ESP 6 - Option 3 and 4

Desoutter Limited Eaton Road Hemel Hempstead Hertfordshire HP2 7DR England

ESP 6 -108252-C

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ITEM No. PART No. DESCRIPTION Qty.
1 108252 Option Board B 1
2 296843 Screw 2

Printed in England
Esp 6 - Option 3 and 4  Programming Description

STATEMENT OF USE:
This control board to be used in conjunction with Desoutter unit ESP6 (108232). No other use permitted.

Programming Description - Option ‘3/4’
To be used in conjunction with S5V2A, S5V2M, S5Z2A, S4X2A, S4Y2A and S4X2M

FUNCTION - PARAMETER CHANGE MODE:
A tool does not have to be connected to carry out parameter changes.
Note: When fitting or removing a new option board, all parameters MUST be rechecked. Alternatively, reload the "Factory Default" values and change parameters as required.

Parameter - VALUES:
To set-up specific parameter values, depressing the mode key (P) for 3 seconds enters the parameter change mode where the following is displayed:

PARAMETER STORED

The set-up and the parameter mode will both be exited automatically, if there is no user input for more than 60 seconds. In this case NO changes will be stored, and the programme will operate to the original set values.

Parameter: TOOL/MODE:
Set parameters as "Basic version".

Parameter: EXTERNAL FORWARD:
The parameter can be configured as OFF, AND or ONLY and is used in conjunction with the I/O porting. OFF: means inactive, so only the tool start (button and/or push) will be active.
AND: means that the tools start (button and/or push) and the external signal must be supplied to start the operation.
ONLY: means that the fastening or reverse operation will be triggered only by the corresponding external signal.
Note: If TOOL has been programmed as PUSH, the ONLY function, although displayed, will be stored as AND.

Parameter: EXTERNAL REVERSE:
The parameter can be configured as OFF, AND or ONLY and is used in conjunction with the I/O porting. OFF: means inactive, so only the tool start (button and/or push) will be active.
AND: means that the tools start (button and/or push) and the external signal must be supplied to start the operation.
ONLY: means that the fastening or reverse operation will be triggered only by the corresponding external signal.
Note: If TOOL has been programmed as PUSH, the ONLY function, although displayed, will be stored as AND.

Parameter: EXTERNAL STOP:
This programme can be selected as NO or YES and is used in conjunction with the I/O porting.
NO: means inactive.
YES: means an external signal is required to stop the fastening (i.e. the tool is being used to position a fastener/component to a specific position, rather than to a torque). If the clutch or current cut-off operation occurs before the external signal, the tightening will be rated as NOK (cycle not completed).

Parameter: SELECT GROUP:
This parameter can be set to EXT, 1, 2, 3 or 4 and is used in conjunction with the I/O porting.
EXT: selected, the actual used and edited parameter group depends on the corresponding digital inputs.
With 1, 2, 3 or 4 selected, the parameter group to be used or edited, will be selected by the number programmed via the display.
With EXT selected, the parameter group to be used or edited, will be selected using the External I/O PROG SEL 1 and PROG SEL 2 lines.
Changes on the PROG-SEL inputs will be disregarded during an already started tightening.

Parameter: SLOW TIME, SLOW SPEED:
If the slow time is selected with a value greater than 0, the parameter "Slow Speed" will appear and a value can be selected. The tool will start with selected slow speed and will then switch automatically to the programmed FAST or FINAL selected speed after the slow time has elapsed. If the slow start is set to 0, the parameter slow speed will be skipped. The slow time/speed parameters apply only to the fastening operation.

Note: To ensure correct tightening of fastener, the change from fast speed to final speed must occur before the total rundown time of the fastener.

The Fast Time/Speed parameters apply only to the fastening operation.
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Parameter: FINAL TIME, FINAL SPEED:
The final time and final speed selection will apply after the slow and fast time (if programmed). The tool operates at this speed until either the shut-off operation occurs or the set time if programmed has elapsed. An “ERR - 5” error will be reported should the “Final Time” timeout before the operation has completed.

Parameter: SPEED REVERSE:
This is the speed used for reverse operation.

Parameter: PRE-REVERSE:
A reverse operation followed by a tightening operation can be selected. This will mean that the tool will first run in reverse for the programmed “Pre-Reverse” time, and will then automatically run in the forward direction until clutch or current shut-off has occurred.

To activate pre-reverse, program the “Pre-Reverse” time and “Speed Reverse” for reverse speed, the following parameters may then be selected as required slow time/speed, fast time/speed and final time/speed. The cycle will be terminated on completion with a valid clutch or current shut-off signal and an OK (cycle complete) signal. The tool will also stop, if the tool start or external start condition is released before the clutch or current shut off has occurred. This will result in a NOK (cycle not complete) condition.

Parameter: AUTO-REVERSE (S5V2M, S5Z2A, S4X2M and S4Y2A only):
An auto-reverse time period can be selected. This will mean, that after clutch or current shut-off has occurred the tool will automatically reverse and run for the defined time and then stop. The auto reverse operation will only be executed, if the fastening cycle had been executed with a valid clutch shut off signal. The cycle will be terminated on completion of the complete programmed auto reverse time, with an OK (cycle complete) signal.

The tool will also stop, if the tool start or external start condition is released before the clutch or current shut-off has occurred or before the complete auto-reverse time has elapsed. This will result in a NOK (cycle not completed) condition.

Parameter: CURRENT (S5Z2A and S4Y2A only):
Current shut-off can be selected either OFF (i.e. For clutch shut-off tools), or 25% to 100 % for stall torque tools.

Note: The programmed Final Speed value will be reduced “internally ” to the programmed current value if a current value less than the final speed value is entered. (i.e. The actual final speed will be reduced). If a current value greater than the programmed final speed is entered, the final speed value will remain unchanged. If a final speed is programmed that is less than the existing current value and the existing final speed, then the tool speed will be reduced.

Summary of display contents in parameter mode:

<table>
<thead>
<tr>
<th>TOOL</th>
<th>PUSH</th>
<th>MANU/PUSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODE</td>
<td>PUSH</td>
<td>PUSH/COMBI</td>
</tr>
<tr>
<td>EXT. FORWARD</td>
<td>OFF</td>
<td>OFF/AND/ONLY</td>
</tr>
<tr>
<td>EXT. REVERSE</td>
<td>OFF</td>
<td>OFF/AND/ONLY</td>
</tr>
<tr>
<td>EXT. STOP</td>
<td>OFF</td>
<td>OFF/ON</td>
</tr>
<tr>
<td>SELECT GROUP</td>
<td>EXT</td>
<td>EXT/1/2/3/4</td>
</tr>
<tr>
<td>1: SLOW TIME</td>
<td>0.3</td>
<td>OFF, 0.1 . . . 9.9 sec</td>
</tr>
<tr>
<td>1: SLOW SPEED</td>
<td>40%</td>
<td>20% . . . 100%</td>
</tr>
<tr>
<td>1: FAST TIME</td>
<td>0.3</td>
<td>OFF, 0.1 . . . 9.9 sec</td>
</tr>
<tr>
<td>1: FAST SPEED</td>
<td>60%</td>
<td>25% . . . 100%</td>
</tr>
<tr>
<td>1: FINAL TIME</td>
<td>5.0</td>
<td>OFF, 0.1 . . . 9.9 sec</td>
</tr>
<tr>
<td>1: FINAL SPEED</td>
<td>80%</td>
<td>25% . . . 100%</td>
</tr>
<tr>
<td>1: REVERSE</td>
<td>60%</td>
<td>20% . . . 100%</td>
</tr>
<tr>
<td>1: PRE-REVERSE</td>
<td>OFF</td>
<td>OFF, 0.1 . . . 9.9 sec</td>
</tr>
<tr>
<td>1: AUTO-REVERSE</td>
<td>OFF</td>
<td>OFF, 0.1 . . . 9.9 sec</td>
</tr>
<tr>
<td>1: CURRENT</td>
<td>OFF</td>
<td>OFF, 25% . . . 100%</td>
</tr>
</tbody>
</table>

I/O Signals:
The option modules add the following digital input/output capabilities to the system.

IN: EXTERNAL FORWARD IN: EXTERNAL REVERSE
IN: EXTERNAL STOP. IN: PROG-SEL 1
IN: PROG-SEL 2 OUT: CYCLE COMPLETE (OK), same operation as LED on front panel.
OUT: NOT COMPLETED (NOK).

Functionality of Inputs:
➢ EXTERNAL FORWARD and EXTERNAL REVERSE are for external operation of the tool.
➢ EXTERNAL STOP NO/YES. When “External Stop” is programmed YES, this input will cause the tool to stop.
➢ PROGRAM - SEL 1 and PROGRAM - SEL 2 are used to select program groups 1, 2, 3 or 4 when “SELECT GROUP” is programmed to EXT.

Functionality of Outputs:
➢ The outputs are switched inactive with every trigger operation, which sets the tool into forward motion.
➢ The OK (cycle complete) or NOK (cycle not complete) will be rated by the following:
   - A tightening finished by a valid clutch or current shut off operation will be rated as OK.
   - In the case of active auto reverse, the OK rating will only be given, if the initial tightening was OK and the tool reversed for the complete programmed reverse time. Failure to complete initial tightening, or not allowing the full reverse time to be completed, will result in a NOK condition.
   - WARNING: A valid clutch or current shut off operation requires that the tool is held firmly against the fastener throughout the operation and for the tightening to be completed within the Final Time period. (If programmed).
➢ All other operations will show a NOK display.
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Signals on the I/O connector:

<table>
<thead>
<tr>
<th>Signal</th>
<th>I/O</th>
<th>Pin</th>
<th>Description</th>
<th>Signal Type</th>
<th>Signal Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXTERNAL FORWARD</td>
<td>Input</td>
<td>21</td>
<td>Signal to run tool forward, can be used exclusive or together with the tool button.</td>
<td>L</td>
<td>24V signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Must be disabled and re enabled for the next cycle</td>
</tr>
<tr>
<td>EXTERNAL REVERSE</td>
<td>Input</td>
<td>22</td>
<td>Signal to run tool in reverse, can be used exclusive or together with the tool button.</td>
<td>L</td>
<td>24V signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Must be disabled and re enabled for the next cycle</td>
</tr>
<tr>
<td>EXTERNAL STOP</td>
<td>Input</td>
<td>12</td>
<td>Allows immediate stop of tool (depth sensor, park position)</td>
<td>P</td>
<td>24V signal. See Note below.</td>
</tr>
<tr>
<td>CYCLE COMPLETED (OK)</td>
<td>Output</td>
<td>2/15</td>
<td>Signals that the fastening is complete - i.e. clutch has fired or current shutoff has activated</td>
<td>L</td>
<td>24V signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Signal remains enabled until start of next tightening cycle (not reverse) or ESP is powered off</td>
</tr>
<tr>
<td>NOT COMPLETED (NOK)</td>
<td>Output</td>
<td>1/14</td>
<td>Signals that the tool has stopped, but fastening was not successful.</td>
<td>L</td>
<td>24V signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Signal remains enabled until start of next tightening cycle (not reverse) or ESP is powered off</td>
</tr>
<tr>
<td>PROG SEL 1</td>
<td>Input</td>
<td>23</td>
<td>Grp1:0V, Grp2:0V, Grp3:+24V, Grp4:+24V</td>
<td>L</td>
<td>24V signal level required to select required Program via Ext I/O</td>
</tr>
<tr>
<td>PROG SEL 2</td>
<td>Input</td>
<td>24</td>
<td>Grp1:0V, Grp2:+24V, Grp3:0V, Grp4:+24V</td>
<td>L</td>
<td>24V signal level required to select required Program via EXT I/O</td>
</tr>
<tr>
<td>+24V</td>
<td></td>
<td>5/18</td>
<td>24V from external power supply</td>
<td>L</td>
<td>Required for all External I/O operations</td>
</tr>
<tr>
<td>GND24V</td>
<td></td>
<td>6/7/13/19/20/25</td>
<td>0V return to external power supply</td>
<td>L</td>
<td>Required for all External I/O operations</td>
</tr>
</tbody>
</table>

**Note:** An external 24V power supply is required to enable the external input and output signals.

Maximum output current per output is 500mA. Current per input is 9mA.