WELDEDIT Schedule Editor Manual

WeldEdit

INTRODUCTION

WeldEdit CDT Weld Schedule Editor is a computer program designed to allow the modification of existing CDT 450 weld schedules in order to create new schedules to suit other combinations of welding consumables.

WeldEdit runs on a standard IBM or compatible computer. The program communicates directly with the CDT via an RS-232 serial link connection. Weld schedules can be `Uploaded' from the CDT schedule library, edited, then `Downloaded' back to the CDT for welding trials. The resultant schedule can be left stored in one of the 20 'Download' schedule positions in the battery-backed RAM memory of the CDT, where it will remain for the customer to use in the short term.

The schedule data can also be stored to disk, from which it can be later printed and transferred to the factory for inclusion in the standard library list. EPROM memory chips including the new schedule can then be supplied and customers' machines updated with the permanently stored schedule. Where a special purpose schedule is developed for a particular customer application, it can be kept distinct from the public library and supplied only to that customer on request.

This manual details the installation and use of the WeldEdit program, with references to the theoretical and practical aspects of the adjustment of CDT weld schedule parameters.

1.0   PRINCIPLES OF PULSED WELDING

In Pulsed GMAW, the arc is supplied with D.C. welding current which is modulated between two distinct values. The lower level is referred to as the `Background Current', and the higher level as the `Pulse Current'. Under the influence of this pulsed current, the transfer of metal within the arc is ideally in the form of droplets, approximately the diameter of the electrode wire, with a single droplet being transferred to the weld pool during the low energy period immediately following each pulse.

The current pulses are controlled in amplitude, time duration and frequency. Typical values are:

      Pulse current peak: 200 - 600 amps;
      Pulse width: 2 - 5 mS;
      Pulse frequency: 30 - 400 Hz;

The remaining primary elements of a CDT weld schedule are:

      Wirefeed rate: 1 - 16 metres/min;
      Background current: 12 - 45 amps average;
      Arc Voltage: 15 - 32 volts.

The essence of the CDT system is that each welding pulse supplies sufficient energy to transfer precisely one droplet of weld metal. For a given set of welding consumables, that is wire type, wire diameter and gas mixture, there is a range of pulse parameters over which single droplet transfer can be achieved. One absolute requirement however is that the pulse height must be greater than the `critical current' of that consumable set. (The critical current is the arc current level at which under steady DC current, that consumable set would enter spray transfer mode.) It general it has been observed that a wider pulse with lower peak current produces a `soft' arc, whereas a narrow but high pulse produces a harsher, more penetrating arc.

Having established a pulse shape which results in single droplet transfer, to maintain a constant wire stick-out it is necessary that pulses are delivered just often enough to match the rate at which wire is being delivered to the arc. Hence, if the wire feed rate is increased, there must be a corresponding increase in pulse frequency.

Between pulses a lower 'background' current is supplied, sufficient to keep the arc alight. At low weld settings, the background current is set to be a low value so that it is a small proportion of the total weld current. At higher weld settings, the background current is increased so that the background arc is less affected by oxidized plate surfaces or magnetic arc blow.

The voltage across an arc is an indication of the arc length. The CDT incorporates a closed loop control system which acts to maintain a regulated arc length using the arc voltage as a

feedback signal. The arc voltage is measured and adjustments within set limits are made to the pulse frequency to maintain this at the required value.

2.0   WELDEDIT COMMANDS

<H> Help   [Weld schedule development assistance]
This function (also activated by pressing <F1>), provides basic step-by-step instructions for developing weld schedules. Press again for further screens of information, or <ESC> to return to the menu screen.

<+-0..9>   [Page selection]
There are 10 `pages' for holding work in progress, numbered <0> to <9>. Select the required page by pressing the corresponding `number' key. The next or previous page can be selected using any of the following keys:
<+> (plus) & <-> (minus), <Page Up> & <Page Down>, or any of the Arrow keys.

<B> Blank   [Erase schedule page]
WeldEdit schedule pages containing data remaining from a previous editing job should be erased before starting a new development. Ensure that the schedules to be kept have first been `filed' to disk storage. If pressed in error, press <N> or <ESC> when asked to confirm your intention.

<C> Copy   [Duplicate schedule page]
The schedule on the current page may be copied to another page, allowing for further editing of that schedule without loss of the source data.
When asked where to place the copy, use any of the page selection command keys, ie: press the number of the required page, or one of the other keys to copy to the next/previous page, or press <ENTER> to copy to the next page. The copy becomes the new current page.

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[page 0] #100 =   =
Gas: 0 = blank =   =

Pulse Width (ms): 1.00   Pulse Height (A): 100
Frequency (Hz): min=10   Max=100
Background (A): min=10   Max=10
Arc Length (V): min=0.0   Max=0.0
Current (Aave): min=0   Max=0
Wirefeed (m/min) min=0.0   Max=0.0   Creep=0.0

GWopts: Pregas=0.3s Postgas=0.6s Craterfill=nil   Burnback=.070s at 0%
Option: .   Vave .   Pulse+PSC +58/-58Hz + 267/- 267Hz/s Gain= 8Hz/V

NB:

Help   +-0..9   Blank   Copy   Edit Wf eXtend Test Setup
Library   Read   File   Upload   Download   Get   Put   Quit

Figure 1. WELDEDIT screen, blank schedule.

<E> Edit   [Modify schedule data]
The data which comprises an existing CDT weld schedule can be edited to create a new schedule. Each data field is edited by placing the cursor in that field, then either directly typing in the new value, or by incrementing the value using the special function keys listed at the bottom of the screen. A message above the key list tells the meaning of the field being edited. Values beyond the range appropriate to that data field will not be accepted.

Use <Tab> and <Shift-Tab> or <Page Down> and <Page Up> keys to move between fields. Press <ENTER> when editing is complete.

<W> Wf   [Calculate operating parameters]
When developing a weld schedule, it can be useful to know exactly what parameter points the CDT should be running at for a given wirefeed rate.

Type in the wirefeed rate (as shown on the CDT screen, or as required by the customer), and the calculated values will be shown on the right side of the WeldEdit screen.

<X> eXtend   [Modify operating range]
It is useful to develop CDT schedules at two points comfortably within the operational range of the wire. Since the CDT uses a linearly predictable control algorithm, it is then easy to extrapolate to higher and lower settings, up to the physical limits of the process.

This function performs a calculation of appropriate parameter values of an existing schedule for any valid range of wirefeed rates. The minimum and maximum values permitted by the

machine capabilities and pulse parameters are shown as defaults. 20% and 70% points are suggested below these as a guide when choosing settings at which to develop the schedule.

<T> Test   [Enable test mode]
Most CDT schedules operate with a `Positive Short Clearing' feature (PSC) which delivers extra periods of pulse current as required to clear arc short-circuits. However, during schedule development, this feature may obscure the effect of parameter changes.

When `TEST MODE' is selected (indicated on the screen), any schedules downloaded automatically have their `Option' values modified to disable PSC.
Once the development of schedule parameters has been completed, turn off test mode (<N> or <ESC> when asked) and download again. Weld test to confirm normal welding operation.

<S> Setup   [Configure the program]
This function sets how WeldEdit will operate. The results are stored to disk, so it need only be done once. If no change is required for the value shown, press <ENTER> in each case.

The first question asks which computer COM port the serial cable is connected to. Press <1>, <2>, <3> or <4>, as appropriate. If it is necessary to unplug a mouse to use its port, also disable the mouse driver software, otherwise problems may be experienced .

The next question asks what units are to be used to indicate wirefeed speed in the WeldEdit display. Normally select <2> for metres/min to match the CDT screen display. The options are:

0 = 126 rpm (max roller speed using WIA feeder)
2 = 16.0 m/min   (max surface speed, metric)
3 = 630 "/min(max surface speed, for USA)

The last question asks if the CDT software supports frequency display during welding (which is an aid to schedule development). Older software does not support this feature, and may not respond correctly when this option is used. Answer <Y> unless difficulty is experienced.

<L> Library   [Select a standard schedule]
WeldEdit contains a built-in library of all the weld schedules which were available at the time of issue, some of which may not be available in the EPROM version fitted to the customer's CDT. It is also useful to look through this list when trying to find a `nearest similar material', as a starting point for schedule development.
The list is scrolled using the `Up' and `Down' arrows, or <Page Up> and <Page Down> to go faster. The `Left' and `Right' arrows follow numerical order, or the 3-digit number schedule number can be directly typed in.

Press <ENTER> to copy the chosen schedule onto the current page, or <ESC> to keep the old one.

figure 2. SCHEDULE TRANSFER DIAGRAM.

<R> Read   [Retrieve schedule from disk]
This function allows a previously developed weld schedule, which has been stored to disk, to be read back into an editing page.

Use the `Up' and `Down' arrow keys to select from the list of stored schedules, then press <ENTER> to proceed or <ESC> to cancel.

<F> File   [Store schedule to disk]
Once the development of a new schedule has been completed, the schedule should be stored to disk for future reference.

NB: Before filing, edit the notes field to record any information about the new schedule which would be useful to remember, eg: customer name, application, wire brand, how successful, who approved the result.

You are asked to give a name for the file: this can have up to 8 letters, numbers or symbols - a good idea is to use the material name and size. Each file name must be different - if that name already exists, you will be asked if you wish to overwrite the existing file.

Use the `Up' and `Down' arrow keys to view a list of the existing files. If you do not wish to proceed, press <ESC> to stop.

<U> Upload [Read schedule from CDT]
This function allows a weld schedule to be read directly from the CDT into a WeldEdit editing page.

Type in the library number of the schedule required or <0> to use the presently selected schedule. If no such number exists, you are asked to try another.

<D> Download   [Send schedule to CDT]
The weld schedule being edited must be downloaded to the CDT to enable welding trials. The downloaded schedule will be stored in the CDT `Download' schedule group, and is automatically selected as the current CDT schedule. It must be sent again each time changes are made to the schedule.

There are 20 available positions in the `Download' group. When the schedule is first downloaded, you will be asked which position to store it in. Next time it will automatically be sent to the same position. The position may be changed by editing the destination number, which is located next to the page number on the WeldEdit screen. WeldEdit indicates `DOWNLOADED' on the page which was last sent, until the data is next edited.

NB: If the download is not successful: check the cable connecting the computer `COM' port to the CDT `SERIAL' socket, that the CDT is turned on, and that the correct computer serial port has been selected via the WeldEdit `Setup' command.

Schedules downloaded to the CDT `Download' group remain available for use even after the CDT is turned off and the computer disconnected.

<G> Get   [Store a set of schedules to disk]
When a customer`s CDT has several schedules stored in the `Download' group, it may be prudent to keep a record of that set of schedules. This function will read all 20 `Download' schedules from the CDT and store them in a ".SET" file which may later be printed, or copied back to another CDT.

The set name follows the same rules as for `File', ie: 8 characters. A good idea is to use the customer name.

<P> Put   [Read a set of schedules from disk]
If the customer has several CDTs, it may be desirable for all of them to have the same set of `Download' schedules. A convenient way of doing this is to first use the `Get' command to store the set of download schedules to disk, then to use this function to download the set to another CDT.

Use the `Up' and `Down' arrow keys to select from the list of stored schedule sets, then press <ENTER>. If everything is ready for downloading, 20 schedules will be read from disk and sent to the CDT.

Caution: Weld schedules already in the CDT `Download' group will be overwritten.

<Q> Quit   [Exit to DOS]
Use this to exit from the WeldEdit program. You will be asked to confirm your intention by pressing <Y> or <ENTER>.

As part of the exit to DOS procedure, WeldEdit restores the COM port to its previous mode. WeldEdit also stores setup settings and schedule page contents in a file called WELDEDIT.DFT, which is automatically loaded next time the program is used.

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[page 0] # 0 =   = 1.2mm CARBON STEEL   A5.18 ER70S-6
Gas: 5 = 18c = ARGON +18% CO   = CORGON 18, ATAL 6

        Pulse Width (ms): 2.79   Pulse Height (A): 430
        Frequency (Hz): min=27   Max=278
        Background (A): min=12   Max=78
        Arc Length (V): min=19.0   Max=32.0
        Current (Aave): min=40   Max=350
        Wirefeed (m/min) min=1.5   Max=11.7   Creep=1.0

GWopts: Pregas=0.3s Postgas=0.6s Craterfill=nil   Burnback=.070s at 0%
Option: .   Vave .   Pulse+PSC +58/-58Hz + 267/- 267Hz/s Gain= 8Hz/V

NB:

Help   +-0..9 Blank Copy   Edit Wf eXtend Test Setup
   Library   Read   File   Upload   Download   Get   Put   Quit

        figure 3. WELDEDIT screen, 1.2mm mild steel schedule.

3.0   WELDEDIT EDITING FIELDS

NB: This description covers only Pulse MIG schedules. Schedules for other welding modes may be viewed, but not edited.

Page
The page number identifies which of the 10 `pages' in WeldEdit you are presently using. Other pages can be selected with the <+-0..9> page selection commands.

Schedule number #
When an existing schedule is read into WeldEdit, (Library/Read/Upload), this field indicates the standard library number for that schedule.

Once a schedule is edited or downloaded, the field specifies the download destination (1-20). Note that it is possible, and sometimes useful, to have several schedules set to the same download position.

File Name
When a schedule has been read from or written to disk, this field indicates the name used for the ".CDT" file. You may type a name here when entering a new schedule, or leave it blank until ready to `File'.

Diameter

Set this field to indicate the diameter of the consumable wire to be shown on the CDT display screen. Use the arrow keys to select from the list of available sizes, or type the number directly. Sizes are indicated in both millimetres and inches while selecting.

Title

Text entered in this field will show in big print on the CDT display and should be used to identify the consumable wire type. The field may contain up to 16 characters.

Additional Information

Text entered in this field will show in smaller print on the CDT display immediately below the title. This can be used to give a standard designation for the wire, an alternative brand name, notes on special applications, customer name for a custom schedule, or the gas mixture (when a non-standard mixture is used). The field may contain up to 15 characters.

Gas Mixture

Set this field to indicate the gas mixture intended for use with this schedule. Use the `Up' and `Down' arrows to select from a list of standard gas mixtures (grouped according to gas composition), or specify the reference number directly if it is known.

Pulse Width (ms)

The number entered in this field defines the duration in milliseconds of the welding pulse. With the "CDT" (Controlled Drop Transfer) control method, the pulse width is held constant for all weld settings. The pulse width value is experimentally established through welding trials.

Pulse Height (Amps)

The number entered in this field defines the maximum (peak) current of the welding pulse. This parameter is also held constant for all welding settings. This parameter value is experimentally established through welding trials. It must however at least exceed the `critical' or `spray transition' current of the consumable combination in use, and must be greater than the maximum welding current required for the schedule.

Frequency (Hz)

Pulse frequency data for CDT weld schedules is defined at two points. The "Min" field value defines the nominal pulse frequency when the `Current' control vernier is set to 0.00, the "Max" field value defines the nominal pulse frequency when the control vernier is set to 10.00. Based on this data, the CDT control system calculates nominal frequency values for all other control settings.

"Min" and "Max" frequency values are experimentally established through welding trials.

Background (Amps)

Background current is also defined by "Min" and "Max" values. The "min" value is used when the `Current' control vernier is set to 0.00, the "Max" value when the control vernier is set to 10.00, and values in between for other control settings.

"Min" and "Max" background current field values can usually be carried over from the source schedule. If the background current is too low, the arc is prone to go out or `wander' between pulses; if it is too high, overheating of the work may result.

Arc Length (Volts)
The arc length data for CDT weld schedules is set in terms of the arc voltage. The arc voltage is defined at two points. The "Min" field value is used when the `Current' control vernier is set to 0.00, the "Max" value when the `Current' control vernier is set to 10.00. Based on this data, the CDT control system calculates arc voltage values for all other control settings.

In the CDT control system, the arc voltage parameter can be increased or decreased by the setting of the `Arc Length' control. The voltages defined above apply when the arc length control is in the central `0' position. "Min" and "Max" voltage values are experimentally established through welding trials.

Current (Amps)
GMAW (MIG) welding, whether pulsed or conventional, is a process controlled by wirefeed and voltage, so the actual current delivered is not directly controlled. The data entered in these fields is used by the CDT to calculate an estimated average welding current for display purposes only.

The "Min" value is used when the control vernier is set to 0.00, the "Max" value when the control vernier is set to 10.00, and values in between for other control settings. "Min" and "Max" current values are experimentally established through welding trials.
For reference, WeldEdit also calculates predicted min and max values based on the pulse and frequency parameters entered. These values are shown within brackets when editing these fields.

Wirefeed (rpm, m/min or "/min)
Wirefeed rate data for CDT weld schedules is defined at two points. The "Min" field value defines the feed rate when the `Current' control vernier is set to 0.00, the "Max" field value defines the feed rate when the control vernier is set to 10.00. Based on this data, the CDT control system scales the feed rate for all other control settings.

"Min" and "Max" values are selected through the process of welding trials on the basis of establishing a useful operating current range for the consumable set. The `eXtend' command is a very useful way of changing the feed rate range, because it also calculates matching values for Frequency, Background, Arc Length and Current.

The "Creep" value sets the default feed rate when the wire is advancing before welding commences. Creep speed can also be adjusted using the `Option' menu on the CDT.

GWopts: (Gas and Wire options).

Pregas
This sets the default period of time (in seconds) for which shielding gas flows before welding can begin. Pregas can also be adjusted using the `Option' menu on the CDT.

Postgas
This sets the default period of time (in seconds) from when welding ceases until the flow of shielding gas is stopped. Postgas can also be adjusted using the `Option' menu on the CDT.

Craterfill
This sets the default time period (in seconds) of welding with reduced current after the torch trigger is released. If set to `nil', no crater fill is performed. Craterfill can also be adjusted using the `Option' menu on the CDT.

Burnback
This sets the default time delay (in seconds) from when wirefeed is stopped until arc current ceases, and is required to prevent the end of the wire freezing in the weld pool. Burnback can also be adjusted using the `Option' menu on the CDT.

Stop %
This is the control setting to which welding current is dropped during craterfill and burnback time. A setting of 10% is suggested.

Option:
This is a collection of settings which determines the mode of operation and response characteristic for the weld schedule. These can only be changed by factory personnel.

NB
This field provides one line of space for comments about the weld schedule, and is stored to disk with the other parameters for later reference.

4.0   HOW TO DEVELOP CDT SCHEDULES

Note that this description applies only for Pulsed GMAW schedules. Facilities are not provided for editing Constant Current and conventional GMAW welding processes.
It is possible for one person to develop weld schedules on their own, but it is quicker and easier if there is a second person present. When the new schedule is complete, a customer representative should test it, to ensure that results are satisfactory to them.

When developing new weld schedules, it is important to be sure that the welding machine used is fully functional and the wirefeed motor correctly calibrated. Refer to the CDT 450 operation manual, "Motor Speed Calibration" (section 12) and "Pull Motor Speed Calibration" (section 15) for details. Correct machine operation should then be checked using a schedule and consumables which are known. This will allow detection of problems with the wirefeed, contact tip, gas coverage, etc. (refer to CDT manual Section 7).

Check the version numbers of the EPROMs fitted to the CDT by switching on the power source and pressing `SCHEDULE'. The Display software version (#381xx/xx) and the Weld CPU software version (#380xx) numbers are listed on the right of the CDt display screen. If later versions are available, it may be advisable to fit them if this benefits the customer.

Prepare the CDT for welding with the required consumables. The customer may have a preference to use a particular gas mixture, and this can be trialled, but sometimes either for reasons of weld chemistry or arc characteristics, it is absolutely necessary to use a more appropriate gas.

With the power off, remove the display panel (4 screws) to gain access to the Display CPU Assembly CP38-11. Connect the CDT end of the PC-CDT cable (the green plug) to the 12-pin socket (marked "SERIAL P2"). Put back the display panel, running the cable out under the lip of the panel. Find a suitable place for the computer (safely clear of the welding area) and connect the other end of the PC-CDT cable to it.

Turn on both the CDT and the PC, start the `WeldEdit' program on the PC. Correct communications between them can be checked  by pressing <U>,<ENTER> to upload the selected schedule to the PC, and <D>,<ENTER> to download it the CDT. The schedule number should now be changed to that of the selected `Download' position, eg. "# 10". If this does not work, check the cable connections and the COM port selection (under the `Setup' function).

Select an existing schedule for a similar material, (of the same diameter if possible), as the starting point for development. Choose an available WeldEdit page, and read the required schedule from the fixed editor library (with the `Library' function) or the fixed machine library (with the `Upload' function).

_   `Edit' the schedule description (size, title(s), gas mixture) to match the intended use.

Use `eXtend' to restrict the wirefeed range to run from approximately 20% to 70% of the original range, as suggested on the screen.

_   Determine the mid-point of the Arc Length control by the following method. Observe the arc length indicator displayed by the CDT (-----..0..+++++). Rotate the control and note the points at which the transitions from `-' to `0' and from `0' to `+' occur. Half way between these is the exact `0' setting, mark it with pencil.

_   Set the current control to 0.0 and arc length to 0. Select test mode (with `Test=<Y>') and `Download' the modified schedule.

Note: Any time changes are made to the schedule (Edit, eXtend, Test, etc), it must be downloaded to the CDT for the changes to have effect. The message "DOWNLOADED" will show on the computer screen for the schedule last downloaded, until changes are made to it. If it is missing, you should `Download' again to be sure of which version you are testing.

‗   Attempt welding. Adjust the arc length control until stable operation is obtained (if possible). Note the frequency (Hz) value indicated on the screen after welding, and `Edit' this as the new Frequency Min value. `Download' and repeat welding as necessary, until a practical pulse rate is obtained.

‗   Observe the arc transfer behaviour:

         * If droplets do not detach properly, add Pulse Height in 10A steps, `Download' and test it again.

         * If the arc is overheated or there is fine spatter, reduce the Pulse Height in 10A steps, `Download' and test again.

‗   Examine the arc:

         * If it is too narrow and long, increase Pulse Width (and possibly reduce Pulse Height).

         * If it is too broad & soft (with less penetration), increase Pulse Height and reduce Pulse Width.

‗   Adjust the Arc Length control so as to get a stable arc of correct length. (If this is not achievable at first, edit Arc Length and/or Frequency `Min' values to be closer to the operating point.) After welding, note the values of Volts, Amps and Hz indicated on the CDT display. `Edit' these into the schedule as the new `Min' values for Arc Length, Current and Frequency respectively.

‗   Set the current control to 10.00. Repeat the above step to obtain the the `Max' values of Volts, Amps and Hz. `Edit' these into the schedule as the new `Max' values for Arc Length, Current and Frequency respectively.

‗   Using the `eXtend' function, extend wirefeed to the maximum permitted range (ie: press <ENTER> to accept the values indicated). Using `Edit', move to the Current Max field and note the [predicted] current. This may not yet be accurate, but if it is significantly below the maximum current level required by the customer, go back to previous steps setting the pulse shape, and attempt to establish a revised pulse shape with increased pulse height.

‗   Adjusting the current control, find the lowest and highest settings at which practical welding operation can be obtained. In each case note the corresponding wirefeed rate (m/min). Use `eXtend' to set these as the new limits.

‗   Turn off test mode (with `Test=<N>') and `Download'.

‗   Test operation over the whole range, fine tuning if necessary. Ideally, stable operation should be possible at all settings with the arc length control in the `0' position.

_   Have the customer representative test operation using the various currents and joint configurations required.

_   Edit the `NB' notes to include anything noteworthy, such as the quality of the results, and any restrictions on applicability of the schedule.

_   `File' the schedule to disk, using a suitable name (such as the wire type and size). Record in your notebook details of the customer, file name, brand name and standard designation of the wire and gas, and any other relevant details.

Note: a standard form is provided for this purpose - see appendix E.

The new schedule is now complete. Choose which CDT download position in which to store the final result. Use `Edit' to change the download position if required.

On a spare schedule page, create a `Blank' schedule, and `Download' it to any other positions in the download group which have been used during the development process, so that the customer is not confused by having multiple versions of the same schedule.

Particularly if several schedules have been downloaded, it is advisable to use the `Get' function to store to disk the complete set of 20 download schedules. If the customer has other CDT welders which they wish to have set up with the same schedules, the `Put' command can then be used to download all 20 positions at once.
The ".SET" file created by the `Get' command (or the ".CDT" files created by the `File' command) can later be printed to paper, for a permanent record of what has been given to the customer.

Before departing close all machine panels, restore everything to normal operating condition, turn on the CDT and do one last test weld.

APPENDIX A: WIRING FOR SERIAL CABLES

Connector P2 on the CP38-11 circuit board provides the signals for an RS-232C compatible "3-wire" (no hardware handshake) connection at 1200 baud, 8-bit, no parity, 1-stop-bit. Various cables are needed to connect to different devices.
PC-CDT CABLE (AM222-0/4)

Connects an IBM-compatible computer to a CDT 450 welder, for use in developing weld schedules.

_   CDT uses a 12-way AMP MODU1 housing;
_   PC-AT uses a DB9S connector. (PC-XT requires a DB25S or adapter).

```
        CDT         PC-AT  PC-XT
        1 -----------  2     3     RxD   (replies from CDT)
        2 -----------  3     2     TxD   (data to CDT)
        :              :     :
        5 -----------  5     7     SG    (signal common)
        :     +----    1     8
        12    +----    4     20    (disable handshaking)
              +----    6     6
              +----    8     5
              +----    9     22
```

CDT-PRINT CABLE (AM222-1/4)

Connects the CDT 450 welder to a serial printer, for use with the `Printout' software option.

_   CDT uses a 12-way AMP MODU1 housing;
_   Serial printer uses a DB25P connector.

```
        CDT         PRINTER
        1 ----------  3            TxD   (data to printer)
        2 ----------  2            RxD   (reply from printer, ignored)
        :             :
        5 ----------  7            SG    (signal common)
        :     +----   4
        12    +----   6                  (disable handshaking)
              +----   20
```

CDT-CDT CABLE (AM221-0/4)

Connects two CDT 450 welders, for transferring weld schedule sets using the `Clone' software option.

_   Cable is symmetrical - ends are interchangeable.
_   Uses a 12-way AMP MODU1 housing at each end.

```
        END A       END B
        1 ----------  2
        2 ----------  1
        :             :
        5 ----------  5
        :             :
        12            12
```

APPENDIX B: TABLE OF WIRE SIZES

Code Size

Code	Size		
0	\<blank\>	= other/none (for non-standard sizes)	
1	0.6mm	= .023"	=3/128"
2	0.7mm	= .028"	
3	0.8mm	= .030"	=1/32"
4	0.9mm	= .035"	
5	1.0mm	= .039"	=5/128"
6	1.1mm	= .043"	
22	1.2mm	= .045"	(USA non-Alum)
7	1.2mm	= .047"	=3/64"
8	1.3mm	= .052"	
9	1.4mm	= .055"	
10	1.5mm	= .059"	
11	1.6mm	= .062"	=1/16"
12	1.7mm	= .067"	
13	1.8mm	= .071"	
14	1.9mm	= .075"	
15	2.0mm	= .078"	=5/64"
20	2.4mm	= .094"	=3/32"
21	2.8mm	= .109"	=7/64"
16	3.2mm	= .125"	=1/8"
17	4.0mm	= .156"	=5/32"
18	MMA	= MMAW/Stick	(not used)
19	GTA	= GTAW/TIG	(not used)

APPENDIX C: TABLE OF GAS MIXTURES

Num	Code	Composition	UK mixture name	Australian mixture name
0	= blank	=	=	=
1	= none	= --- no gas ---	=	=
2	= Ar = ARGON		= WELDING GRADE ARGON 100%	= WELDING GRADE ARGON 100%
3	= Ar-HP = HIGH PURITY ARGON		= SPECIAL GRADE ARGON 100% = SPECIAL GRADE ARGON 100%	
14	= 0.5x	= ARGON +0.7% O, ARGON = ARGOSHIELD 70,ARGONOX 1, ARGON		= ARGONOX 1, ARGON S1, ARGON
11	= 0.7x	= ARGON +0.7% O = ARGOSHIELD 70, ARGONOX 1		= ARGONOX 1, ARGON S1
33	= 1x = ARGON +1% O		= ARGONOX 1, ARGON S1	= ARGONOX 1, ARGON S1, ARGON O1
9	= 1.5x	= ARGON +1.5% O = ARGOSHIELD 60, MIG-Shield S1		= ARGONOX 2, ARGON S2, CORGAL 1
21	= 2x = ARGON +2% O		= ARGONOX 2, ARGON S2, CORGAL 1	=
34	= 3x = ARGON +3% O		= ARGON S3, ARGOSHIELD LC	= ARGON S3,ARGOSHIELD L,ARGON O3
20	= 5x = ARGON +5% O		= ARGON S5, CORGAL 3, EXELLAR 5	= CORGON O5, ARGOSHIELD 40,L
6	= 7x = ARGON +7% O		= ARGON S7	= MIG-Shield M4, CORGON O7
27	= 5c2x	= ARGON +5% CO +2% O = CORGON 5-2, ARGOSHIELD 50		= ARGOSHIELD 5, CORGON 5
25	= 5c3x	= ARGON +5% CO +3% O = ARGOSHIELD 50, ARGOSHIELD 54		=
28	= 5c5x	= ARGON +5% CO +5% O		= TERAL 23, CORGON 1 =
26	= 7c1x	= ARGON +7% CO +1.5% O = ARGOSHIELD 54, ARGOSHIELD 50		=
29	= 12c2x	= ARGON +12% CO +2% O		= ARGOSHIELD TC, CORGON SM =
8	= 16c2x	= ARGON +16% CO +2.5% O = ARGO'D 51,CORGON 2,MIG-Shld M1		= COOGAR SG, CORGON 2, TERAL 24
30	= 20c2x	= ARGON +20% CO +2% O = ARGOSHIELD 20, CORGON 20		= ARGOSHIELD 20, CORGON 20
32	= 2.5c	= ARGON +2.5% CO = CORGON X2, BLUESHIELD 6.2		= CRONIGON 2, ATAL 2, KRYSAL K3
4	= 5c = ARGON +5% CO		= '95/5'	=
7	= 10c	= ARGON +10% CO	= '90/10', CORGON 10	= MIG-Shield M5, CORGON 10

5 = 18c = ARGON +18% CO = CORGON 18, ATAL 6 =
MIG-Shd M1, CORGON 18, ARGO 51

31 = 20c = ARGON +20% CO = 80/20,PURESHIELD P3, AGAMIX
UN =

15 = 25c = ARGON +25% CO = CORGON 25, ATAL 7, AGAMIX SH
= MIG-Shield M3, ARGOSHIELD 52

23 = 50c = ARGON +50% CO = =
ARGOSHIELD 53

22 = 28e2c = ARGON +28% He +2% CO = =

35 = 26e8c = ARGON +26%He+8%CO+0.5%O = 'TIME' =

10 = 30e5c = ARGON +30% He +5% CO = ASTEC S3, STELLAR T6 =
ARGOSHIELD 61, MIG-Shield S4

16 = 38e2c = ARGON +38% He +2% CO = HELISHIELD H101, HELION 3
=

36 = 85e2c = ARGON +85% He +1.5% CO = HELISHIELD H1 =

18 = 5e = ARGON +5% He = =

12 = 27e = ARGON +27% He = HELISHIELD H3, HELION 30
= ARGOSHIELD 80T, MIG-Shield TCB

17 = 50e = ARGON +50% He = HELISHIELD H5, HELION 50
= BLUESHIELD 2

13 = 75e = ARGON +75% He = HELISHIELD H2, HELION 2
= ARGOSHIELD 81T, MIG-Shield TCA

24 = 7e3h = ARGON +7.5% He +2.5% H = =

19 = 2.5h = ARGON +2.5% H = HYLAR 3, NOXAL 2 =
HYLAR 3, NOXAL 2

APPENDIX D: WELD SCHEDULES AVAILABLE IN WELDEDIT

This list was correct at time of publication, but new schedules are constantly being developed, so the software version supplied may contain additional schedules (accessed by the `Library' function).

Similarly, more recently issued EPROMs for the CDT Display CPU (#381xx/xx) may contain additional schedules (accessed by the `Schedule' menu).

It is therefore advisable, before developing a new schedule, to check all available sources for a suitable existing schedule.

Note that some schedules, particularly those identified by a customer name, are for various reasons limited in application, and so not made available in EPROMs for general use. They may however be useful starting points for the development of new schedules.

Full Library Listing of CDT Weld Schedules, 28 Feb'94   (225 schedules)

CARBON & ALLOY STEELS

#	Size	Material	Spec	Gas
#257	0.9mm	CARBON STEEL	GMH Special	Argon +18% CO2
#126	0.9mm	CARBON STEEL	A5.18 ER70S-6	Argon +5% CO2
#127	1.0mm	CARBON STEEL	A5.18 ER70S-6	Argon +5% CO2
#128	1.2mm	CARBON STEEL	A5.18 ER70S-6	Argon +5% CO2
#129	1.3mm	CARBON STEEL	A5.18 ER70S-6	Argon +5% CO2
#146	1.6mm	CARBON STEEL	A5.18 ER70S-6	Argon +5% CO2
#130	1.6mm	CARBON STEEL	A5.18 ER70S-6	Argon +5% CO2
#155	0.6mm	CARBON STEEL	A5.18 ER70S-6	Argon +10% CO2
#156	0.8mm	CARBON STEEL	A5.18 ER70S-6	Argon +10% CO2
#286	1.0mm	CARBON STEEL	A5.18 ER70S-6	Argon +10% CO2
#147	1.6mm	CARBON STEEL	A5.18 ER70S-6	Argon +10% CO2
#157	0.9mm	CARBON STEEL	A5.18 ER70S-6	Argon +18% CO2
#158	1.0mm	CARBON STEEL	A5.18 ER70S-6	Argon +18% CO2
#159	1.2mm	CARBON STEEL	A5.18 ER70S-6	Argon +18% CO2
#234	1.6mm	CARBON STEEL	A5.18 ER70S-6	Argon +18% CO2
#266	1.0mm	CARBON STEEL	A5.18 ER70S-6	Argon +20% CO2
#287	1.0mm	CARBON STEEL	A5.18 ER70S-6	Argon +12% CO2 +2% O2
#273	1.6mm	CARBON STEEL	A5.18 ER70S-6	Argon+16% CO2+2.5% O2
#244	1.2mm	CARBON STEEL	A5.18 ER70S-6	Argon +25% CO2
#295	1.2mm	CARBON STEEL	A5.18 ER70S-6	Argon +5% CO2 +2% O2
#301	1.2mm	CARBON STEEL	LONG STICKOUT	Argon +5% CO2 +2% O2
#262	1.2mm	CARBON STEEL	A5.18 ER70S-6	Argon +7% CO2 +1.5% O2
#310	0.9mm	CARBON STEEL	A5.18 ER70S-6	Argon +1.5% O2
#311	0.9mm	CARBON STEEL	Walkers	Argon +1.5% O2
#152	1.2mm	CARBON STEEL	A5.18 ER70S-6	Argon +5% O2
#250	0.9mm	CARBON STEEL	A5.18 ER70S-6	Argon +7% O2
#251	1.2mm	CARBON STEEL	A5.18 ER70S-6	Argon +7% O2

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#327  1.6mm      LOW ALLOY STEEL        A5.28 ER80S-D2    Argon +10% CO2
#326  1.6mm      LOW ALLOY STEEL        A5.28 ER80S-D2    Argon +5% CO2
#144  1.2mm      LINDE 95          A5.28 ER100S-1     Argon +5% CO2
#145  1.6mm      LINDE 95          A5.28 ER100S-1     Argon +5% CO2
#320  0.9mm      LINDE 120         A5.28 ER120S-1     Argon +5% CO2
#321  1.2mm      LINDE 120         A5.28 ER120S-1     Argon +5% CO2
#270  0.9mm      LINDE 120         A5.28 ER120S-1     Argon +2% O2
#271  1.2mm      LINDE 120         A5.28 ER120S-1     Argon +2% O2
#143  1.6mm      LINDE 140         MIL TYPE 140S-1    Argon +5% O2
#337  1.2mm      STEEL SG CrMo 1   ASC-E #2           Argon +1.5% O2
#248  0.9mm      CARBON STEEL      Robotic Automat    Argon +18% CO2
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STAINLESS STEELS

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#309  0.9mm      STAINLESS 308L    A5.9 ER308L        Argon +1.5% O2
#308  0.9mm      STAINLESS 308L    Walkers            Argon +1.5% O2
#304  1.2mm      STAINLESS 308L    Walkers            Argon +1.5% O2
#180  0.9mm      STAINLESS 308LSi  A5.9 ER308LSi      Argon +1.5% O2
#791  0.9mm      STAINLESS 308LSi  Centurion Ind.     Argon +1.5% O2
#218  1.2mm      STAINLESS 308LSi  A5.9 ER308LSi      Argon +1.5% O2
#220  1.6mm      STAINLESS 308LSi  A5.9 ER308LSi      Argon +30% He +5% CO2
#314  0.8mm      STAINLESS 309                        Argon +30% He +5% CO2
#189  0.9mm      STAINLESS 309L    A5.9 ER309L        Argon +30% He +5% CO2
#190  1.2mm      STAINLESS 309L    A5.9 ER309L        Argon +30% He +5% CO2
#290  0.9mm      STAINLESS 309L    A5.9 ER309L        Argon +50% He
#291  1.2mm      STAINLESS 309L    A5.9 ER309L        Argon +50% He
#336  1.2mm      STAINLESS 309L    ASC-E #1           Argon +1.5% O2
#332  0.9mm      STAINLESS 309LSi  A5.9 ER309LSi      Argon +1.5% O2
#335  0.9mm      STAINLESS 309LSi  ASC-E #3           Argon +1.5% O2
#297  0.9mm      STAINLESS 309LSi  A5.9 ER309LSi      Argon +5% O2
#298  1.2mm      STAINLESS 309LSi  A5.9 ER309LSi      Argon +5% O2
#267  1.0mm      AVESTA P5         A5.9 ER309MoL      Argon +30% He +5% CO2
#237  0.9mm      STAINLESS 310     A5.9 ER310         Argon +1.5% O2
#238  1.2mm      STAINLESS 310     A5.9 ER310         Argon +1.5% O2
#188  0.9mm      STAINLESS 312     A5.9 ER312         Argon +30% He +5% CO2
#241  1.2mm      STAINLESS 312     A5.9 ER312         Argon +1.5% O2
#197  0.8mm      STAINLESS 316L    A5.9 ER316L        Argon +38% He +2% CO2
#198  1.0mm      STAINLESS 316L    A5.9 ER316L        Argon +38% He +2% CO2
#199  1.2mm      STAINLESS 316L    A5.9 ER316L        Argon +38% He +2% CO2
#200  1.6mm      STAINLESS 316L    A5.9 ER316L        Argon +38% He +2% CO2
#191  0.9mm      STAINLESS 316LSi  A5.9 ER316LSi      Argon +30% He +5% CO2
#192  1.0mm      STAINLESS 316LSi  A5.9 ER316LSi      Argon +30% He +5% CO2
#193  1.2mm      STAINLESS 316LSi  A5.9 ER316LSi      Argon +30% He +5% CO2
#179  0.9mm      STAINLESS 316LSi  BHP 3CR12 plate    Argon +30% He +5% CO2
#313  0.9mm      STAINLESS 316LSi  MIGshield S4
#293  0.9mm      ST/LESS 316LHiSi  A5.9 ER316LHiSi    Argon +2% O2
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#182	0.8mm	STAINLESS 316LSi	A5.9 ER316LSi	Argon +1.5% O2
#183	0.9mm	STAINLESS 316LSi	A5.9 ER316LSi	Argon +1.5% O2
#184	1.2mm	STAINLESS 316LSi	A5.9 ER316LSi	Argon +1.5% O2
#322	0.8mm	STAINLESS 316LSi	A5.9 ER316LSi	Argon +5% CO2
#323	0.9mm	STAINLESS 316LSi	A5.9 ER316LSi	Argon +5% CO2
#196	1.2mm	STAINLESS 316LSi	A5.9 ER316LSi	Argon +5% CO2
#239	0.9mm	STAINLESS 347	A5.9 ER347	Argon +1.5% O2
#282	0.9mm	STAINLESS 347	A5.9 ER347	Argon +30% He +5% CO2
#283	1.2mm	STAINLESS 347	A5.9 ER347	Argon +30% He +5% CO2
#124	1.2mm	CRONIFER 1925hMo	UNS N08925	Argon - high purity
#240	1.2mm	STAINLESS 1707		Argon +1.5% O2
#305	0.8mm	AVESTA 223 FAL	UNS S31803	Argon +30% He +5% CO2
#177	0.9mm	AVESTA 223 FAL	UNS S31803	Argon +30% He +5% CO2
#334	1.0mm	AVESTA 223 FAL	UNS S31803	Argon +30% He +5% CO2
#178	1.2mm	AVESTA 223 FAL	UNS S31803	Argon +30% He +5% CO2
#316	1.2mm	ST/LESS SAF 2507	SANDVK 25.10.4L	Argon +1.5% O2
#317	1.2mm	ST/LESS SAF 2507	SANDVK 25.10.4L	Argon +30% He +5% CO2
#185	1.0mm	AVESTA 253 MA	UNS S30815	Argon +30% He +5% CO2
#219	1.2mm	AVESTA 253 MA	UNS S30815	Argon +30% He +5% CO2
#186	1.2mm	AVESTA 253 MA	UNS S30815	Argon - high purity
#181	0.9mm	AVESTA 254 SLX	UNS N08904	Argon +27% He
#187	1.2mm	AVESTA 254 SLX	UNS N08904	Argon +30% He +5% CO2
#173	0.8mm	STAINLESS STA59		Argon +1.5% O2
#174	0.9mm	STAINLESS STA59		Argon +1.5% O2

ALUMINIUM & ALLOYS

#114	1.2mm	ALUMINIUM 1100	A5.10 ER1100	Argon
#115	1.6mm	ALUMINIUM 1100	A5.10 ER1100	Argon
#103	0.9mm	ALUMINIUM 4043	A5.10 ER4043	Argon
#226	1.0mm	ALUMINIUM 4043	A5.10 ER4043	Argon
#104	1.2mm	ALUMINIUM 4043	A5.10 ER4043	Argon
#265	1.6mm	ALUMINIUM 4043	A5.10 ER4043	Argon - high purity
#141	1.0mm	ALUMINIUM 4047	A5.10 ER4047	Argon
#330	1.2mm	ALUMINIUM 5183	A5.10 ER5183	Argon
#300	1.2mm	ALUMINIUM 5183	A5.10 ER5183	Argon +27% He
#249	1.2mm	ALUMINIUM 5183	A5.10 ER5183	Argon +75% He
#107	0.8mm	ALUMINIUM 5356	A5.10 ER5356	Argon
#108	0.9mm	ALUMINIUM 5356	A5.10 ER5356	Argon
#109	1.0mm	ALUMINIUM 5356	A5.10 ER5356	Argon
#110	1.2mm	ALUMINIUM 5356	A5.10 ER5356	Argon
#710	1.2mm	ALUMINIUM 5356	EXTENDED	Argon
#111	1.6mm	ALUMINIUM 5356	A5.10 ER5356	Argon
#312	2.4mm	ALUMINIUM 5356	A5.10 ER5356	Argon
#116	1.2mm	ALUMINIUM 5356	A5.10 ER5356	Argon +27% He
#117	1.6mm	ALUMINIUM 5356	A5.10 ER5356	Argon +27% He
#118	1.2mm	ALUMINIUM 5356	A5.10 ER5356	Argon +75% He

#718	1.2mm	ALUMINIUM 5356	EXTENDED	Argon +75% He
#303	1.6mm	ALUMINIUM 5356	A5.10 ER5356	Argon +75% He
#105	1.2mm	ALUMINIUM 5554	A5.10 ER5554	Argon +27% He
#106	1.6mm	ALUMINIUM 5554	A5.10 ER5554	Argon
#253	1.2mm	ALUMINIUM 5356	InterCats 1	Argon
#254	1.6mm	ALUMINIUM 5356	InterCats 2	Argon
#255	1.6mm	ALUMINIUM 5356	InterCats 3	Argon

COPPER & ALLOYS

#212	0.9mm	DE-OX COPPER	A5.7 ERCu	Argon +75% He
#261	1.2mm	DE-OX COPPER	A5.7 ERCu	Argon +75% He
#307	1.2mm	DE-OX COPPER	Extended	Argon +75% He
#213	1.2mm	DE-OX COPPER	A5.7 ERCu	Argon +27% He
#302	1.6mm	H/tegger SG-CuSn	AWS A5.7-84	Argon +75% He
#306	1.6mm	H/Tegger SG-CuSn	Gas:Pure HELIUM	
#101	1.6mm	ALUM/BRONZE A1	A5.7 ERCuAl-A1	Argon
#102	1.2mm	ALUM/BRONZE A2	A5.7 ERCuAl-A2	Argon
#229	1.2mm	PHOS/BRONZE	A5.7 ERCuSn-A	Argon
#169	0.8mm	SILICON BRONZE	A5.7 ERCuSi-A	Argon +0.5% O2, Argon
#170	0.9mm	SILICON BRONZE	A5.7 ERCuSi-A	Argon +0.5% O2, Argon
#272	0.9mm	SILICON BRONZE	SAFRA	Argon +0.5% O2, Argon
#171	1.0mm	SILICON BRONZE	A5.7 ERCuSi-A	Argon +0.5% O2, Argon
#172	1.2mm	SILICON BRONZE	A5.7 ERCuSi-A	Argon +0.5% O2, Argon
#288	1.2mm	SILICON BRONZE	FORD Special 1	Argon +0.5% O2, Argon
#289	1.2mm	SILICON BRONZE	FORD Special 2	Argon +0.5% O2, Argon
#122	0.9mm	MONEL 67	A5.7 ERCuNi	Argon +27% He
#153	0.9mm	MONEL 67	A5.7 ERCuNi	Argon +0.7% O2
#154	1.2mm	MONEL 67	A5.7 ERCuNi	Argon +0.7% O2

FLUX CORED WIRES

#119	1.2mm	BOHLER 600	DIN8555 E6-UM60	Argon +18% CO2
#120	1.6mm	COBALARC 100-OP		Argon +18% CO2
#121	1.2mm	COLMONOY 56	AI 1756 Ni/Cr/B	Argon +30% He +5% CO2
#123	1.6mm	COLMONOY 56	AI 1756 Ni/Cr/B	Argon
#148	0.9mm	COREWELD 70	A5.20 E71T-1	Argon +18% CO2
#149	1.2mm	COREWELD 70	A5.20 E71T-1	Argon +18% CO2
#150	1.6mm	COREWELD 70	A5.20 E71T-1	Argon +18% CO2
#242	1.6mm	CORODUR 42		Argon +1.5% O2
#223	1.6mm	CORODUR 55 MOmig		Argon +7% O2
#221	1.6mm	CORODUR 61 OA		Argon +1.5% O2
#222	2.4mm	CORODUR 61		Argon +7% O2
#243	2.4mm	CORODUR 68		Argon +1.5% O2
#224	2.4mm	CORODUR 300 MIG		Argon +7% O2
#135	0.9mm	DUAL SHIELD 7000	A5.20 E71T-1	Argon +18% CO2
#136	1.2mm	DUAL SHIELD 7000	A5.20 E71T-1	Argon +18% CO2
#137	1.6mm	DUAL SHIELD 7000	A5.20 E71T-1	Argon +18% CO2

#131	1.2mm	DUAL SHLD II-70	A5.20 E71T-1	Argon +18% CO2
#210	1.2mm	DUAL SHLD II-70	A5.20 E71T-1	Argon +25% CO2
#211	1.6mm	DUAL SHLD II-70	A5.20 E71T-1	Argon +25% CO2
#132	1.2mm	DUAL SHLD II-110	A5.29 E110T1-K3	Argon +18% CO2
#294	1.2mm	DUAL SHIELD T-5	A5.20 E71T-5	Argon +16% CO2 +2.5% O2
#259	1.6mm	EnDOtec DO*14	AS2576 1560-B5	Argon +1.5% O2
#133	1.2mm	FABLOY 409 F.C.	A5.22 E409T-2G	Argon +1.5% O2
#134	1.2mm	FLUXOFIL 11 Ni	A5.20 E70T-G	Argon +18% CO2
#231	1.6mm	FLUXOFIL 11 Ni	A5.20 E70T-G	Argon +18% CO2
#328	1.2mm	FLUXOFIL 11 Ni	A5.20 E70T-G	Argon +16% CO2 +2.5% O2
#274	1.6mm	FLUXOFIL 11 Ni	A5.20 E70T-G	Argon +16% CO2 +2.5% O2
#268	1.2mm	FLUXOFIL 14	A5.20 E71T-1	Argon +16% CO2 +2.5% O2
#275	1.6mm	FLUXOFIL 14	A5.20 E71T-1	Argon +16% CO2 +2.5% O2
#276	1.6mm	FLUXOFIL 20	A5.20 E81T-1Ni1	Argon +16% CO2 +2.5% O2
#331	1.6mm	FLUXOFIL 31	A5.20 E70T-5	Argon +18% CO2
#139	1.6mm	FLUXODUR 1855	AS2576 1855-B5	Argon +1.5% O2
#232	1.6mm	HARDFACE HC-G	or HB-G	Argon +18% CO2
#252	2.4mm	HARDFACE HL-O		--- no gas ---
#228	1.2mm	METALCOR XP	A5.20 E70T-G	Argon +18% CO2
#280	1.2mm	OUTERSHIELD 71M	A5.20 E71T-1	Argon +16% CO2 +2.5% O2
#281	1.6mm	OUTERSHIELD 71M	A5.20 E71T-1	Argon +16% CO2 +2.5% O2
#246	1.2mm	O/SHIELD MC 710	A5.20 E71T-1	Argon +18% CO2
#269	1.6mm	O/SHIELD MC 710	A5.20 E71T-1	Argon +16% CO2 +2.5% O2
#296	1.6mm	O/SHIELD MC 710	A5.20 E71T-1	Argon +5% CO2 +2% O2
#264	1.2mm	SHLD-BRIGHT 309L	A5.22 E309LT-1	Argon +18% CO2
#277	1.2mm	SHLD-BRIGHT 309L	A5.22 E309LT-1	Argon +25% CO2
#324	1.2mm	SHLD-BRIGHT 316L	A5.22 E316LT-1	Argon +18% CO2
#325	1.2mm	SHLD-BRIGHT 316L	A5.22 E316LT-1	Argon +25% CO2
#194	1.2mm	STELLITE NO.6	STELLOY 6	Argon +0.7% O2
#195	1.6mm	STELLITE NO.6	STELLOY 6	Argon +0.7% O2
#230	1.6mm	STELLITE NO.21	G21-FC-GT	Argon +1.5% O2
#175	1.6mm	STOODY 130		Argon +18% CO2
#329	1.2mm	STOODY HQ-913		Argon +16% CO2 +2.5% O2
#201	1.3mm	TRIMARK TM771	A5.20 E71T-1	Argon +18% CO2
#202	1.6mm	TRIMARK TM771	A5.20 E71T-1	Argon +18% CO2
#278	1.2mm	VERTICOR 3XP	A5.20 E71T-1	Argon +16% CO2 +2.5% O2
#778	1.2mm	VERTICOR 3XP	SPECIAL #1	Argon +16% CO2 +2.5% O2
#878	1.2mm	VERTICOR 3XP	SPECIAL #2	Argon +16% CO2 +2.5% O2
#279	1.6mm	VERTICOR 3XP	A5.20 E71T-1	Argon +16% CO2 +2.5% O2
#299	1.2mm	VERTICOR 3XP	A5.20 E71T-1	Argon +25% CO2
#292	1.6mm	VERTICOR 3XP	A5.20 E71T-1	Argon +25% CO2

OTHER WIRE TYPES

#260	1.6mm	BOHLER DUR650-IG	DIN MSG 3-GZ-60	Argon +18% CO2
#233	1.2mm	INCONEL 617	ERNiCrCoMo-1	Argon +27% He
#284	0.8mm	INCONEL 625	Positional	Argon +27% He
#258	1.0mm	AVESTA P12A	5.14 ERNiCrMo-3	Argon +27% He
#214	1.2mm	INCONEL 625	5.14 ERNiCrMo-3	Argon +27% He
#142	1.6mm	INCONEL 625	5.14 ERNiCrMo-3	Argon +27% He
#315	1.2mm	INCONEL 625	5.14 ERNiCrMo-3	Argon +30% He +5% CO2
#151	1.6mm	MAGNESIUM AZ61A	5.19 ERAZ61A	Argon
#318	0.8mm	MONEL 60	5.14 ERNiCu-7	Argon +0.7% O2
#162	1.2mm	MONEL 60	5.14 ERNiCu-7	Argon +0.7% O2
#319	0.8mm	NICKEL 61	5.14 ERNi-1	Argon +0.7% O2
#166	0.9mm	NICKEL 61	5.14 ERNi-1	Argon +0.7% O2
#167	1.2mm	NICKEL 61	5.14 ERNi-1	Argon +0.7% O2
#333	0.9mm	NICROFER S6020	5.14 ERNiCrMo-3	Argon
#163	0.9mm	NICROFER S6020	5.14 ERNiCrMo-3	Argon +27% He
#215	1.2mm	NICROFER S6020	5.14 ERNiCrMo-3	Argon +0.7% O2
#217	1.2mm	NICROFER S7020	on MONEL 600	Argon +27% He
#216	1.2mm	NICROFER S7020	on MONEL 600	Argon +30% He +5% CO2
#164	1.2mm	NIROD 44	ENi Fe-C1	Argon +7% O2
#165	1.6mm	NIROD 44	ENi Fe-C1	Argon +7% O2
#176	1.2mm	SANICRO 27	on SANICRO 28	Argon +1.5% O2
#168	1.2mm	SANICRO 72	5.14 ERNiCr-3	Argon - high purity

CONSTANT CURRENT MODE

#205	CC-Mode	10-30A	Use CC terminal
#204	CC-Mode	25-300A	Use CC terminal
#203	CC-Mode	250-450A	Use CC terminal

G.M.A.W. MODE

#208	0.9mm	GMAW
#209	1.2mm	GMAW

APPENDIX E: CDT WELD SCHEDULE DEVELOPMENT FORM

File name: _ _ _ _ _ _ _ _

Text: _._ mm _ _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _

Gas: _ _ = _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Group:
Mild Steel / Stainless / Aluminium / Copper / Cored / Other / C.C. / GMAW

Data: Pulse Width (ms): _._ _   Pulse Height (A): _ _ _
      Frequency (Hz):   min= _ _   Max= _ _ _
      Background (A):   min= _ _   Max= _ _
      Arc Length (V):   min= _ _._   Max= _ _._
      Current (Aave):   min= _ _   Max= _ _ _
      Wirefeed (m/min): min= _._   Max= _ _._ Creep= _._
      [(rpm): min= _ _   Max= _ _ _ Creep= _ _]

GWopts: Pregas= _._ Postgas= _._ Craterfill= _._ Burnback= _ _ at _ _ %
Option: .   Vave .   Pulse+PSC +58/-58Hz + 267/- 267Hz/s Gain= 8Hz/V

Manufacturer, Trade name, Description & Composition of wire:

Standard designation(s) for wire:

Known equivalent wires:
      Tested: NO / YES
      Tested: NO / YES
      Tested: NO / YES

Notes: (application, customer, comments)

Developed by: . . . .   Approved by: . . . .

Mechanical tests: NO / YES (attach)   Date: . . . / . . . . / . . .

Chemical analysis: NO / YES (attach)   General release: NO / YES

APPENDIX F: TOOLBOX REQUIREMENTS

When developing weld schedules, the following items should be available.
_ PC-compatible laptop computer with `WeldEdit' software;
_ Spare batteries, or a charger and extension cord;
_ PC-CDT cable (AM222-0/4);
_ Spare EPROMs for Display (#381xx/xx) and Weld CPU (#380xx);

_ Digital Multimeter (DMM);
_ Digital Tachometer;
_ Screwdrivers (Philips & Flat types);
_ Electric screwdriver;

_ 3/8" (10mm) nutdriver or spanner (for body panels);
_ Pliers;
_ CDT `door holder' hook (350mm);
_ Welding visor and protective clothing;

_ WeldEdit (this) manual;
_ CDT 450 operation manual;
_ Information about welding wires and gas mixtures;
_ Pen & paper for taking notes.

At the premises you will require:

_ CDT welder set up for operation;
_ Wire and gas as appropriate (possibly a choice of gases);
_ Sample plates to use for test welding.

List here any other items you find useful: