4B	4H IF BACKUP PRESSED GOTO 4C
PLASMA ENABLE	OPEN ----	OPEN ----	OPEN ----	---- CLOSE	---- CLOSE	---- CLOSE	OPEN ----	OPEN ----
PLASMA START	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----
PLASMA HEIGHT DISABLE	OPEN ----	OPEN ----	OPEN ----	OPEN ----	---- CLOSE	OPEN ---- *NOTE 1	OPEN ----	OPEN ----
MARKER	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----

NOTE 1- Height disable contact remains closed until machine accelerates to cutting speed. It then opens to allow height sensor operation. The contact will close again if the machine slows for a corner in the part program or it the Height Sensor Disable function code is read from the part program.

MACH.5.7 PLASMA CUTTING – "AUTOCUT" RELAY SEQUENCING (SD61=10)

*** PLASMA CUTTING – "AUTOCUT" RELAY SEQUENCING ***

	5A RECYCLE SELECT PGM	5B PRESS CYCLE START MOVING TO NEW PIERCE POINT	5C ARRIVE AT PIERCE POINT WAIT FOR ARC-ON SENSE TO BE OFF	5D ENABLE PLASMA BEGIN START DELAY TIMER (SD49)	5E START DELAY TIME =0.00 START PLASMA WAIT TILL ARC-ON SENSED	5F DELAY MOTION FOR PURGE DELAY TIME (SD01)	5G BEGIN MOTION ALONG CUT PATH WHEN PURGE DELAY TIMER =0.00	5H WHEN CUTTING PATH IS COMPLETE OR IF CYCLE STOP IS PRESSED GOTO 4B	5I IF PREBACKSCSED UP GOTO5C
PLASMA ENABLE	OPEN ----	OPEN ----	OPEN ----	---- CLOSE	---- CLOSE	---- CLOSE	---- CLOSE	OPEN ----	OPEN ----
PLASMA START	OPEN ----	OPEN ----	OPEN ----	OPEN ----	---- CLOSE	---- CLOSE	---- CLOSE	OPEN ----	OPEN ----
PLASMA HEIGHT DISABLE	OPEN ----	OPEN ----	OPEN ----	---- CLOSE	---- CLOSE	---- CLOSE	---- CLOSE	OPEN ----	OPEN ----
MARKER	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----	OPEN ----

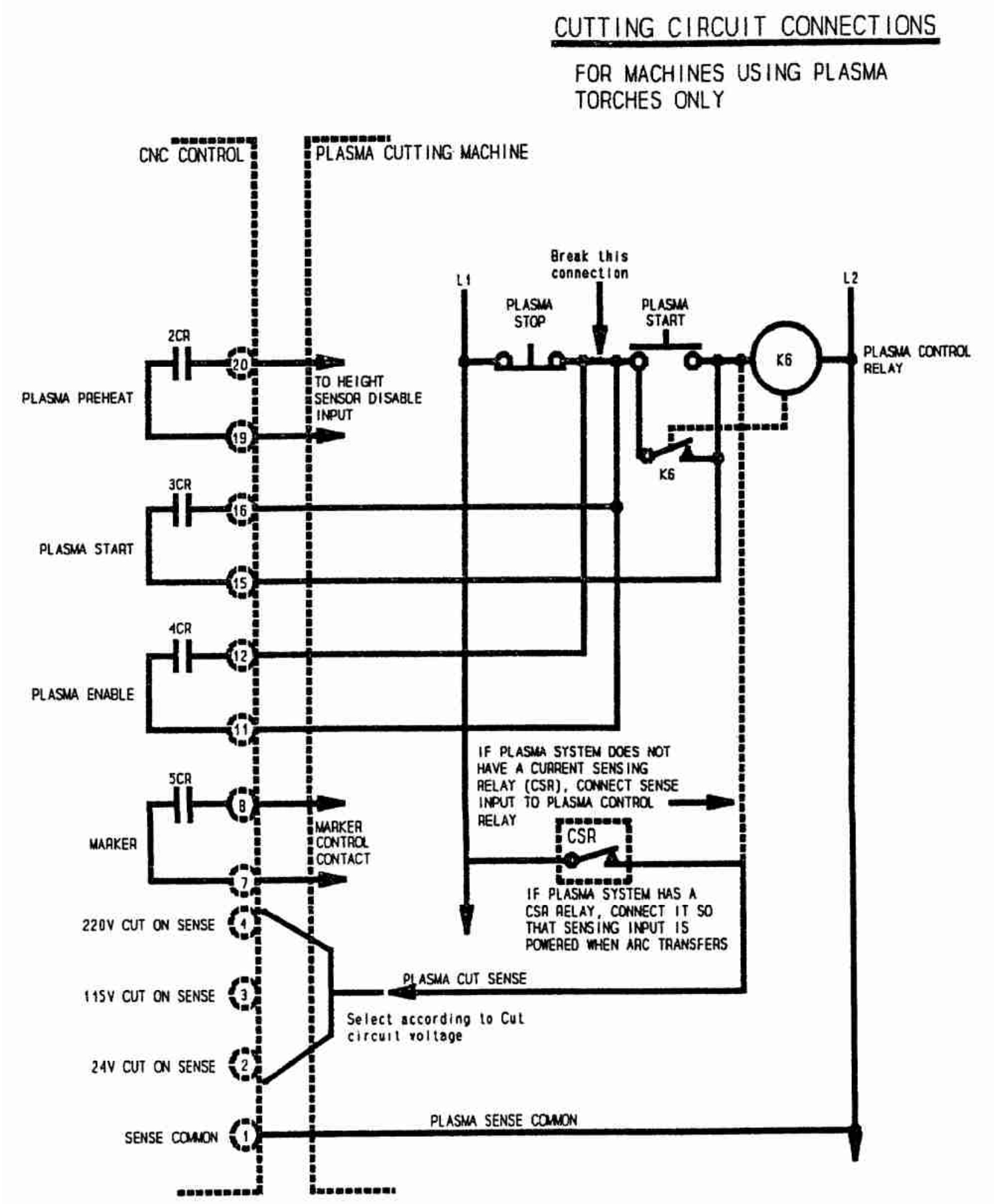


Figure 1-2

CUTTING CIRCUIT CONNECTIONS FOR MACHINES USING PLASMA TORCHES ONLY

(SD61=10)