Loom control system W1C
User’s Guide

Attach: the hand terminal user’s guide
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1. Feeders installation and connection to LCS

W1C Insertion control system for water jet loom

1. Feeder installation and connection

   1) Feeder installation
      ① Use the stand and yarn creel to install the feeder, these stand and yarn creel. Use the fixed supporting feet to fix the feeders on the suitable place. Attention: the distance between the feeder and the main nozzle of the loom must be 260mm or more.
      ② Fix the VSB on the stand. Attention: the minimum distance from the VSB bottom to the ground would be 200mm.

2. connect VSB to LCS

   1) Use 4-wires cable to connect the VSB to 3-phase power. The 4 core cable: black, brown, white, yellow/green, connect R1, S1, T1, E on VSB corresponding. attention: the earth wire must connect the earthing system.
   2) The 4-wires signal cable: blue/yellow, corresponding to S100/SA on "arrange" contactor MSA coils, and red/white to S100,120 on "forward" contactor MSF coils.
   3) The 2-wires signal cable: red, blue, connect to the Normally Open signal (like weft stop) or MC/0V respectively, or connect to the SP, 0V respectively.
3. proximity switch install and adjust

use the proximity switch-tool to install the proximity switch, notice that the best distance between sensor area and inductive metal is 2mm. Adjust the angle of the inductive metal, take the red led just lighting as final, then read the angle of the main shaft.

The angle set value of red led lighting = nozzle water jet angle – running delay angle

The computational formula of running delay angle=7ms×0.006×RPM(loom speed)

Example: loom speed =720rpm  7×0.006×720=30.24degree

Water jet angle=105 degree  running delay angle=30 degree

Now set the proximity switch lighting angle 105-30=75 degree

That is to say the proximity switch lighting when the main shaft is 75degree, and the feeder release weft actual angle is 105 degree. It must be sure that the gripper opened all of the releasing period, the gripper should open before weft insertion begin and close after weft insertion ended. This has different with the Mechanical feeder in setting the gripper angle.

2. Feeders working parameter setting

1. The hand terminal introduce

This hand terminal is used for W2C equipped super Elf. It can set the feeders working parameter, select the special functions, analyse the production statement and check the alarm messages.

The special functions as follows:

- Roj Super-Elf G2 working parameter
- pattern editing (not all functions are used here)
- W2C parameter setting (not use here)
- check the weaving data(not all functions are used here)
1.1 input keyboard instruction

the keyboard use for input data and select the special function
the keyboard divide into 4 parts below:

<table>
<thead>
<tr>
<th>Function key:</th>
</tr>
</thead>
<tbody>
<tr>
<td>are used to select the functions described on the second line of the display. If more functions are available on that screen a special symbol is shown on the right hand of the second line, use the → or ← to see the other available functions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special function key:</th>
</tr>
</thead>
</table>
| -directly into the special function menu  
-ROJ SUPER-ELF G2 working parameter setting  
-pattern editing  
-W2C parameter setting (Here does not use)  
-Weaving data check |

<table>
<thead>
<tr>
<th>Arrow keys:</th>
</tr>
</thead>
</table>
| -↑/↓ if the menu has multipage and can not display together, use the button as page up/page down  
-↑/↓ in input mode use up/down to look the possible input options.  
-↑/↓ in edit mode use up/down to look the parameter list (display number or character string input fields), only the system accepted parameter can be chose.  
-←/→ use to display other functions which can not show in one page under the screen.  
-←/→ when the screen has mutly options, use to move/select the target. The selected target will be highlight (white on black).  
-←/→ in edit mode use it to move to the fields want to be modified. |

<table>
<thead>
<tr>
<th>Numeric entry keys:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used for input number in edit mode.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enter key:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Used for confirm the input or modification at the end of edit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ESC:</th>
</tr>
</thead>
<tbody>
<tr>
<td>exits the edit mode without changing the original data. Also use f or return to parent directory</td>
</tr>
</tbody>
</table>
2. Menu structure and Terminology in this guide

The Display is a 122x32 dot-matrix graphic LCD, it can show the graphic icons, symbols, and alphabetical characters in two rows.
Here we describe the meaning of the terminology used in the User manual, symbols shown on the LCD display and the basic organisation of information.

**Screen-shots** are used to show what will be seen on the display in the various situations with all the active keys that can be used. What is shown by the LCD display is called **PICTURE** and will be numbered with a **picture code number** to help the description and for database reference.

The first picture that is shown at power-on is called **Splash Picture**.
This picture can show a logo or a wait message. This first picture will disappear after a few seconds, when initialising has finished, and will appear again only at next power-on.

All information is organised in **MENUS**.
A menu is a collection of parameters and information on a specific argument, that is displayed on one or more **PAGES**.
The first menu is called **MAIN MENU**. The main menu shows the Product name and the loom speed.

A menu can be selected by **FUNCTION KEYS** ( ), or by **SPECIAL KEYS** ( ). Special keys will directly access to the **FUNCTION MENU** of the relative special function.

**GRAPHIC SYMBOLS** can be shown on the display. They can be **IDEOGRAMS** or **FUNCTIONAL SYMBOLS**. On the following we give a summery of Functional Symbols:

- **settings**
- **Language**
- **SCROLL**
- **MORE**
- **SELECT FIELD**

The black box shows an **ACTIVE EDIT OBJECT** press key to edit

The light blue box shows another **EDIT OBJECT** on the same page, press keys to activate next/prev. edit object. (This is only a convention used in this manual, it is not shown on the display).

**2.1 Editing Objects**

**EDIT OBJECTS** are data input fields displayed by the HTC terminal. You can distinguish an **EDIT OBJECT** only when it is selected (it is shown as a black box with white characters). When there are more than one **EDIT OBJECTS** on the same page, the first object will be in selected mode (in the black box), use the keys to move selection to the next / previous **EDIT OBJECT**. An **EDIT OBJECT** can be
modified only if it is selected. To change the value of an edit object you must enter the EDIT MODE either typing a NUMBER key or the ← key.

There are mainly two kinds of edit objects:

**EDIT FIELDS**

Edit fields are mainly PARAMETERS that may be modified or DATA FIELDS for data entry. Fields may be: NUMERICAL fields (decimal or hexadecimal format) or STRING fields (all ASCII standard character set). NUMBERS can be directly typed in using the numerical keyboard and confirming with the ENTER key; this will automatically enter the EDIT MODE. When a numerical key is typed the previous value is replaced by the number and the cursor blinks in the next position. If you press the ← key, the previous value is restored. The action of the ← key is to store the new value and move the selection to the next object on the screen. After storing a new value, the previous value will be lost and can not be restored by the ← key. If there is only one edit object in the page, the selection remains on the same object.

Another EDIT MODE is possible; type the ← key to enter the EDIT MODE. The previous value is still shown with the blinking cursor under the left-most character, use the ← → keys to select the character to change, then use the ← ↑ ↓ key to select the new character from the character list or the numerical keyboard. The character list is will only show the admitted characters for that type of field (numerical or string). If you press the ← key, the previous value is restored. At the end of editing the ← key must be typed to store the new data and exit EDIT MODE.
SELECT FIELDS

A SELECT field is a list of choices from which you can choose a setting for the desired parameter (ON/OFF, HIGH/LOW/OFF etc.). As for EDIT fields, SELECT fields can be modified only when they are in EDIT MODE. After typing the key to enter the edit mode, a scroll symbol is shown ( ) and use the keys to select the character from the character list, then type key to save the parameter and exit edit mode.
3. **FEEDER setup menu**

Press the FEEDER SETUP special key ( ) to access the FEEDER SETUP MENU: The W2C system can work with two Roj Super ELF electronic feeders, each with their own setup parameters:

Press F1 or F3 function keys to enter the desired feeder setup menu, then use the ↑ and ↓ function keys to scroll through the settings.

On the following a description of all the parameters:

### 3.1 LENGTH: (*pic-001*)

Is the weft length [in cm] to be released by the feeder at each pick. The new value is automatically converted into an alphanumerical combination. If more than one combinations are found, the menu will show the first combination and two arrows on F2 and F3 function keys to select other combinations.

**The letter**, (between A and E), indicates how to adjust the Spool Body diameter.

**The number**, (between 2 and 12), indicates how many coils are released at each pick.

Possible setting: 68 - 501 [cm]

Default setting: combination 04E (see appendix B:)

**Notes:**

Some weft lengths can be woven by using different combinations between Spool Body diameters and coils to be released. It is strongly recommended to make the Feeder operating with the Spool Body set to the wider diameter and releasing the minimum number of coils (see Appendix B)

### 3.2 ROTATION: (*pic-002*)

Sets the winding direction of the Feeder according to the yarn twist. When changing the winding direction, the coils pitch has to be changed too. (see feeder instruction manual).
Possible setting: \textbf{Z / S}
Default setting: \textbf{Z}

\textbf{3.3 SENSIBILITY: (Pic-003)}
Sets the sensitivity of the photocell which is controlling the outgoing coils. Set HIGH when the yarn count is lower than 50 dtex, or in case of shining and reflective yarns.
Possible setting: \textbf{LOW} low sensitivity
\textbf{HIGH} high sensitivity
Default setting: \textbf{LOW}

\textbf{3.4 WEFT STORAGE: (Pic-004)}
Sets the number of coils on the Spool Body of the Feeder.
Possible setting: \textbf{12 - 68} coils
Recommended setting: according to the yarn count, set the coils pitch as low as possible. Set the highest number of coils so as to avoid them overlapping each other on the Stopper side. The reserve has to be over 3/4 of the Spool Body length. In case of different reserve positions between Feeders, set with the same number of coils, make them equal by adjusting the coils pitch.

\textbf{3.5YARN BREAK: (Pic-004)}
Yarn breakage control on the coil drum. This sets the reaction time of the Weft break signal. Increase the value in case of false stops of the Loom.
Possible setting: \textbf{OFF} do not check for Yarn break
2 stops after 2 missing coils
3 stops after 3 missing coils
4 stops after 4 missing coils
5 stops after 5 missing coils
Default setting: 3

\textbf{3.6 FEELER IN: (Pic-005)}
Yarn breakage control by means of an external sensor (e.g. ROJ PIEZO sensor TFE6). It sets the reaction time of the external Weft break signal. Increase the value in case of false stops of the Loom.
Possible setting: \textbf{OFF} do not check for Yarn break
2 stops after 2 missing coils
3 stops after 3 missing coils
4 stops after 4 missing coils
5 stops after 5 missing coils
Default setting: 3

3.7 FEELER WINDOW: (Pic-005)
To avoid faulty length measurement due to fluffs or dust released by the yarn. Increase the value to 70% or 80% in case of fluffy yarns (e.g. Cotton), or wrong length released by the Feeder (one coil less).
Reduce the value to 50% or 40% only with non fluffy yarns (e.g. synthetic) and irregular flying times.
Possible setting: **40% - 80%** (step 10%)
Default setting: **60%**

3.8 ACCELERATION: (Pic-006)
This is to set the acceleration ramp of the Feeder Winder according to the pattern to be woven. Set HIGH when weaving stripes, or one colour installation.
With this setting the working temperature of the Feeder could increase.
Possible setting: Low (standard)
High (max.)
Default setting: Low

3.9 DOUBLE COIL: (Pic-006)
This is to avoid wrong weft length measurement due to eventual overlapping of the coils on the Spool Body. Set OFF only in case of short picks (one coil less) and very irregular insertion times (fancy yarns).
Possible setting: ON (protection activated)
OFF (protection not activated)
Default setting: ON (protection activated)

3.10 MAX SPEED: (Pic-007)
This is the maximum allowed speed for the feeder, in turns/minute. It can be used to avoid the feeder motor stops in case of weft stripes pattern. In order to correctly set this parameter, when the loom is in RUNNING mode, start from the max value (7200) and reduce it till the feeder motor speed becomes more even. Low values can cause the feeder storage to run empty.
Possible setting: **500 - 7200**
Default setting: **7200**

3.11 BRAKE STEP 1: (Pic-007)
It sets the pulsars rod torque during its braking function. Set a value according to the yarn characteristics.
Possible setting: OFF (braking disabled)
1 - 9 (1 = min, 9 = max. strength)
Default setting: OFF

3.12 BRAKE TIME: (Pic-008)
Pulsar activation setting. With brake time set to 00, the pulsar is automatically activated in order to have the rod on the braking position only during the last coil insertion. By increasing this value, you can anticipate the braking function. Therefore, the weft insertion will be slowed down for a longer time.
Possible setting: 0 - 30 [msec]
Default setting: 0 [msec]

Notes:
See the recommended settings on the feeder manual.

3.13 PULL BACK: (Pic-008)
Pulsar activation control to recover the weft into the nozzle after yarn cutting (.Pull-back function).
Possible setting: ON - OFF
Default setting: OFF

Notes:
See the recommended settings on the feeder manual.

3.14 PULSAR TYPE: (Pic-009)
This is to set type of pulsar connected to the Super Elf.
Possible setting: 0 - (Standard Pulsar)
1 - (do not use)
2 - (Strong Pulsar)
Default setting: 0 - (Standard Pulsar)

* Notes:
This parameter may not be available on old feeders. If not available, the HTC will not show this parameter.
When use new HP Pulsar, the parameter 3.12-3.14 will show as fellow:
(to ensure the version of hand terminal is V1.00.12 or update, otherwise it can not support the HP pulsar)

Brake angle
It sets the pulsars rod swing range during its braking function.
Possible setting:
OFF pulser function disabled
1-5  1-minimum swing range  
      5-maximum swing range

Brake time
Pulsar activation setting.
Possible setting: **0-30**
The bigger the number, the earlier the pulsar begins to swing.

Pull back
Pulsar activation control to recover the weft into the nozzle after yarn cutting.
Possible setting:
- **OFF**  function disabled
- **Min**  the minimum range to pull back the yarn automatically
- **Mid**  the medium range to pull back the yarn automatically
- **Max**  the maximum range to pull back the yarn automatically
- **Wj1** only use for water jet weaving loom, the minimum range to pull back the yarn automatically
- **Wj2** only use for water jet weaving loom, the medium range to pull back the yarn automatically
- **Wj3** only use for water jet weaving loom, the maximum range to pull back the yarn automatically

Weft type
Select the yarn type, the system will automatically set the pulsars rod torque during its braking function.
Possible setting:
- **A1-A5**  fit for filament, the torque become bigger from A1 to A5
- **B1-B5**  fit for common chemical fiber yarn, recommended B1-B5 for water jet weaving loom
- **C1-C5**  fit for nature fabric such as wool, cotton, etc.

*Note: the Hp pulsar will make a calibration action when the system power switch-on. To avoid the tense yarn affect the calibration action, the system request for release a circle yarn manually to loose the yarn in order to finish the calibration action.*

Brake angle
Brake time
Weft type

Pull back
- to set the brake action after the yarn releasing end
  - commonly use for wide width weaving loom, set to WJ1

Note: the pull back function should be opened on wide width weaving loom, commonly select in WJ1—WJ3. The wide width weaving loom need the pull back function to strain the yarn in order to prevent the ballooning.
The pull back function need not used on narrow width weaving loom, as usually the fly weft only need to
brake to reduce the tension peak value to prevent excessive pulled.
When use HP pulsar, the feeder will recognize the type of pulsar and display the corresponding menu.
When use not HP pulsar(common pulsar) and the menu “pulsar type” set 0 or common, the pull back function enabled; set 2 or strong, the function disabled.

**Commonly, for common yarn**

<table>
<thead>
<tr>
<th>Narrow width loom</th>
<th>wide width loom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brake angle=2</td>
<td>Brake angle=1</td>
</tr>
<tr>
<td>Brake time=10</td>
<td>Brake time=8</td>
</tr>
<tr>
<td>Weft type=B2</td>
<td>Weft type=B2</td>
</tr>
<tr>
<td>Pull back=OFF</td>
<td>Pull back=WJ1</td>
</tr>
</tbody>
</table>
## APPENDIX - A: ERROR MESSAGES

### FEEDER ERRORS

<table>
<thead>
<tr>
<th>Error message:</th>
<th>Error code:</th>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self 1 err 1500</td>
<td>1500 -</td>
<td>The Super ELF parameter have been reset.</td>
</tr>
<tr>
<td>Bad data</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self 1 err 1501</td>
<td>1501 -</td>
<td>The Super ELF needs a Photocell Cleaning.</td>
</tr>
<tr>
<td>Ftc clean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self 1 err 1502</td>
<td>1502 -</td>
<td>It indicates a short dropout in the supply voltage.</td>
</tr>
<tr>
<td>Volt drop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self 1 err 1503</td>
<td>1503 -</td>
<td>Check if the winding disc of the feeder is free to rotate.</td>
</tr>
<tr>
<td>Motor lock</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self 1 err 1504</td>
<td>1504 -</td>
<td>Super ELF motor voltage too high: check if the transformer is supplied with the correct power voltage.</td>
</tr>
<tr>
<td>High volt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self 1 err 1505</td>
<td>1505 -</td>
<td>Super ELF motor voltage too low: check the fuses; check if the transformer is supplied with the correct power voltage.</td>
</tr>
<tr>
<td>Low volt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self 1 err 1506</td>
<td>1506 -</td>
<td>The yarn breakage control photocell is not calibrated: replace it.</td>
</tr>
<tr>
<td>Wfp calib</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self 1 err 1507</td>
<td>1507 -</td>
<td>The weft length photocell is not calibrated: replace it.</td>
</tr>
<tr>
<td>Coils calib</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self 1 err 1508</td>
<td>1508 -</td>
<td>Electrical interference on Super ELF feeder: reset it (Off/On).</td>
</tr>
<tr>
<td>Watch dog</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self 1 err 1509</td>
<td>1509 -</td>
<td>Super ELF CPU board in trouble.</td>
</tr>
<tr>
<td>System Error</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self 1 err 1510</td>
<td>1510 -</td>
<td>Fault on signals from W2C to SELF. Check the extension cable, the connectors and the boards.</td>
</tr>
<tr>
<td>Pia timeout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self 1 err 1511</td>
<td>1511 -</td>
<td>Stopper problem. Check the SELF electromagnet.</td>
</tr>
<tr>
<td>Pin timeout</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: See Super ELF Instruction Manual for further details.*
<table>
<thead>
<tr>
<th>Error message:</th>
<th>Error code:</th>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self 2 err 1600 Bad data</td>
<td>1600</td>
<td>The Super ELF parameter have been reset.</td>
</tr>
<tr>
<td>Self 2 err 1601 Ftc clean</td>
<td>1601</td>
<td>The Super ELF needs a Photocell Cleaning.</td>
</tr>
<tr>
<td>Self 2 err 1602 Volt drop</td>
<td>1602</td>
<td>It indicates a short dropout in the supply voltage.</td>
</tr>
<tr>
<td>Self 2 err 1603 Motor lock</td>
<td>1603</td>
<td>Check if the winding disc of the feeder is free to rotate.</td>
</tr>
<tr>
<td>Self 2 err 1604 High volt</td>
<td>1604</td>
<td>Super ELF motor voltage too high: check if the transformer is supplied with the correct power voltage.</td>
</tr>
<tr>
<td>Self 2 err 1605 Low volt</td>
<td>1605</td>
<td>Super ELF motor voltage too low: check the fuses; check if the transformer is supplied with the correct power voltage.</td>
</tr>
<tr>
<td>Self 2 err 1606 wfp calib</td>
<td>1606</td>
<td>The yarn breakage control photocell is not calibrated: replace it.</td>
</tr>
<tr>
<td>Self 2 err 1607 Coils calib</td>
<td>1607</td>
<td>The weft length photocell is not calibrated: replace it.</td>
</tr>
<tr>
<td>Self 2 err 1608 Watch dog</td>
<td>1608</td>
<td>Electrical interference on Super ELF feeder: reset it (Off/On).</td>
</tr>
<tr>
<td>Self 2 err 1609 System Error</td>
<td>1609</td>
<td>Super ELF CPU board in trouble.</td>
</tr>
<tr>
<td>Self 2 err 1610 Pia timeout</td>
<td>1610</td>
<td>Fault on signals from W2C to SELF. Check the extension cable, the connectors and the boards.</td>
</tr>
<tr>
<td>Self 2 err 1611 Pin timeout</td>
<td>1611</td>
<td>Stopper problem. Check the SELF electromagnet.</td>
</tr>
</tbody>
</table>

*Note: See Super ELF Instruction Manual for further details.*
<table>
<thead>
<tr>
<th>Error message:</th>
<th>Error code:</th>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Checksum error on pattern directory. All patterns have been deleted.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2000 - The Dobby is not synchronised with the weft pattern.

2500 - Encoder error. Check the encoder.

2501 - Encoder error. Check the encoder.

2502 - Encoder error. Check the encoder.

3000 - To many errors from the loom.

3001 - To many errors from the loom.

3500 - Hardware error on the W2C System board. Report to service.

4000 - Data checksum error. This error is normal at software release change. In other cases check batteries.

4500 - Error on start sequence. Start before Arrange.

4501 - Power failure (the loom was not running).

4502 - Bobbin breakage from feeder 1.

4503 - Bobbin breakage from feeder 2.

4504 - Power failure while loom running. Check pattern phase.

5000 - Watch-dog error. Report to service.

6000 - Short circuit on Grippers or Solenoid/Rotary valves.

*Note: See Super ELF Instruction Manual for further details.*
<table>
<thead>
<tr>
<th>Error message:</th>
<th>Error code:</th>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency 6500 Invalid grip 1</td>
<td>6500</td>
<td>Device check failure: Current flow on Gripper 1 does not match with GRIPPER setting (pic.036). Change Gripper and/or verify settings.</td>
</tr>
<tr>
<td>Emergency 6501 Invalid grip 2</td>
<td>6501</td>
<td>Device check failure: Current flow on Gripper 2 does not match with GRIPPER setting (pic.036). Change Gripper and/or verify settings.</td>
</tr>
<tr>
<td>Emergency 6502 Invalid elv 1</td>
<td>6502</td>
<td>Device check failure: Current flow on Water Selector 1 does not match with WATER SEL setting (pic.036). Change Water Selector and/or verify settings.</td>
</tr>
<tr>
<td>Emergency 6503 Invalid elv 2</td>
<td>6503</td>
<td>Device check failure: Current flow on Water Selector 2 does not match with WATER SEL setting (pic.036). Change Water Selector and/or verify settings.</td>
</tr>
<tr>
<td>Emergency 6504 Invalid elv 3</td>
<td>6504</td>
<td>Device check failure: Current flow on Water Selector 3 does not match with WATER SEL setting (pic.036). Change Water Selector and/or verify settings.</td>
</tr>
<tr>
<td>Emergency 6505 Invalid elv 4</td>
<td>6505</td>
<td>Device check failure: Current flow on Water Selector 4 does not match with WATER SEL setting (pic.036). Change Water Selector and/or verify settings.</td>
</tr>
</tbody>
</table>

**Note:** See Super ELF Instruction Manual for further details.
APPENDIX B: Spooler body length combination table

Some weft lengths can be woven by using different combinations between Spool Body diameters and coils to be released. It is strongly recommended to make the Feeder operating with the Spool Body set to the wider diameter and releasing the minimum number of coils.

<table>
<thead>
<tr>
<th>coils</th>
<th>Reference letter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
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