TUCKER Technology at its Best: Stud Welding with DCE!

Equipment that Fits any Body-in-white Concept

Optimum Accessories for Maximum Availability!

Perfectly matched aids

TUCKER’s large range of accessories provides a wide range of aid in fulfilling the requirements of the body-in-white concept.

Efficient quality assurance

Welding results may be affected by external factors. This does not necessarily mean that the welding is wrong. But merely signifies that upper or lower limits of defined parameters were exceeded.

Testing the right way!

You can choose from a broad range of testing equipment perfectly adapted to the load on the respective stud.

TUCKER Technology at its Best: Stud Welding with DCE!

Specifications at a Glance

LM Weld Head LM Gun

<table>
<thead>
<tr>
<th>Dimensions (W x D x H)</th>
<th>DCE 1500 / HA</th>
<th>DCE 1800</th>
<th>DCE 1500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (excluding studs)</td>
<td>45 kg</td>
<td>50 kg</td>
<td>50 kg</td>
</tr>
<tr>
<td>Power voltage</td>
<td>400 / 440 / 500 V AC</td>
<td>400 / 440 / 500 V AC</td>
<td></td>
</tr>
<tr>
<td>Power frequency</td>
<td>fN: 50/60 Hz</td>
<td>fN: 50/60 Hz</td>
<td></td>
</tr>
<tr>
<td>Welding current range</td>
<td>100 A – 1800 A</td>
<td>100 A – 1800 A</td>
<td></td>
</tr>
<tr>
<td>No. of studs</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Dimensions (W x D x H)</td>
<td>565 x 565 x 965 mm</td>
<td>565 x 565 x 965 mm</td>
<td></td>
</tr>
</tbody>
</table>

ETF Feed Unit

<table>
<thead>
<tr>
<th>Dimensions (W x D x H)</th>
<th>ETF Feed Unit</th>
<th>LM 310 / LM 240  PLM 200  PLM 560</th>
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</thead>
<tbody>
<tr>
<td>Weight (excluding studs)</td>
<td>10 kg</td>
<td>10 kg</td>
</tr>
<tr>
<td>Power voltage</td>
<td>400 / 440 / 500 V AC</td>
<td>400 / 440 / 500 V AC</td>
</tr>
<tr>
<td>Power frequency</td>
<td>fN: 50/60 Hz</td>
<td>fN: 50/60 Hz</td>
</tr>
<tr>
<td>Welding current range</td>
<td>100 A – 1800 A</td>
<td>100 A – 1800 A</td>
</tr>
<tr>
<td>No. of studs</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Dimensions (W x D x H)</td>
<td>560 x 565 x 965 mm</td>
<td>560 x 565 x 965 mm</td>
</tr>
</tbody>
</table>

Control and Energy Unit

<table>
<thead>
<tr>
<th>Dimensions (W x D x H)</th>
<th>DCE Side / HA</th>
<th>DCE Top</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>60 kg</td>
<td>60 kg</td>
</tr>
<tr>
<td>Dimensions (W x D x H)</td>
<td>560 x 565 x 965 mm</td>
<td>560 x 565 x 965 mm</td>
</tr>
</tbody>
</table>

The new dimension of quality for the entire welding process

Innovation with fascination: DCE – Digitally Controlled Energy

Online Clip Catalog: www.emhart-vic.com
DCE Control and Energy Unit

For the first time weld energy and stud movement are controlled in real time!

Constant weld time, independent of stud size!

Even though weld output is constant, independent of the actual stud movement and weld plume, flux gases and inert gas can cause contamination of all components involved in the weld movement of the weld head and stud.

Nevertheless, all welding is done at a constantly high level of quality. As an added bonus, the service life of all steel guns is extended significantly — we are the maintenance engineers. Increased resistance to wear increases availability and reduces efforts relating to maintenance and spare parts.

From program to standard

This TUCKER technology responds to the increasing role of lightweight construction including high-strength steel, aluminum, magnesium, and many more novel materials and others.

From experience to leadership

Today, more than 11,000 TUCKER stud welding systems are being used in various industries worldwide. This experience, along with close contacts with experts in the field, is a constant source of innovative ideas which we have implemented in the DCE Control and Energy Unit.

Optimum Comfort and Security!

The New Operating Panel

Software Packages

• Programming for steel or aluminum

With the DCE generation of equipment, every welder is already today fully equipped with the equipment perfectly adapted to his requirements.

• Offline programming

This software is a true aid, when the operating device is not available or the weld head can no longer be equipped with an energy source.

• "Assist" features

Products and processes have become more complex, yet there are solutions to be managed by a smaller operating and maintenance staff. That’s where “Assist” comes into play.

There’s no more struggle with data sheets, interface drawings, troubleshooting guides etc. Supported by illustrations and pictures, all of these matters are simplified and can be explained even during incidents!
**TUCKER Technology at its Best: Stud Welding with DCE!**

**DCE Control and Energy Unit**

With the new DCE Control and Energy Unit (Digitally Controlled Energy) in action, the weld parameters consisting of the feeding rate and current flow can be precisely controlled.

The unit monitors and controls the feeding rate and welding time. These actions are adjusted electronically, ensuring constant weld quality. The DCE series provides stud welding with the highest level of quality.

**Study the fields of application!**

**Constant weld time, independent of energy!**

Even though weld quality is superior, independent of chosen feeding rate and weld current flow, the welding parameters can be monitored and controlled through digital signal processing (DSP) in real-time.

With the new DCE Control and Energy Unit, the study movement is adjusted electronically under control! There are no more deviations in the weld behavior (closed loop control).

**From experience to leadership!**

TUCKER has down to the last detail the new TUCKER series using a DCE-Link interface (Digitally Controlled Energy) the entire weld process, including all parameters, is monitored and controlled. This makes it possible to stop the remaining feeding process.

**Steady availability and reduced effort!**

This TUCKER technology responds to the increasing role of lightweight construction: steel, aluminum, magnesium, and many other materials are used.

**For the first time weld energy and stud movement are controlled in real time!**

With the new DCE Control and Energy Unit, everything is controlled through the customer interface. The system manages the welding process, including all parameters, and provides constant feedback, with the system responding immediately and automatically to the changing geometry of the component (closed loop control).

**From experience to leadership!**

The next time TUCKER stud welding systems utilizing a primary modulated power control unit are used worldwide. This technology, the size of controls is adapted to the welder's requirements. By means of the innovative touch-screen technology, the size of controls is adapted to the user's current requirements.

The TUCKER USB interface facilitates the transfer of firmware, welding programs, measuring data, and tool paths.

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**Software Packages**

- **Programming for cladding or aluminium**
  - The welding system and welding current can be programmed for each application.

- **Online operating**
  - This software turns the operating device into a ‘full-fledged offline-programming station’. It is no longer necessary to operate from the current welding data and pass them on to the customer's control system. The customer now has better quality management and efficient improvement processes with one goal: zero defects in the final assembly.

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**The New Operating Panel**

**Optimum Comfort and Security!**

Clear, intuitive, user-friendly Windows interface is today’s standard for any other. TUCKER's DCE Control and Energy Unit offers a new, state-of-the-art operating panel for its DCE generation of equipment. High-resolution displays illustrate the current equipment status, and useful tools are available in the toolboxes and data.

Alphanumeric, arrow keys, and cursor keys make up the panel. The new ‘operator interface’ prevents errors in usage.

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**Equipment variations**

**DCE Control and Energy Unit**

- Welding equipment consists of two basic units: DCE pushing station + welding control unit. Welding control unit can be modularly combined to DCE control panel.

- DCE-Link interface allows the user to control and monitor the welding process'
  - On the new operating panel comes with different software packages providing the right program for your application.
With the new DCE Control and Energy Unit (Digitally Controlled Energy) the entire weld process is efficiently controlled. The system is adapted electronically to the changing geometry of the component (closed loop control).

Constant weld time, independent of material
Even though weld outlet is closed externally, calibrated lift movement and welding plume, flux gases and inert gas can cause contamination of all components (infl. on lift movement of the weld head and tool).

Nonetheless, all welding is done at a consistently high quality. As an added benefit, the service life of all gas pipes is extended significantly – we use the maximum extension intervals. Internal (track) resistance time increases availability and reduces efforts relating to maintenance and spare parts.

Free program to standard
This TUCKER technology researches the increasing need of high-technology manufacturers to the automotive industry. A new grade of stud welding which also applies to thin metal sheets (0.6 mm) with high-strength steel, aluminum, magnesium, and many other materials is possible.

Easy and safe download of software
Today, more than 11,000 TUCKER stud welding systems utilizing a primary modulated welding system are used worldwide. This innovative ideas which we have implemented in the DCE Control and Energy Unit.

Optimum Comfort and Security!

Software Packages

- Programming for steel or aluminum
- Offline programming

This software turns the operating device in a "full-fledged" offline-programming unit. It is no longer necessary to test the welding system in a safe manner – not even by means of the innovation touch-screen technology, the use of controls is adapted to the user's current requirements.

Welding current
Movement of component
Arc voltage

Contact
Pilot current phase
Welding phase
Flange phase
Time (ms)

Inert gas
Operation with switches

Customer Interfaces

- Customer Interfaces – A full-fledged offline-programming unit. Users are fully enabled to perfectly adapt the equipment to their requirements. It is no longer necessary to test the welding system in a safe manner – not even by means of the innovation touch-screen technology, the use of controls is adapted to the user's current requirements.

For each welding operation, lift movement and weld duration are preset by means of the teaching data.

Stud penetration control

- Stud penetration control
- Stud penetration defined

Dirt protection tailored made to suit your need
Cleaning is significantly reduced, maintenance scheduling made easier and replacement work can be carried out more easily.

Everything under control!

Stud penetration defined

- Stud penetration defined
- Adjustable lift height

For each welding operation, the lift height may be programmed to swing between 0.5 mm and 3 mm. Thus, every single application is perfectly adapted to the welding need.

Software Packages

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Equipment that Fits any Body-in-white Concept

Optimum Accessories for Maximum Availability!

Perfectly matched tools

TUCKER’s large range of accessories provides a wide range of combinations, allowing the maximum flexibility.

Specific accessories can be obtained for the following applications:

- Welding of step studs or T-studs
- Welding of earth studs
- Welding of threaded studs
- Welding of CKD or small-scale serial production
- Welding of (large-scale) serial production

Efficient quality assurance

Welding positions affected are marked when welding. When welding by means of a color coding system, the consistent quality achievable is immediately evident. The matching parts are located quickly and efficiently.

Testing the right way!

You can choose from a broad range of testing equipment perfectly adapted to the task at the respective stud.

Specifications at a Glance

<table>
<thead>
<tr>
<th>LM Weld Head</th>
<th>LM Gun</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (W x D x H): 92 x 137 x 135 mm</td>
<td>160 x 465 x 320 mm</td>
</tr>
<tr>
<td>Welding current range: 30 – 200 A</td>
<td>30 – 200 A</td>
</tr>
<tr>
<td>Welding time range: 60 ms</td>
<td>60 ms</td>
</tr>
<tr>
<td>Welding current range: 600 – 1500 A</td>
<td>600 – 1500 A</td>
</tr>
<tr>
<td>Welding time range: 60 ms</td>
<td>60 ms</td>
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<tr>
<td>Weight: 12.5 kg</td>
<td>25 kg</td>
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</table>

ETF Feed Unit

| Dimensions (W x D x H): 102 x 370 x 140 mm | 102 x 370 x 140 mm |
| Welding current range: 100 A – 1500 A | 100 A – 1500 A |
| Welding time range: 6 ms – 100 ms | 6 ms – 100 ms |
| Weight: 50 kg | 50 kg |

ETF Feed Unit

| Dimensions (W x D x H): 50 x 185 x 180 mm | 50 x 185 x 180 mm |
| Welding current range: 100 A – 1500 A | 100 A – 1500 A |
| Welding time range: 6 ms – 100 ms | 6 ms – 100 ms |
| Weight: 5 kg | 5 kg |
TUCKER Technology at its Best: Stud Welding with DCE!

Equipment that Fits any Body-in-white Concept

- Perfectly matched aids
- TUCKER's large range of accessories provides a wide range of possibilities for customizing the appearance of the body-in-white.

- Efficient quality assurance
- Welding widths may be affected by several factors. This does not necessarily result in poor welding, but merely signifies that upper or lower limits of defined parameters were exceeded.

- Testing the right way!
- You can choose from a broad range of testing equipment perfectly adapted to the load on the respective stud.

Optimum Accessories for Maximum Availability!

- Color coding
- Perfectly matched adapters
- Perfectly matched nozzles and guide bushings
- Perfectly matched welding guns

Specifications at a Glance

**LM Weld Head**

<table>
<thead>
<tr>
<th>Specifications</th>
<th>LM 15A</th>
<th>LM 18A</th>
<th>LM 20A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (W x D x H)</td>
<td>50 x 185 x 180 mm</td>
<td>50 x 185 x 180 mm</td>
<td>50 x 185 x 180 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>5.5 kg</td>
<td>5.5 kg</td>
<td>5.5 kg</td>
</tr>
<tr>
<td>Welding current range</td>
<td>∆I 6 ms – 100 ms</td>
<td>∆I 6 ms – 100 ms</td>
<td>∆I 6 ms – 100 ms</td>
</tr>
<tr>
<td>Welding position</td>
<td>60 / min @ I=750 A, t=30 ms</td>
<td>60 / min @ I=750 A, t=30 ms</td>
<td>60 / min @ I=750 A, t=30 ms</td>
</tr>
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</table>

**ETF Feed Unit**

<table>
<thead>
<tr>
<th>Specifications</th>
<th>ETF 20</th>
<th>ETF 30</th>
<th>ETF 50</th>
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<tbody>
<tr>
<td>Dimensions (W x D x H)</td>
<td>140 x 240 x 96 mm</td>
<td>140 x 240 x 96 mm</td>
<td>140 x 240 x 96 mm</td>
</tr>
<tr>
<td>Weight (studs excluded)</td>
<td>45 kg</td>
<td>50 kg</td>
<td>50 kg</td>
</tr>
<tr>
<td>Power voltage</td>
<td>240 / 415 V AC 240 / 415 V AC 240 / 415 V AC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power frequency</td>
<td>60 / 50 Hz</td>
<td>60 / 50 Hz</td>
<td>60 / 50 Hz</td>
</tr>
<tr>
<td>Welding current range</td>
<td>I 100 A – 1500 A</td>
<td>I 100 A – 1500 A</td>
<td>I 100 A – 1500 A</td>
</tr>
</tbody>
</table>

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The new dimension of quality for the entire welding process