THE PROFESSIONAL
COBOT WELDING
AUTOMATION SOLUTION

OUR PERFORMANCE
makes THE DIFFERENCE

DEMMELER® COBOT WeldSpace 4.0® TABLE 24/12

Dynamic and simultaneous welding in multi-station operation

EN

www.demmeler.com

In the future, advances in digitalisation and automation will also change the processes in welding production. Particularly in the manual welding of classic sheet metal components, the new technology – welding with collaborative robots – can eliminate the need for valuable skilled workers to perform tiring routine and repetitive tasks.

With the welding cell COBOT WeldSpace 4.0® TABLE 24/12 *F*, even small and medium-sized companies can get to grips with automated and professional welding production in next to no time thanks to the fast commissioning. Whether individual parts, parts from series production, or small batch sizes with a large variety of parts – you save time in welding and reworking. The fully equipped welding cells with welding robots and welding technology offer unique modularity and flexibility with a multitude of possible configuration options.

MATHEMATICAL COUPLED – SIMULTANEOUS WELDING POSSIBLE

demmeler® Two-axis manipulator

FANUC CRX-10iA Cobot
Torch cleaning station
DEMMELER® 3D welding table

The COBOT WeldSpace 4.0® welding cell from DEMMELER comes with everything you need.

The complete package for a quick and professional introduction to automated welding

DEMMELER® COBOT PATENTED WELDSPACE 4.0 TABLE 24/12

BASIC Series equipment
OPTION Special equipment

BASIC **DEMMELER COBOT WeldSpace 4.0®**
The most versatile welding automation solution with maximum efficiency and extremely simple operation as well as maximum environmental and operator protection.

BASIC **Flexibility and efficiency**
Up to four workspaces Space A (optional A1-A2) + Space B with perfect accessibility from all sides and crane loading for set-up and workpiece change.

BASIC **Unique programming and operating concept**
With the DEMMELER® WeldSoft F 1.0 Software you can create complex welding programs intuitively without explicit programming knowledge.

BASIC **Main time parallel shuttle operation**
Standard main time parallel shuttle operation between two 3 m² work areas Space A and Space B.

1 **BASIC** **FANUC CRX-10iA Cobot**
FANUC CRX-10iA collaborative robot with a payload of 10 kg and a reach of 1249 mm

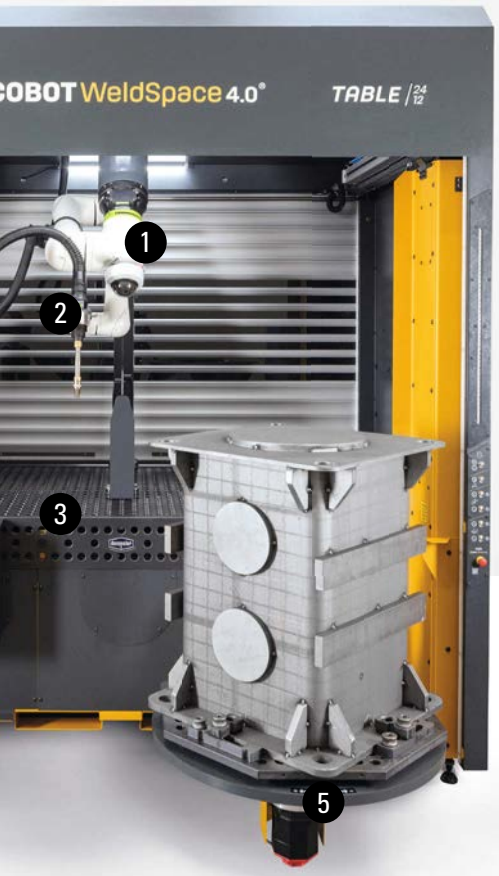
2 **BASIC** **DEMMELER® WeldSpace programming and operating concept**
The 4-button handle can be used to select between many functions. Displacement and welding points are transferred directly into the programme.

3 **BASIC** **DEMMELER® welding table**
Equipped with a DEMMELER® 3D welding table 2400 x 1200 mm in system size D28

4 **OPTION** **Integrated and professional high-performance welding system**
FRONIUS Robot welding equipment

5 **OPTION** **Two-axis manipulator**
Modular two-axis manipulator up to 500 kg payload for professional workpiece handling and circumferential seam welding with the rotary axis

6 **OPTION** **Torch cleaning station**
Optimised and reliable cleaning of the gas nozzle ensures a reliable welding process and increases system availability



DEMMELER SYSTEM COMPATBILITY

BASIC **Central control unit**
The completely new programming interface on a touchscreen counterpart with simple drag-and-drop technology does not require any robotic experience.

BASIC **Crane loading possible due to movable gantry**
Simple loading of the workpieces for setup and reclamping also by crane.

DEMMELER WeldSpace 4.0® Software
The best settings for the power source, welding process and torch with simple and fast operability.

Standard shuttle operation

Four workspaces with perfect accessibility from all sides

The standard shuttle operation between the SPACE A and SPACE B workspaces with optional subdivision of the SPACE A workspace into A1 and A2 enables set-up, reclamping and welding in parallel time.

Standard shuttle operation

SPACE A

SPACE A

SPACE A1 / A2

Equipped with a DEMMELER® 3D welding table 2400 x 1200 mm in system size D28.

The SPACE A workspace can optionally be divided into SPACE A1 and SPACE A2 by a partition wall.

LOADING
BY CRANE

SPACE A2

SPACE A1

500 kg

SPACE B

between SPACE A and SPACE B

Two large
working areas:

A = 2 m²
B = 3,4 m²

SPACE B

SPACE B

Depending on requirements, the SPACE B workspace can be optionally equipped with another DEMMELER 3D welding table with a maximum size of 2,000 x 1,000 mm or with a two-axis manipulator with a payload of up to 500 kg. This enables highly productive welding in the flat position.

The cabins of the respective workspaces are closed during welding.

Intuitive programming and operating concept

DEMMELER® WeldSoft F 1.0 Software guides you step by step to the perfect welding result

The heart of the COBOT WeldSpace 4.0 is its ease of use. Developed by our welding experts the software is perfectly adapted to the robot and welding process. The new way to programming: by activating the Free-Drive function, the COBOT can be moved by hand to the place where welding is to be started and stopped. Waypoints and welds can be programmed by simply pressing a button. This allows you to create professional welding programs simply at the touch of a button. The welder has full access to all relevant functions of the welding system with only one control panel and can select, set and save parameters in the robot control.

All COBOT and welding parameters in one place

- Professional welding software with many functions which, together with the innovative 4-button handle, makes it much easier to create complex welding programs. The completely new programming interface on a touchscreen counterpart with simple drag-and-drop technology does not require any robotic experience
- With the 4-button handle you can choose between the functions Free, Translation, Rotation and Custom, Waypoints and welding points are transferred directly to the program. Circular welding seams can also be programmed directly with the help of the handle.
- An extensive job library that can be expanded at any time, in which parameters and characteristic curves for typical welding applications are stored, leads to the perfect welding result

The multi-function handle: Settings at the touch of a button

The multi-function handle is the interface between the robot and operator. Using the buttons on the handle, you move the robot and select certain actions.

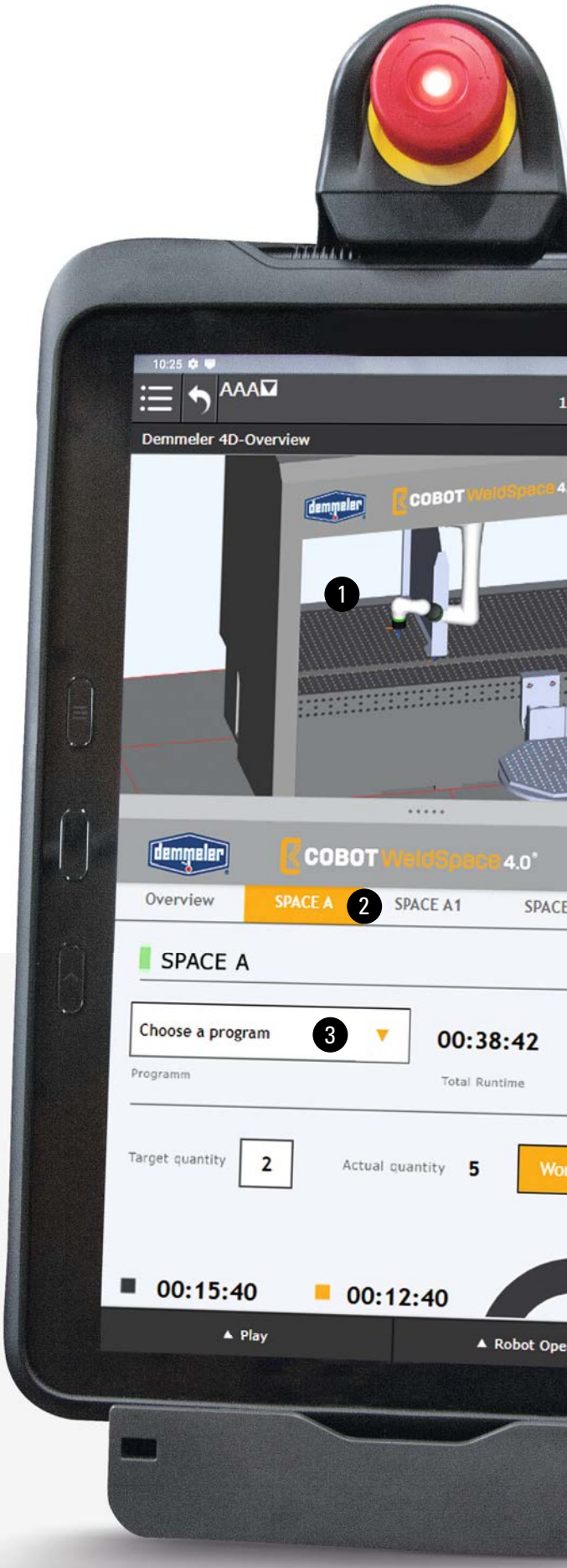
- **Switch between Free, Translation, Rotation, Custom**
- **Joints**
- **Welding points**
- **Circular spot weld**

COBOT WeldSpace 4.0

Professional welding software with numerous features for industrial welding

Easy programming via drag-and-drop

Whether you are an experienced programmer or a beginner – the professional welding software DEMMELER® WeldSoft F 1.0 offers numerous features for industrial welding, such as arc sensor, tactile sensor, etc. Programming and teaching of points using the Teach Pendant user interface for pass-through teaching and easy drag-and-drop programming.

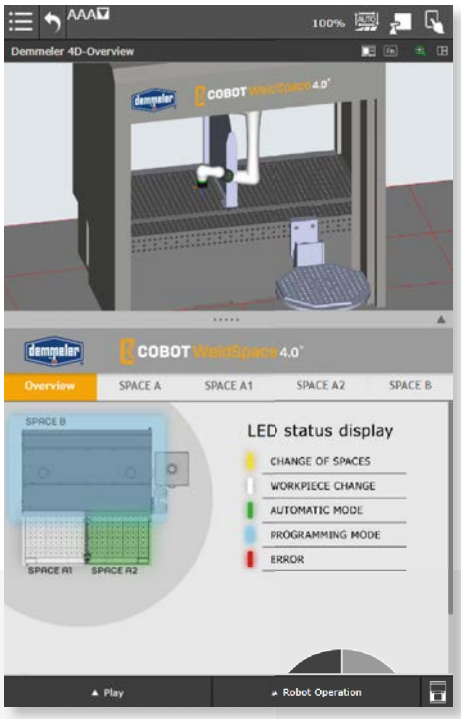


1 **3D-Overview with simulation of the Robot and manipulator movement**

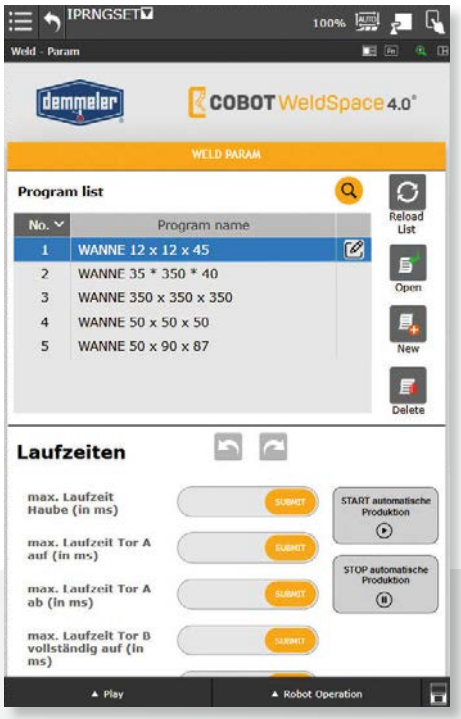
2 **Selection of the workspace**

3 **Programme selection with display at runtime**

Easy programming with the Tablet Teach Pendant



Highlighting the active workspace

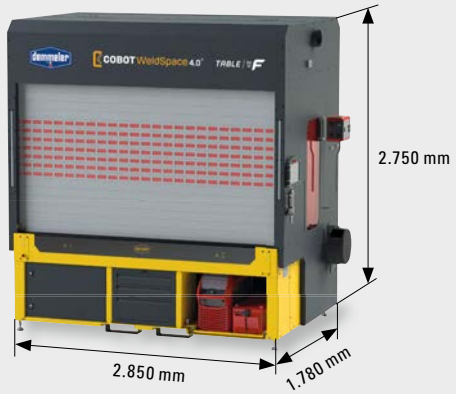


Clear programme management with display of various parameters
- Current runtime component
- Job runtime
- Arc time

Dimensions of base cell / workspaces

Maximum accessibility and compact design

Dimensions of base cell



Enclosure closed state:
2850 × 1780 × 2750 mm

Enclosure movement:
2850 × 2705 × 2750 mm

Dimensions of workspaces A / A1-A2

SPACE A

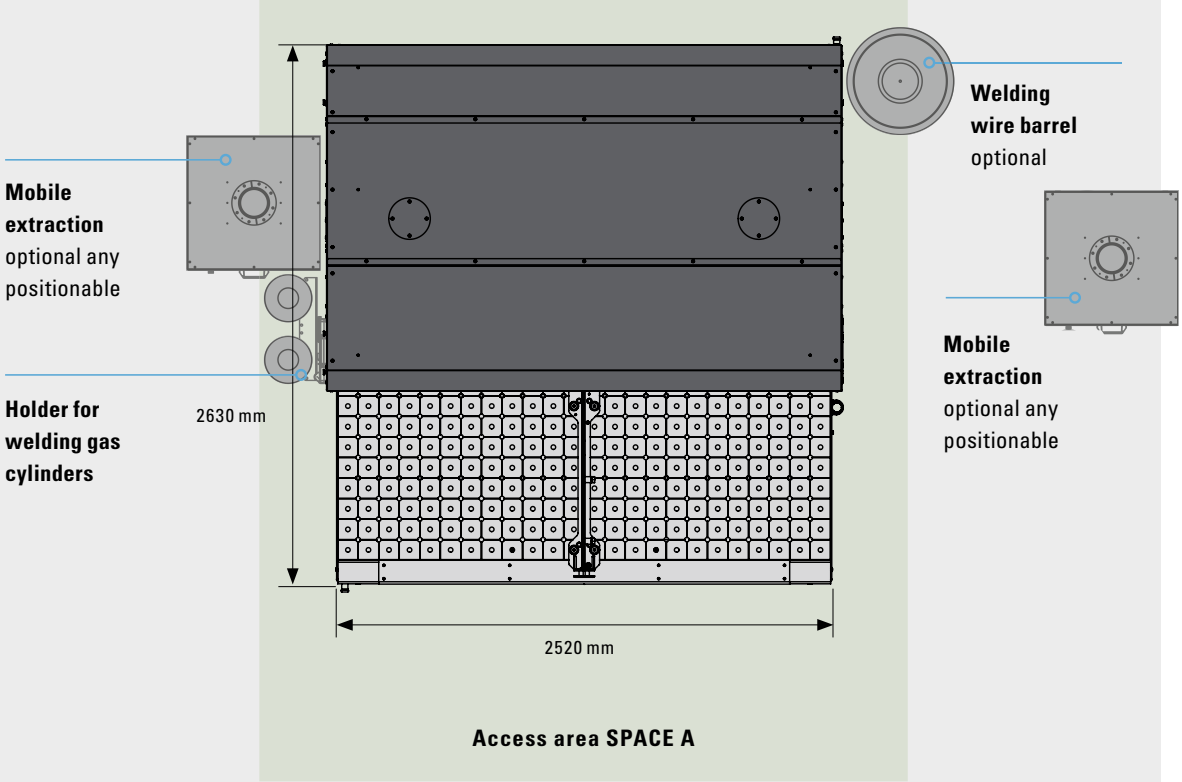
Size of workspace SPACE A:
2300 × 875 × 1100 mm

Workspace SPACE A1-A2:
1000 × 865 × 1100 mm

SPACE B

Size of workspace SPACE B depending on equipment:
max. 2300 × 1500 × 1750 mm

Dimensions of workspaces B



Dimensions of footprint

Maximum flexibility with the equipment

Equipment that is perfectly tailored to your specific tasks.

Fronius
TPS400i
Push
Push Pull
CMT

COBOT WeldSpace 4.0® TABLE 24/12 *F* Basic cell
from page 16

Basic configuration

Work table for basic cell
page 19

Optional equipment options

Equipment in SPACE A1/A2
page 21

Equipment in SPACE B
from page 23

Welding current sources for robotics applications
page 25

Optional accessories
from page 26

Depending on your requirements, choose from the extensive equipment options of the COBOT WeldSpace 4.0®.

WeldSpace 4.0® software options
page 29

For a quick commissioning

The basic equipment of the DEMMELER® COBOT WeldSpace 4.0® TABLE 24/12 *F*

DEMMELER® COBOT WeldSpace 4.0® TABLE 24/12 *F* – basic equipment

- Ready-to-operate cell with two large workspaces – SPACE A and SPACE B
- Automatically moving protective enclosure with two roller shutter doors (aluminium cladding with viewing elements made of protective welding glass)
- The new collaborative FANUC CRX-10iA offers highest accuracy and industrial reliability (8 years maintenance-free) with maximum sensitivity, as well as high speed for maximum productivity. The new Fanuc CRX is the perfect solution for users with little or no robotic experience without significantly sacrificing performance compared to complex industrial robots.
- Touchscreen counterpart with simple drag-and-drogue technology
- Professional welding software with many functions which, together with the innovative 4-button handle, makes the creation of complex welding programmes much easier.
- An extensive job library that can be expanded at any time, in which parameters and characteristic curves for typical welding applications are stored, leads to the perfect welding result.
- Enabling button
- Smart toolbox with three lockable drawers
- Forklift pockets for easy transport
- Gas cylinder holder for up to two gas cylinders
- Connection options for a central production facility exhaust system on the left or right side and two at the top of the system
- LED strips on all side corners signify processes and machine statuses
- Equipped with a DEMMELER® 3D welding table 2400 x 1200 mm in system size D28
- Optimum access to the welding power source

Enclosure when closed:
2850 × 1780 × 2750 mm

Enclosure when moving:
2850 × 2705 × 2750 mm

DEMMELER® COBOT WeldSpace 4.0® TABLE 24/12 *F* basic cell

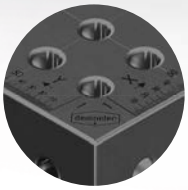
Dimensions	2850 × 1780 (2705 mm) × 2750 mm
Weight	Approx. 2325 kg
Electrical data	
Feed-in	3x 400 V/N/PE
Frequency	50 Hz
Operating voltage	400 V
Control voltage	24 V DC
External fuse	Max. 32 A slow-blow (up to 400 A welding current)
Rated current	30 A
Workspace SPACE A	
Dimensions	2300 x 875 x 1100 mm
Typical workpiece size	Workpiece size depends on workpiece geometry and welding torch accessibility
Max. load	3000 kg
FANUC CRX-10iA	
Number of axes	6
Load capacity	10 kg
Weight of the mechanics	40 kg
Max. Range	1294 mm
Repeatability	± 0,04 mm
Workspace SPACE B	
Dimensions	2300 x 1500 x 1750 mm
Typical workpiece size	Workpiece size depends on workpiece geometry and welding torch accessibility
Max. load	Floor load
Item no.	**00215923**

BASIC Basic configuration for SPACE A

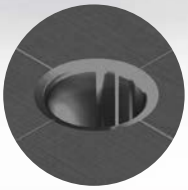
Your work table in SPACE A

SYSTEM D28

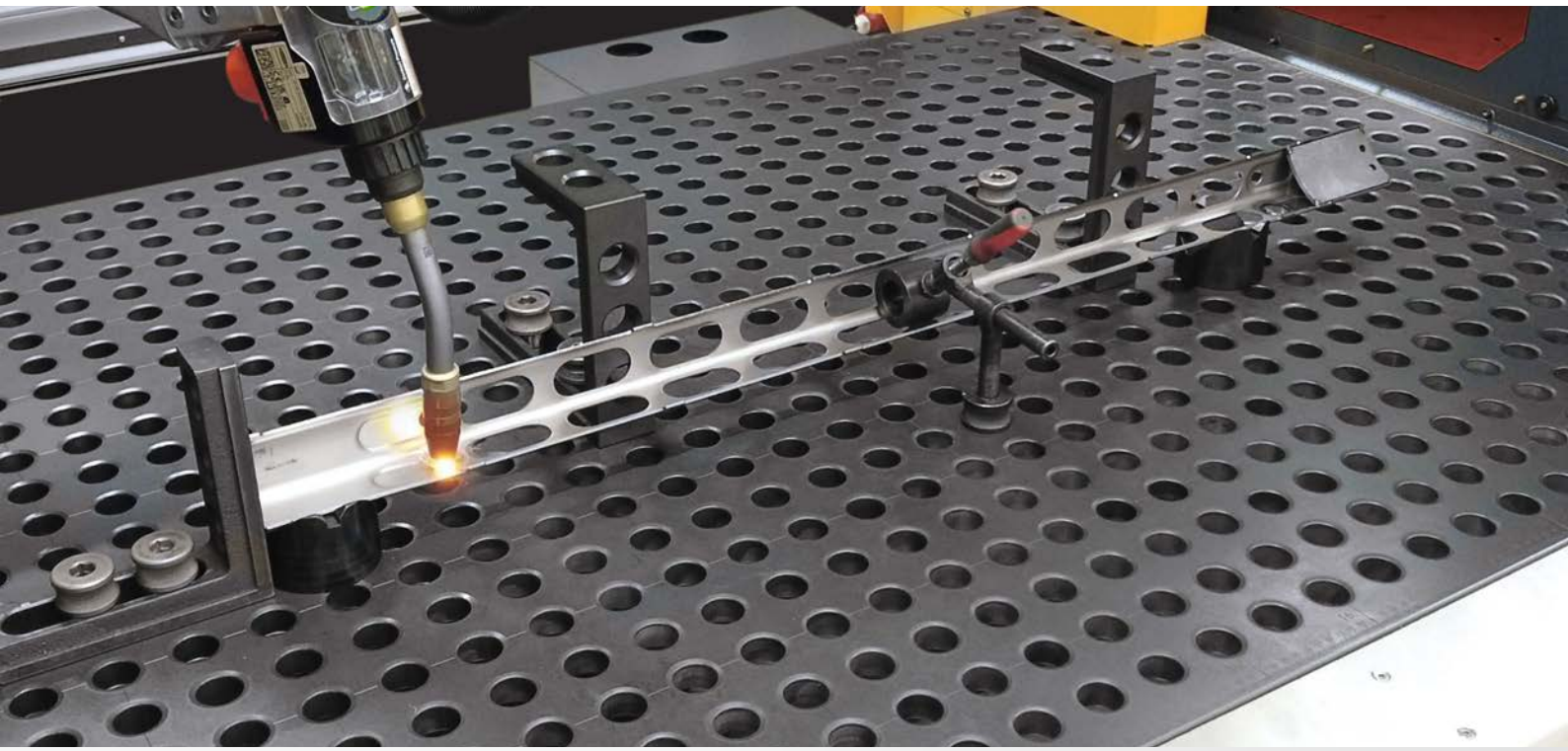
Equipped with a DEMMELER® 3D welding table 2400 x 1200 mm in system size D28



Precision scaling
Axis designation in x and y-direction. Standard version includes precision scaling.

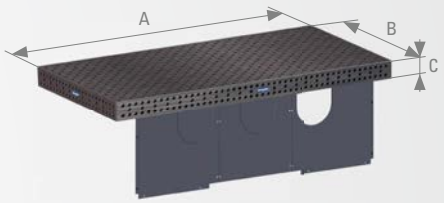


Protective countersink
Optimum bolt and clamp insertion with simultaneous protection of the tabletop against damage from materials, even in case of extreme strain on the system bore or when used with aluminium.



DEMMELER® 3D welding table

- Only in conjunction with the 00203831 basic cell
- Hardened version DEMONT 760 M
- All system bores with protective countersink and ultimate functionality
- Precision scaling with millimetre graduation
- Coordinate marking of the bores in the X and Y directions
- Including mounting kit for COBOT WeldSpace 4.0® basic cell and sheet metal cladding



D28

SPACE A

DEMMELER® COBOT WeldSpace 4.0® 3D welding table D28 PROFIPremiumLINE (PP) — **D28**

- Worktop with D28 system bores in a 50 x 50 mm grid
- Grid lines in X and Y alignment, 100 mm spacing throughout

A in mm	B in mm	C in mm	Approx. weight in kg	Description	Item no.
2400	1200	200	824	50 x 50 mm grid	00219901

Highest flexibility and efficiency
You can also draw from the extensive range of DEMMELER accessories when setting up your clamping fixtures.

demmeler
COBOT WeldSpace 4.0®
TABLE 24/12
A1
A2

OPTION Equipment options for SPACE A

Equipment options to extend SPACE A into SPACE A1/A2

With this extension set, the SPACE A workspace can optionally be divided in the centre into two workspaces – SPACE A1 and SPACE A2. This makes it possible to operate the welding cell in three-station mode. When the partition is removed, the full width of the SPACE A workspace can be used again.

Partition wall

Additional roller shutter doors 3 and 4 with viewing elements

Workspace A1 / A2

- Two additional roller shutter doors (aluminium cladding with viewing elements made of welding protection glass) for workspaces A1 and A2
- Fast and easy-to-install partition wall (dimensions: A 935 x B 150 x C 1300 mm, weight: 18.5 kg)
- Automatic detection of the partition wall by the control system
- Dimensions per Workspace 1000 x 865 x 1100 mm
- Max. load per Workspace 1500 kg

D28

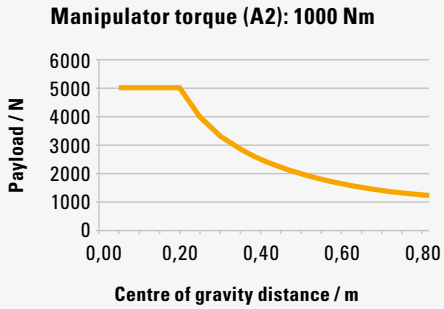
DEMMELER® COBOT WeldSpace 4.0® extension set for Workspace A1/A2 — D28

Set components:	Item no.
1x set of roller shutter doors 3 and 4, 1x partition wall, 4x PPC bolts	00220542

OPTION

Equipment options for SPACE B

Optimally position work-pieces weighing up to 500 kg in the flat position with the two-axis manipulator



With the two-axis manipulator, it is possible to position workpieces weighing up to 500 kg in an optimal flat position. This eliminates the time-consuming reclamping of workpieces and, thanks to the rotary axis (axis 2) of the manipulator, uniform circumferential seams can also be welded without any problems. The manipulator is fully integrated into the DEMMELER® WeldSoft® Software. Simultaneous movement of the manipulator and robot axes is possible with the COBOT. Programming is carried out in the simplest way by teaching the waypoints or by entering them in the graphic user interface of the Touchscreen-Pendant.

Max. workpiece size

Max. workpiece size
Axis of rotation:
Diameter: 850 mm
Length: 1500 mm

Max. workpiece size
Pivot axis:
Diameter: 850 mm
Length: 1.500 mm

The actual available working range depends on factors such as accessibility of the workpiece, torch length, etc. and can therefore be considerably less.

Two-axis manipulator

D28

SPACE B

- Powerful and fast two-axis manipulator with excellent repeatability for ideal positioning of the workpieces
- Mount for D28, D22 and D16 clamping plates
- Mathematically coupled for synchronized motion with the robot
- Galvanically isolated clamping plate
- Extensive range of DEMMELER accessories
- Earthing via double sliding contacts up to 500 A

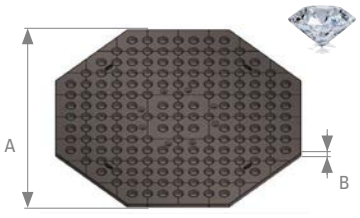
DEMMELER® COBOT WeldSpace 4.0® two-axis manipulator

Speed of manipulator axis 1/axis 2	0.01–7 rpm (in 0.02 rpm increments)
Axis 1 (swivel axis)	±190°
Axis 2 (axis of rotation)	±360°
Max. load capacity	500 kg
Weight	255 kg
Max. workpiece diameter	850 mm (with 360° rotation)
Max. workpiece length	1.500 mm
Max. torque	1.000 Nm
Item no.	00215187

Clamping plate D28 for the two-axis manipulator

Clamping plates

- M8 tapped holes on the side
- Grid lines in X and Y alignment, 50 mm spacing throughout
- Hardened version DEMONT 760 M
- Tailored to the two-axis manipulator
- Tapped holes in addition to system holes



D28

DEMMELER® Clamping and adapter plate D28

D28

A in mm	B in mm	Approx. weight in kg	Description	Item no.
WAF800	25	95	50 x 50 mm grid	00162810

Optional equipment for SPACE B

The SPACE B workspace offers room for larger components and fixtures, which can also be placed directly on the floor of the production facility. SPACE B can optionally be equipped with an additional 3D welding table (max. dimensions 2000 x 1000 mm). You can choose from the entire range of the DEMMELER® 3D welding table and clamping system.

Perfectly coordinated welding processes

Welding systems

- Welding systems designed for the COBOT WeldSpace 4.0®
- Robot welding equipment from the Fronius brand
- The welding device is integrated in the table base unit to save space
- Only one main switch and power connection for the cell with welding system
- Extensive job libraries
- EMC emission class: A

Welding systems from the Fronius TPS400i series

Technical device data:

- Mains voltage: 3x 400 V/mains voltage tolerance: ±15 %
- Mains fuse: 32 A slow-blow
- Mains frequency: 50/60 Hz
- Cos phi: 0,99
- MIG/MAG welding current range: 3–400 A
- Welding current at 10 min/40 °C: 40% 400 A/60% 360 A/100% 320 A
- MIG/MAG output voltage: 14.2–34.0 V
- Open-circuit voltage: 73 V
- Protection class: IP23
- Power source of the TPS 400i: Current range 400 A

Optionally available:
Fronius RC Panel Pro
control panel (with 5 m cable)
Item no. 00203955

	Fronius TPS400i 400 A Push water-cooled	Fronius TPS400i 400 A Push Pull water-cooled	Fronius TPS400i 400 A CMT water-cooled
Integration and software extension of the DEMMELER WeldSpace 4.0® software Input of the welding jobs from the power source and simple selection using a list on the control panel	●	●	●
Welding packages: Standard welding package, Pulse welding package	●	●	●
CMT welding package	-	-	●
Interface for COBOT WeldSpace 4.0®	●	●	●
CU 1100i recirculating cooler	●	●	-
CU 1400i recirculating cooler	-	-	●
Intermediate tube assembly	●	●	●
W25i wire feed unit	●	●	●
SB SplitBox	-	●	●
Tube assembly	●	●	-
CMT tube assembly	-	-	●
Torch body MTB 400i R / 22° / L241 / H50	●	-	-
Torch body MTB 400i W R / 22° / L241 / H50 with additional drive for wire feed unit in the torch	-	●	-
Robacta Drive/CMT push/pull torch / 22° / L241 / H50	-	-	●
Torch holder for COBOT UR10e	●	●	●
Range of application	Steel, stainless steel	Steel, stainless steel, Aluminium	Steel, stainless steel, Aluminium, Thin sheet metal < 4 mm
Item no.	**00216012**	**00216013**	**00216014**

Optional software extensions welding unit

Item no.: Cycle Step (Software extension for CMT)	**00200728**
Item no.: Puls Multi Control	**00213088**
Item no.: Low Splatter Control	**00213089**

Torch cleaning station

Torch cleaning
- Cutter, specially adapted to the welding torch
- Clamping V-blocks with diameter of 25 mm diameter, others on request
- Powerful, high-quality air motor for powerful cleaning

Spraying unit
- Cleaning of the contact tube and applying of the anti-spatter agent in one step
- Highly efficient spray function, minimal consumption
- Excess anti-spatter agent is collected in a container
- Fully protected for a clean environment and safe work area

DAV wire cutter
- Powerful, reliable cutting device with sharp cutting action for starting an arc safely
- Hardened cutting blade for a long service life

DEMMELER® COBOT WeldSpace 4.0® torch cleaning station	
Air consumption	Approx. 400 l/min
Rated pressure	6 bar
Operating pressure	6 – 8 bar
Max. wire diameter at 6 bar	1.6 mm solid wire
Control voltage	24 V DC
Power consumption	2,8 W
Operating voltage	10 – 30 V DC
Continuous current	max. 100 mA
Power consumption	Approx. 14 mA (4 V)
Item no.	00201320

MobiAirClean D1 welding fume extraction system

- The automatic cleaning system makes the mobile filter system ideal for welding work which involves non-alloy and alloyed steels, galvanised materials and aluminium and produces a high volume of fumes
- MobiAirClean D1 meets the safety requirements for devices from welding fume class "W3" (high-alloy steels that contain > 30% nickel)
- The specially developed cleaning system for any type of dirt gives the filter cartridge good cleaning characteristics, ensuring optimum extraction performance during the entire operation
- Including spiral tube and connecting tube
- Length (A)/width (B)/height (C): 665/1100/1495 mm

DEMMELER® COBOT WeldSpace 4.0® MobiAirClean D1 welding fume extraction system

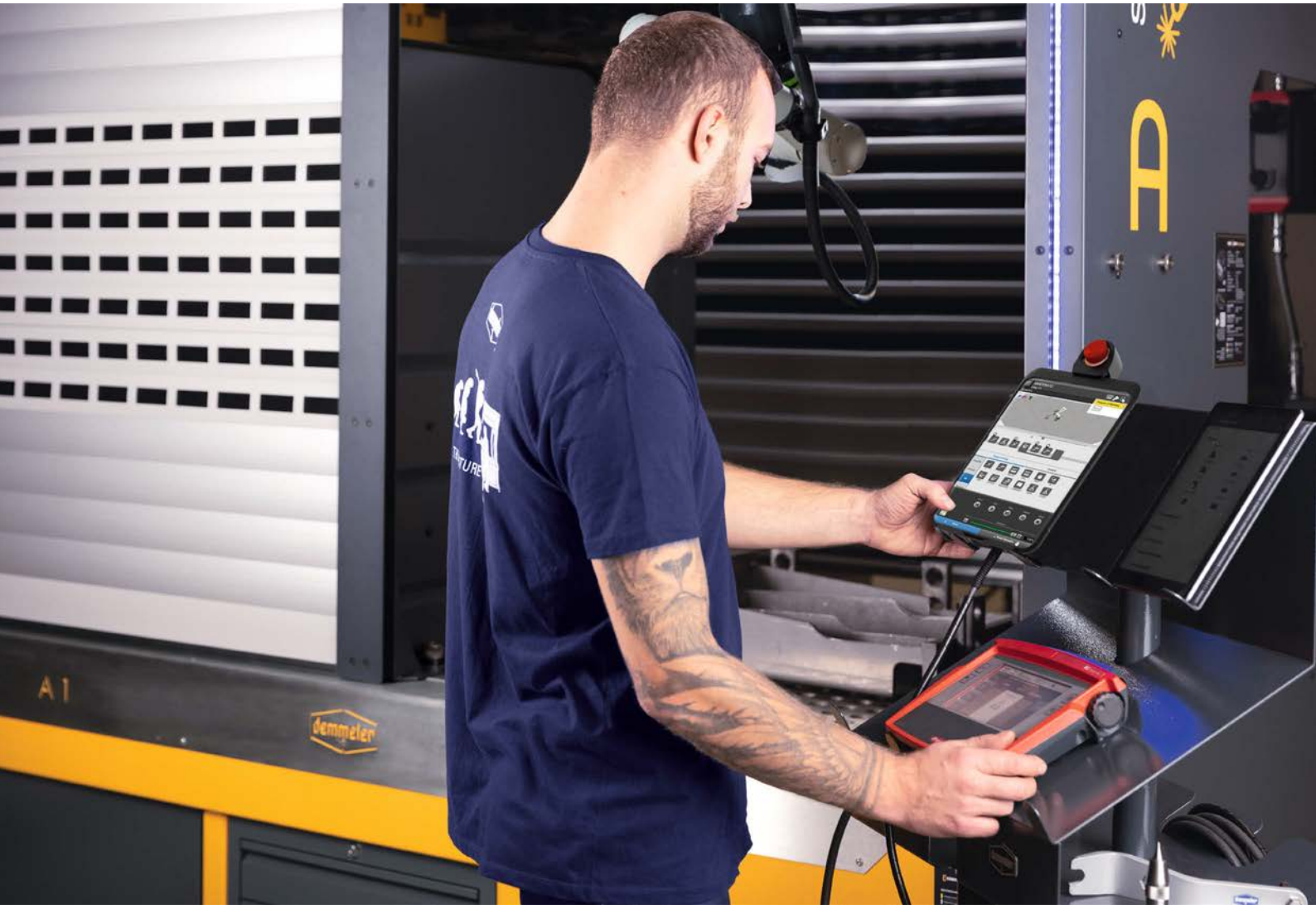
Fan output	1860 m^3/h
Stress	2900 Pa
Operating point	1100 m^3/h at 1900 Pa
Pre-filter	Baffle plate
Filter area	10 m^2
Filter cartridge	Dust class M
Motor power	1.1 kW
Input voltage	400 V/50 Hz
Power consumption	2.5 A
Noise level	Approx. 72 dB (A)
Current type	3Ph+N+PE
Weight	180 kg
Item no.	00204525

Network camera

- Check and document welding results by means of live transmission and videos
- Digital zoom
- With autofocus and wide dynamic range, ideal for difficult lighting conditions (welding light)

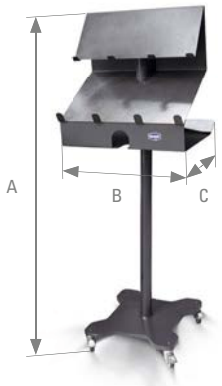
DEMMELER® COBOT WeldSpace 4.0® network camera

Item no.	00220465



COBOT WeldSpace 4.0® control panel terminal

- The perfect storage space for the UR control panel, enabling switch, Fronius panel and industrial tablet
- Bracket for UR control panel and for enabling switch
- The extra heavy design prevents tipping over and with the brakes on each castor the terminal stays where you need it
- 4 swivel castors with brakes

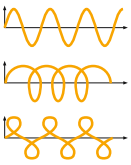


DEMMELER® COBOT WeldSpace 4.0® control panel terminal

A in mm	B in mm	C in mm	Approx. weight in kg	Item no.
1410	520	400	38	00225079

DEMMELER® WeldSoft F 1.0 Options

DEMMELER® WeldSoft F 1.0 Software-Option "Weave"



- With this tool, you can create perfect weave seams for linear as well as circular weld seams
- Three custom weave seams patterns
- This function can be used to create larger weld seams in one layer or to bridge gap seams

Item no. 00216000

DEMMELER® WeldSoft F 1.0 Software-Option „Arc sensor"

- Sensor to compensate for bending and workpiece tolerances in arc welding
- The current feedback signal and the weaving motion are used to track the weld seams
- Improves quality through path compensation
- Saves costs that would otherwise be required for a better attachment
- Adjusts the seam position even when the workpiece size varies and there is thermal distortion

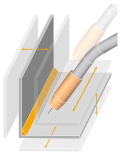
Item no. 00216002

DEMMELER® WeldSoft F 1.0 Software-Option „TCP compensation"

- Automatic and fast TCP compensation by moving to the reference peak
- Changes in the geometry of the COBOT cell are compensated, thereby ensuring repeatability

Item no. 00216003

DEMMELER® WeldSoft F 1.0 Software-Option „Touch sense"



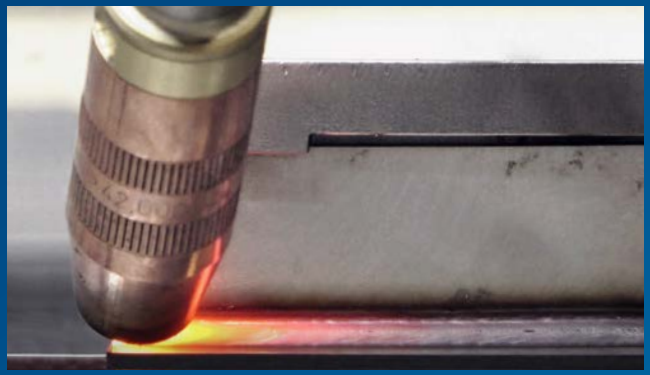
- The function is used to compensate for position shifts of the workpiece
- The position of the workpiece is recorded by touch sensing with the welding wire and the coordinates of the weld seam are adjusted accordingly

Item no. 00216001

DEMMELER® WeldSoft F 1.0 Software-Option „Multilayer welding"

- With this tool, you can add additional welding seams to the root seam by offset
- Reduces programming or set-up time due to multi-pass welding does not require each weld path to be programmed individually
- Improves quality
- Uses also the same compensation for the second pass weld as for the root weld

Item no. 00215999



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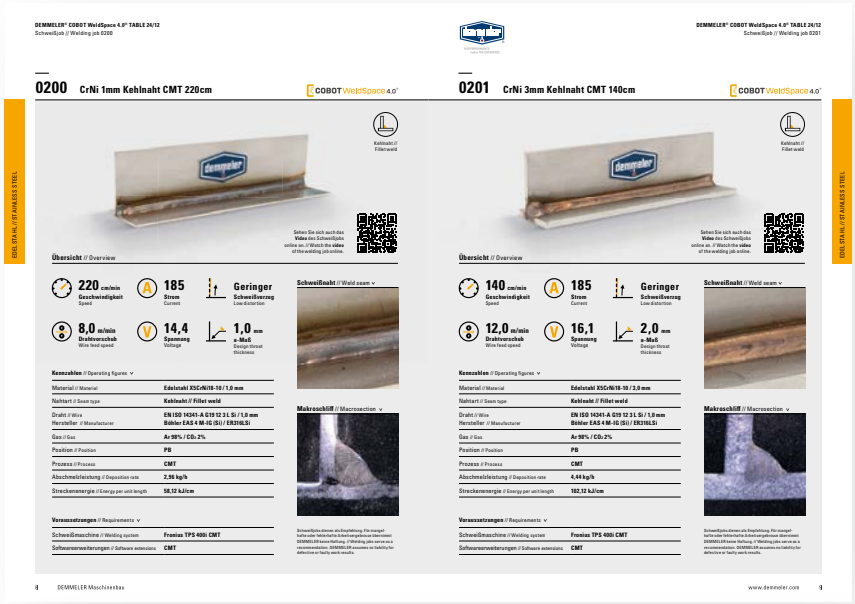

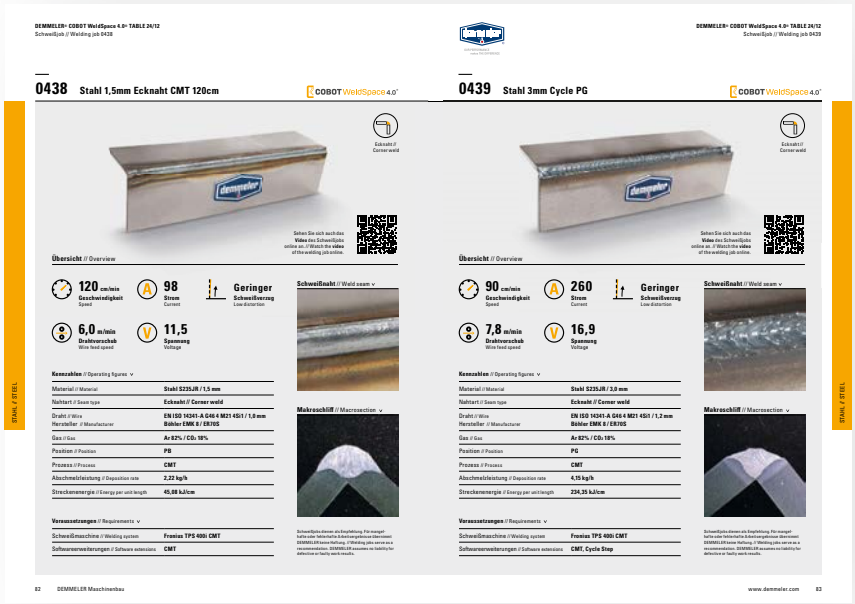

Registered users have access to all jobs in the DEMMELER® WeldSoft F 1.0 software. You can also view the videos on the welding processes via QR codes on the stored data sheets.

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DEMMELER
Maschinenbau GmbH & Co. KG
Alpenstraße 10
87751 Heimertingen/Germany
Tel.: +49 8335 9859-0
sales@demmeler.com
www.demmeler.com

DEMMELER
Automatisierung & Roboter GmbH
Alpenstraße 10
87751 Heimertingen/Germany
Tel.: +49 8335 9859-0
sales@demmeler.com
www.demmeler.com

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