

# Product catalog Microwelding

Harms & Wende QST GmbH

Version 01 / 2024

Your contact for resistance welding,  
quality assurance & micro welding

## Legal notice

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Harms & Wende QST GmbH offers practice-oriented, sturdy and high-performance products for welding and monitoring your processes. The spectrum ranges from single-user applications to fully integrated hall networking, and the scope of delivery ranges from individual components to the finished cabinet system.

We also offer various services such as process analysis, integration or training on our products.

Founded in Chemnitz in 1993, part of the Harms & Wende Group since 2000. Benefit from our over 30 years of experience in applying welding technology and optimizing your processes.

Our core competencies

- Sales and service of products from Harms & Wende GmbH & Co. KG
- Competence in microwelding for components and solutions
- Process quality assurance systems with a focus on resistance welding
- Services in the areas of training, analysis, optimization and integration
- Welding laboratory for preliminary investigations and small series production

Experienced experts from software and hardware development as well as process specialists analyze your tasks and support you in implementing the solution together.



## The joining task

Quantity of pieces?

Monitoring and Documentation?

The joining process?

The manufacturing facility?



Questions upon questions. What is needed??

## Construction of a micro-welding system

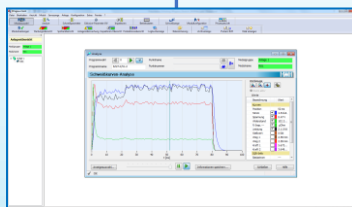
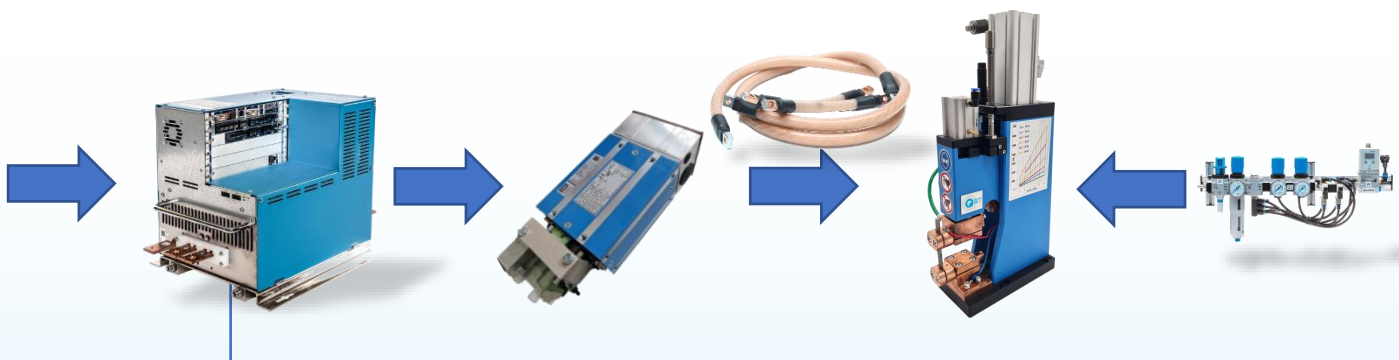
Genius inverter

transformer

Secondary cable

Welding head

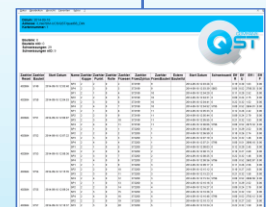
Pneumatic unit



XPegasus



XPQS monitoring

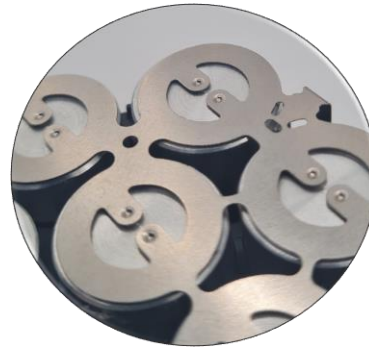


Documentation

# Application examples



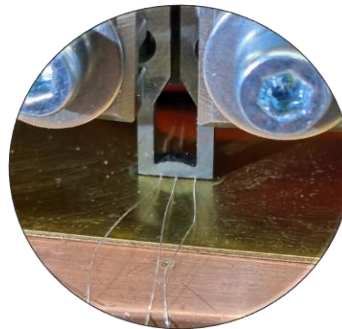
Resistance on stamping part



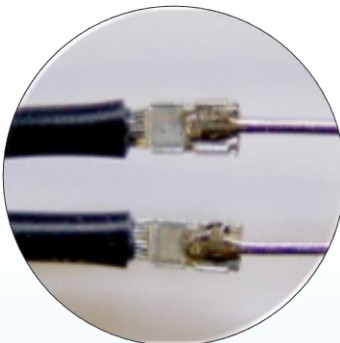
Connecting battery cells



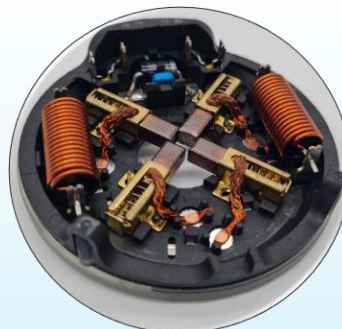
Hot riveting of contacts



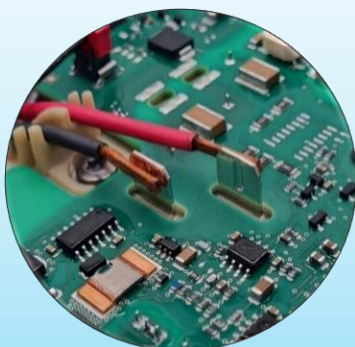
Thermode welding of enameled wire



Cable ferrules on sensor connection



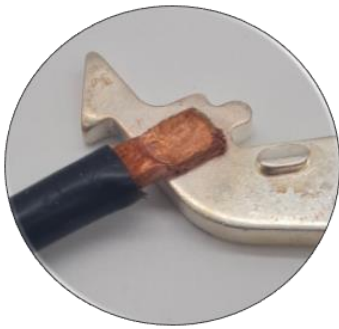
Cable set on stamping part



Welding cables to circuit boards



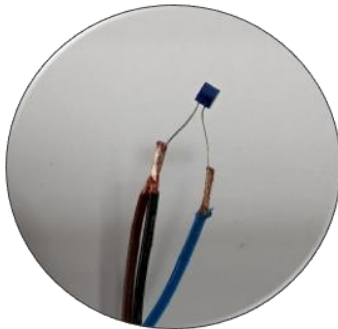
# Application examples



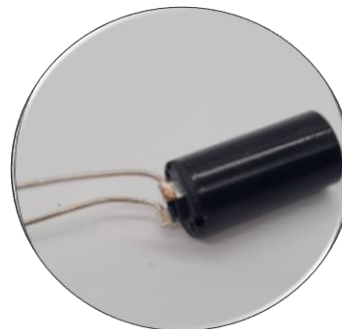
Welding a compacted cable



Connecting cable ends



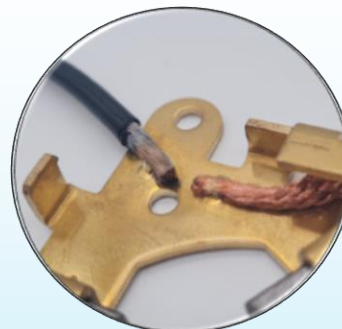
Welding of temperature sensors



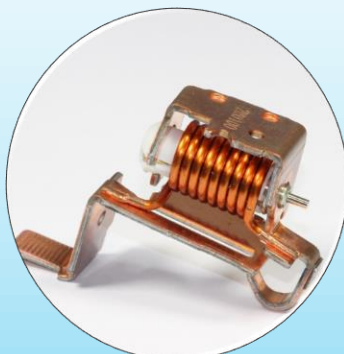
Welded Motor connection cable



Weld coil connection

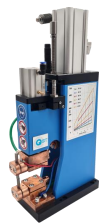


Welding of compacted cables



Connection to a coil

The shown welding guns can be customized according to customer requirements.



SKF-600

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SKF-1000

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DSKF-600

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SKF-600 HUB

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SZ-400

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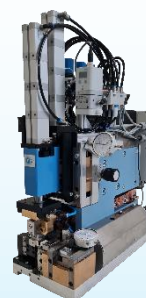
ZFK-200

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ZFK-200 SERV

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KM-6

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HSK-3575

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STP-Mikro

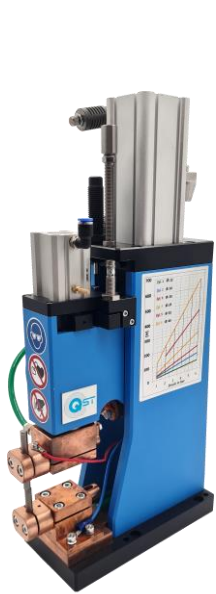
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The universal spot welding heads to solve your joining and soldering task in small part welding

## SKF-series



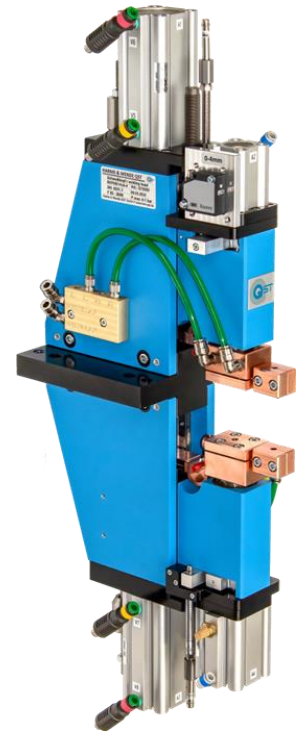
SKF-600



SKF-1000



DSKF-600



SKF-600 HUB

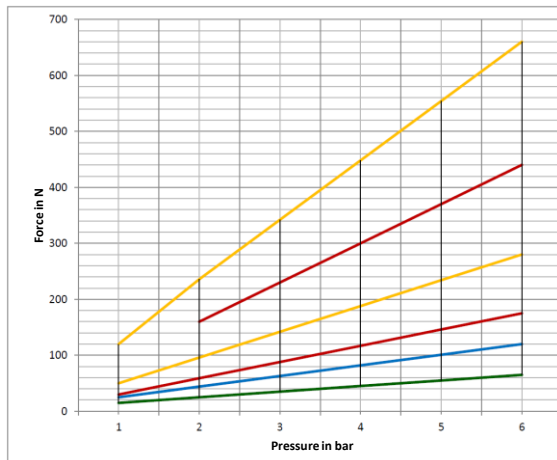
### PERFORMANCE

The SKF series welding heads guarantee you a safe and trouble-free welding process. The flexible systems can be used in both manual workstations and automated systems. The heads offer a wide range of applications in the area of small part welding.

### CHARACTERISTICS

- Suitable for manual workstations and automation solutions
- Use with weld materials with good or poor weldability
- Compact design
- Distance measuring system can be easily upgraded
- Quick replacement of the power-springs/follow up units
- High quality requirements
- Implementation and replacement in existing systems possible
- numerous applications

... and much more

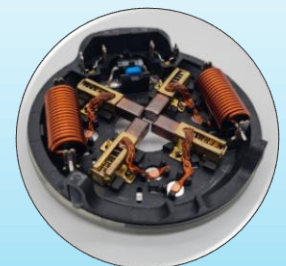
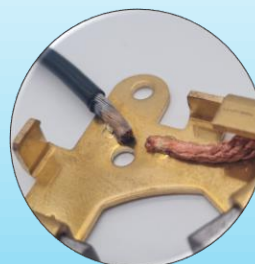
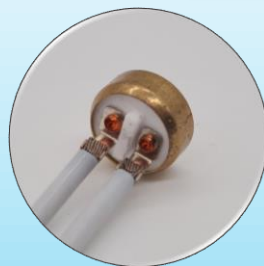


## APPLICATION

- Spot welding
- Projection welding
- Cross wire welding
- Contact welding
- Resistance soldering

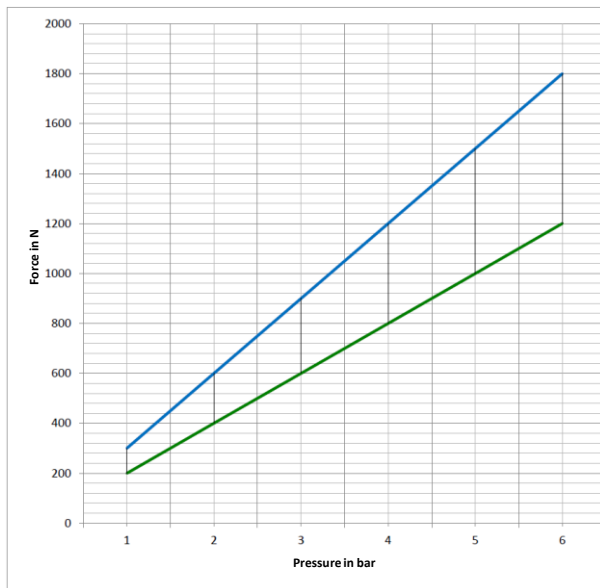
## BENEFITS

- Effective manufacturing processes
- High flexibility
- Maximum security
- High weld quality
- Fast integration
- Safe manufacturing processes
- Ease of maintainability



## TECHNICAL DATA

Features	SKF-600
<b>In general</b>	
Style	Rack Version with secondary connections and water distributor
Options	<ul style="list-style-type: none"> <li>– Head for integration into machines</li> <li>– without Rack</li> <li>– without lower fitting (electrode holder)</li> <li>– Power actuating cylinder or scale house with up to 6 different power springs</li> </ul>
<b>Electrical data</b>	
Secondary connection	Secondary cable or secondary profiles to the transformer 25 mm <sup>2</sup> – 250 mm <sup>2</sup>
Signaler	Upper end position - proximity switch type IFRM 08P17A3/S35L PNP / Baumer head spring-loaded - proximity switch type IFRM 08P17A3/S35L PNP / Baumer
Maximum welding current	approx. 16 kA at 50% E.D.
<b>Mechanical data</b>	
Welding force	approx. 15 N – 660 N depending on the power cylinder
Force introduction (actuation)	pneumatic
Force adjustment	manually with scale house and knurled screw or pneumatically with power cylinder
Compressed air connection	min. 6 bar to max. 7 bar network pressure
Electrode holding	Electrodes Ø 6 mm
Arm projection / Arm distance	max. approx. 100 mm / approx. 75 mm, mechanically adjustable
Electrode stroke in mm	0 – 60, mechanically adjustable
Dimensions in mm	404 x 92 x 211 (H x W x D)
Weight	approx. 10 kg
<b>Operating data</b>	
Ambient temperature	0 – 40° C
Cooling	Water-cooled electrode arm holders, electrode arms optional



## APPLICATION

- Spot welding
- Projection welding
- Cross wire welding
- Contact welding
- Resistance soldering

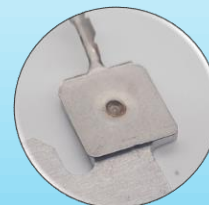
## BENEFITS

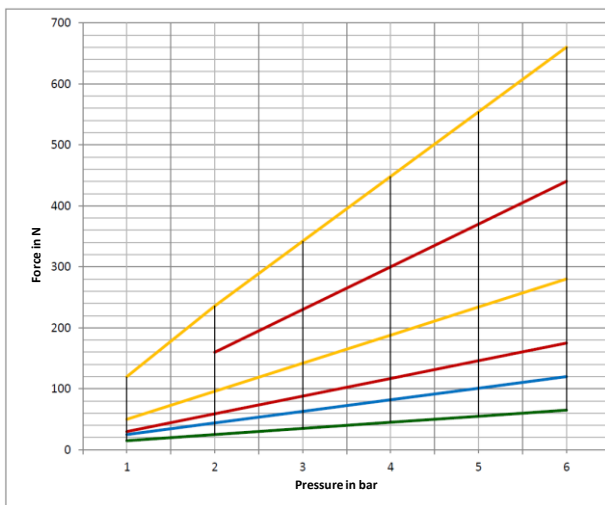
- Effective manufacturing processes
- High flexibility
- Maximum security
- High weld quality
- Fast integration
- Safe manufacturing processes
- Ease of maintainability



## TECHNICAL DATA

Features	SKF-1000
<b>In general</b>	
Style	Rack Version with secondary connections and water distributor
Options	<ul style="list-style-type: none"> <li>- Head for integration into machines</li> <li>- without rack</li> <li>- without lower fitting (electrode holder)</li> <li>- Power actuating cylinder or scale house with up to 2 different power springs</li> </ul>
<b>Electrical data</b>	
Secondary connection	Secondary cable or secondary profiles to the transformer 150 mm <sup>2</sup> – 500 mm <sup>2</sup>
Signaler	Upper end position - proximity switch type IFRM 06P17A3/S35L PNP / Baumer head spring-loaded - proximity switch type IFRM 08P17A3/S35L PNP / Baumer
Maximum welding current	approx. 20 kA at 50% E.D.
<b>Mechanical data</b>	
Welding force	approx. 200 N – 1500 N depending on the power cylinder
Force introduction (actuation)	pneumatic
Force adjustment	manually with scale house and knurled screw or pneumatically with power cylinder
Compressed air connection	min. 6 bar to max. 7 bar network pressure
Electrode holding	Electrodes Ø 10 mm
Arm projection / Arm distance	approx. 140 mm / approx. 110 mm, mechanically adjustable
Electrode stroke in mm	0 – 40, mechanically adjustable
Dimensions in mm	564 (574) x 152 x 320 (H x W x D)
Weight	approx. 37 kg
<b>Operating data</b>	
Ambient temperature	0 – 40° C
Cooling	Water-cooled electrode arm holders and electrode arms





## APPLICATION

- Spot welding
- Projection welding
- Cross wire welding
- Contact welding
- Resistance soldering

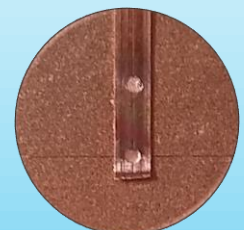
## BENEFITS

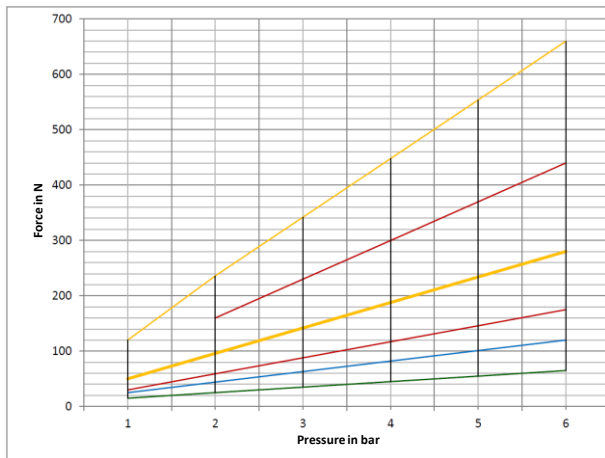
- Effective manufacturing processes
- High flexibility
- Maximum security
- High weld quality
- Fast integration
- Safe manufacturing processes
- Ease of maintainability



## TECHNICAL DATA

Features	DSKF-600
<b>In general</b>	
Style	Rack Version with secondary connections in double version and water distributor
Options	<ul style="list-style-type: none"> <li>– Head for integration into machines</li> <li>– without rack</li> <li>– without lower fitting (electrode holder)</li> <li>– Power actuating cylinder or scale house with up to 6 different power springs</li> </ul>
<b>Electrical data</b>	
Secondary connection	Secondary cable or secondary profiles to the transformer 25 mm <sup>2</sup> – 250 mm <sup>2</sup>
Signaler	Upper end position - proximity switch type IFRM 06P17A3/S35L PNP / Baumer head spring-loaded - proximity switch type IFRM 08P17A3/S35L PNP / Baumer
Maximum welding current	approx. 16 kA at 50% E.D.
<b>Mechanical data</b>	
Welding force	approx. 15 N – 660 N depending on the power cylinder
Force introduction (actuation)	pneumatic
Force adjustment	manually with scale house and knurled screw or pneumatically with power cylinder
Compressed air connection	min. 6 bar to max. 7 bar network pressure
Electrode holding	Electrodes Ø 6 mm
Arm projection / Arm distance	max. approx. 100 mm / approx. 75 mm, mechanically adjustable
Electrode stroke in mm	0 – 60, mechanically adjustable
Dimensions in mm	404,5 x 164 x 202,5 (H x W x D)
Weight	approx. 10 kg
<b>Operating data</b>	
Ambient temperature	0 – 40° C
Cooling	Water-cooled electrode arm holders, electrode arms optional



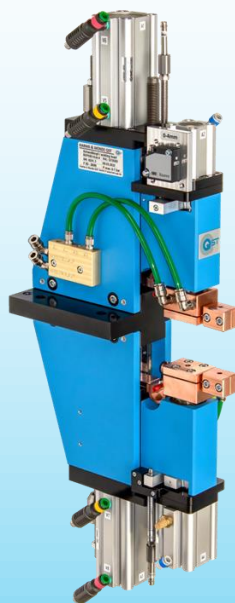


## APPLICATION

- Spot welding
- Projection welding
- Cross wire welding
- Contact welding
- Resistance soldering

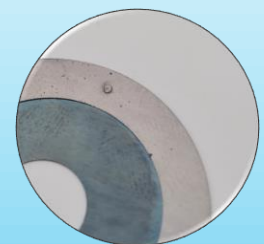
## BENEFITS

- Effective manufacturing processes
- High flexibility
- Maximum security
- High weld quality
- Fast integration
- Safe manufacturing processes
- Ease of maintainability



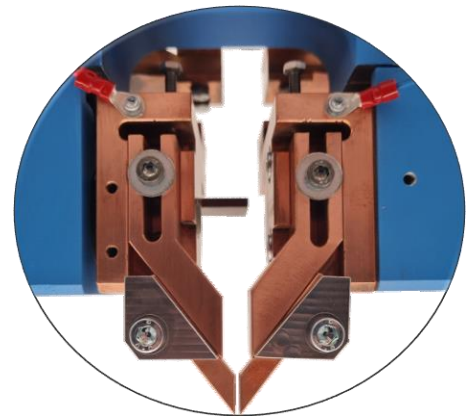
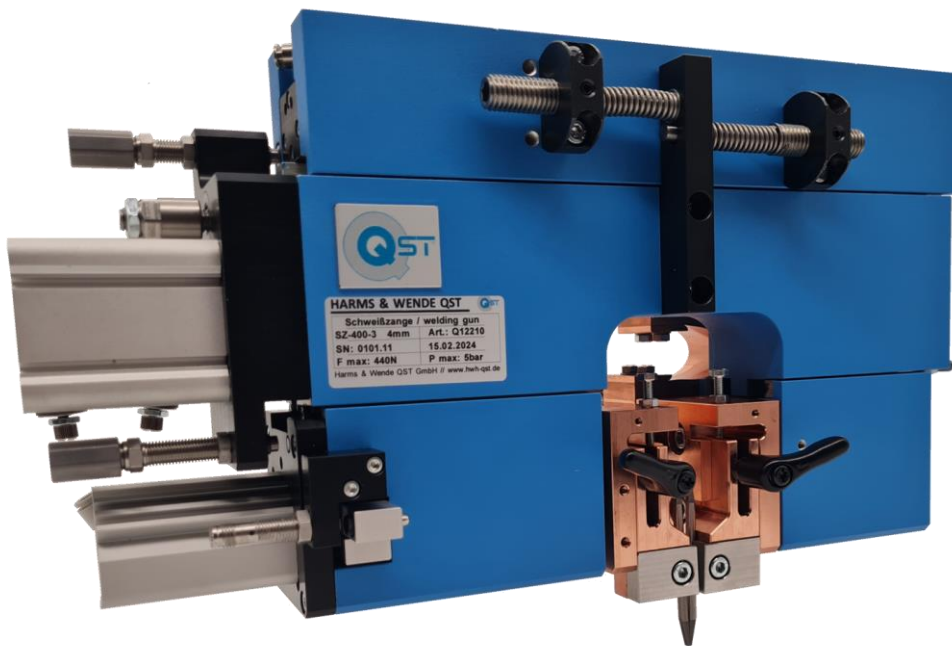
## TECHNICAL DATA

Features	SKF-600 HUB
<b>In general</b>	
Style	Rack Version with secondary connections and water distributor
Options	<ul style="list-style-type: none"> <li>– Customization possible according to customer requirements</li> <li>– Power actuating cylinder or scale house with up to 6 different power springs</li> </ul>
<b>Electrical data</b>	
Secondary connection	Secondary cable or secondary profiles to the transformer 25 mm <sup>2</sup> – 250 mm <sup>2</sup>
Signaler	Upper end position - proximity switch type IFRM 08P17A3/S35L PNP / Baumer head spring-loaded - proximity switch type IFRM 08P17A3/S35L PNP / Baumer
Maximum welding current	approx. 16 kA at 50% E.D.
<b>Mechanical data</b>	
Welding force	approx. 15 N – 660 N depending on the power cylinder
Force introduction (actuation)	pneumatic
Force adjustment	pneumatic
Compressed air connection	max. 6 bar
Electrode holding	Electrodes Ø 6 mm
Arm projection / Arm distance	max. approx. 100 mm
Electrode stroke in mm	0 – 120
Dimensions in mm	649 x 140 x 225 (H x W x D)
Weight	approx. 15 kg
<b>Operating data</b>	
Ambient temperature	0 – 40° C
Cooling	Water-cooled electrode arm holders, electrode arms optional



*The universal spot welding heads to solve your joining and soldering task in small part welding*

## SZ-400



### PERFORMANCE

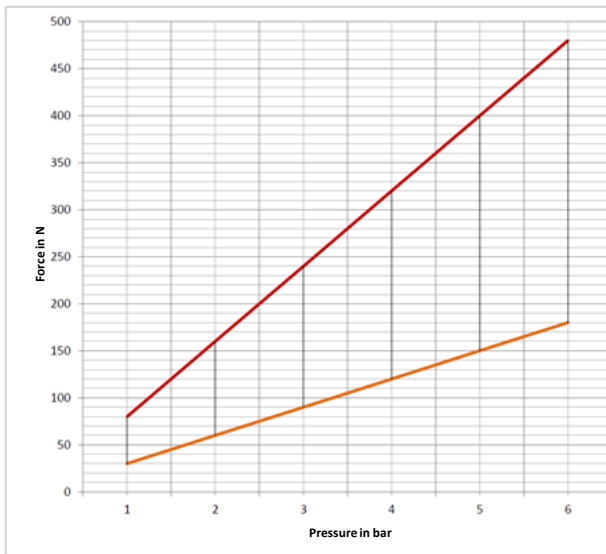
The welding guns of the SZ series ensure a safe and trouble-free welding process. The flexible systems can be used in both manual workstations and automated systems. The gun offer a wide range of uses in the area of small part welding.

### CHARACTERISTICS

- Suitable for manual workstations and automation solutions
- Use with weld materials with good or poor weldability
- Compact design
- Distance measuring system can be easily upgraded
- Used for joining parts with difficult geometry
- High quality requirements
- Implementation as well as replacement in existing systems possible
- numerous applications

... and much more



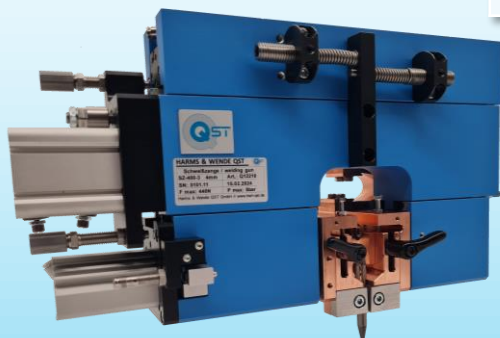


## APPLICATION

- Spot welding
- Projection welding
- Cross wire welding
- Contact welding
- Enamelled wire welding
- Hot Staking

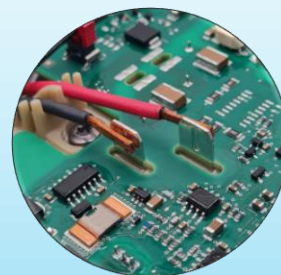
## BENEFITS

- Effective manufacturing processes
- High flexibility
- Maximum security
- High weld quality
- Fast integration
- Safe manufacturing processes
- Ease of maintainability



## TECHNICAL DATA

Features	SZ-400
<b>In general</b>	
Style	Automatic version with secondary connections
Options	<ul style="list-style-type: none"> <li>– Customization possible according to customer requirements</li> <li>– Power actuating cylinder or scale house with up to 2 different power springs</li> </ul>
<b>Electrical data</b>	
Secondary connection	Secondary cable to the transformer 25 mm <sup>2</sup> – 250 mm <sup>2</sup>
Signaler	Proximity switch type IRO8.P03S-F46.P01Z.7SL PNP / Baumer
Maximum welding current	approx. 12 kA at 50% E.D.
<b>Mechanical data</b>	
Welding force	approx. 30 N – 480 N depending on the power cylinder
Force introduction (actuation)	pneumatic
Force adjustment	manually with scale house and knurled screw or pneumatically with power cylinder
Compressed air connection	min. 6 bar network pressure
Electrode holding	Individually
Arm projection / Arm distance	Individually
Electrode stroke in mm	0 – 40, mechanically adjustable
Dimensions in mm	218 x 355 x 114 (H x W x D)
Weight	approx. 12 kg
<b>Operating data</b>	
Ambient temperature	0 – 40° C
Cooling	Water-cooled electrode arm holders



The universal spot welding heads to solve your joining and soldering task in small part welding

## ZFK- series



**ZFK-200**  
(Pneumatic delivery movement)



**ZFK-200 SERV**  
(Servo-electric delivery movement)

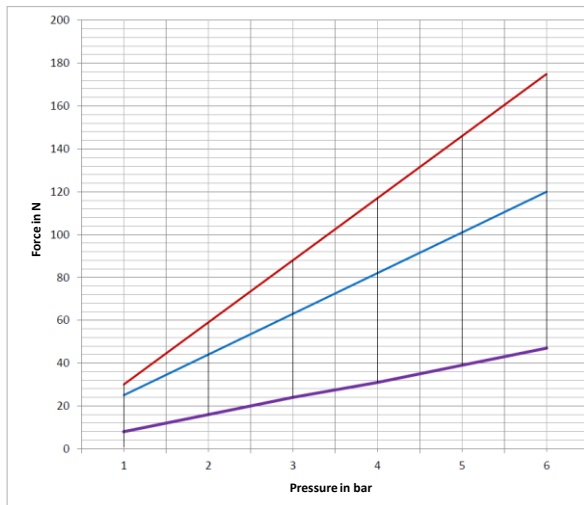
### PERFORMANCE

The welding heads of the ZFK series ensures a safe and trouble-free welding process. The flexible systems can be used in both manual workstations and automated systems. The heads offer a wide range of applications in the area of small part welding

### CHARACTERISTICS

- Suitable for manual workstations and automation solutions
- Compact design
- Use with weld materials with good or poor weldability
- Integrated distance measuring system
- High quality requirements
- Implementation and replacement in existing systems possible
- Quick replacement of the power-springs/follow up units
- numerous applications
- Pneumatic or servo-electric version averrable

... and much more



## APPLICATION

- Spot welding
- Projection welding
- Contact welding
- Resistance soldering

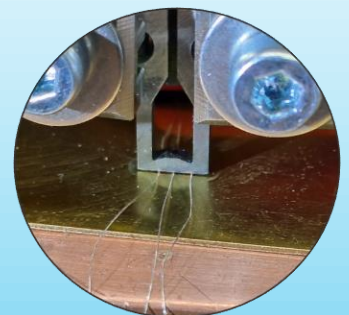
## BENEFITS

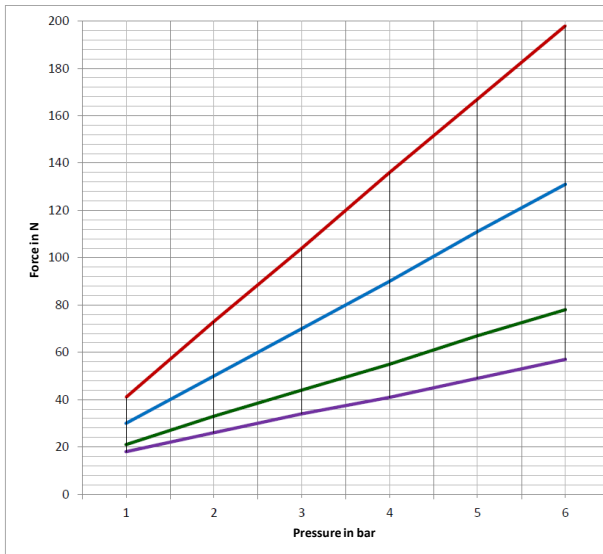
- Effective manufacturing processes
- High flexibility
- Maximum security
- High weld quality
- Fast integration
- Safe manufacturing processes
- Ease of maintainability
- High cycle times
- Gentle landing



## TECHNICAL DATA

Features	ZFK-200
<b>In general</b>	
Style	Guide head for integration without rack
Options	Customer-specific adaptation to the welding task
<b>Electrical data</b>	
Secondary connection	Secondary cable to the transformer 70 mm <sup>2</sup> – 90 mm <sup>2</sup>
Signaler	Proximity initiator type PNP (force / pressure reached) Distance sensor sinking distance - laser distance sensor type OM20 - PDI20.HH.YUN from Baumer
Maximum welding current	approx. 8 kA at 50% E.D.
<b>Mechanical data</b>	
Welding force	approx. 15 N – 175 N depending on the power cylinder
Force introduction (actuation)	pneumatic
Force adjustment	pneumatic
Compressed air connection	max. 6 bar
Electrode holding	Electrodes Ø 3 mm
Arm projection / Arm distance	Adaptation to the welding task
Electrode stroke in mm	0 – 30
Dimensions in mm	328 x 95 x 109 (H x W x D)
Weight	approx. 4 kg
<b>Operating data</b>	
Ambient temperature	0 – 40° C
Cooling	Water-cooled electrode arm holders





## APPLICATION

- Spot welding
- Projection welding
- Contact welding
- Resistance soldering

## BENEFITS

- Effective manufacturing processes
- High flexibility
- Maximum security
- High weld quality
- Fast integration
- Safe manufacturing processes
- Ease of maintainability
- High cycle times
- Gentle landing



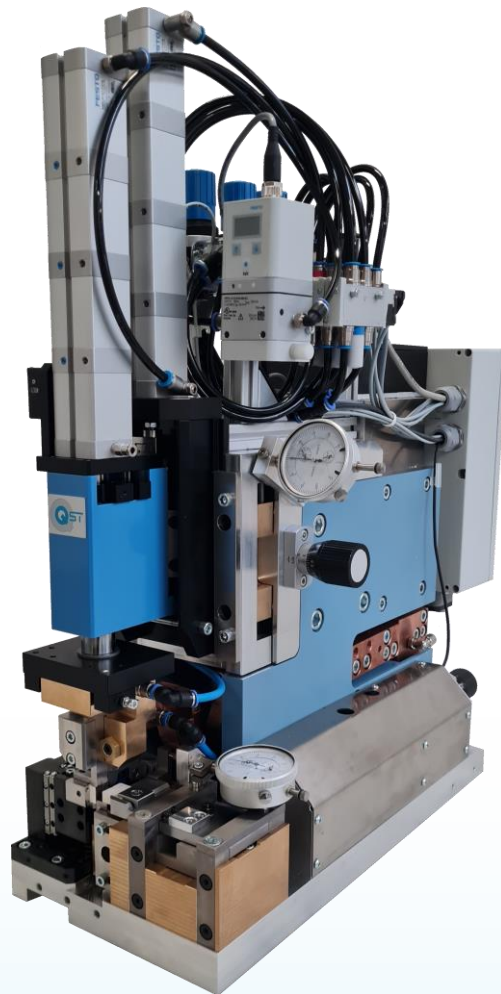
## TECHNICAL DATA

Features	ZFK-200 SERV
<b>In general</b>	
Style	Guide head for integration without rack
Options	Customer-specific adaptation to the welding task
<b>Electrical data</b>	
Secondary connection	Secondary cable to the transformer 70 mm <sup>2</sup> – 90 mm <sup>2</sup>
Signaler	Proximity switch type PNP (force/pressure reached)
Maximum welding current	approx. 5 kA at 50% E.D.
<b>Mechanical data</b>	
Welding force	approx. 18 N – 198 N depending on the power cylinder
Force introduction (actuation)	Servo-electric
Force adjustment	pneumatic
Compressed air connection	max. 6 bar
Electrode holding	Electrodes Ø 3 mm
Arm projection / Arm distance	Max. melt-down stroke 2 mm
Electrode stroke in mm	0 – 20
Dimensions in mm	511 x 84 x 109 (H x W x D)
Weight	approx. 4 kg
<b>Operating data</b>	
Ambient temperature	0 – 40° C
Cooling	Water-cooled electrode arm holders



*The universal compaction module to solve your compaction tasks when welding small parts.*

## KM-6



### PERFORMANCE

The compacting module of the KM-6 series ensures a safe and trouble-free compacting process. The module can be used in both manual workstations and automated systems. It offers a wide range of applications in the area of small part welding.

### CHARACTERISTICS

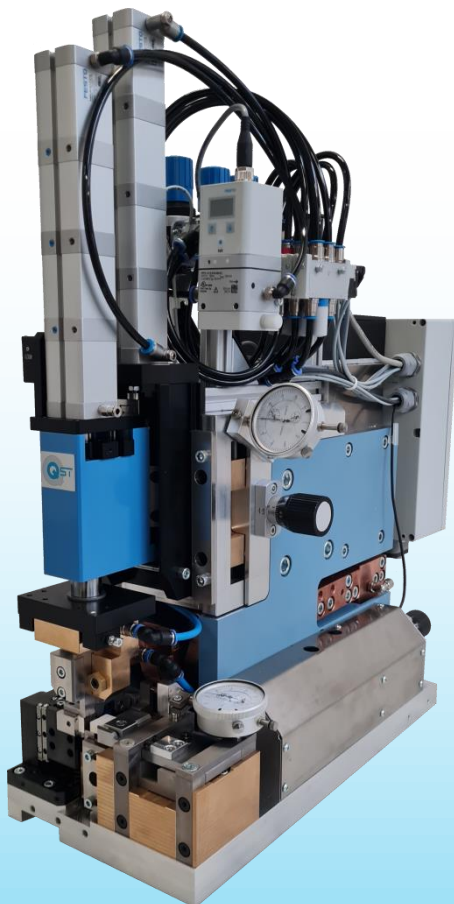
- Suitable for manual workstations and automation solutions
  - Compact design
  - Distance measuring system with high resolution
  - Use for different cross sections
  - High quality requirements
  - Implementation and replacement in existing systems possible
  - Quick adjustment of the desired cable cross section
- ... and much more

## APPLICATION

- compaction welding

## BENEFITS

- Effective manufacturing processes
- High flexibility
- Maximum security
- High compaction quality
- Fast integration
- Safe manufacturing processes
- Ease of maintainability



## TECHNICAL DATA

Features	KM-6
<b>In general</b>	
Cycle time (standard pneumatic drive)	< 0,6 s
Compaction width	0-3 mm infinitely adjustable
Compaction length	to 10 mm
Repeatability	< +/- 0,02 mm
<b>Mechanical data</b>	
Electrode force	approx. 100 N – 900 N
Force introduction	pneumatic
Compressed air connection	min. 6 bar network pressure
Distance measurement	5 µm
monitoring	Current, voltage, time, component recognition, gauge block, travel shutdown
Dimensions in mm	ca 485 x 230 x 610 (L x W x D )
Weight	approx. 25 kg
<b>Operating data</b>	
Ambient temperature	0 – 40° C
Cooling	6 – 8 l/min





*The universal hand welding head to solve your micro-welding tasks.*

## *Push welder series*



*HSK-3575*



*STP-Micro*

### PERFORMANCE

Our push-welders ensure a safe and trouble-free welding process. The push-welders offer a wide range of uses in the area of manual resistance welding.

### CHARACTERISTICS

- Suitable for manual workstations
- Used on materials with good weldability
- Use of different electrode shapes
- Compact and very light design
- Quick exchange of electrodes
- Easy connection to different welding controller
- Numerous areas of application

... and much more

## APPLICATION

- Spot welding
- Cross wire welding
- Repair welding

## BENEFITS

- Easy to use
- High flexibility
- Fast integration
- Ease of maintainability

## TECHNICAL DATA

Features	HSK-3575
<b>In general</b>	
Style	Handheld device with secondary connections
Current start	Button in the handle
<b>Electrical data</b>	
Secondary connection	Secondary cable to the transformer 50 mm <sup>2</sup> -95 mm <sup>2</sup> Length 2.5 m Earth cable length 2.6 m
Maximum welding current	approx. 10 kA
<b>Mechanical data</b>	
Welding force	depending on operator
Force introduction	manually
Electrode holding	Electrodes Ø 18 mm, optional Ø 6 mm or 10 mm
Dimensions in mm	150 x 200 x 40 (H x W x D)
Weight	approx. 0,5 kg (without cable)
<b>Operating data</b>	
Ambient temperature	0 – 40° C
Cooling	Air cooling



Optionally available with ground clamp.

## APPLICATION

- Spot welding
- Cross wire welding
- Repair welding

## BENEFITS

- Easy to use
- High flexibility
- Fast integration
- Ease of maintainability

## TECHNICAL DATA

Features	STP-Micro
<b>In general</b>	
Style	Handheld device with secondary connections
Current start	start signal by spring-loaded electrode
<b>Electrical data</b>	
Secondary connection	Secondary cable to the transformer 50 mm <sup>2</sup> , Length 2,5 m Earth cable length 2,6 m
Maximum welding current	approx. 10 kA
<b>Mechanical data</b>	
Welding force	depending on operator
Force introduction	manually
Electrode holding	Electrodes Ø 18 mm, optional Ø 6 mm or 10 mm
Dimensions in mm	160 x 22 x 40 (H x W x D)
Weight	approx. 0,4 kg (without cable)
<b>Operating data</b>	
Ambient temperature	0 – 40° C
Cooling	Air cooling



Optionally available with ground clamp.



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Genius ACS page 27



Primus page 29



iSpotHFG page 31



Filius page 33

The modular control system  
for your micro-welding task

## Genius H<sub>WI</sub>



### PERFORMANCE

Our medium-frequency inverter series GeniusH<sub>WI</sub> is designed for manual or automated systems and is outfitted with a maximum level of functionality. Extensive monitoring and control functions allow an optimized and safe welding process. Thanks to the range of power units, aluminum can also be spot welded.

### CHARACTERISTICS

- Individual equipment and customizable range of functions (Basic, Professional, Hand)
- Max. output currents from 400 A to 3500 A (higher currents through a Master-Slave connection)
- 3 weld times (preheating, main current and post-hold time)
- Monitoring of displacement, force, current, voltage and regulation limit
- Constant Current Regulation (secondary)
- Adaptive welding package IQR (optional)
- Visualization of the last 10 measurements
- Operation via PC running XPegasus software

... and much more

## APPLICATION

- Spot welding with constant current regulation
- Adaptive feedback welding (optional) for steel materials
- Classic Aluminum Mode CAM for aluminium alloys (typ 5000/6000)
- Projection welds
- Master-Slave setups for up to eight inverters

## BENEFITS

- Best welding quality thanks to fast and accurate controller
- Automatic controller calibration
- Short integration time
- Quality assurance routines
- Effetive production processes
- Competitive production processes
- Increasing competitive advantage
- Efficient data processing and -backup



*Genius H<sup>WI</sup>* - the flexible inverter consists of a compact power unit with a slot-based control unit. The CPU and welding board forms the core of the Genius system.

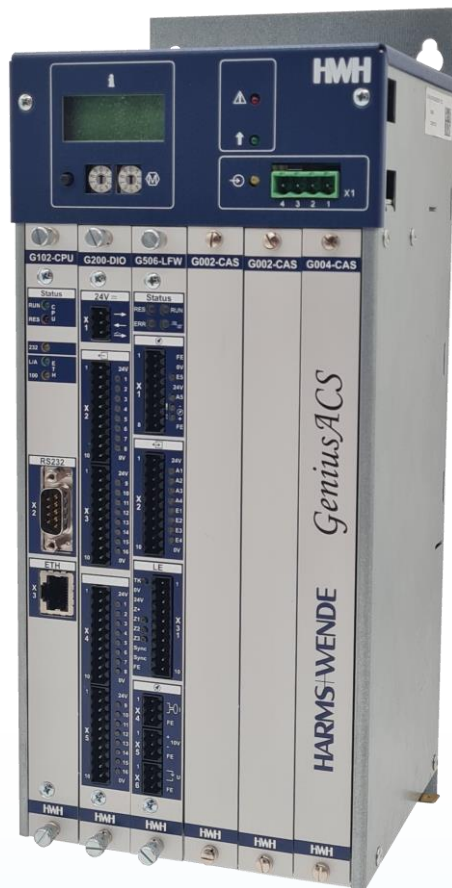
## TECHNICAL DATA

Features	Genius H <sup>WI</sup> BAS	Genius H <sup>WI</sup> PRO
operating concept	Windows based PC with XPegasus software	
programs	256	512
Welding profile	3 times VWZ, HSZ, NWZ*1	
Max output current	400A to 3,500A	
Mains supply	400V - 440V or 480V, 690V	
Cooling	air or water	
Upslope	Yes	
Downslope	Yes	
Impulses	Yes	
Digital IO	24V I/Os	
Electrode management	Yes	
Proportional valve	Yes	
Visualization of the last IO measurements	Yes	
Limit monitoring current	Yes	
Constant current control KSR	Yes	
S-Inspector	Yes	
Inspectors I,U,H,R	No	Yes
IQR (Adaptive feedback package)	optional	
IQ - Flex	optional	
Q-Inspector	optional	
PQS (PQS-Ready)	optional	
AMC / DCM - ALU Mode Classic + Dynamic Conditioning Mode	optional	
PDD - Process Data Documentation	optional	
TT - Trace Tag	optional	
HSC - High Speed Current	optional	



The modular control system for your  
micro welding task in the alternating current range

## Genius ACS



### PERFORMANCE

The Genius ACS AC control is designed for manual or automated systems and impresses with its maximum level of functionality. Extensive levels of monitoring and control functions enable an optimized and safe welding process.

### CHARACTERISTICS

- Individual equipment and a customizable range of functions
- 1- and 3-phase variants (GeniusACS1 and GeniusACS3).
- Compatible with all HWH power units
- 3 weld times (preheating, main current and postheating time)
- Optimal control of way, force, current, voltage and working stroke
- Constant current control
- Visualization of the last 10 measurements
- Operation via PC with the XPEgusus software

... and much more

## APPLICATION

- Spot welding
- Projection welding

## BENEFITS

- Best welding quality thanks to fast and accurate controller
- Automatic controller calibration
- Fast integration
- Maximum security
- Optimal quality assurance
- Effective manufacturing processes
- Increasing competitive advantage
- Efficient data management and data backup

## TECHNICAL DATA

Features	Genius ACS SPOT	Genius ACS PRJ
Operating concepts	PC with XPEgasus operating software	
programs	512	256
Welding profile	3 Current times PrHT, MCT, PoHT	
Upslope	Yes	
Downslope	Yes	
Impulses	Yes	
I/O	EA = 24 V E/A und Feldbus	
Electrode management	Yes	
I proportional valve output 0-10 V	Yes	
I and 3 phase variants	Yes	
Visualization of the last IO measurement	Yes	
Constant current control KSR	Yes	
S-Inspector (way)	No	Yes
I-Inspector (current)	Yes	
H-Inspector (working stroke)	optional	Yes
U-Inspector (voltage)	Yes	optional
R-Inspector (resistance)	Yes	optional
F-Inspector (force)	Yes	
PQS (PQS-Ready)	optional	
BD - Component documentation	optional	
PDD - Process Data Documentation	optional	
TT - Trace Tag	optional	



*Genius ACS* - the control for your AC welding process, individually adaptable to your welding tasks and systems.

The universal welding system for  
resistance welding and soldering

## Primus



### PERFORMANCE

The Primus welding system offer the highest level of functionality. Result-oriented process management and extensive monitoring functions ensure safety during the joining process

### CHARACTERISTICS

- Innovative process regulation
- Integrated inverter; external transformer
- Logical process control (IF/THEN link)
- analysis of current, voltage, power, displacement, temperature and time
- Integration of up to four weld heads or guns
- Modular program design
- Event controlled process (i. e. displacement and force)
- Comprehensive monitoring with warning and intervention limits
- Primary data storage
- User rights management

... and much more

APPLICATION

- Spot welding
- Projection welding
- Cross wire welding
- Seam welding
- Gap welding
- Contact welding
- Compacting
- Hot Staking
- Resistance soldering
- Bar soldering

BENEFITS

- Best joining quality
- Effective joining processes
- Extensive visualization and trend analysis
- Higher productivity
- Powerful quality assurance
- Increasing competitive advantage
- Efficient data administration and backup



*Primus* – The universal resistance weld and soldering system consisting of: Weld timer with integrated inverter, transformer, connection cable and PC based user interface.

TECHNICAL DATA

Features	5 kA	10 kA
Inverter frequency	10kHz	
Max output power @ 20% DC*	31 kVA	56 kVA
Mains voltage; Mains frequency	3 x 400 V; 50/60 Hz	
Dimensions W/H/D	305 x 120 x 410 mm	
Timer / Regulation mode	Primary, Secondary, Voltage and Power regulation, no regulation; Temp. regulation for soldering all regulation modes adjustable by impulsation	
Number of schedules	200 internal, 63 external selectable; PC backup	
Number of weldimpulses	ca. 100; each individual fully configurable	
Weld cycle	Upslope, current time, downslope, adjustable set value, displacement cut-off: way or remaining thickness, Displacement cut-off with security cut-off	
Monitoring functions	Relative limits +/-% to set value and absolute values for all regulation modes, max current freely selectable, automatic cut off when reaching U, Displacement cut-off with time limit	
Force measurement	2 channels parallel: 0...10V; 0...20mA and/or incremental; max 4 channels (when operation different heads)	
Displacement measurement	2 channels parallel: 0...10V; 0...20mA and/or incremental; max 4+2 channels (when operation different heads)	
Temperature regulation	up to 450 deg C (for soft soldering); 900 deg C for hard soldering	
User interface	PC Software	
Outputs for weld head	4 outputs; 3 inputs for displacement for auxiliary functions 2 proportional valves; control of twin head	
Weld transformer	external, water cooled, 12 V secondary voltage	
Analog in- and outputs	Voltage plug; 2 incremental displ. Inputs, 4 free measurement inputs, 2 proportional valves (incl. analog actual value input)	
Internal memory	100.000 data set	
Interfaces	Ethernet TCP/IP, digital EA	
Digital inputs	20 Inputs, 4 of which are freely configurable + 24 V supply	
Digital outputs	17 outputs, 6 of which are freely configurable + 24 V supply	

The universal welding system for  
resistance welding and soldering

## iSpotHFG



### PERFORMANCE

The devices of the series iSpot are designed for manual and semiautomated workstations for resistance welding as well as soldering of micro components. A highly accurate digital regulation of current, voltage, power and temperature assures a reproducible and safe process.

The display is built into the device, but can also be ordered in a separate housing with plug-in cables.

### CHARACTERISTICS

- High regulation speed (10 / 15 kHz)
- Current, voltage and power regulation
- Capacitor discharge mode (power regulation)
- Soldering mode (temperature regulation)
- Different operating levels
- Compact design (table top)
- 4.3" colored graphic touch screen
- Analysis of current, voltage, power, resistance and temperature
- PC interface for operation and data backup
- Different user levels, password protected

... and much more

## APPLICATION

- Spot welding
- Projection welding
- Cross wire welding
- Seam welding
- Gap welding
- Resistance soldering
- Bar soldering

## BENEFITS

- Quick start of production
- Effective production processes
- Time savings through direct editing of the parameters
- Efficient data management and data storage
- Flexible production planning

## TECHNICAL DATA

Features	05L	10L	40L	80W
Current range	0,005 – 0,5 kA	0,01 – 1 kA	0,05 – 4 kA	0,1 – 8 kA
Mains supply/ frequency	3 x 400 V, 50/60 Hz			
Mains power	1,1 kVA	2,2 kVA	2,2 kVA	16 kVA
Mains fuse (slow)	3 x 16 A	3 x 16 A	3 x 16 A	3 x 25 A
Mains cable	H07RN-F4G2,5	H07RN-F4G2,5	H07RN-F4G2,5	H07RN-F4G4,0
Open circuit voltage	8,0 V	8,0 V	8,0 V	10,0 V
Max sec current	500 A	1000 A	4000 A	8000 A
Inverter cycle time	15 kHz	10 kHz	10 kHz	10 kHz
Max spot repetition rate / min	60 Spot/min.	60 Spot/min.	120 Spot/min.	120 Spot/min.
Max sec. Output current @ 20%DC*	500 A	550 A	650 A	3.600 A
Output power	3,3 kVA @20%ED,	3,8 kVA @20%ED	4,4 kVA @20%ED	28 kVA @20%ED
	1,5 kVA @50%ED	2,1 kVA @50%ED	2,4 kVA @50%ED	19 kVA @50%ED
Cooling	air	air	air	water
User interface	colored touch screen / PC-Interface			
Dimensions (l x w x d)	470 x 220 x 270 mm			
Weight	14 kg			16,5 kg

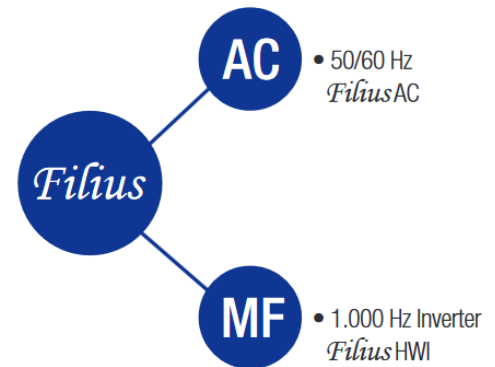


*iSpotHFG*: The compact tabletop device with integrated transformer with optional temperature regulation for soldering.



The universal welding system for  
resistance welding

# Filius



## PERFORMANCE

The Filius control is the perfect solution for your future resistance welding machine projects for producing spot, projection and seam welded connections. The ability to control, regulate and monitor both medium frequency and mains frequency power components opens up a wide range of possible solutions. Logging the welding results in the device provides you with proof of process quality. The self-explanatory menu navigation as well as the convenient backup of the most important program data via USB stick ensure quick commissioning.

## CHARACTERISTICS

- Range of functions: Classic, Multi, Mono, Analog
- Unified menu navigation and operation for 10kHz, 1kHz and 50/60Hz devices
- MF power units between 400A and 3500A available
- AC power levels from 45A to 2950A available
- High frequency devices available upon request.
- Controls for 3 phase DC applications available upon request
- Program sequencing control
- Networking of up to 8 controllers in conjunction with the Filius RC possible as a mini chain
- Firmware download via USB stick
- Menu navigation available in several national languages using loadable language files
- Constant current control force program
- Electrode management/stepper function
- Distance measurement
- Proportional valve control

... and much more

APPLICATION

- Spot welding
- Projection welding
- Cross wire welding
- Seam welding
- Gap welding
- Compacting
- Hot staking
- Resistance soldering
- Heating

BENEFITS

- Direct parameterization of the control via integrated front panel
- By configuring the functions, incorrect entries can be avoided
- Best welding quality
- Customized solutions for resistance welding at manual workstations, partially automated or automated welding systems
- Separate assembly of control and power section
- Networking of up to 8 controllers as a mini chain
- Internal and external program selection
- Distance-dependent program control
- Setpoint change during the process through analog value specifications
- Pressure and force program by switching on a solenoid valve and/or changing the proportional valve
- Automatic sequence of programs

TECHNICAL DATA

Features	Mono			Multi		Classic	
	AC	AC	MF	AC	MF	AC	MF
Time entry	Per/HW /ms	Per/HW /ms	lms	Per/HW /ms	lms		
Starting inputs	1	2	2	1	1		
Pre-stroke valve			1				
Solenoid valves	1			2			
Proportional valves	0	2	2	1	1		
Mains voltage compensation	Yes	Yes	No	Yes	No		
Analogue setpoint input		No			Yes		
Current regulation	Nein			Yes			
Force calibration in kN	No			Yes			
Signal exchange 24-V I/Os			Yes				
Parameter backup via USB			Yes				
USB in the front			Yes				
programs	8		2*16			128	
Program inputs	3	4				7	
Internal program selection			Yes				
External program selection			Yes				
Status display			Yes				
Scoreboard menu			Yes				
Process and editing menu			Yes				
Configuration menu			Yes				
Limit-value monitoring/ current	No	Yes					
Distance monitoring	No	Yes					
Remote control with FiliusRC	No	Yes					
Stepper function		No				Yes	
Pressure, force program		No				Yes	
Program sequence		No				Yes	

# Accessories



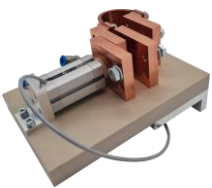
Electrodes & thermodes page 36

Electrode holder page 37



Adjustment aid page 37

Secondary cable page 38



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Cooling device page 42

Mass clamp page 42



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TE 1700 C page 43



The right electrode for your small part welding task

## Electrodes & Thermodes



We offer you electrodes made from the following materials:

- CuCrZr (copper-chromium-zirconium)
- CuCoBe (copper-cobalt-beryllium)
- W (Tungsten)
- Mo (molybdenum)

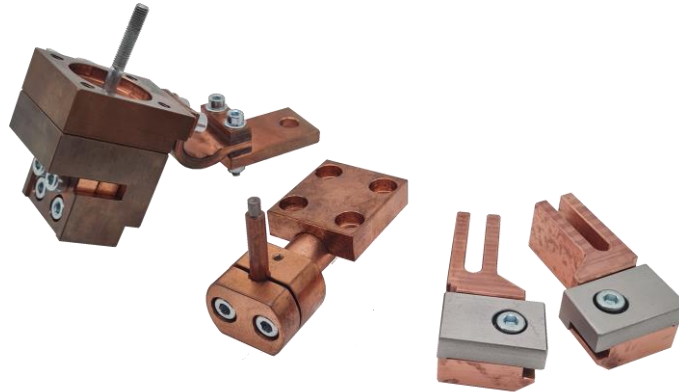
We offer you thermodes made from the following materials:

- W (Tungsten)

We manufacture these for you from blanks specifically for your welding task.

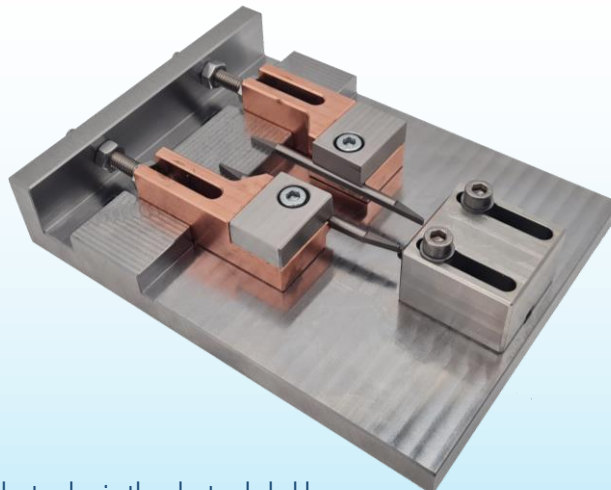


## *Electrode holder*



We offer you electrode holders according to your system and welding tasks.  
We would be happy to advise you.

## *Adjustment aid*



For correct positioning of the electrodes in the electrode holder.

Available for all HWH –QST welding heads.

## *Secondary cable*

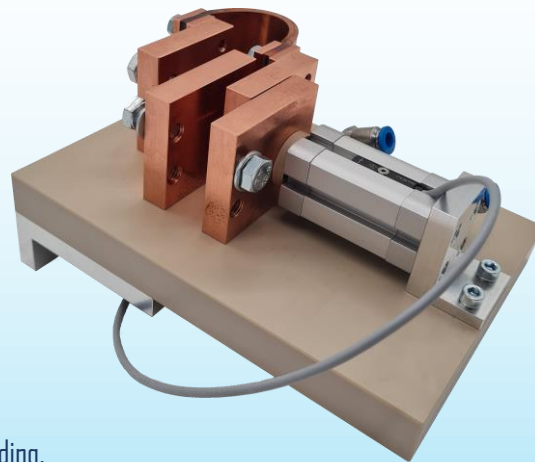


We offer welding cables for your required welding head in the following versions:

Cable length 100 mm to max. 900 mm (special lengths on request)

Cable cross sections 50 mm<sup>2</sup> to 200 mm<sup>2</sup> (special cross sections on request)

## *Secondary switch*



To switch between welding and thermode welding,  
or to switch the welding heads in the secondary.



# Sensors

## Distance sensor & measuring transducer



### Analogue displacement sensors

A distance measurement is a must for your micro-welding task. We offer you position measuring sensors in different lengths:

- Distance sensor 25 mm
- Distance sensor 100 mm
- Distance sensor 150 mm including ball joint as linkage

### Optical displacement sensors

Using laser triangulation, your path measurement can be monitored even more precisely. Here we offer you various options.

## Force sensor

In addition to displacement sensors, we also offer force measuring sensors for your welding gun or head. Here we mainly use strain sensors from Kistler. These are attached to the tong arm and measure its elongation when the two electrodes move together.



## Current sensor

In systems without current measurement or with primary current measurement, a current measuring belt or measuring coil must be installed in the secondary circuit. Furthermore, separate measuring belts should be used if the welding current is divided between several electrodes which are welding at the same time, but no differences can be seen in the overall current.

- Flexible current measuring belt (diameter 90 mm; 130 mm; 260 mm)
- Rigid current measuring belt (diameter 55 mm)



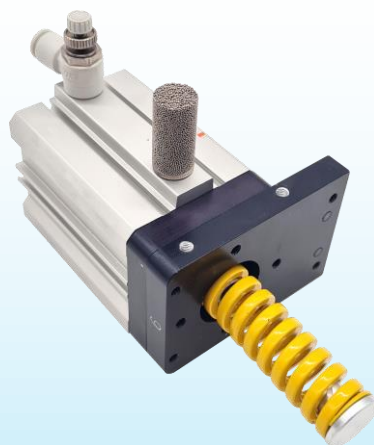
## *Pneumatic unit*



We offer you the pneumatic unit for your welding system as a complete solution or as individual parts for your manual workstation.

The pneumatic unit is individually dimensioned according to the design of your system. We would be happy to advise you.

## *Power springs with cylinders*



For our welding heads, we offer you the right springs with cylinders for the force you need.

## *Cooling device*



Cooling devices for cooling the welding control and welding heads.

Individually dimensioned according to the design of your welding system.  
We would be happy to advise you.

## *Mass clamp*



When using Push-welders, a ground clamp is absolutely necessary  
to close the secondary circuit.

# TECNA Measuring devices

## TE 1600



With our mobile T1600 measuring device from TECNA, you always have all welding gun measurement data available. Especially when setting up a system, it is important to know whether the welding machine is delivering the required current and the gun is reaching the required pressure.

You can order the measuring device either in combination with the two sensors or individually. The force transducers are available in versions up to 200 daN and up to 1200 daN.

## TE 1700 C

The TE1700C is a portable device for measuring the parameters of resistance welding. The use of different types of probes allows the measurement of the welding current and electrode force on the electrodes.



Especially in the setup phase, this device provides all necessary information for the correct and optimal setting of the individual welding process. Therefore, every technician should have this measuring device with them for commissioning and service. Only a measurement provides certainty whether the welding machine or a welding gun performs what is sufficient for the requirements. Corrective effects in the current setting or the electrode force can also be checked immediately. The color 5.7" LCD touch screen ensures accurate reading even under adverse conditions.



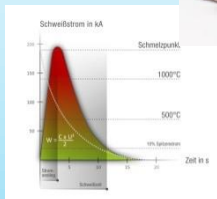
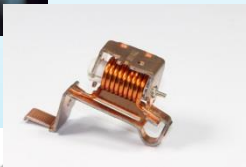
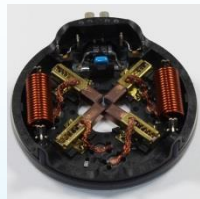
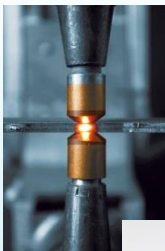


APPLICATION

- Spot welding
- Projection welding
- Small parts welding
- Medium frequency (MF)
- Alternating current (AC)
- Direct current (DC)
- Capacitor discharge welding (CD)

PROCESS RELIABILITY

- Comprehensive process analysis
- Timely response to process changes
- Hence increased competitive advantage and high productivity
- Reduced testing costs and testing time
- Effective manufacturing processes
- Powerful quality assurance
- Image improvement



TECHNICAL DATA

Features	XPQS
<b>In general</b>	
Measurements	Signal characteristics of current, voltage, resistance, power, force and displacement
Sampling frequency	Up to 36kHz at measurement of the electric and mechanical sizes
Interfaces	24V i/o, Ethernet, Profibus, Profinet, Interbus (optical / electrical)
Measurable current times	Up to 7.000 ms
<b>Software</b>	
XPQS	Workplace-Version: Operation and visualization of up to 16 systems, permanent data storage possible, logging of component IDs
XPQS-NET	Network version: Operating and visualizing of the network version. Includes the OPC UA option
<b>Parameters</b>	
Monitorable parameters	More than 20 parameters can be monitored. For example, penetration, average electrical values, current, resistance, voltage, power, energy, force, peak current and current flow time
<b>Monitoring</b>	
Signal characteristics / parameters	A max. of 5 signal characteristics and 5 parameters can be monitored simultaneously
<b>Other functions</b>	
Other possible uses	Usage of Software XPQS for component documentation

XPQS-Versions:

- For welding control *Genius* available
- For any external welding controls (50 Hz, MF or HF) with the *QUADRIGO* measuring module
- For CD-welding with measuring module *QUADRIGO*

*On the safe side even without HWH control*

## Quadrigo

Quadrigo measuring module for 1 or 2 measuring points



### BENEFITS

- Very compact high-performance module for a variety of joining techniques
- High quality metrology recording of analogue process data
- High reliability and interference immunity
- Designed as a built-in module for existing control/switch cabinets
- Offers a variety of field bus interfaces
- Expandable to up to 2 simultaneous measuring points with a total of 8 analog measuring channels

Other welding controllers available on the market use our QUADRIGO measuring modules. These can be flexibly integrated into existing systems or retrofitted. They are ideally suited for installation in control cabinets. Depending on the specific task, the modules are available for one to a maximum of two measuring points. Thus, a maximum of two joining processes can be measured and monitored simultaneously with the four measured variables (current, voltage, force and displacement). Operation and data archiving are performed via a PC.

Quadrigo Master PC



### BENEFITS

- for DIN rail mounting, supply with 24V
- On-board graphics adapter with DVI connection
- Dual Ethernet adapter with 2x 100/1000 Gigabit Ethernet
- 1x serial interface RS232 and 4 USB 2.0 ports
- Active cooling via quick-change fan cassette with speed monitoring
- Can be installed in our QUADRIGO box with a QUADRIGO measuring module
- UPS preparation including external battery pack

The QUADRIGO Master is an industrial PC designed for space-saving control cabinet installation in industrial applications. The PQS software package – for data recording but also for overall system operation – can be installed on the QUADRIGO Master. QUADRIGO Master PCs can of course be used for other applications, such as running the XPeGasus software.

## Quadrigo Box

We offer you a control cabinet that is ready for connection and pre-configured for you.



### BENEFITS

- Protection class IP54, cable glands prepared
- 2\*RJ45 network socket including mating connector, Ethernet switch optional
- Connection ~240V, 24V/7.5A power supply built in
- Can be used to power our VISU PC, then the master PC is no longer necessary

## Mobile measurement system



Our mobile measuring system is recommended for flexible installation of the PQS system. You are not tied to one system during installation. If process fluctuations occur, you can switch between the systems and install the PQS on the respective system. It is ideal for process analysis and evaluation, can record data autonomously and be operated via Ethernet or by directly connecting the monitor and input devices via DVI / USB.

## Quadrigo VISU

Safe operation and convenient visualisation are essential prerequisites for the effective use of an inline quality assurance system. Furthermore, confusing or complex production facilities demand specially adapted functional and information offerings. Not everything should or may be possible everywhere. But important information must be available quickly and reliably. QUADRIGO-VISU PCs can of course be used for other applications, such as running the XPEgasmus software.

Your workplace according to your requirements

## Manual workstation

We would be happy to put together a manual workstation for your welding task consisting of a welding control, welding head and other required components. We offer you different variants for this.

Our manual workstations can be configured with different dimensions and depending on the work activity (sitting or standing):

### Dimensions:

Depth:	750 mm
Width:	variable (1,200 mm // 1,500 mm)
Working height:	variable (780 mm // 1,040 mm)
Height:	variable (max. 2,100 mm)

### Including:

- Metal information boards
- Container holder for storage boxes
- Power supply 230V
- Workplace lighting from above

### Additional options:

- option for wheels or a feet
- Operation via footswitch or two-hand control panel
- Storage boxes
- Protective pad for tabletop
- Pneumatic unit (hardware-specific)
- Touch PC with Vesa mount (technical data on request)
- Cooling device (pressweless, 230V)
- PQS monitoring (PC required)

### **Welding power sources from the house of Harms and Wende**

As a specialist in the field of resistance welding, Harms & Wende offers you controls for microjoining technology. The portfolio includes welding controls of 50Hz (AC), 1kHz (MF) or 10kHz (HF). We will work with you to put together your manual workstation, using the welding control system most suitable for your application.

### **More options for manual workstations**

In addition to a manual workstation, it is possible to have electrodes made from various materials and individually manufactured electrode shapes at Harms & Wende QST. Electrical connections such as secondary cables are specifically configured and delivered.



*We support you with your welding process*

## Service

Our core competencies are joining technologies. HWH-QST is the specialist for the reliable protection of your joining processes. Our experienced team of experts will always provide you with competent and committed support when it comes to analyses, parameterization or system setup.

### Our services

- Training
- Advice
- Remote maintenance
- System integration
- Process support
- Process optimization
- Process analysis



### Key points of the QST service

- Modular training courses on welding technology and HWH Group products coordinated with the customer
- User-specific and practical training in in-house training rooms in conjunction with applications on modern welding systems
- Orientation towards leading QM standards
- Great wealth of experience from demanding customer applications



*A training concept tailored to your needs*

## Training

Harms & Wende QST offers you coordinated and modular training modules on the following topics:

- Basics of welding technology
- PQS monitoring
- Welding controls from Harms & Wende GmbH & Co. KG

The user-specific and practical training courses can be carried out in in-house training rooms in conjunction with work on modern welding systems.

Of course, on-site training at the customer's site is also possible. These can take place in German and English or with an interpreter on request. After completing the courses, participants receive a certificate confirming their participation with a description of the content.

### Information about our training courses:

- Specific qualification of users for the respective area of responsibility
- The participants are qualified as part of a modular training concept
- All modules build on each other
- The number of participants is limited to a maximum of 8 people per module in order to be able to respond to the participants individually and effectively, thus achieving maximum learning success





## *Examination of weldability on your test parts*

# *Preliminary investigation*

**As part of our preliminary investigations, we offer you various packages depending on the scope you require.**

### **Feasibility package small**

Service for testing weldability using sample parts provided by the customer. Tactile test without revealing specific welding parameters. After the test has been carried out, a short evaluation (few images and text) with an estimate of the joint connection is sent to the customer.

### **Feasibility package large**

Service for testing weldability using sample parts provided by the customer. A defined number of pieces (approx. 100 pieces) is required. The welding tests are carried out taking into account customer information (e.g. pull-off forces or other quality features) or specifications requirements. Finally, you will receive a report summarizing information about basic welding parameters, quality characteristics of the joint as well as all values for force, pressure, etc. determined in the laboratory. You will also receive suggestions about the welding hardware used (welding control and head, electrode material and shape). Any device that may be required will be constructed at an additional cost.

### **Individual package**

Service for testing weldability using test parts provided by the customer (special applications). The welding tests are carried out taking into account customer information (e.g. pull-off forces or other quality features) or specifications requirements. Finally, you will receive an examination report that contains all information about the welding parameters used, quality characteristics of the joint based on PQS data (curve evaluation and complete documentation of the joined welded joints) as well as all values for force, pressure, etc. determined in the laboratory. You will also receive recommendations and technical details about the welding hardware used (welding control and head, electrode material and shape). The individual package is billed based on actual effort.

company member of

## HARMS+WENDE GROUP

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Harms & Wende GmbH & Co. KG