



1. HANDLING MACHINES PRODUCTION SERIES BZ
Single-column portal / manipulators



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3. FLAT TURN TABLES



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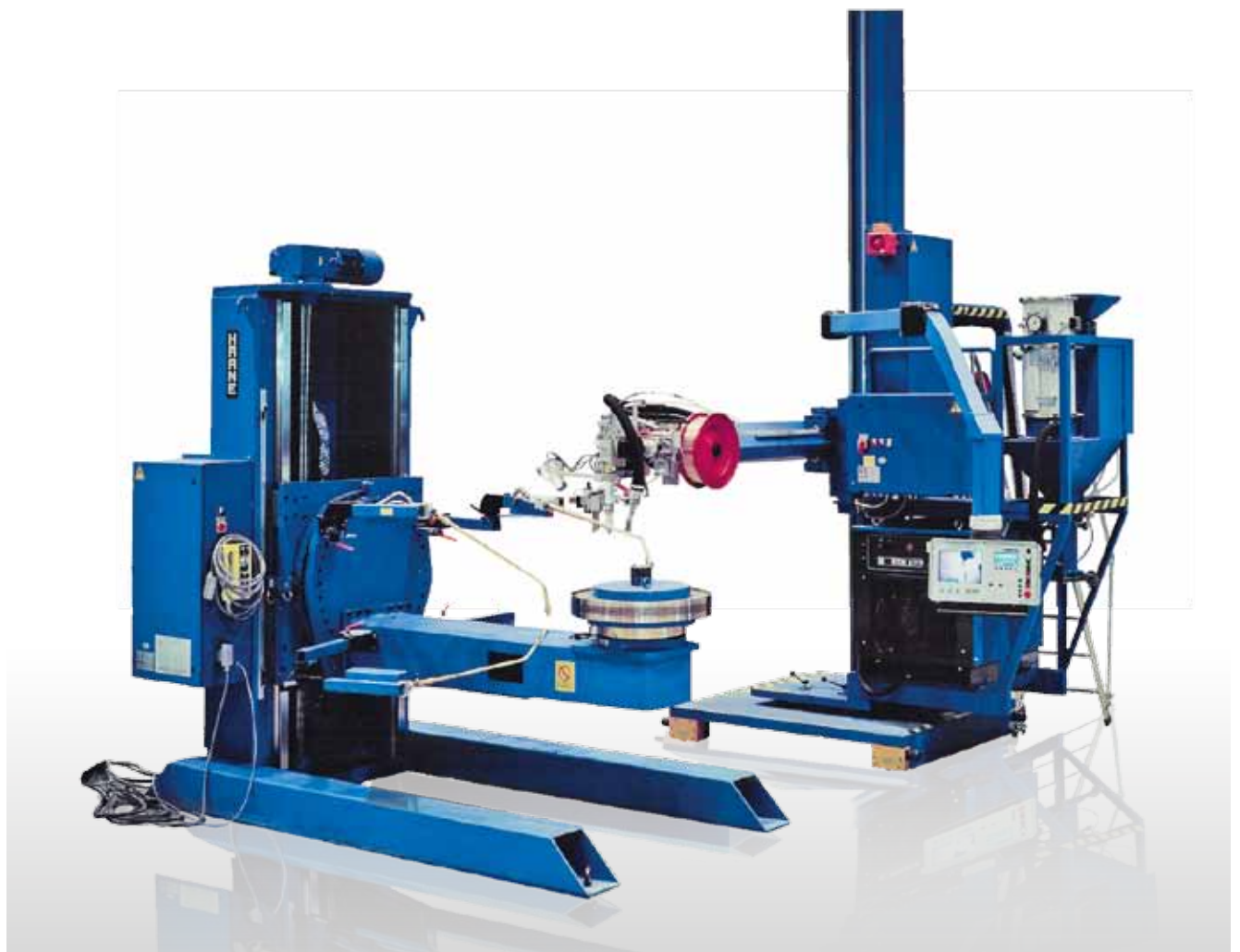
1. HANDLING MACHINES PRODUCTION SERIES BZ Single-column portal / manipulators



All devices are made on the basis of a large BZ modular system which has matured and continuously been refined over 40 years. Our components feature the high quality that is typical of series products. These devices provide decisive benefits in terms of performance, cost effectiveness and maintenance.

Requirements with regard to instrumentation are especially high in the case of submerged arc welding in order to realise low non-productive times.

The high welding performance of our submerged welding multiwire processes is therefore characterised by short production times. Thanks to a wide variety of exclusive details of our machines, you will be able to obtain extremely high levels of performance, low non-productive times and long operating times.





1.1. BENEFITS

- Rapid motion from 5m/min up to 40m/min for a decisive reduction of non-productive times.
- Travel - 12m, loads from 100 to 5000 kg.
- Easy operation of the axes for a very rapid positioning of the torch during set-up operation according to the reduction of non-productive times.
- High levels of security and availability of the device thanks to the exclusive use of standard and matured structural components of our BZ handling machines modular system.
- Exclusive use of leading-edge products as externally bought parts.
- High-quality automatic welding machines of state-of-the-art design including powerful, high-precision wire drive units and most advanced feed sources of electric power with reversing characteristic curve.
- User-friendly programming and archiving of all welding process data via CNC- welding process control.

1.2. ADDITIONAL BENEFITS

High precision, high stability and longevity thanks to:

- Precisely machined guides including screwed on and replaceable hardened guide.
- Hardened and ground, pre-stressed, free of play guide rollers.
- Generously dimensioned and ribbed cross slides made of GGG 40 nodular cast iron.
- High-grade AC servo drive including four-quadrant transistor converter, control range 1:1000, control accuracy 0.25%.
- Welding process control through CNC welding process control and state-of-the-art welding current sources.
- An absolutely reliable construction and design, tried and tested for many years.



1.3. SECURITY AND AVAILABILITY

High levels of security and availability of the device thanks to:

- Design acc. to UVV 18.3 lifting platforms.
- Stability acc. to DIN 15120.
- Electrical equipment acc. to VDE 0100 and 0113.
- CU-screening of nominal and actual value lines and protective circuits of all contactors.
- Actual value supervision and antilock system of all drive units.
- Installation of lines and hoses in stable cable chains with double-sided strain relief.
- Hardened pinions, toothed racks and guide rails.
- Maintenance-free AC servo drive units and guide rollers.
- Reliable spare parts delivery.

1.4. MODULAR DESIGN

All handling machines of the BZ production series can be installed as manipulator version.

The column and the boom are made of seamless rectangular tubes with precision-ground guide surfaces.

The cross slide as the central guide element is strongly ribbed and made of aluminium alloy or alternatively of GGG 40 nodular cast iron.

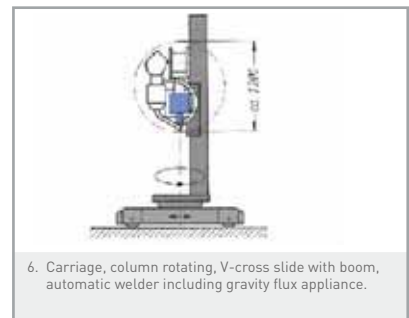
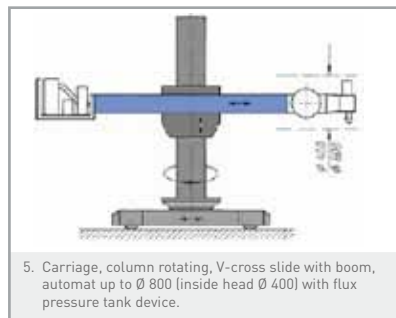
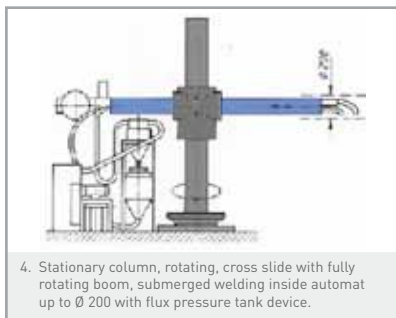
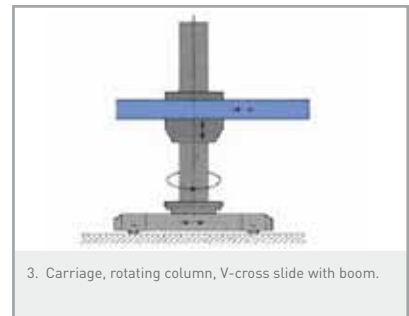
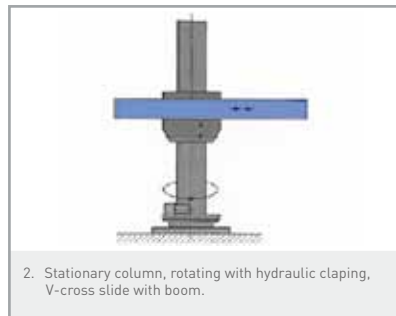
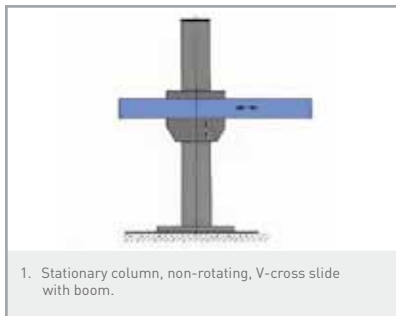
The guiding of the cross slides of the column and of the boom inside the slide is done by pre-stressed, hardened and ground rollers. The hoist and the boom are driven by servo back-gearred motors with hardened toothed racks.

The generous dimensioning of the cable conduits enables an easy installation of all control and welding lines.

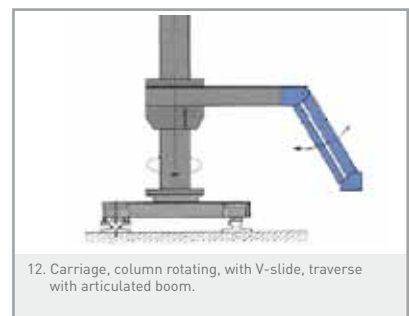
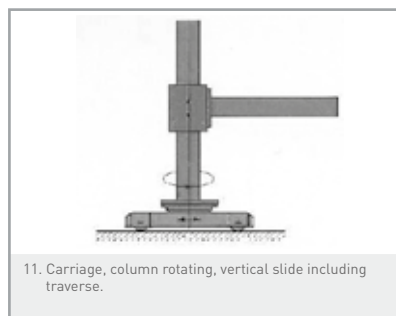
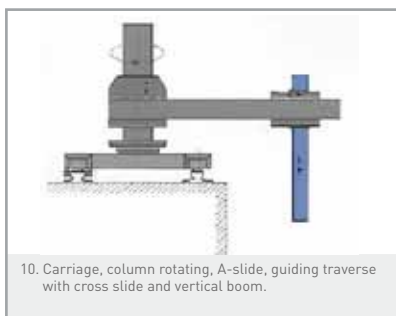
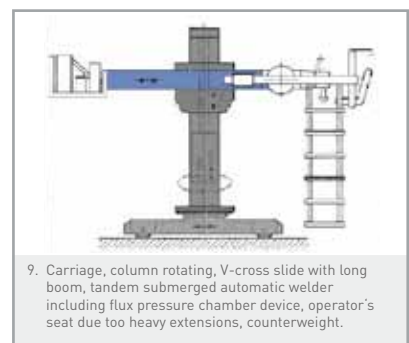
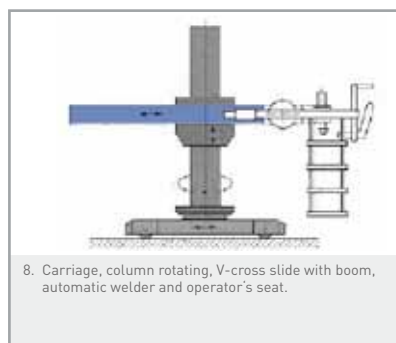
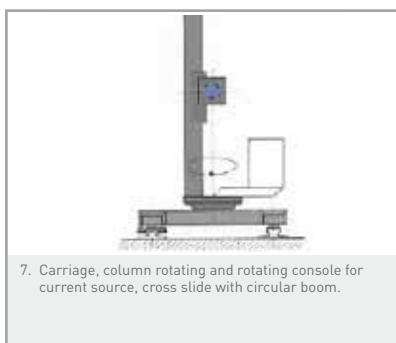
The BZ production series allows for an application-specific arrangement, e.g. as single-column portal.



1.5. OVERVIEW BZ MODULAR SYSTEM PART 1

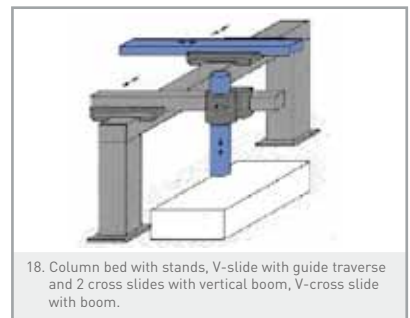
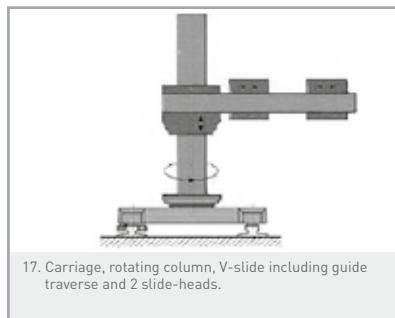
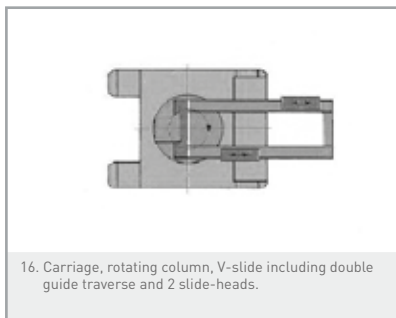
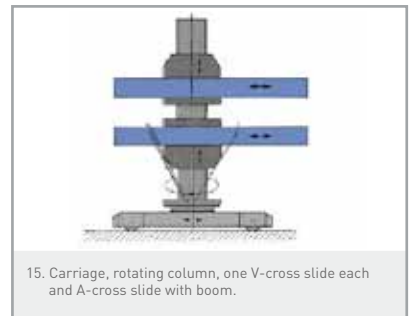
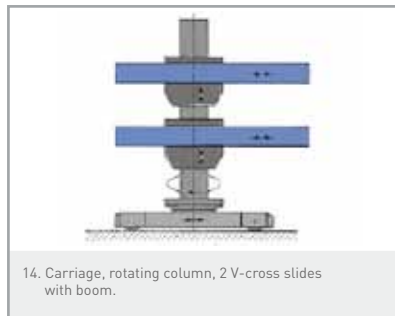
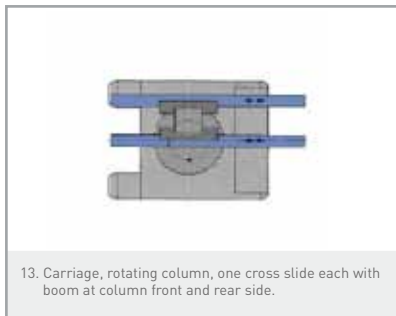


1.6. OVERVIEW MODULAR SYSTEM BZ PART 2

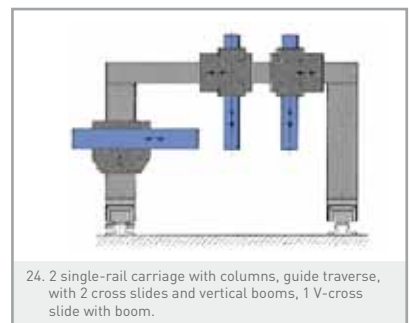
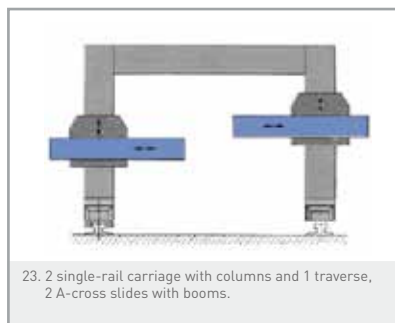
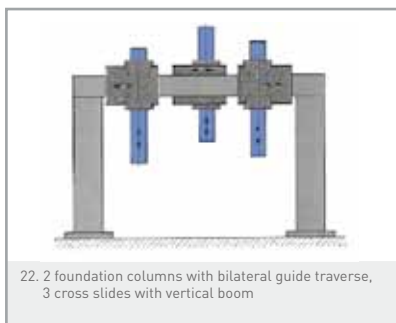
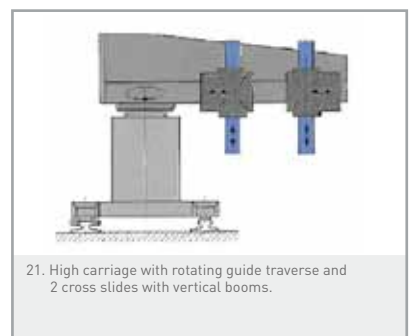
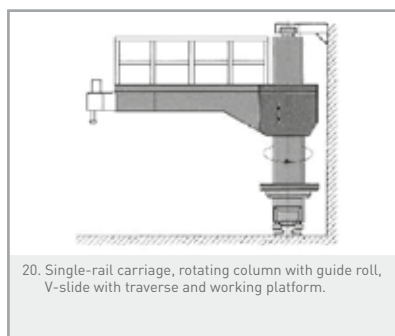
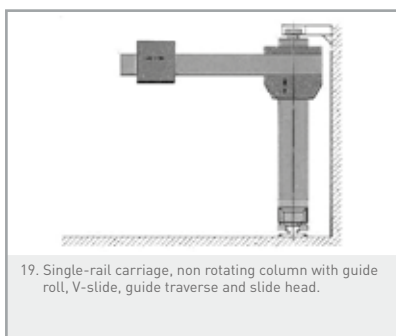




1.7. OVERVIEW MODULAR SYSTEM BZ PART 3



1.8. OVERVIEW MODULAR SYSTEM BZ PART 4





1.9. TECHNICAL DATA IN STANDARD CONSTRUCTION

		BZ 4	BZ 5	BZ 6	BZ 7	BZ 8
Carriage						
Gauge	mm	1000	1500	1500 or 2000	2000	2000
Wheel base	mm	1000	1500	1500 or 2000	2000	2500
Wheel diameter	mm	112	125	160	200	250
Rail width, adjustable from	mm	30 - 70	30 - 70	30 - 80	40 - 90	40 - 90
Creep speed adjustable & direct Controllable through feelers & sensors	mm/min	50 - 500	50 - 500	50 - 500	50 - 500	50 - 500
Feed continuously controllable	mm/min	50 - 2000	50 - 2000	50 - 2000	50 - 2000	50 - 2000
Control accuracy normal	%	1	1	1	1	1
Control accuracy upon request	%	0.1	0.1	0.1	0.1	0.1
Fast traverse optional	m/min	10 or 20	10 or 20	10 or 20	10 or 20	10 or 20
Earth return affecting the running rails for amp		1000 or 2000	1000 or 2000	1000 or 2000	1000 or 2000	2000
Columns						
Cross section without guides	mm	147x147x10	250x250x16	350x350x16	500x500x20x12	800x800
Column, rotating by	degree	370	370	370	370	370
Column bearing diameter	mm	520	850	1050	1200	1600
Autom. hydr. clamping, clamping power	N	60000	120000	120000	200000	200000
Creep speed adjustable & direct Controllable through feelers & sensors	mm/min	50 - 500	50 - 500	50 - 500	50 - 500	50 - 500
Continuously controllable feed unit upon request	mm/min	50 x 2000	50 x 2000	50 x 2000	50 x 2000	50 x 2000
Control accuracy	%	0.1	0.1	0.1	0.1	0.1
Optional fast traverse	m/min	5	5	10	10	10
* Specifications subject to alterations						

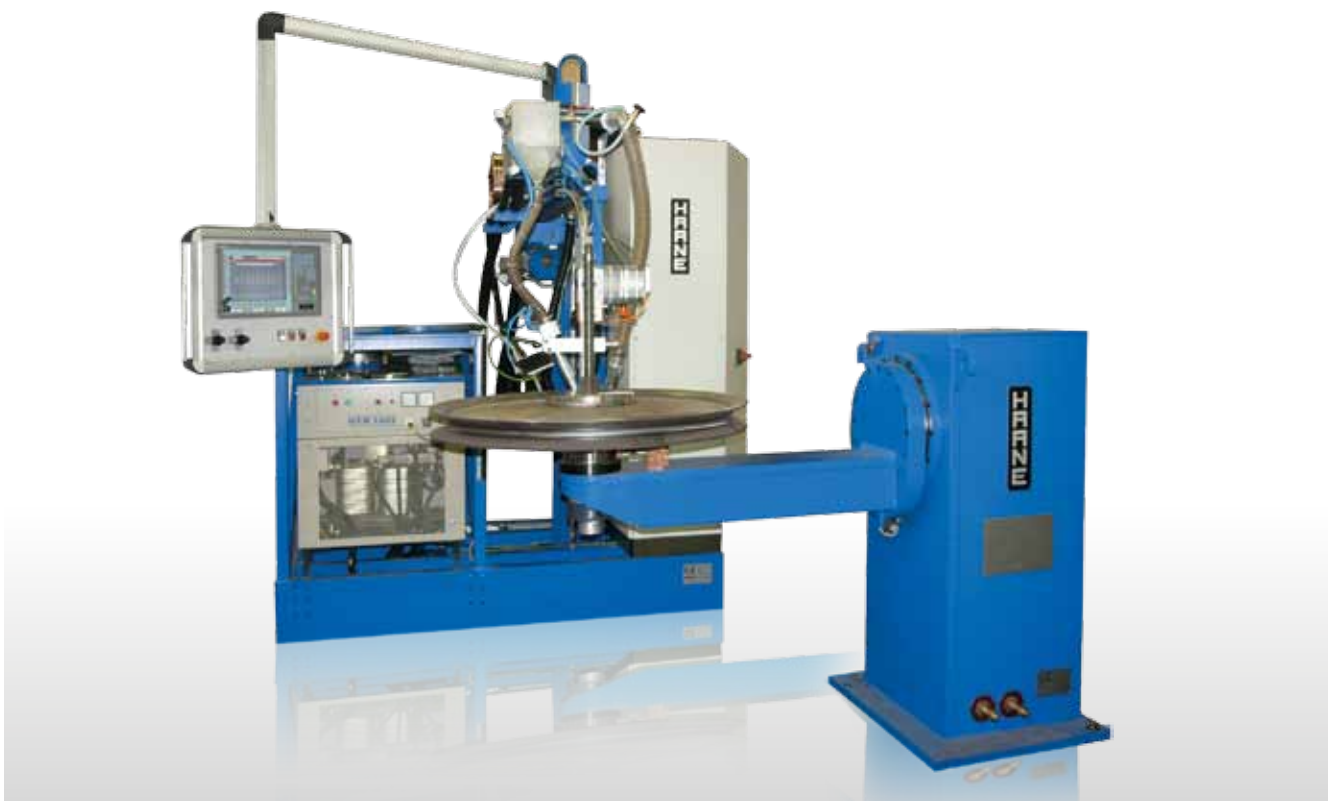


1.9. TECHNICAL DATA, CONT.

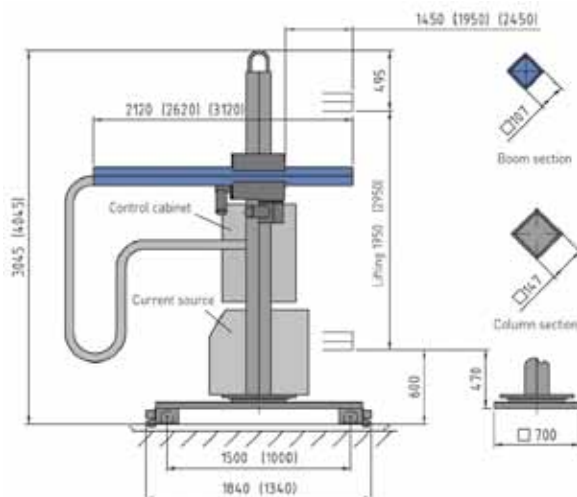
		BZ 4		BZ 5		BZ 6		BZ 7		BZ 8	
Boom											
Smallest weldable inner diameter	mm	upon request		upon request		upon request		upon request		upon request	
Boom feed way	min/max.	1450	2450	2300	3500	2500	4500	3000	5500	4000	8000
Boom load without counterweight per boom end	max. kg	50	50	200	200	400	400				
However, total boom load	max. kg	100	100	300	200	700	450				2500
Boom load with counterweight	max. kg					700	700	800	800		
However, total boom load	max. kg					1250	1000	1500	1000		
Creep speed adjustable & directly controllable through feelers & sensors	mm/min	50 - 500		50 - 500		50 - 500		50 - 500		50 - 500	
Feed continuously controllable	mm/min	50 - 2000		50 - 2000		50 - 2000		50 - 2000		50 - 2000	
Control accuracy normal	%	1		1		1		1		1	
Control accuracy upon request	%	0.1		0.1		0.1		0.1		0.1	
Fast traverse optional	m/min	5		5		10		10		10	
Approach dimensions											
		Carriage	stationary	Carriage	stationary	Carriage	stationary	Carriage	stationary	Carriage	stationary
Height to the top edge of the running rail or hall floor to the lower edge of the boom with V-slide	min. mm	600	470	670	500	890	720	1000	790	1300	
dto. with A slide	min. mm					545	375	640	430	940	
Fall in meters from the lower edge of the boom to the top edge of the column without counterweight	mm	495		415		490					800
as above, with counterweight	mm					630		800			
* Specifications subject to alterations.											



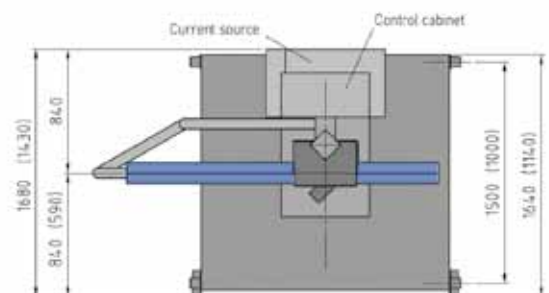
1.10.1. HANDLING MACHINE BZ4



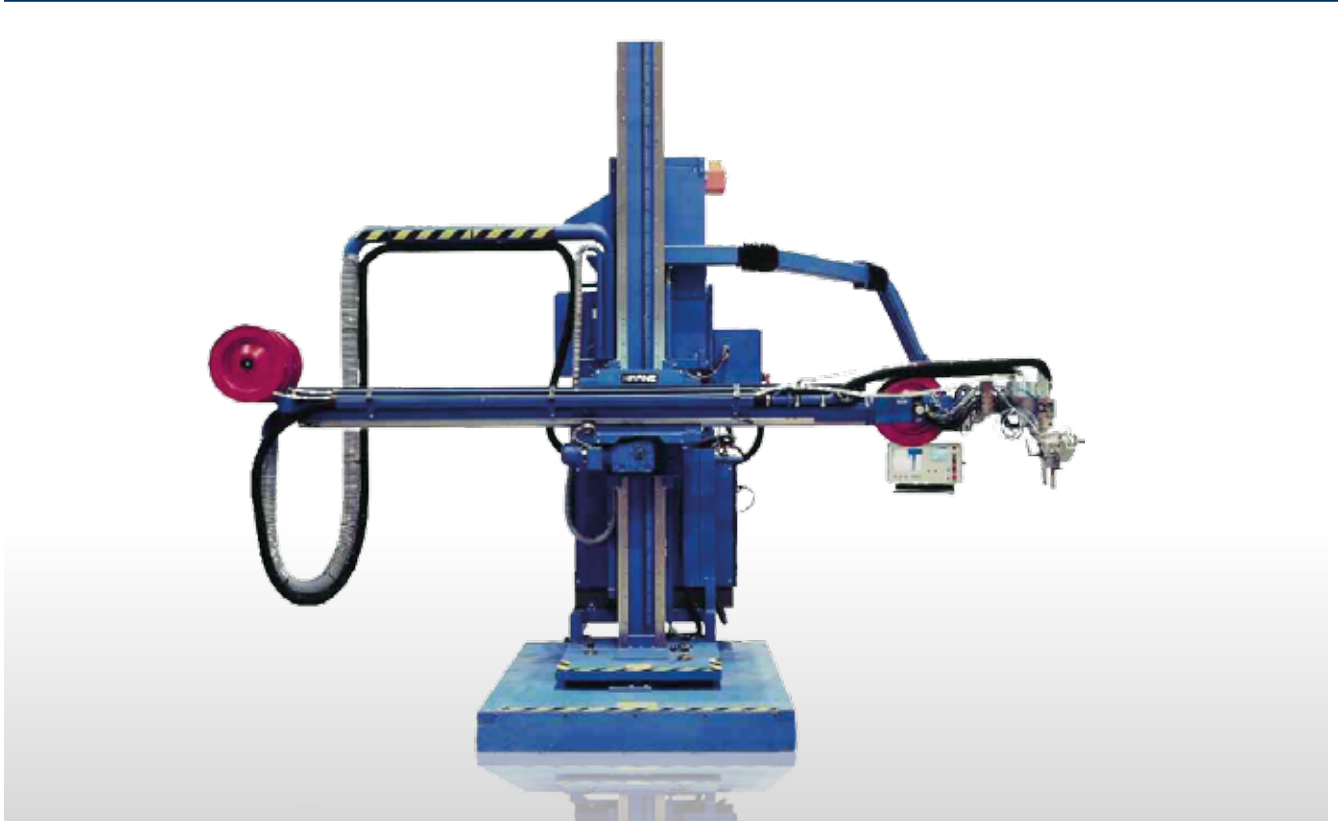
BZ4 Dimensions side view



BZ4 Dimensions top view

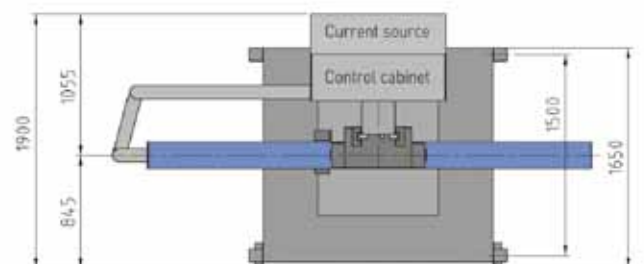
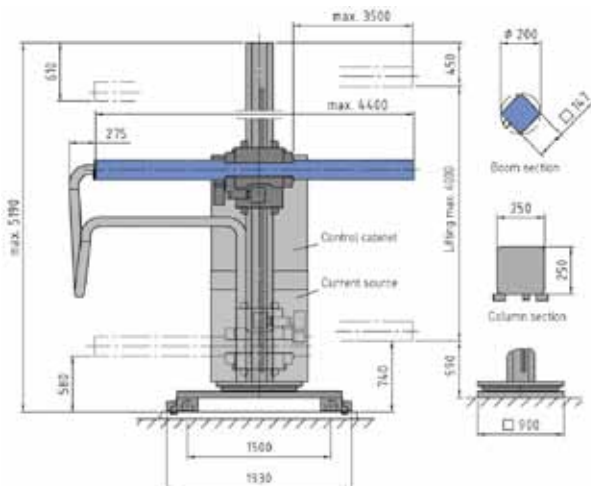


1.10.2. HANDLING MACHINE BZ5



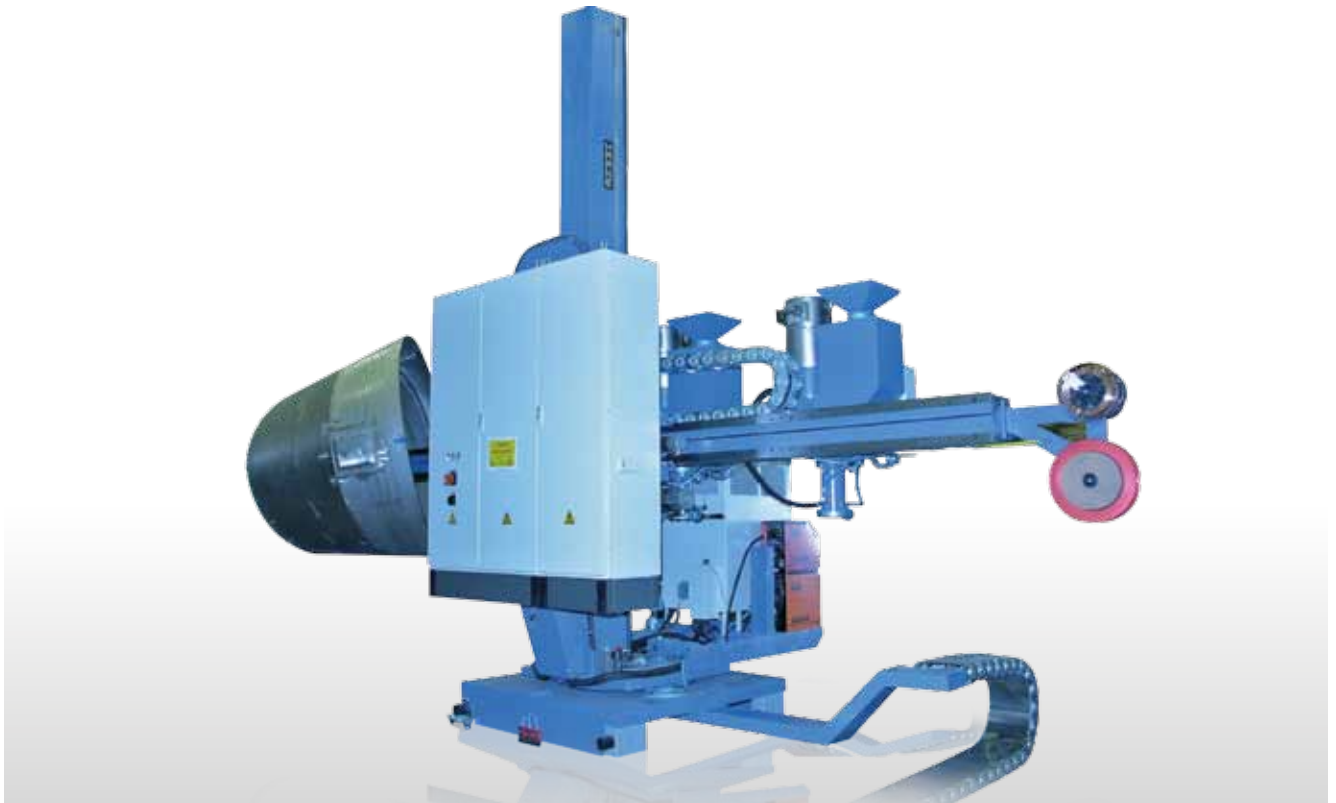
BZ5 Dimensions side view

BZ5 Dimensions top view

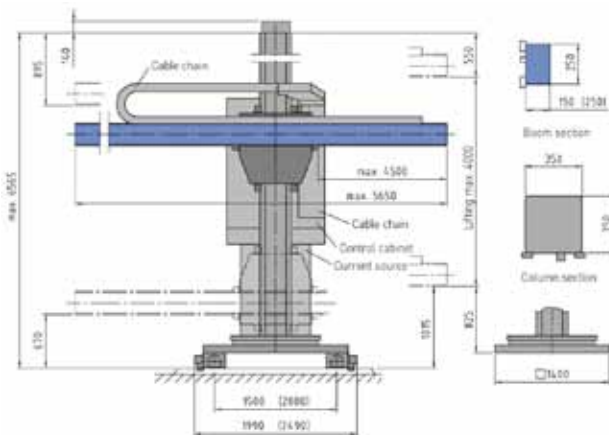




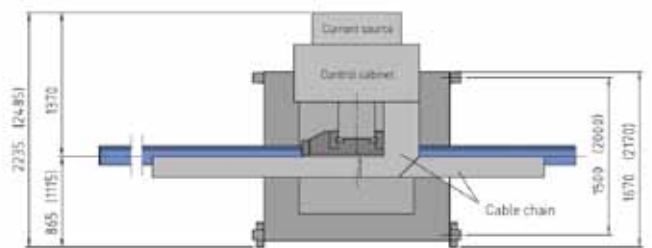
1.10.3. HANDLING MACHINE BZ6



BZ6 Dimensions side view

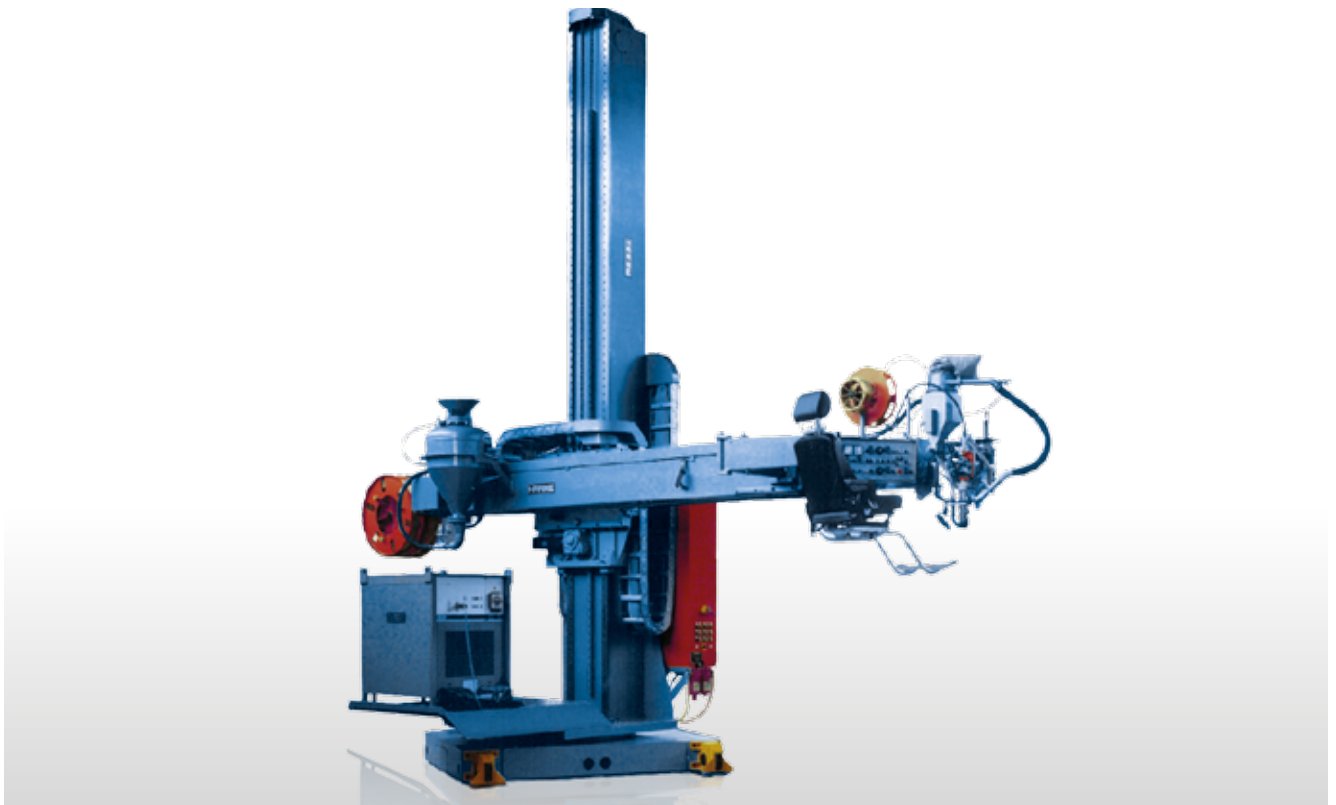


BZ6 Dimensions top view

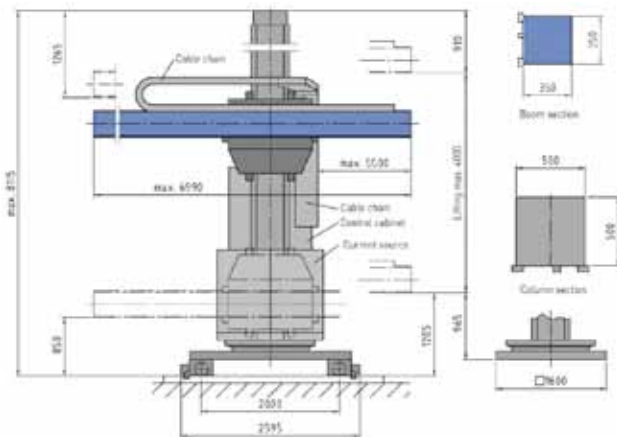




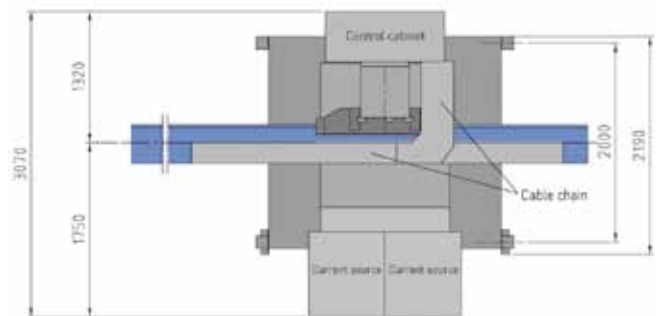
1.10.4. HANDLING MACHINE BZ7



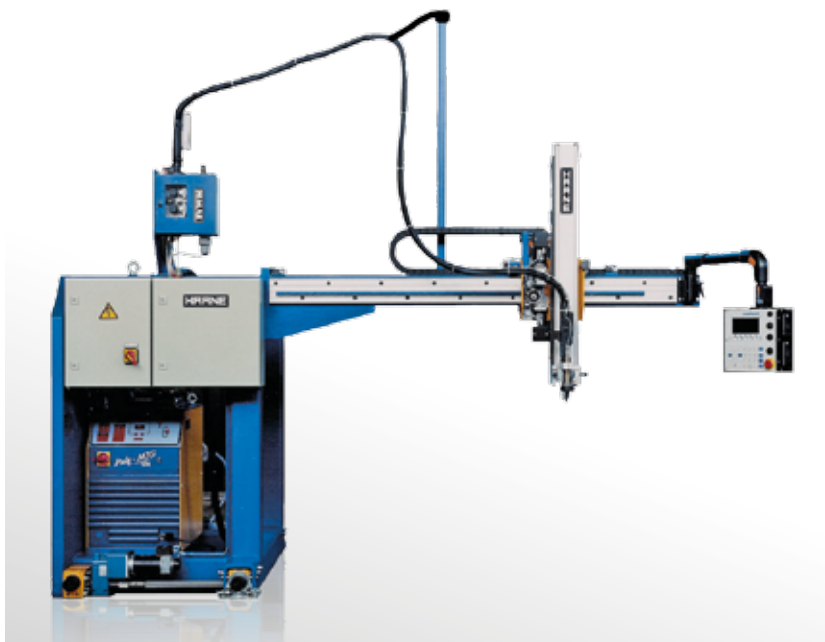
BZ7 Dimensions side view



BZ7 Dimensions top view



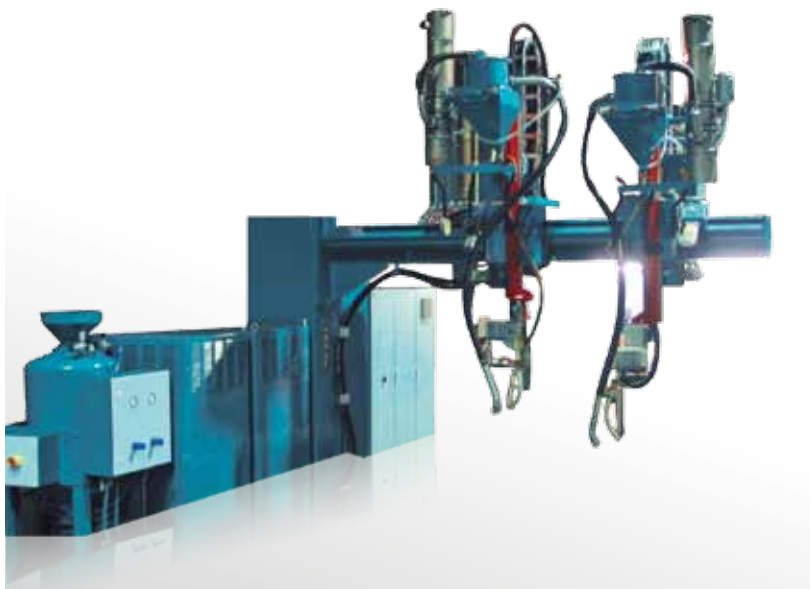
1.10.5. SINGLE-COLUMN PORTAL SYSTEM PRODUCTION SERIES BZ3



TECHNICAL DATA:

Setting range lifting:	750 mm
Setting range, crosswise:	1500 mm
Welding:	MIG / MAG
Current source:	Puls-Mig
max. current:	450 A
Control unit:	AWS 1000
Sensor:	Tactile

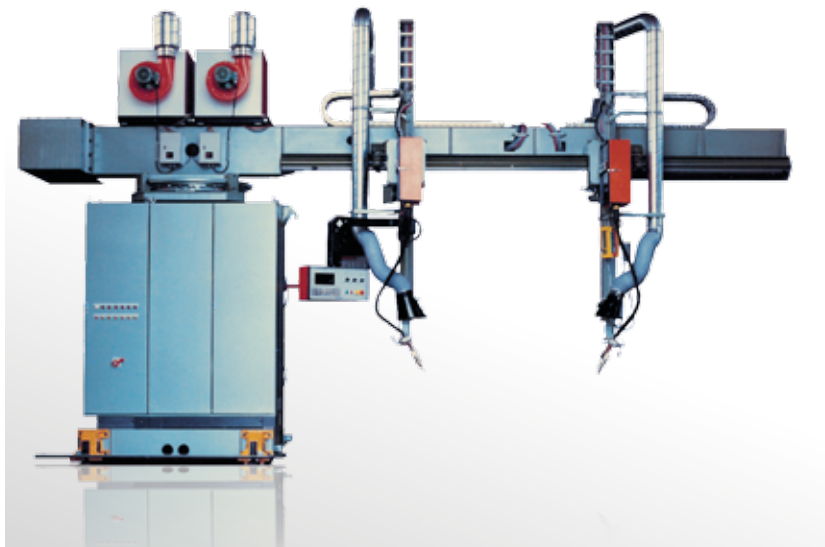
1.10.6. SINGLE-COLUMN PORTAL SYSTEM PRODUCTION SERIES BZ4 - SAW



TECHNICAL DATA:

Setting range lifting:	700 mm
Setting range, crosswise:	2000 mm
Welding head:	2 x SAW
Current source:	DC-1000
max. current:	2 x 1000 A
Flux supply:	Recycling-prinziple
Control unit:	AWS 287005
Sensor:	2 x tactile

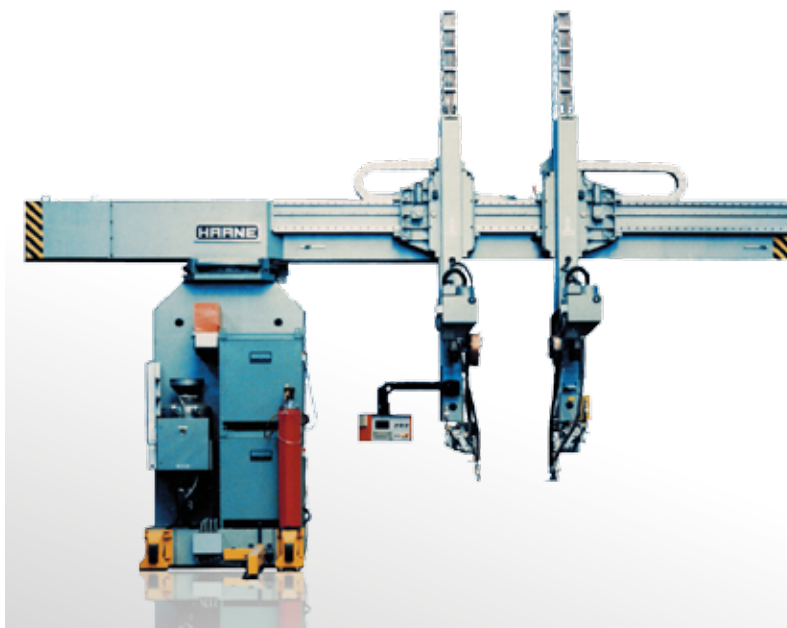
1.10.7. SINGLE-COLUMN PORTAL SYSTEM PRODUCTION SERIES BZ4



TECHNICAL DATA:

Setting range lifting:	1400 mm
Setting range, crosswise:	3500 mm
Welding:	MIG / MAG
max. current:	2 x 600 A
Control unit:	AWS 287005
Sensor:	2 x tactile

1.10.8. SINGLE-COLUMN PORTAL SYSTEM PRODUCTION SERIES BZ6 – SAW / MAG



TECHNICAL DATA:

Setting range lifting:	2500 mm
Setting range, crosswise:	4000 mm
Welding head:	SAW / MAG
Current source:	DC-1000
max. current:	2 x 1000 A
Flux supply:	Pressure tank principle
Control unit:	AWS 287005
Sensor:	2 x tactile

1.2. CNC - WELDING PROCESS CONTROL SYSTEMS



- Tractor control
CNC AWS 1000 / 1200
- Welding process control
CNC AWS 287006
- Turntable control
CNC AWS 287008

1.2.1. CNC AWS 1000 / 1200 – TRACTOR CONTROL SYSTEM

The CNC AWS 1000 is a compact and easy-to-use control unit for welding tractors and small manipulators with an integrated welding system based on Siemens components.

The welding system is operated via the operator panel of the AWS control system 1000. The panel is provided with a foil keyboard with illuminated keys. Unlike in the case of conventional CNC and robot control systems which are programmed acc. to DIN, no programming skills are required for operation. Operators will be guided through prepared screen masks, menus and symbols. Input of process parameters is exclusively done in charts in the current input mask on the screen. This operating structure is the same for all welding methods.

Disturbances of the process such as troubles concerning the wire or the feed axis will be displayed as texts. In addition, the welding process will be interrupted, if required.

The control unit supervises the axes of the tractor or manipulator. Using the cursor keys you can also operate the axes manually for set-up purposes. If the device is equipped with a tactile or laser-guided sensor, the sensor operation of the axes is also possible.

The weld control current source and the feed of the wire drive unit are controlled by the AWS 1000. However, this requires a suitable interface at the weld control current source.



1.2.2. OPERATOR PANEL AWS 1000



1.2.3. OPERATOR PANEL BZ5 WITH AWS 1200 AND CAMERA MONITOR



1.2.4. CNC AWS 287006 – WELDING PROCESS CONTROL SYSTEM



The AWS 287006 CNC welding process control unit is the central element of a device for the mechanised or automated welding.

This control unit is based on the Siemens S7 series control unit. In an automatic welding machine it allows the simultaneous control of the welding process, the course of the process, the entire handling equipment required (manipulators, rotary table, roller stand, etc.) as well as the peripheral functions and devices such as sensors used for the guiding of the welding heads, inert gas, cooling water, flux supply, pre-heating of the parts, etc.. The CNC manages all parameters required for welding and for the movement of the parts and the torch.

The modular hardware and software structure allows for a random combination of welding process and handling equipment. Special software modules have been developed for the various welding methods to be applied (SAW, GMAW, TIG, plasma, etc.). These method-specific software modules include the operational level on the screen, the supply of the welding current source with parameters as well as the run-off control, screen visualisation of actual data and the monitoring of the process. The modular structure makes it also possible to integrate several processes in one welding system. The processes can be selected directly at the screen and according to the task to perform.

The operation of the complete welding system is effected by a central screen-operator panel. Thus, the user will be confronted with just one operational level. The panel is equipped with keys which are illuminated over their whole surface (system of protection IP54) with pressure point and exchangeable symbols.

Unlike in the case of conventional CNC and robot control systems which are programmed acc. to DIN, no programming skills are required for operation. Operators will be guided through prepared screen masks, menus and symbols. Input of process parameters is exclusively done in charts in the current input mask on the screen. The input fields of the charts are provided with relevant text comments regarding the parameters to be input. This operating structure is the same for all welding methods.

In the case of complex welding methods requiring various input parameters, such as the gas metal-arc welding-pulsed current arc welding and the additionally required parameters for the pulsing of the arc, the operator will also be supported by an integrated expert system. This expert system includes complete sets of parameters for the correct adjustment of the arc for pre-defined welding tasks.

Such a prepared set of parameters can be called via keypress and be transferred to the current processing chart.



A set of parameters prepared for a certain welding task can be stored under a certain name and be recalled at a later point of time. Optionally, the storing of such parameters on an external data medium (memory-card, memory-stick) is also possible.

During the course of the process all relevant data of the welding process (voltage across the arc, arc current, etc.) and of the handling machine (positions and travelling speed of the axes, etc.) will be displayed. Using the +/- keys below the screen, whose allocations to the parameter are represented as symbols on the screen, the operator may directly influence the most important welding process parameters during the run-off control.

The range of adjustment where changes may be made during the welding process, is defined in a dedicated chart. Access to that chart can be prevented by using a special coding.

Disturbances of the process, such as lack of flux during submerged arc welding, lacking protection gas during gas metal-arc welding, troubles with regard to the drive of the wire or the feed axis will be displayed in clear text. In addition, the welding process will be interrupted depending on the fault classification.

2. TILT AND TURN TABLES



200 tons tilt and turn table

- **HDL** Hollow shaft tilt and turn table, 125 – 500 kg
- **VDL** Height-adjustable hollow shaft tilt and turn table, 125 – 500 kg
- **HTZ** Tilt and turn table, 1000 – 3200 kg
- **HVZ** Height-adjustable tilt and turn table, 1000 – 3200 kg
- **HDN** Tilt and turn table, 5 – 50 t
- **HDV** Height-adjustable tilt and turn table, 5 – 25 t
- **DKT** Tilt and turn table, 200 t



2.1. HDL / VDL PRODUCTION SERIES

- Tilt drive with HDL and VDL 125 continuously and manually via an adjustable self-locking worm gear.
- HDL and VDL 500 with motor tilt drive for a 270° tilting angle through high-performance spur-gear drive with three-phase brake motor installed in a protected position in the column.
- Continuous rotary drive for all types through high-end DC motor with integrated DC tachometer generator.
- Control through four-quadrant transistor converter, control range 1:100, control accuracy 1%
- Height adjustment with VDL 125 via hand wheel and with VDL 250 and 500 via motor unit.

Tilt and turn tables		HDL / VDL 125	HDL / VDL 250	HDL / VDL 500
Carrying force	kg	125	250	500
Speed range	r.p.m.	0.08 – 8.0	0.033 - 3.3	0.028 - 2.8
Control range		1:100	1:100	1:100
Control accuracy	%	1	1	1
Torque	Nm	125	250	500
Speed range (OPTION)	r.p.m.	0.125 - 25	0.05 - 10	0.04 - 8
Control range (OPTION)		1:200	1:200	1:200
Control accuracy (OPTION)	%	1	1	1
Torque (OPTION)	Nm	60	120	220
Max. possible speed range	r.p.m.	80	16	13
Tilting moment	Nm	375	1080	2160
Tilting angle	degree	270°	270°	270°
Tilting time for 90°	sec.	Hand	14	15
Welding current transfer	Amp.	500	500	500
Mains voltage	Volt	230	400	400
Self-centring chuck ø	mm	250	315	400
Chucking thread no. x ø		14 x M12	14 x M16	14 x M16
Diameter of hollow shaft	mm	80	103	136
Table board diameter	mm	350	500	600
Table board thickness	mm	31	35	40
Turning diameter 90°	mm	510	1420	1420
Weight of the machine approx.	kg	180	450	650

* Specifications subject to alterations

2.1.1. HDL / VDL 125

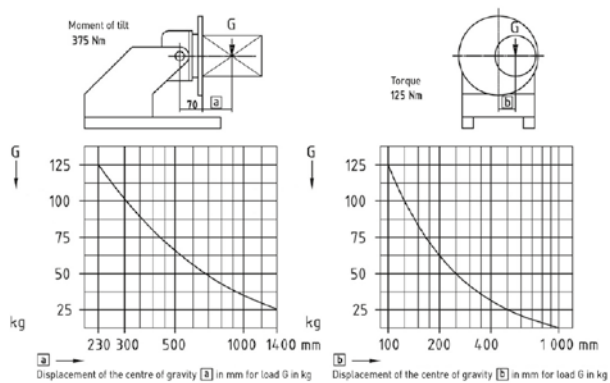


Tilt and turn table HDL 125

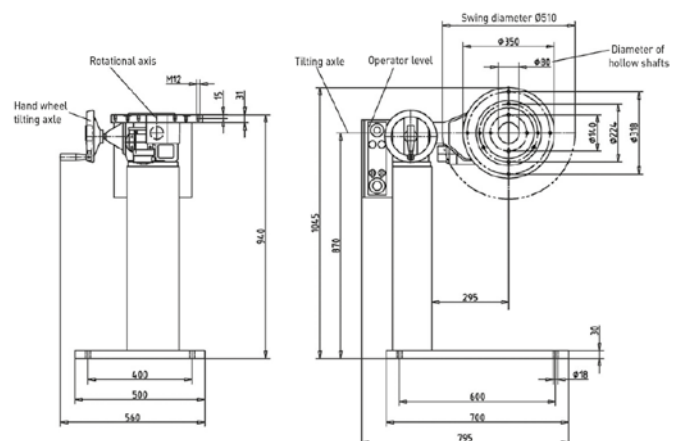


Tilt and turn table VDL 125

Load diagram



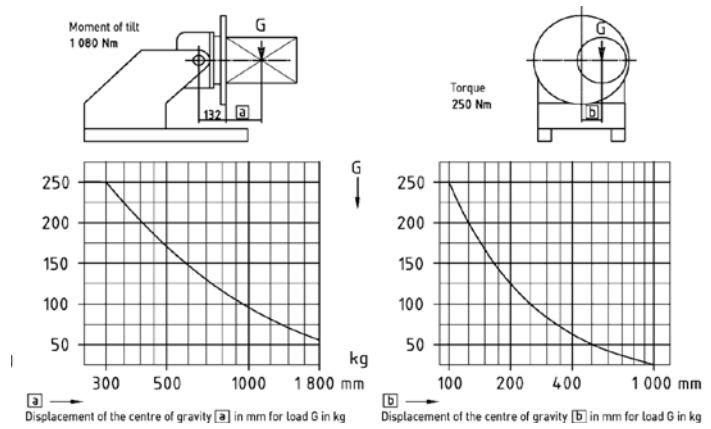
Dimensions HDL 125



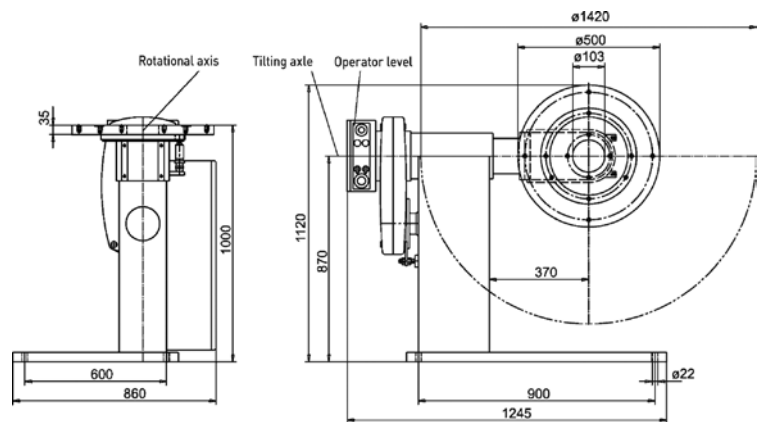
2.1.2. HDL / VDL 250



Load diagram



Dimensions HDL 250



2.1.3. HDL / VDL 500

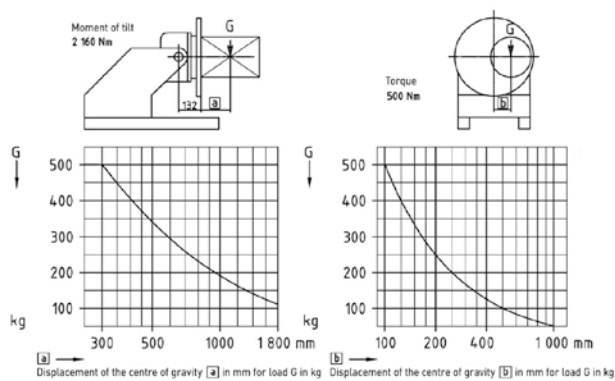


Tilt and turn table HDL 500

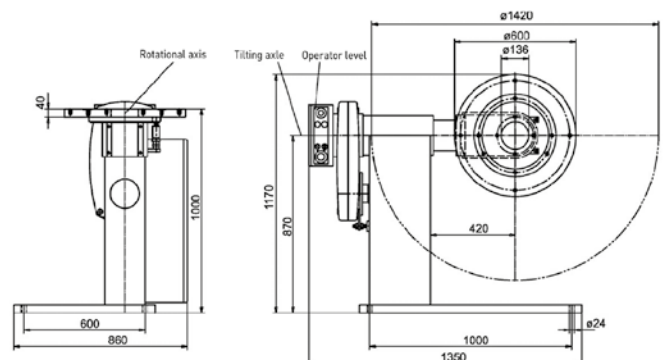


Tilt and turn table VDL 500

Load diagram



Dimensions HDL 500





2.1.4. PRODUCTION SERIES HDL / VDL OPTIONS

- Speed range II = higher speeds
- Rotational speed calculator
Automatic adjustment of correct speed following digital pre-selection of workpiece diameter from 1 to 1000 mm and a welding speed of 1 to 1000 mm/min. Adjustment of \varnothing in mm and v in mm/min.
- Additional remote control device for „left-off-right“, optional hand control device or foot actuated rocker switch.
- Centrally tensioned, self-centring chuck including one set each of inward and outward graded clamping jaw with extended chuck key.
 - \varnothing 250 mm with 80 mm passage for HDL / VDL 125
 - \varnothing 315 mm with 103 mm passage for HDL / VDL 250
 - \varnothing 400 mm with 136 mm passage for HDL / VDL 500
- Hollow shaft with 304 mm diameter for HDL or VDL 500



2.2. PRODUCTION SERIES HTZ / HVZ

- Rotary drive via three-phase current motor with separate fan and posistor protection.
- Continuous regulation through frequency converter from 0.05 to 1.0 r.p.m..
- Tilt drive through toothed quadrant and spur-gear motor.

Tilt and turn tables		HTZ / HVZ 1000	HTZ / HVZ 2000	HTZ / HVZ 3200
Carrying force	kg	1000	2000	3200
Speed range	r.p.m.	0.05-1.0	0.05-1.0	0.05-1.0
Control range		1:20	1:20	1:20
Torque with 1 rotary drive	Nm	1000	2000	3200
Torque with 2 rotary drives	Nm	2000	4000	6400
Speed range (OPTION)	r.p.m.	0.0015 - 1.5	0.0015 - 1.5	0.0015 - 1.5
Control range (OPTION)		1:1000	1:1000	1:1000
Control accuracy (OPTION)	%	0.25	0.25	0.25
Tilting moment	Nm	4300	10000	16640
Tilting angle	degree	135	135	135
Tilting time for 90°	sec.			
Welding current transfer	Amp.	1000	1000	1000
Mains voltage	Volt	400	400	400
Current consumption (fuse protection)	Amp.	16	16	20
Weight of the device approx.	kg	1200	1300	1800
* Specifications subject to alterations				



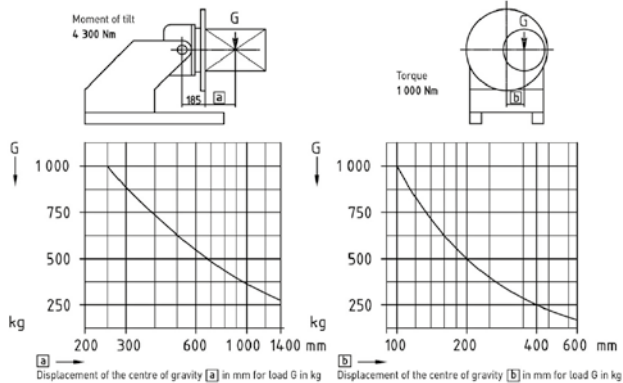
2.2.1. HTZ / HVZ 1000



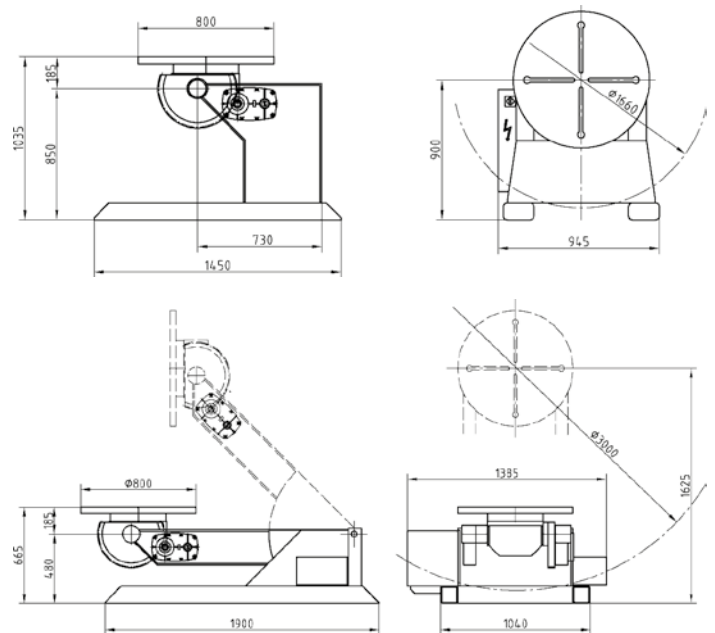
Tilt and turn table **HTZ 1000**

Tilt and turn table **HVZ 1000**

Load diagram



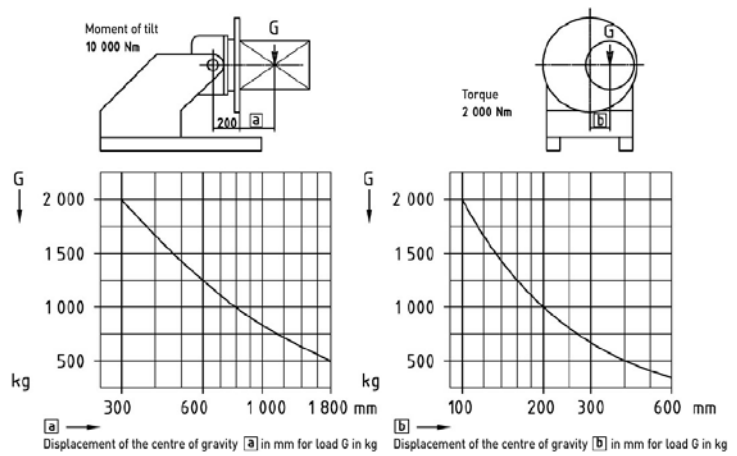
Dimensions





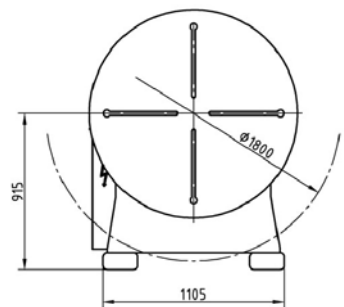
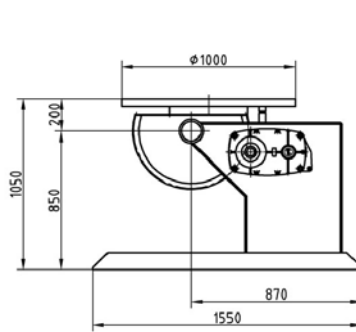
2.2.2. HTZ 2000 / HVZ 2000

Load diagram

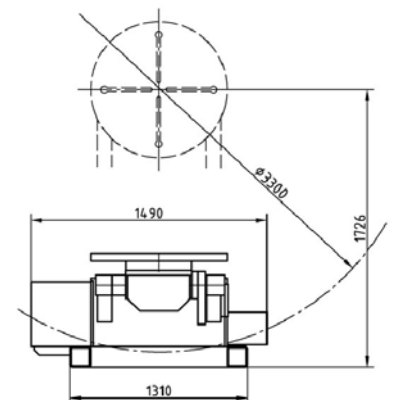
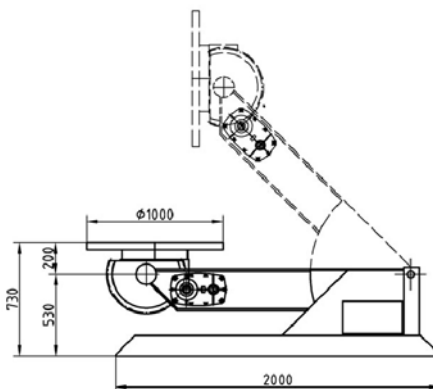


Dimensions

HTZ 2000



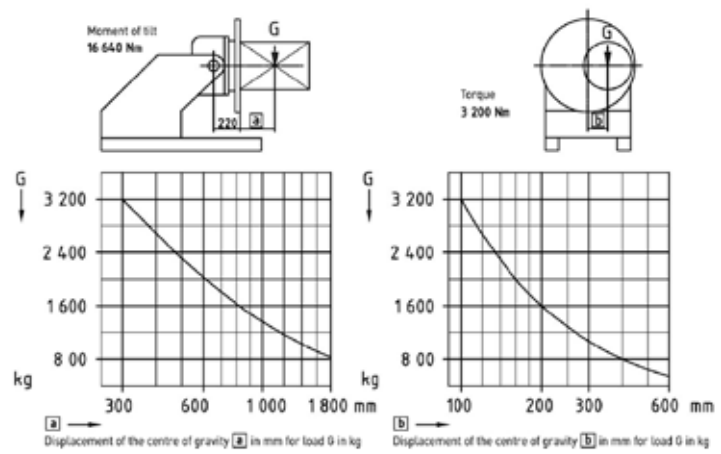
HVZ 2000



2.2.3. HTZ 3200 / HVZ 3200

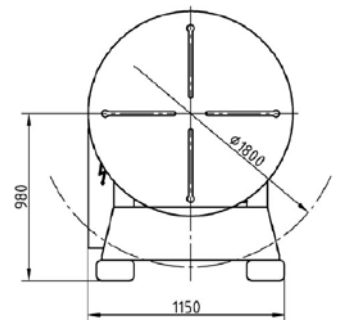
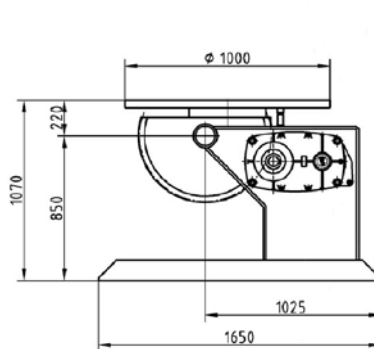


Load diagram

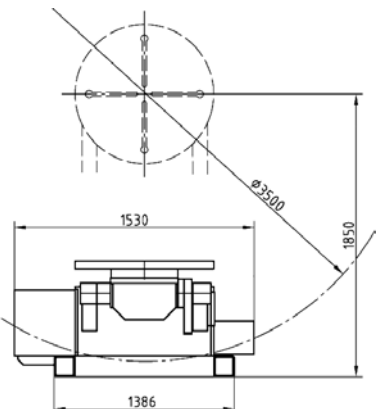
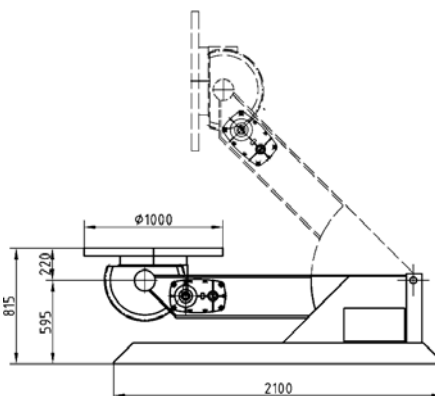


Dimensions

HTZ 3200



HVZ 3200



2.2.4. PRODUCTION SERIES HTZ / HVZ OPTIONS



- Rotary drive via AC servo motor and regulation via transistor converter for a control range of 1:1000 and control accuracy of 0.25 % at speeds of 0.0015 to 1.5 r.p.m.
- Rotational speed calculator
Automatic adjustment of the correct speed following digital pre-selection of the workpiece diameter from 1 to 5000 mm and speed of welding from 1 to 1000 mm/min.
adjustment of \varnothing in mm and in mm/min.
- Foot actuated switch turning „Left-Off-Right“ including protection hood



2.3. HTN / HDV PRODUCTION SERIES

- Completely operational with welding current transfer 1000 A.
- Mains cable, 7 m long, with remote control at the control cabinet; pluggable with 7 m long control cable.
- Table top in play-free pre-tensioned ball bearing slewing rim including precise and quenched and tempered internal gear
- Rotary drive through three-phase current motor with separate fan and posistor protection.
- Regulation through frequency converter.
- Continuous table top speed from 0.01 to 1.0 r.p.m.

Tilt and turn table		HDN / HDV 5	HDN / HDV 10	HDN / HDV 15	HDN / HDV 25
Carrying force	kg	5000	10000	15000	25000
Speed range	r.p.m.	0.001 - 1.0	0.001 - 1.0	0.001 - 1.0	0.001 - 1.0
Control range	1:1000	1:1000	1:1000	1:1000	
Control accuracy	%	0.25	0.25	0.25	0.25
Torque with 1 rotary drive	Nm	5000	10000	17250	26000
Torque with 2 rotary drives	Nm	10000	20000	34500	52000
Tilting moment	Nm	31750	76000	135000	241250
Tilting angle	degree	135	135	135	135
Tilting time for 90°	sec.	29	51	64	64
Table top diameter	mm	1000,1200	1200,1500	1750,2000	2000,2500
Welding current transfer	Amp.	1200	1200	1200	1200
Mains voltage	Volt	400	400	400	400
Current consumption (fuse protection)	Amp.	16	32	32	32
Weight of the device approx.	kg	1850/3000	3150/4900	5800/9500	10000/16000
* Specifications subject to alterations					

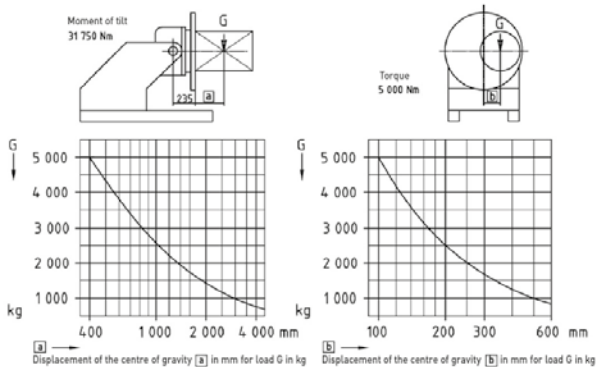
2.3.1. HDN / HDV 5 X 400



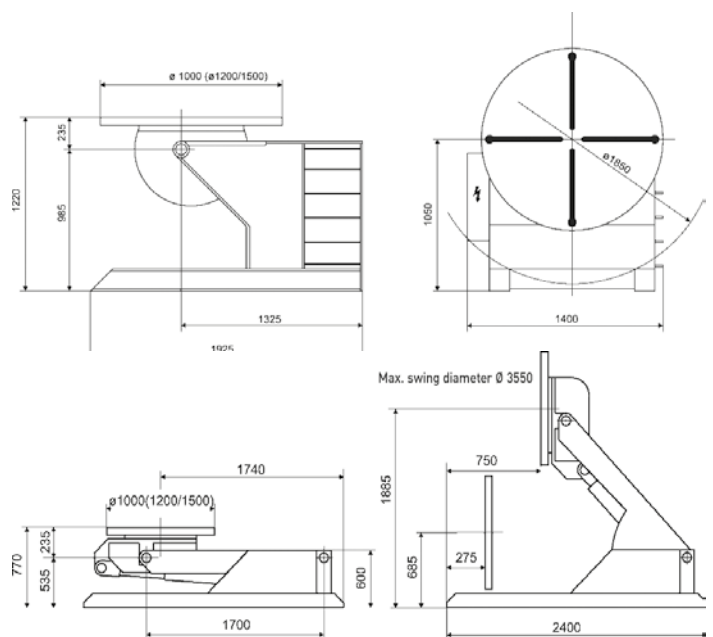
Tilt and turn table HDN 5 x 400

Tilt and turn table HDV 5 x 400

Load diagram



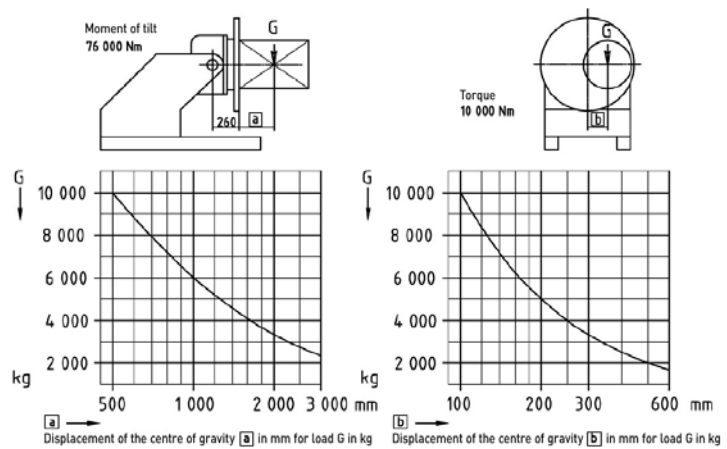
Dimensions





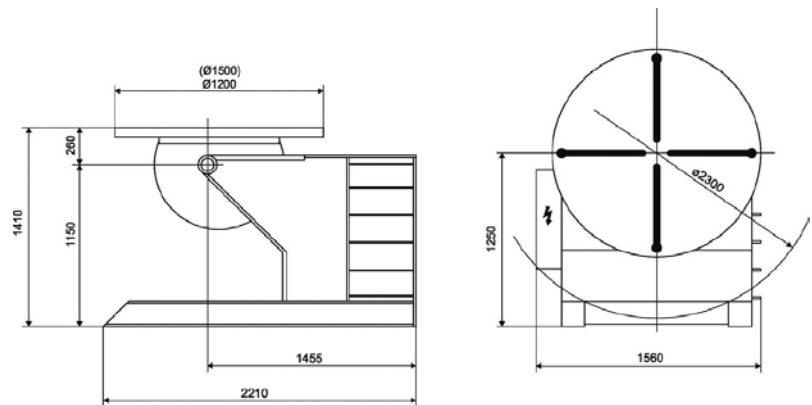
2.3.2. HDN / HDV 10 X 500

Load diagram

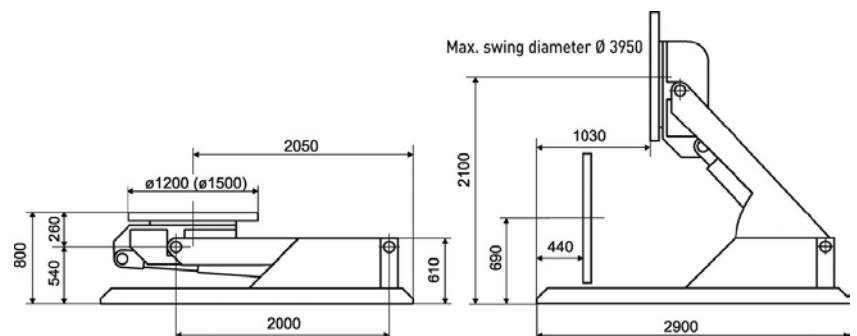


Dimensions

HDN 10 x 500



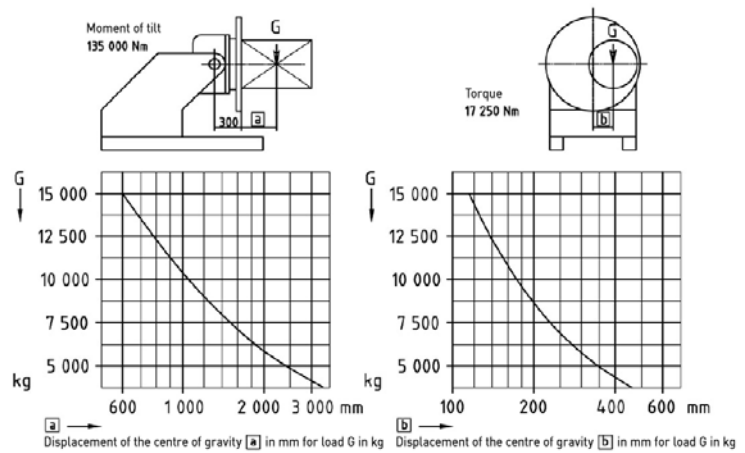
HDV 10 x 500



2.3.3. HDN / HDV 15 X 600

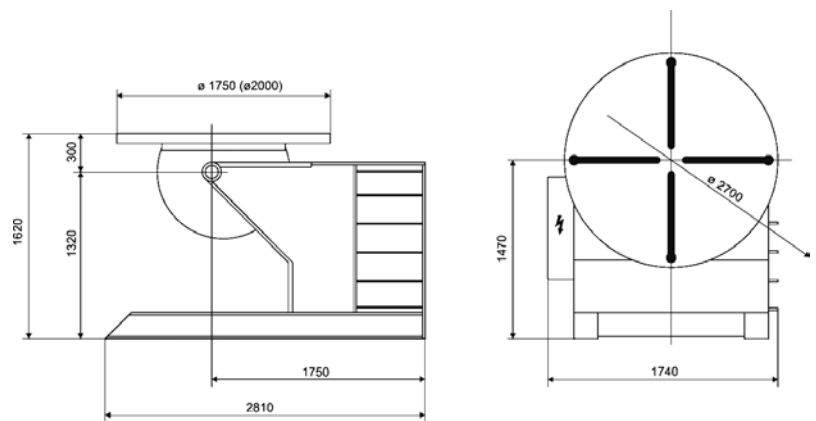


Load diagram

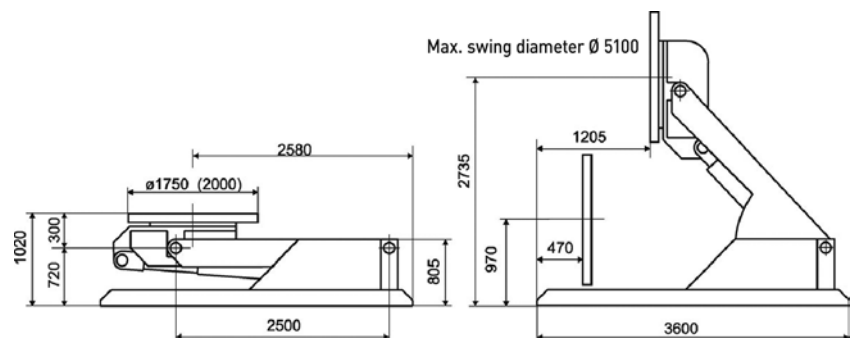


Dimensions

HDN 15 x 600



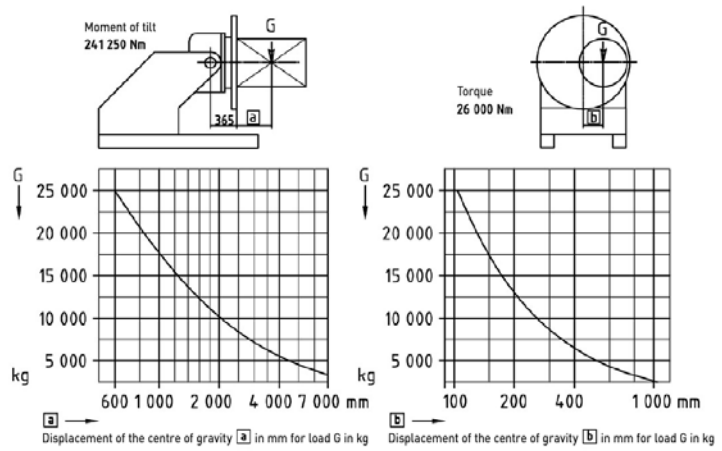
HDV 15 x 600



2.3.4. HDN / HDV 25 X 600

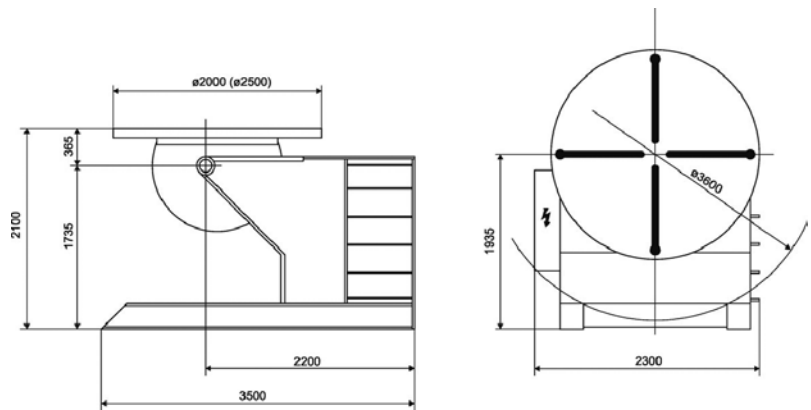


Load diagram

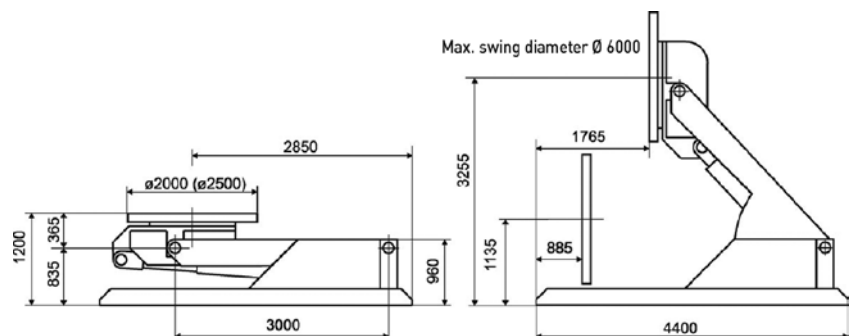


Dimensions

HDN 25 x 600



HDV 25 x 600





2.4. SPECIAL DESIGNS

2.4.1. HDN 50 X 700



Tilt and turn table		HDN 50 x 700
Carrying force	kg	50000
Speed range	r.p.m.	0.0045 - 0.9
Control range		1 : 200
Control accuracy	%	1
Torque with 1 rotary drive	Nm	45000
Torque with 2 rotary drives	Nm	90000
Tilting moment	Nm	610000
Tilting angle	degree	135
Tilting time for 90°	sec.	120
Table top diameter	mm	6000
Welding current transfer	Amp.	1200
Mains voltage	Volt	400
Current consumption (fuse protection)	Amp.	80
Weight of the device approx.	kg	42500

* Specifications subject to alterations



2.4.2. DKT 200



Tilt and turn table		DKT 200
Carrying force	t	200
Speed range	r.p.m.	0.0006 - 0.6
Control range		1 : 1000
Control accuracy	%	0.25
Torque with 1 rotary drive	kNm	220
Torque with 2 rotary drives	kNm	440
Tilting moment	kNm	8800
Tilting angle	degree	270
Tilting time for 90°	sec.	75
Table top diameter	mm	6000
Welding current transfer	Amp.	2500
Mains voltage	Volt	3 x 400
Current consumption (fuse protection)	Amp.	100
Weight of the device approx.	t	120

* Specifications subject to alterations

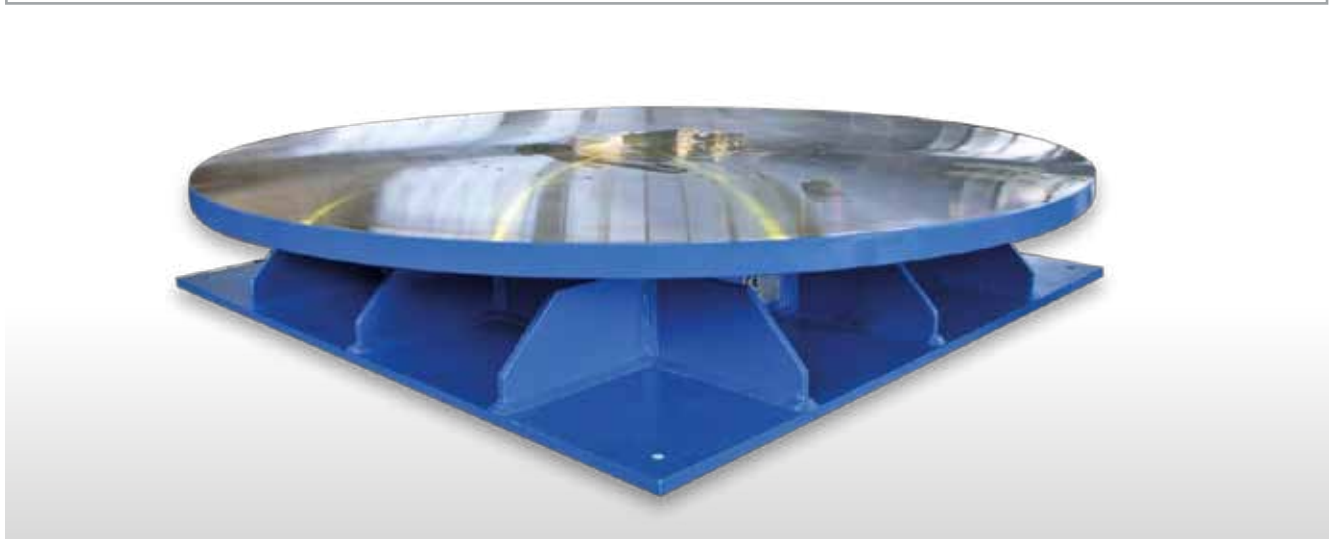


3. PRODUCTION SERIES HTS

- Completely operational with welding current transfer 1000 A.
- Mains cable, 7 m long, with remote control at the control cabinet; pluggable with 7 m long control cable.
- Table top in play-free pre-tensioned ball bearing slewing rim with precise and quenched internal gear.
- Rotary drive through three-phase current motor with separate fan and posistor protection.
- Regulation through frequency converter.
- Tabletop speed, continuously from 0.02 to 1.0 r.p.m..

Flat turntables		HTS 20 x 4500	HTS 40 x 4500	HTS 60 x 4500
Carrying force	kg	20000	40000	60000
Speed range	r.p.m..	0.02 – 1.0	0.016 – 0.8	0.016 – 0.8
Control range		1:50	1:50	1:50
Control accuracy	%	2	2	2
Torque max.	Nm	8000	20000	20000
Total table top height approx.	mm	70	250	250
Welding current transfer	Amp.	1000	1000	1000
Tot. overall height approx.	mm	420	650	670
Column base surface	mm	2000x2000	3000 x 3000	3000 x 3000
Weight of the device approx.	kg	4750	11000	15000

* Specifications subject to alterations



3.1. HTS 80 X 8000 SPECIAL DESIGN



Flat turntables		HTS 80 x 8000
Carrying force	kg	80000
Speed range	r.p.m.	0.02 – 10.0
Control range		1:500
Control accuracy	%	1
Torque max.	Nm	50000
Total table top height approx.	mm	400
Total overall height approx.	mm	1030
Column base surface	mm	4000 x 4000
Weight of the device approx.	kg	33500
* Specifications subject to alterations		

3.2. PRODUCTION SERIES HTS OPTIONS



- Rotary drive via AC servo motor and regulation via transistor converter for a control range of 1:1000 and control accuracy of 0.25 % at speeds of 0.0015 to 1.5 r.p.m.
- Rotational speed calculator
Automatic adjustment of the correct speed following digital pre-selection of the workpiece diameter from 1 to 5000 mm and speed of welding from 1 to 1000 mm/min.
adjustment of \varnothing in mm and in mm/min.
- Foot actuated switch turning „Left-Off-Right“ including protection hood

4. L AND I - POSITIONER



For the welding of demanding elements, the handling using L- and I-positioners will be facilitated enormously. The L- and I-positioner production series has been derived from the standard components of the tilt and turn tables.

Dimensions such as turning diameter, weight and features will be adapted customer-specifically to the elements of the respective welding elements or to the respective case of application. The positioner can be used fully automatically in robot operation incl. indexing or for manual workplaces using the respective operator unit.



L-Positioner

I-Positioner



4.1. L AND I - POSITIONER PRODUCTION SERIES

- Completely operational with welding current transfer 1000 A.
- Mains cable, 7 m long, with remote control at the control cabinet; pluggable with 7 m long control cable.
- Table top in play-free pre-tensioned ball bearing slewing rim with precise and quenched internal gear.
- Rotary drive through three-phase current motor with separate fan and posistor protection.
- Regulation through frequency converter.
- Tabletop speed, continuously from 0.01 - 1.0 r.p.m..
- Lifting drive via trapezoidal threaded spindle, with integrated safety nut.

Positioner		L2 / I2	L3 / I3	L4 / I4	L5 / I5
Carrying force	kg	2000	3000	4000	5000
Speed range	r.p.m.	0.01 - 1.0	0.01 - 1.0	0.01 - 1.0	0.01 - 1.0
Torque	Nm	2000	3000	4000	5000
Tilting moment	Nm	8000/-	12000/-	16000/-	20000/-
Tilting angle	degree	359/-	359/-	359/-	359/-
Tilting speed	r.p.m.	0.5/-	0.5/-	0.5/-	0.5/-
Tilting time for 180°	sec.	60/-	60/-	60/-	60/-
Table top diameter	mm	1200	1200	1200	1200
Turning diameter acc. to UVV	mm	3500/-	3500/-	3500/-	3500/-
Welding current transmission	Amp.	1000	1000	1000	1000
Mains voltage	Volt	400	400	400	400
Current consumption (fuse protection)	Amp.	25	25	25	25
* Specifications subject to alterations					

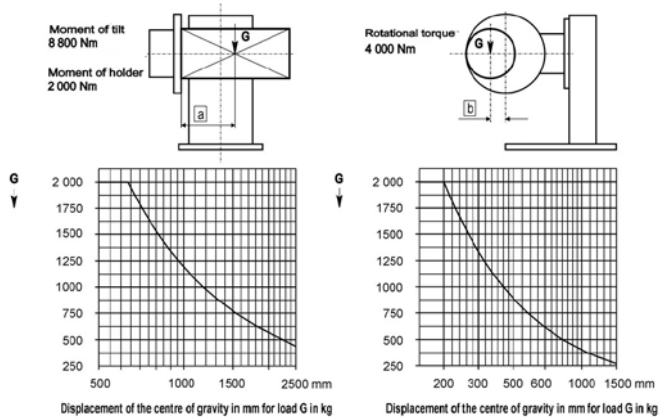
4.2. PRODUCTION SERIES – L AND I POSITIONER OPTIONS

- Rotary drive via AC servomotor and regulation via transistor converter for control range 1:1000 and control accuracy 0.25 % at speeds of 0.0015 - 1.5 r.p.m.
- Rotational speed calculator Automatic adjustment of correct speed following digital pre-selection of work piece diameter from 1 - 2000 mm and speed of welding from 1 - 1000 mm/min. Adjustment of ϕ in mm and v in mm/min.
- Foot actuated switch turning „Left-Off-Right“ with protection hood

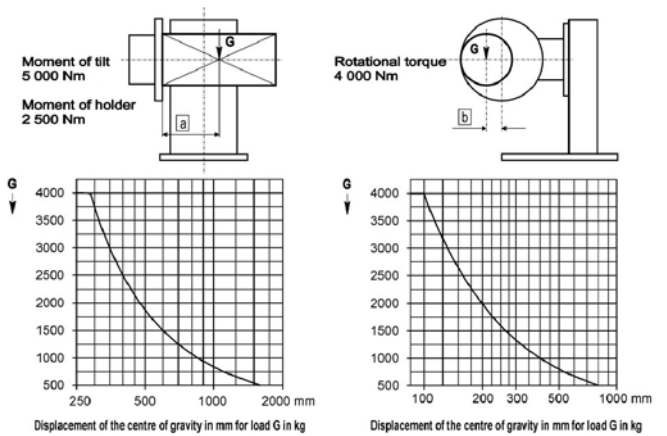


4.3. L AND I POSITIONER LOAD DIAGRAMS

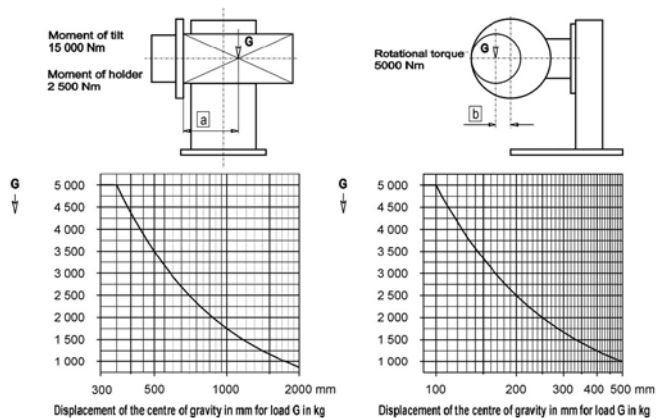
L2 / I2



L4 / I4



L5 / I5



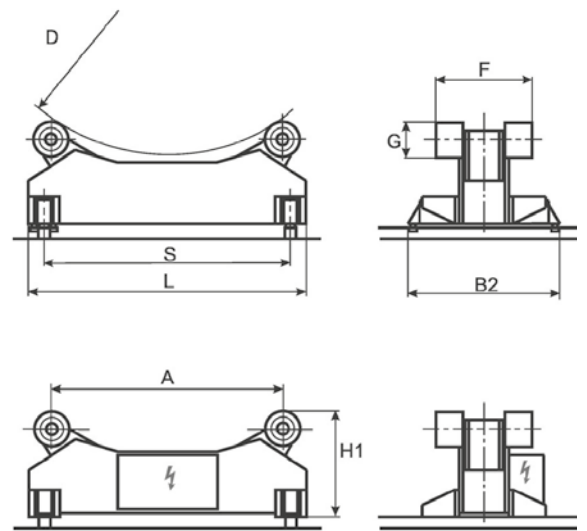


5. ROLLER STANDS

- Externally plugged on and quickly exchangeable rollers for universal applications, large support at the workpiece and simple exchange of torn Vulkollan tyres.
- New multifunctional rollers (registered design protection no. 69007082.8) including friction rings which can easily be removed and bolted from the outside for the increasing the traction or flanged wheels for a simplified axial fixing of the workpieces to be machined.
- New, high-performance drive units offering a substantially increased peripheral force and high precision, improved efficiency, longevity and complete freedom from maintenance.
- Substantial reduction of non-productive times thanks to fast traverse of 9.0 m/min.
- All roll axles equipped with precise, maintenance-free rolling bearings.
- Post designed to accommodate torsion forces including integrated swivel arms for the easy setting of the diameter of the workpieces to be machined.
- Optionally, stationary or movable design through new, patented return stands.
- The movable design can be retrofitted easily by using suitably designed return stands including pluggable wheels or wheel blocks.
- Same overall height for stationary and movable units.
- Double drive with operationally reliable synchronisation for a high degree of precision and an ideal load distribution of the drive units, both during part-load and full-load operation.
- Integrated pulse generator for precise feed speeds in the entire setting range.
- High degree of rest safety of the workpieces to be machined through a supporting angle of approx. 50°.



5.1. PRODUCTION SERIES BSN „SWIVEL ARM“



Roller stands		BSN 1500	BSN 2500	BSN 5000	BSN 8000	BSN 15000
Load	per unit kg/max.	1500	2500	5000	8000	15000
Workpiece	d ø /min. mm	80	80	80	120	120
	d ø /max. mm	2500	3000	3000	3500	4000
Distance betw. rollers	A mm	1125	1335	1345	1572	1810
	G mm	160	160	180	220	285
Roller width	F mm	295	295	420	490	660
	L mm	1170	1670	1700	1700	1700
Width	B1 mm	640	645	670	710	800
	B2 mm	770	775	800	840	930
Height	H1 mm	590	610	610	700	765
Gauge	S mm	1000	1500	1500	1500	1500
Wheel base	R mm	460	465	490	530	590
Peripheral force	N	2190	4375	8220	13630	21750
Servo drive	feed mm/ min	100-2000	100-2000	100-2000	100-2000	100-2000
	fast traverse m/ min	5	9	9	9	9

* Specifications subject to alterations

5.2. PRODUCTION SERIES BMS



Roller stands		BMS 20	BMS 30	BMS 40	BMS 50	BMS 60	BMS 80
Load	per unit t/max.	20	30	40	50	60	80
Workpiece	d ø /min. mm	500	500	600	600	700	700
	d ø /max. mm	5000	5000	6000	6000	7000	7000
Rollers ø	G mm	400	400	455	455	520	520
Roller width	F mm	120	150	150	200	200	250
Width	I mm	1000	1030	1150	1200	1450	1500
Height	E mm	700	700	780	780	925	925
Length	B mm	2800	2800	3340	3340	3870	3870
	C mm	3240	3240	3830	3830	4450	4450
Gauge	A mm	1500	1500	1500	1500	1500	1500
						2000	2000
Wheel base	H mm	660	690	765	815	980	1030
Peripheral force	standard N	28200	28200	33510	33510	48845	48845
	double drive N	56400	56400	67020	67020	97690	97690
Feed	continuously mm/min	110 - 2000	110 - 2000	130 - 2000	130 - 2000	130 - 2000	130 - 2000
	fast traverse m/min	11	11	13	13	13	13
Control range		1:100	1:100	1:100	1:100	1:100	1:100
Control accuracy	%	1	1	1	1	1	1
* Specifications subject to alterations							

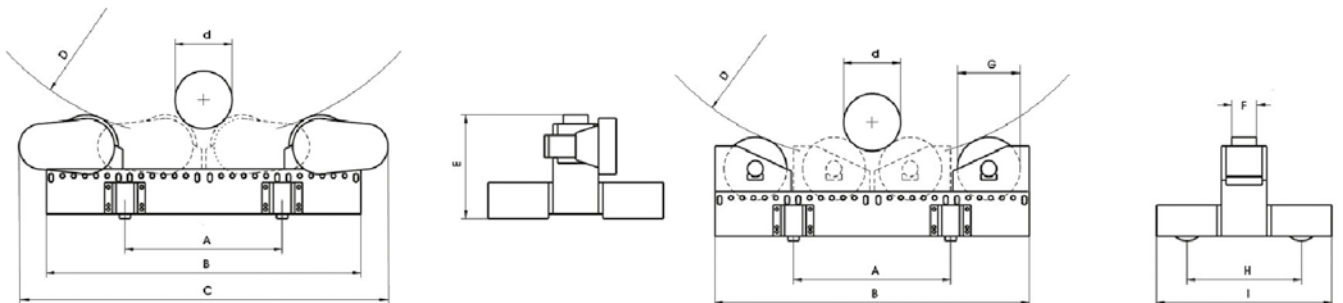
5.2. PRODUCTION SERIES BMS



Roller stands		BMS 100	BMS 150	BMS 200	BMS 250	BMS 375	BMS 500
Load	per unit t/max.	100	150	200	250	375	500
Workpiece	d \varnothing /min. mm	900	900	950	950	1200	1200
	D \varnothing /max. mm	7000	7000	8000	8000	8000	8000
Rollers \varnothing	G mm	700	700	750	750	1000	1000
Roller width	F mm	280	400	420	550	600	800
Width	I mm	1800	2175	2340	2470	2725	3830
Height	E mm	1185	1315	1400	1400	1750	2150
Length	B mm	4100	4100	4700	4700	5100	5100
	C mm	4825	4825	5430	5430	6100	6100
Gauge	A mm	2000	2000	2000	2000	2000	2000
		2500	2500	3000	3000	3000	3000
Wheel base	H mm	1220	1475	1640	1770	1925	2630
Peripheral force	standard N	72570	72570	94400	94400	138000	138000
	double drive N	145140	145140	188800	188800	276000	276000
Torque	standard Nm	25400	25400	35400	35400	69000	69000
	double drive Nm	50800	50800	70800	70800	138000	138000
Feed	continuously mm/min	130 - 2000	130 - 2000	130 - 2000	130 - 2000	130 - 2000	130 - 2000
	fast traverse m/min	13	13	13	13	13	13
Control range		1:100	1:100	1:100	1:100	1:100	1:100
Control accuracy	%	1	1	1	1	1	1

* Specifications subject to alterations

5.2.1. DIMENSIONS



5.3. PRODUCTION SERIES BMB



Roller stands		BMB 20 000	BMB 25 000	BMB 30 000	BMB 40 000	BMB 50 000
Load	per unit kg/max.	20000	25000	30000	40000	50000
Workpiece	d ø /min. mm	200	200	200	250	250
	D ø /max. mm	5000	5000	5000	6000	6000
Distance betw. rollers max.	A mm	2290	2290	2290	2750	2750
Rollers ø	G mm	415	415	415	500	500
Roller width	Steel rolls F mm	430		430	500	
	Vullkolan rolls	620	710	800	980	1150
Width	B1 mm	1010	1010	1010	1240	1520
	B2 mm	1175	1175	1175	1440	1805
Height	H mm	810	810	810	945	1010
Length	L1 mm	3000	3000	3000	3600	3600
	L2 mm	3780	3890	3890	4680	4680
Gauge	S mm	1500	1500	1500	1500	1500
Wheel base	R mm	635	635	635	780	960
Peripheral force	single drive N	18000	26410	26410	36000	48000
	double drive N	36000	52820	52820	72000	96000
Servo drive	feed mm/min.	75 - 2000	75 - 2000	75 - 2000	75 - 2000	75 - 2000
	fast traverse m/min.	6	6	6	6	6

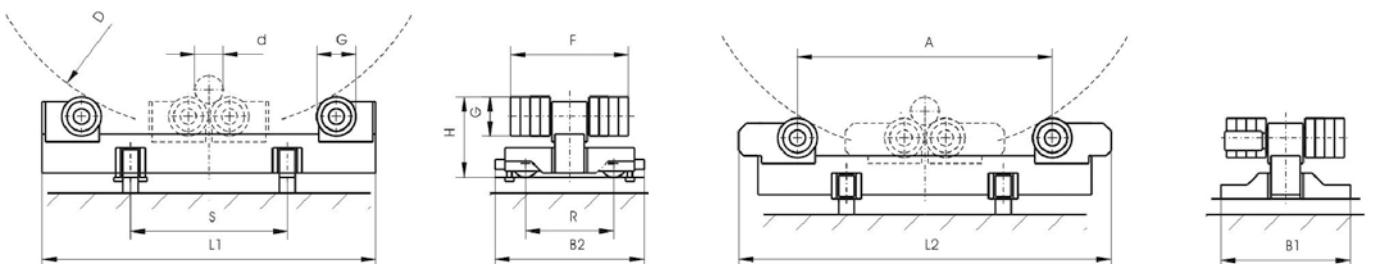
* Specifications subject to alterations



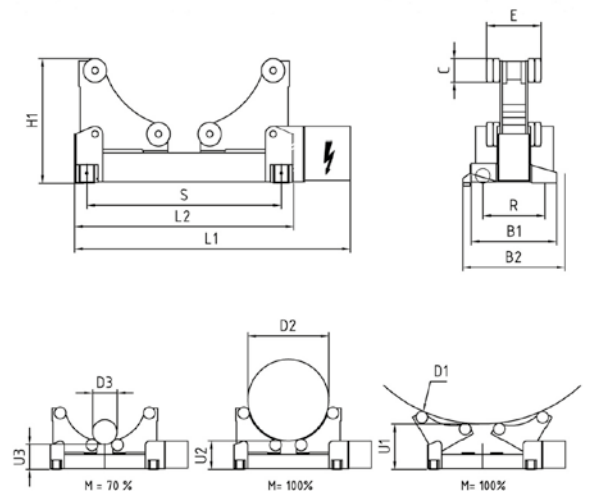
Roller stands		BMB 60 000	BMB 80 000	BMB 100 000	BMB 125 000
Load	per unit kg/max.	60000	80000	100000	125000
Workpiece	d ø/min. mm	250	650	650	650
	D ø/max. mm	6000	7000	7000	7000
Distance betw. rollers max.	A mm	2750	3235	3235	3235
Rollers ø	G mm	500	660	660	660
Roller width	Steel rolls F mm	570	765	840	935
	Vullkolan rolls	1310	1225	1420	1655
Width	B1 mm	1520	1710	1710	1950
	B2 mm	1805	1970	1970	2280
Height	H mm	1010	2000	2000	2000
Length	L1 mm	3600	4400	4400	4400
	L2 mm	4680	4950	4950	4950
Gauge	S mm	1500	2000	2000	2000
Wheel base	R mm	960	1130	1130	1250
Peripheral force	single drive N	48000	60600	60600	60600
	double drive N	96000	121200	121200	121200
Special design	single drive	72700			
	double drive	145450			
Servo drive	feed mm/min.	75 - 2000	150 - 2000	150 - 2000	150 - 2000
	fast traverse m/min.	6	15	15	15

* Specifications subject to alterations

5.3.1. DIMENSIONS



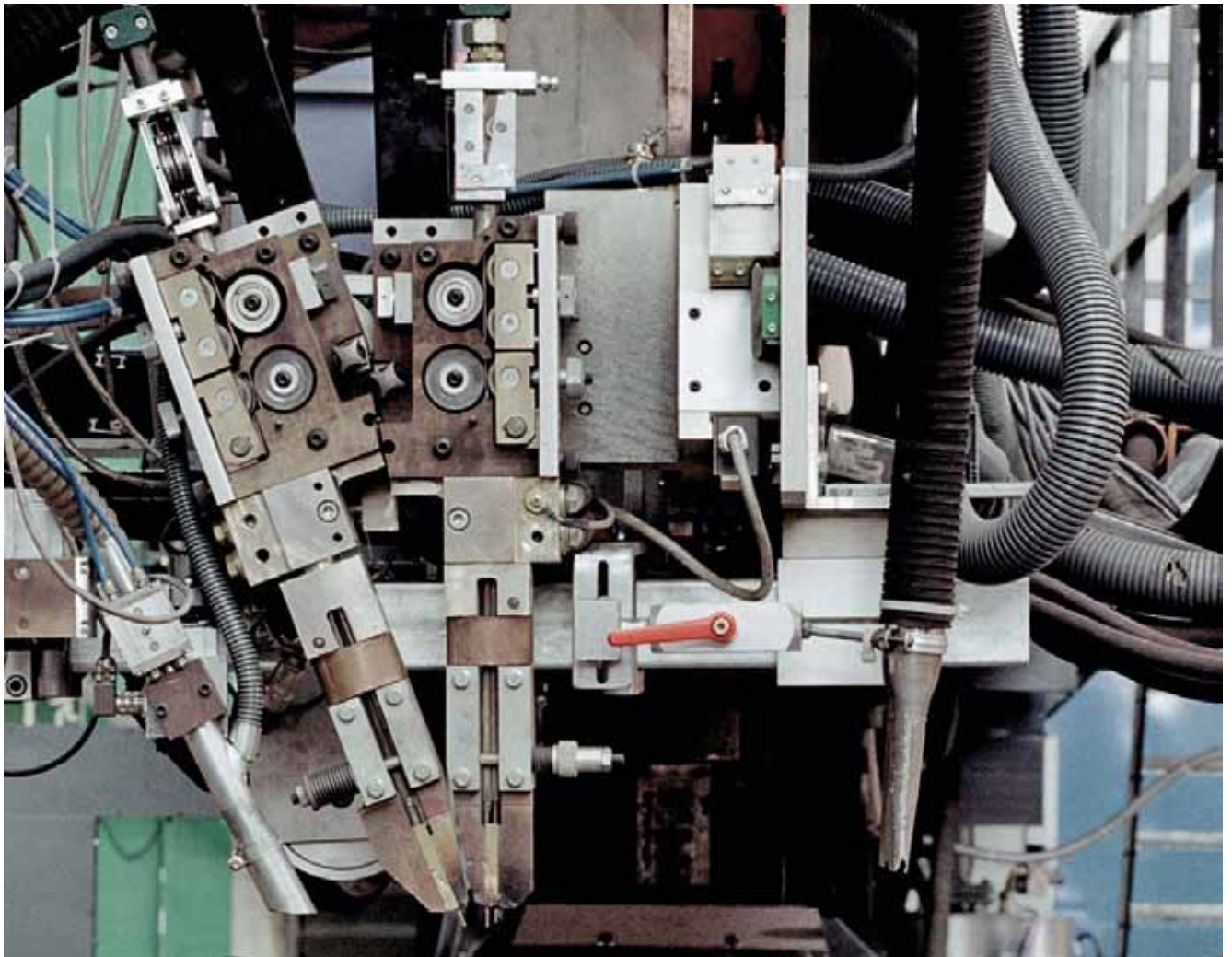
5.4. PRODUCTION SERIES RBZ



Roller stands			RBZ 4000	RBZ 8000	RBZ 12500	RBZ 20000
Load	per unit	kg/max.	4000	8000	12500	20000
Workpiece Ø		D1 mm	4000	4330	4450	5000
		D2 mm	1120	1200	1220	1340
		D3 mm	300	320	340	360
Workpiece lower edge		U1 mm	625	695	800	930
		U2 mm	390	435	540	640
		U3 mm	345	385	485	575
Rollers Ø		C mm	160	180	220	285
Roller width		E mm	295	420	490	620
Width		B1 mm	626	658	780	916
		B2 mm	756	788	912	1070
Height		H1 mm	865	955	1060	1220
Drive unit		L1 mm	2010	2080	2120	2345
Idling unit		L2 mm	1710	1690	1760	1910
Gauge		S mm	1500	1500	1500	1500
Wheel base		R mm	446	478	570	651
Peripheral force		N	4375	8220	13630	21750
Servo drive	feed	mm/min.	100 – 2000	100 – 2000	100 – 2000	100 – 2000
	fast traverse	m/min.	9	9	9	9

* Specifications subject to alterations

6. WELDING DEVICES



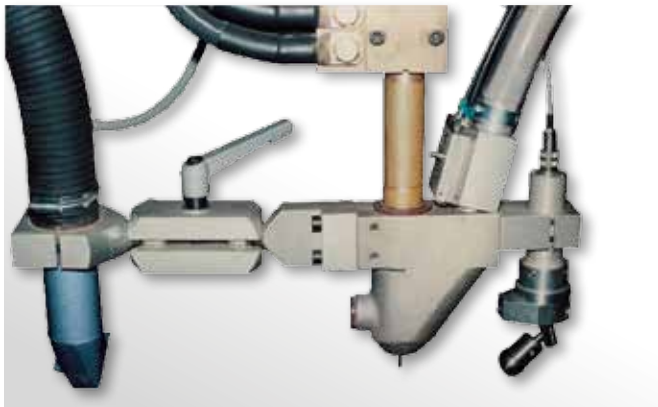
- Welding heads
- Wire feed gear motors
- Current sources
- Sensors
- Slides
- Accessories



6.1. WELDING HEADS

- SAW standard
- SAW inside
- SAW narrow gap
- GMAW narrow gap
- SAW / GMAW turret heads
- SAW multiwire inside welding head
- Multi - Mode

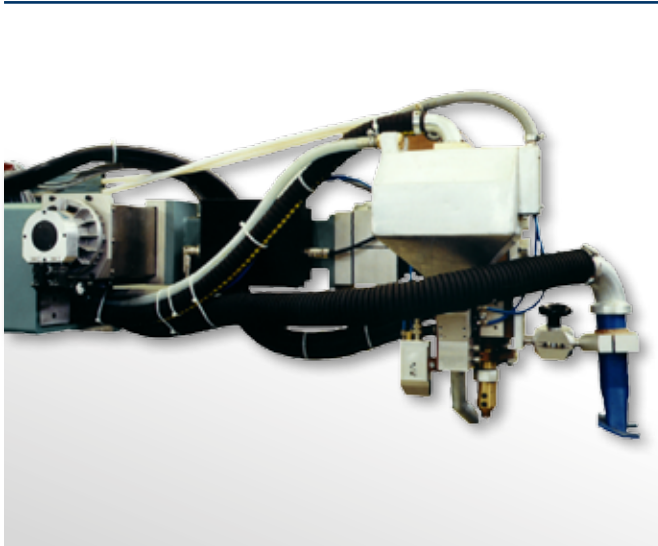
6.1.1. SAW-STANDARD



TECHNICAL DATA:

- Circular flux fill-up nozzle and pneumatically operated power flap
- With tactile sensor
- Double ball-and-socket joint including flux suction nozzle
- Wire driving mechanism: 5000 mm/min
- Max. current: 1500 A

6.1.2. SAW-INSIDE-DOUBLE WIRE

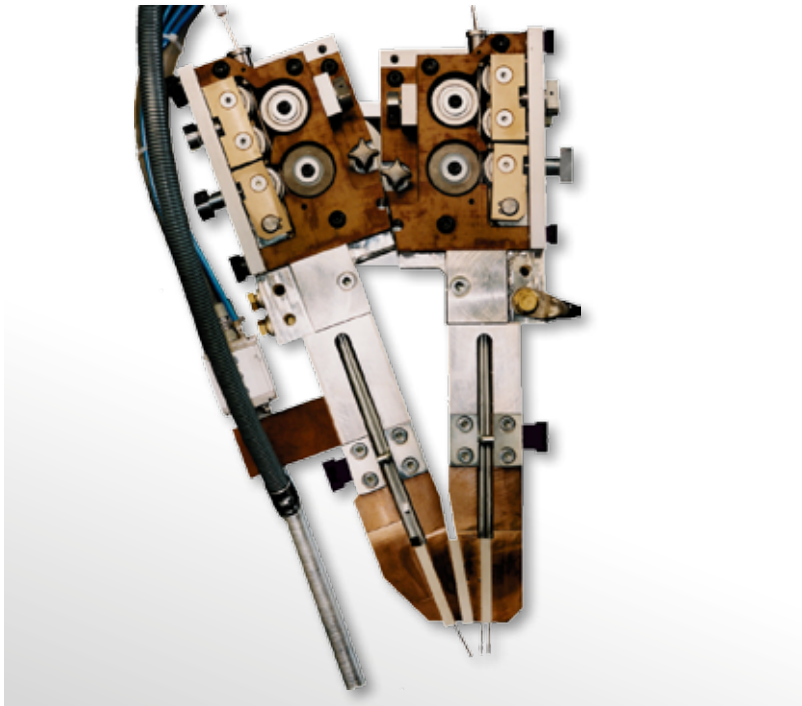


TECHNICAL DATA:

- SAW torch with contact jaws
- Current 1200 A
- Wire diameter 2 x 1.2 mm to 2 x 2.0 mm
- Max. wire feed speed: 10000 mm/min.
- Integrated flux container
- Stickout and welding head guidance, fully automatically via laser sensors including servoslides
- Min. tube diameter 480 mm (19")



6.1.3. SAW-NARROW GAP-TANDEM-WELDING HEAD

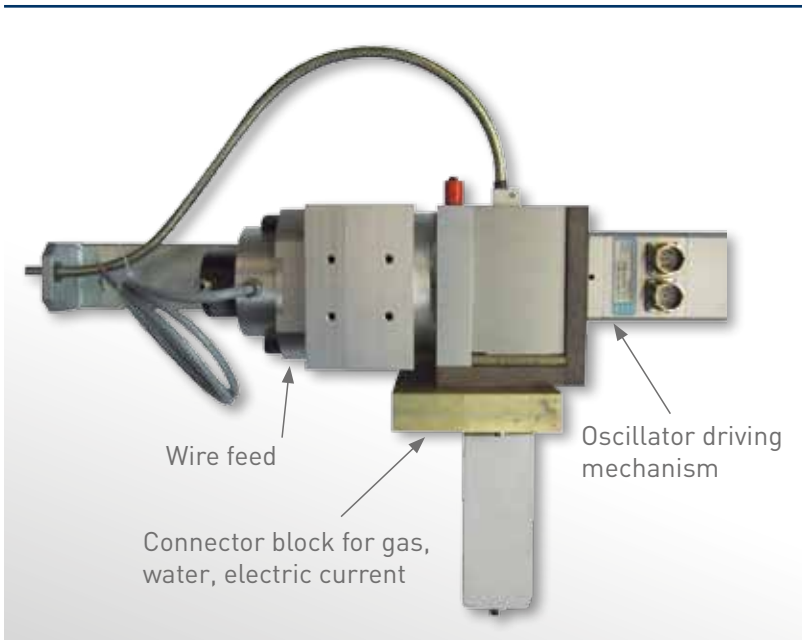


TECHNICAL DATA:

Groove width:	20 mm
Groove depth:	60 mm (150 mm)
Current:	2 x 1500 A
Wire feed:	2 x 10000 mm/min.

Wire distance and angle fixed;
 Mounting surfaces for additional
 elements such as sensor, flux
 supply unit etc.
 Single or double wire optionally

6.1.4. GMAW -NARROW GAP-WELDING HEAD

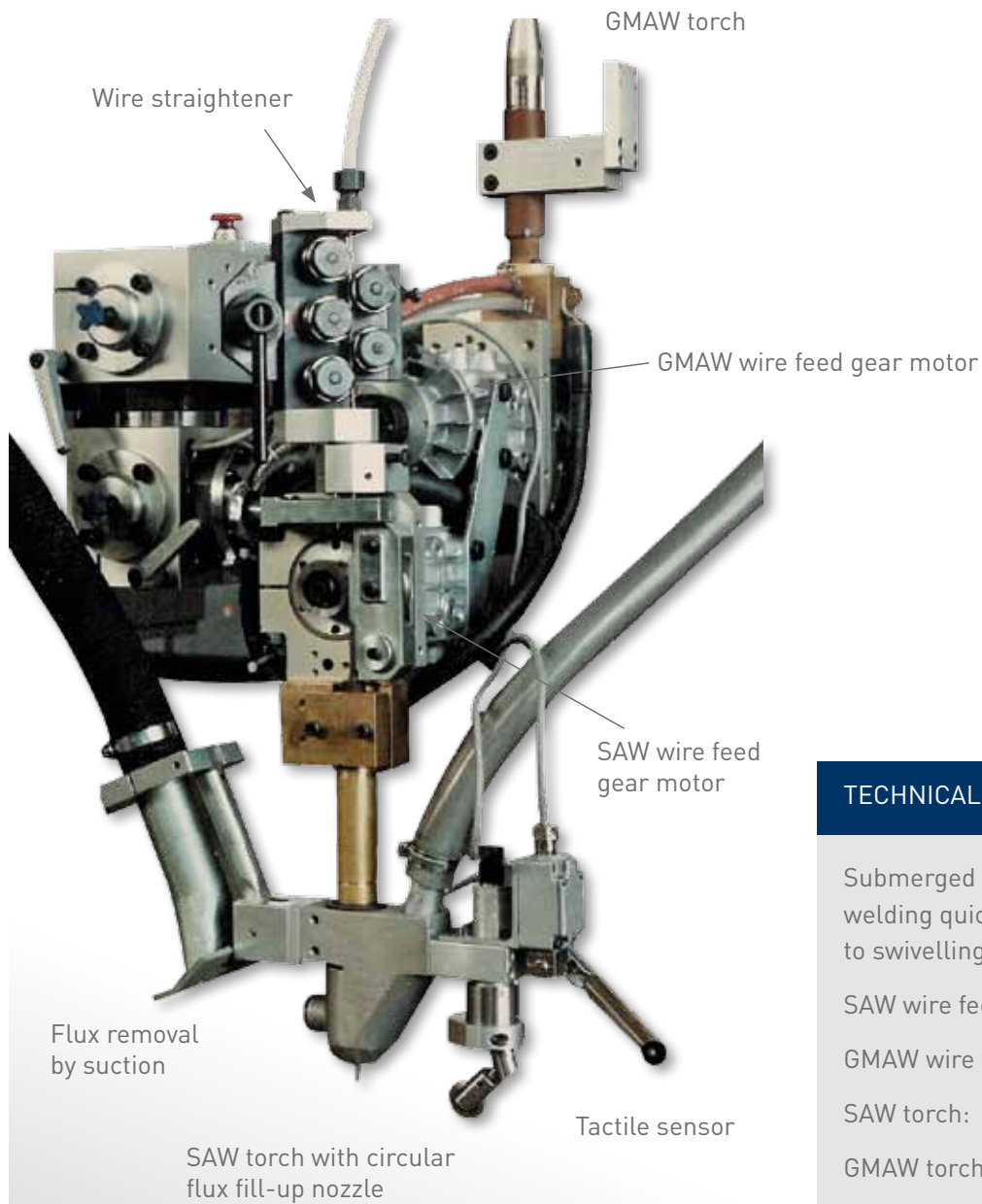


TECHNICAL DATA:

Groove width:	10 mm
Groove depth:	100 mm
Wire feed:	20000 mm/min
Oscillation frequency:	0.2-2 Hz
Max current:	450 A



6.1.5. SAW / GMAW TURRET HEAD



TECHNICAL DATA:

Submerged arc and gas-metal arc welding quickly exchangeable thanks to swivelling unit

SAW wire feed: 5000 mm/min

GMAW wire feed: 20000 mm/min

SAW torch: 1500 A

GMAW torch: 600 A



6.1.6. MULTI - MODE

For the welding of greatly differing wall thickness and groove geometries we have developed an innovative welding head, which makes it possible to weld either single wires or double wires without any modifications: the wire feed contacting and wire guide systems for single and double wire are integrated in this new welding head.

Single wire welding is possible from \varnothing 2.5 mm to \varnothing 4.0 mm whereas the double wire variant is feasible within the range from \varnothing 1.6 mm to \varnothing 2.5 mm. This makes it possible to benefit from the advantages of the single process variants without the need for a sudden resetting of the welding head.

During single wire welding, it is possible to profit from the advantage of the high fusion penetration, primarily upon the welding of the welding root passes and upon the welding of square butt joints in root pass cap/capping pass. In any other application such as back gouging and filler beads with V-weld and single-U-groove

welds, double wire welding leads to an increase in the deposition rate of 50 – 80% and an improved modulation of the welding beads.

It is also possible to weld single wire using one of the double wires with a suitable small diameter, without any resetting. This is an application which should be chosen with small sheet thickness or with low permissible heat introduction.

During multiple layer welding, the root will be welded using the single wire system, before you switch over directly to double wire, in order to realise the filler beads and final runs with an increased deposition rate. The other advantages such as the good gap bridging with square butt joints or the wider welding bead with build-up welding using the double wire method can still be used utilised without any limitations.

Thanks to the central location of the torch it is still possible to vary the position of the double wire electrodes from longitudinal position up to cross position.





6.2. WIRE FEED GEAR MECHANISMS

- SAW / GMAW wire feed gear motor
- GMAW DC wire feed gear motor
- Cold wire feed gear motor
- CNC-controlled oscillation unit for MIG-MAG / TIG-automatic welding machine

6.2.1. SAW / GMAW - WIRE FEED GEAR MOTOR

The represented wire feed gear motor is designed for the demanding requirements of submerged arc welding - and gas metal-arc welding, in particular of submerged arc welding with double wire. The power of 335 W is especially suitable for the requirements

of submerged arc welding. The very strong wire pull force of this drive unit is more than sufficient to convey the wire electrodes across very long distances, for example 1000 kg headstocks.



TECHNICAL DATA:

Wire diameter:
 1 x 2.5 mm – 5.0 mm
 or: 2 x 1.2 mm – 3.0 mm

Max. wire feed:
 5000...10000 mm/min

Max. torque: 30...100 Nm

Brushless AC servomotor 42 V
 Maintenance-free Harmonic
 Drive mechanism
 Integrated motor control

6.2.2. GMAW - DC WIRE FEED GEAR MOTOR



The newly developed wire feed gear motor is designed for a high feed performance in continuous operation. The driving mechanism is a very compact and highly dynamic DC - disk armature motor with a DC tachometer generator mounted on it.

The gear is designed as a two-stage spur gear with hardened and ground, helical gearwheels for a quiet running at a very high efficiency degree (98%). The large diameter of the wire feed roll of 50 mm ensures that the wire transport is extremely safe.

TECHNICAL DATA:

Wire feed speed, continuously adjustable	33 to 33000 mm/min.
Range of adjustment:	1 : 1000
Adjustment precision:	0.5 %
Wire diameter massive wire up to	2.0 mm
Filler wire diameter up to	2.8 mm
Driving power	250 Watt



6.2.3. COLD WIRE FEED GEAR MOTOR

Primarily, this wire feed gear motor serves to convey cold filler wire in TIG and laser beam welding. When using these welding methods a high degree of constancy of the wire feed speed is very important for the welding.



The driving mechanism has been designed exactly for this purpose. With regard to the components chosen and the high gear efficiency, the construction of the driving mechanism is extremely compact.

TECHNICAL DATA:

Operating voltage:	42 V
Power:	75 W
Wire speed:	16-8000 mm/min
Torque:	5.5 Nm
Wire tensile force:	220 N

6.2.4. CNC-CONTROLLED OSCILLATION UNIT FOR MIG-MAG / TIG

The oscillation unit can be swivelled easily and quickly for round and longitudinal seams by 90°.

The actuation is effected by a practically wear-free AC servomotor with mounted incremental encoder and a Harmonic drive gear which is free from play.

The torch is oscillated in parallel with the work-piece surface. Moreover, the device is ideally suitable for overlay welding. The following parameters are programmable in the completed program of the oscillation software at the screen in the respective mask: oscillation speed, oscillation amplitude, flank dwell time.

TECHNICAL DATA:

Oscillation speed (cross speed)	
as target speed towards right	0 to 5000 mm/min.
as target speed towards left	0 to 5000 mm/min.
Dwell time right-hand in 0.1 sec.	0 – 9.9 sek.
Dwell time left-hand in 0.1 sec.	0 – 9.9 sek.
Amplitude	0 – 30 mm
Offset = centre displacement +/-	5 mm



6.3. SAW - SOURCES OF ELECTRIC POWER

The current source consists of a solid frame with steel plate sheathing. Two current sources may be stacked. A low-noise ventilator provides for the required cooling. The control electronics is separated by a lockable intermediate case.

The characteristic reversion is carried out externally and the slope adjustment internally. The current source is provided with a standardised interface with standardised values (0-10V) for the respective submerged arc welding-control unit.

	DC AWS 080	DC AWS 100	DC AWS 125	AC AWS 100T
Current range [A]	100 – 800	100 – 1000	100 – 1250	100 – 1000
Voltage range [V]	15 – 46	15 – 50	15 – 45	20 – 45
Current 100% .continuous duty [A]	800	1000	1250	1000
Max. no-load circuit voltage [V]	60	65	70	80
Mains voltage [V]	3 x 400	3 x 400	3 x 400	2 x 400
Power factor cos φ	0.8	0.8	0.75	0.55
Rated power [KVA]	48	69	94	85
Fuse protection [A]	80	125	160	200
Noise level [dB]	70	70	70	70
Weight [kg]	370	540	700	620
Dimensions (LxWxH) [mm]	800 x 500 x 1200	760 x 800 x 1130	850 x 750 x 1200	850 x 750 x 1200
* Specifications subject to alterations				

6.3.1. SAW - RECTIFIER WELDING SET AWS 125





6.4. SENSORS

- Laser optical height sensor
- Tactile sensor
- Laser sensor

6.4.1. LASER OPTICAL HEIGHT SENSOR



TECHNICAL DATA:

Measuring range:	50...150 mm
Power supply:	DC 10...30 V
Resolution:	< 0.1 mm
Exactness:	± 0.5 mm
Reproducibility:	0.2 mm
Analogue output:	4...20 mA
Type of connection:	Plug-type connector, M12.5-pole
System of protection:	IP 65
Working temperature:	-20° C...+55° C
Laser protection class:	2



6.4.2. TACTILE SENSOR

Tactile sensors are frequently used for automated arc welding applications since they are reliable, robust and user-friendly. The here considered welding head guide system is based on a tactile sensor, working analogue proportionally. This is why it is preferably used for automated arc welding in connection with handling machines.

The sensor signals control the main axes of the handling machine via the sensor processor. This means that it is possible to reguide across the entire travel way of the handling machine.

Almost all groove geometries can be scanned with the exception of the gapless I-groove.

BENEFITS

- The analogue-proportional signalling allows for a highly precise and fast deviation correction without jolt.
- High-resolution, inductive distance sensors allow for a tracking precision of 0.1 to 0.2 mm.
- Due to the nearness of the torch, feed errors are negligible. The sensor position is always exactly defined, even from changing from circular to longitudinal seam welding.
- The electronic fine adjustment of the torch position in 2 axes in respect of the sensor with an ample range of adjustment permits any layering in the weld groove.





6.4.3. LASER SENSOR

The sensor system of the 294 production series is the latest generation of high-grade, fully equipped optical welding head guide systems. The sensor system works according to the triangulation principle. This is why a large measuring range is obtained with a high degree of measuring safety and precision. The key part of the evaluation unit is a power PC with integrated frame grabber.

The sensor system can also be operated without screen and keyboard and is thus suitable for automatic operation.

All common groove shapes are pre-programmed. Special groove shapes can be retrofitted.

6.4.4. LASER SENSOR CAMERA HEAD



TECHNICAL DATA:

Operating principle:	Optical surface scanning acc. to the triangulation principle
Measuring range:	200 mm
Measuring distance:	60 to 260 mm
Linearity:	+/- 0.4%
Measuring rate:	1 kHz
Resolution:	0.1% of the measuring range
Source of light:	Semiconductor laser 1mW, 670 nm (red) laser protection class 2 pursuant to DIN EN 60825-1 03.97 (no special protective measurements required)
System of protection:	IP 67
Vibration:	15 g ... 1 kHz
Weight:	ca. 100 g (without cable)
Working temperature:	0...55° C
Analogue output:	4...20 mA
Current supply:	11...33 V DC, typically 24 V DC/150mA
Electronics:	integrated signal processor
Electro-magnetic compatibility:	(EMV) acc. to EN 50081-1 and EN50082-2



6.5. SLIDES

- Precision hand slide
- Mechatronic precision servo slide

6.5.1. PRECISION HAND SLIDE



TECHNICAL DATA:

- Actuation via hand crank
- High-precision, hardened and precision-ground anti-friction slideways
- The guide rail is continuously bolted together with the rigid, box-shaped, slide bed and offers a high degree of rigidity and torque resistance.
- Setting range from 110 mm to 600 mm, depending on execution.
- Max. load 300 kg
- Max. lifting performance 100 kg
- Max. torque 700 Nm.

6.5.2. MECHATRONIC PRECISION SERVO SLIDE

with integrated AC servomotor, mechanism, absolute encoder, limit switch and driving gear electronics



The precision servo slides are used for positioning purposes.

High-precision, hardened and precision-ground anti-friction guideways are used.

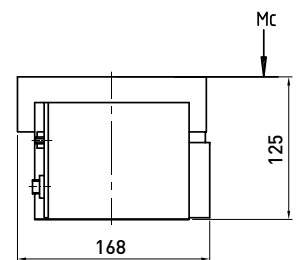
The guide rail is continuously bolted together with the rigid, box-shaped, slide bed. This construction leads to a substantially improved rigidity and torque resistance when compared with round shaft slides. Thanks to a completely encapsulated or spherical roller spindle, applications under rough ambience conditions are possible. The modular design allows the combinability with the X-,Y- and Z system of coordinates.

Benefits:

- Compact design including AC servomotor, mechanism, absolute encoder, limit switch and driving gear electronics
- Modular design to X, Y and Z-system of coordinates
- CANopen bus communication
- The decentralised structure including intelligence allows for a reduction of cable lines
- There is no need for a control cabinet

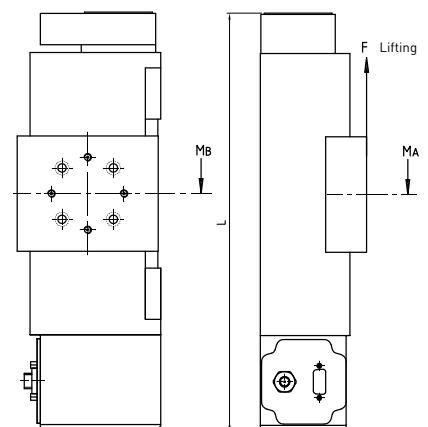
Option:

- Special designs available upon request.



AWS-No.		3153-4097	3154-4097	3155-4097	3156-4097
Lifting	mm	100	180	340	500
L (= Length)	mm	346	437	615	775
Lifting performance	N	300	300	300	300
Lifting speed	mm/min.	1100	1100	1100	1100
Torque MB	Nm	72	104	168	168
Torque MA	Nm	72	104	168	168
Torque MC	Nm	128	140	173	173
Motor voltage	Volt	24	24	24	24
Motor current	A	2.4	2.4	2.4	2.4
Nominal speed	r.p.m.	5260	5260	5260	5260
Operating voltage	Volt	24-30	24-30	24-30	24-30

* Figures may occasionally deviate.



6.5.2. MECHATRONIC PRECISION SERVO SLIDE

with integrated AC servomotor, mechanism, absolute encoder, limit switch and driving gear electronics



The precision servo slides are used for positioning purposes.

High-precision, hardened and precision-ground anti-friction guideways are used.

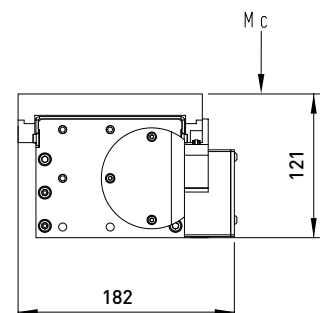
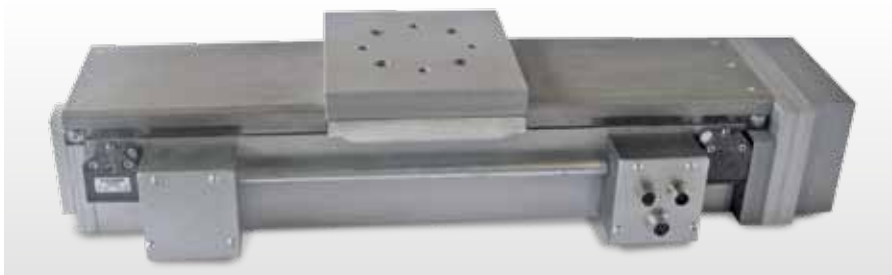
The guide rail is continuously bolted together with the rigid, box-shaped, slide bed. This construction leads to a substantially improved rigidity and torque resistance when compared with round shaft slides. Thanks to a completely encapsulated or spherical roller spindle, applications under rough ambient conditions are possible. The modular design allows the combinability with the X-, Y- and Z system of coordinates.

Benefits:

- Compact design including AC servomotor, mechanism, absolute encoder, limit switch and driving gear electronics
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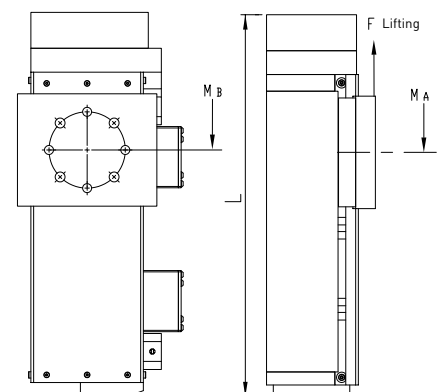
Option:

- Special designs available upon request.



AWS-No.		3159-4199	3158-4199	3157-4199	3149-4199
Lifting	mm	100	180	340	500
L (= Length)	mm	333	425	609	769
Lifting performance	N	1500	1500	1500	1500
Lifting speed	mm/min.	660	660	660	660
Torque MB	Nm	180	280	455	455
Torque MA	Nm	180	280	455	455
Torque MC	Nm	356	455	550	550
Motor voltage	Volt	24	24	24	24
Motor current	A	5.4	5.4	5.4	5.4
Nominal speed	r.p.m.	2650	2650	2650	2650
Operating voltage	Volt	24-30	24-30	24-30	24-30

* Figures may occasionally deviate.





6.6. WELDING TECHNIC ACCESSORIES

- Swivelling unit
- Wire straightener
- Flux carriage

6.6.1. SWIVELLING UNIT

- Continuously adjustable on two levels
- Indexing every 7.5°
- Capacity approx. 20 kg





6.6.2. WIRE STRAIGHTENER 1



Wire straightener at 2 levels with measuring system

6.6.3. WIRE STRAIGHTENER 2



7-roller wire straightener with separately adjustable rollers



6.6.4. FLUX CARRIAGE

- Capacity: 130 l.
- Mechanically operated flaps for filling and emptying.
- Suspension straps for crane transport



7. FLUX SYSTEM



- Flux pressure tank devices, HDT-type
- Automatic flux recycling machine AWS 214021
- Flux pressure chamber device



7.1. FLUX PRESSURE TANK SYSTEM, TYPE HDT

- Incl. TÜV acceptance certificate.
- Useable with an AWS 214021-23 recycling machine for up to three feed and suction positions.
- Primary circuit for continuous adding of fresh flux. The composition of the flux remains substantially unchanged.
- Two capacitive solid matter sensors inside the flux funnel for - + 250 degree C min. and max. flux level.
- 1 sensor inside the pressure tank – cone for min. flux level – control with indicator light as warning lamp.
- Automatic flux conveyance through sensor-controlled, pneumatically operated membrane valve.
- Additional active venturi inside the feed line for the loosening and air throughput of the dense flow.
- Generous screw surfaces for an easy mounting to columns or booms of manipulators. Optionally, 4 stands can be mounted easily.



TECHNICAL DATA:

Capacity:	200, 500 or 1000 l
Permissible working pressure:	3 bar
Permissible working temperature:	+ 150° C
Air network pressure, to be supplied by the customer:	6 bar
Nominal width connecting hose:	19 mm
Mains voltage:	400/230 V 50 Hz



7.2. AUTOMATIC FLUX RECYCLING MACHINE AWS 214021

- Required for a welding head in connection with the pressure tank HDT 200, HDT 500 or HDT 1000.
- 40l capacity of the store funnel. Gravity feed towards filling position.
- Completion of used flux through the pressure tank.
- Removal by suction through high performance vacuum and blow ejector for suction heights of 0.5 to 3 m.
- Air consumption approx. 800 l/min of low-tension air with 3 l/min of flux to be sucked.
- Short, flux saving suction way and low conveyance speed through suction tube, nominal diameter 50 mm.
- Cyclone with flux saving rubber coating.
- The escaping exhaust air corresponds to the Technical Instructions on Air Quality Control (TA-Air). Compressed air with a receiver pressure of 6 bar is required for the operation of the dedusting appliance.
- Slag drawer for the removal of the slag sucked.
- Two capacitive level sensors, thermoresistant - 250 ° C, inside the store funnel for flux min./max. Together with the membrane valve at the pressure tank, they provide for the level regulation.
- As soon as the min. sensor has acted following a defined period of time, the device will be switched to „ Stop welding“.





7.3. PRESSURE CHAMBER DEVICE

The device serves for the continuous suctioning of flux and the discontinuous flux conveyance into a buffer tank (flux funnel) at the front of the welding head. When streaming into the conveyor chamber, approx. 17% of the flux which is sucked back into the store funnel, will be mixed with fresh flux from the integrated fresh flux silo. The continuous adding of fresh flux to the

circulatory ensures that the flux quality remains

constant. Thanks to the continuous recirculation of sucked off flux into the conveyance process, the capacity of the pressure chamber device is 6 to 7 times above the capacity of a flux appliance without integrated flux recirculation.

Using a fast emptying flap, the device can be prepared quickly for a new type of flux.

7.3.1. STRUCTURAL COMPONENTS

- Heating elements, funnels with shutting flaps, capacitive level sensor for „flux - min“.
- Fully automatic, electro-pneumatic, accumulator-supported dedusting device for three conical filter elements with folded (pleated) filter materials. The escaping exhaust air corresponds to the Technical Instructions on Air Quality Control (TA-Air). Compressed air with a receiver pressure of 6 bar is required for the operation of the dedusting appliance. The dedusted filter cake will again be added to the flux cycle.
- Suction through high performance vacuum and blow ejector for suction heights of 0.5 to 3 m. Air consumption approx. 800 l/min of low-tension air with 3 l/min of flux to be sucked. Short, flux saving suction way and low conveyance speed through suction tube, nominal diameter 50 mm..
- Cyclone with flux saving rubber coating.
- Slag drawer for the removal of the slag sucked.
- Store funnel with a capacity of 20 litres and a view glass for the flux sucked off.
- Pressure chamber with a capacity of 3 litres, electro-pneumatic shutting flap, capacitive level sensors for the level regulation and refilling.
- The control cabinet, including the components for the air supply and the evaluation devices for the level sensors is provided at the fresh flux silo.
- The electrical control is located inside the central control cabinet of the handling machine.



7.3.2. TECHNICAL DATA

Pressure chamber installations	AWS 212007	AWS 212005	AWS 212006
Total size of the installation HxWxD	1429 x 1320 x 617 mm	1681 x 1200 x 670 mm	1981 x 1450 x 670 mm
Empty weight approx.	180 kg	230 kg	250 kg
Capacity	75 l.	130 l.	250 l.

* Specifications subject to alterations



8. WELDING TRACTORS



- CNC-controlled SAW-tractor AWS 1000
- CNC-controlled SAW-tractor AWS 1200

CNC-CONTROLLED SUBMERGED ARC WELDING TRACTORS



Increased work output and improved quality of weld seams

- CNC compact control for welding head, tractor, motor slide, sensor and flux cycle.
- Fast tractor motion.
- Path-dependent change of welding parameters via CNC control.
- Program memory for more than 100 sets of parameters.
- Motor slide with servo drives, highly loadable, free of play.
- Sensor guidance of the welding head.

High precision, high degree of stability and long service life

- Solid tractor carriage designed to accommodate torsion forces in steel/weld design.
- Four-quadrant transistor converter, control accuracy < 1% as motor regulator.
- Large wheel base and gauge.
- Anti-friction guideway slide, free from play, including covering of threaded spindle and guide.

High flexibility

- Quick change of gauge.
- Single wire, double wire and double wire – Narrow gap equipment.
- Hand or motor slide with two strokes.
- Wheels equipped with rubber or steel tyres for rail guide.
- Motor-controllable design.
- Support rollers for guide support.
- Easily retrofittable sensor guidance.

High level of security and availability

- Avoidance of shears and bruises acc. to DIN 31001, DIN EN 394, DIN EN 294.
- Protection of feed gear mechanism and wire straightener.
- Smooth-surfaced wire drum.
- Generously dimensioned drive units.
- Standard jack ring.
- CE compliant design.

8.1. TECHNICAL DATA



		AWS 1000	AWS 1200
Welding current max.	A	1500	1500
Wire diameter	mm	1.6 – 5	1.6 – 5
Wire diameter double wire	mm	2 x 1.2 – 2 x 3.0	2 x 1.2 – 2 x 3.0
Wire rings in 70 or 100mm width	kg	20 – 30	20 – 30
Wire rings in 70 or 100mm width double wire	kg	2 x 20 – 30	2 x 20 – 30
Wire feed speed	mm / min	50 – 8800	50 – 10000
Weld feed speed	mm / min	70 – 2000	50 – 2000
Tractor fast motion	mm / min	13000	10000
Wheel base	mm	400	600
Gauge, adaptable	mm	240, 280, 320	600
Wheel diameter	mm	150	160
Flux funnel	Litre	6 or 12	60
Height adjustment	mm	150 or 330	350
Transversal adjustment	mm	150 or 330	200
Swivelling range of the welding head at 2 levels	degree	45	45
Inside welding from tube diameter (without suctioning)	mm	1300 (1000)	1500
Service hatch through manhole in disassembled status	mm	650	1600
Weight without wire and flux	kg	68 – 114	465
Supply voltage	V	24	24
* Specifications subject to alterations			



8.2. CNC-CONTROLLED SAW-TRACTOR AWS 1000

- Driving gear, completely maintenance-free with almost low play for all 4 wheels through hermetically close high-precision mechanisms including hardened and ground toothed wheels.
- The wire feed gear motor and the gear motor for the tractor mechanism are completely identical and interchangeable. These are high-performance worm gear units with permanently excited DC motor and mounted DC tachometer generator.
- The height and lateral adjustment of the welding head is carried out by encapsulated precision anti-friction guideway slides. The adjustment slides for lifting and transversal motion are optionally designed as hand slide or as servo slides with DC-motor and mounted DC-tachometer generator.
- Current tubes (SAW-torch) for contact jaws or contact nozzles in single wire design.
- Wire feed back-gearred motor including clamped flange and current tube at 2 levels, continuously swivelling and clampable.
- Clamped flange, fully isolated, including integrated feed and pressure roll, protected pursuant to UVV. Wire straightening device, plugged on and rotating.
- Welding head, displaceable cross slide bed or capable of being put on to the slide front side.
- Holding device for one or - in the case of double wire welding - 2 wire coils, swivelling by 90 degrees and indexable.
- Control box including CNC-control, swivelling.
- Flux funnel with level control, capacity normally 6l.
- Flux suctioning through injector.



8.3. CNC-CONTROLLED SAW-TRACTOR AWS 1200



- Tractor drive, completely protected and maintenance-free via DC-servomotor with mounted DC-tachometer generator and worm gear unit with hollow shaft. The driving axle is plugged through the hollow shaft. The drive has a low degree of play; it runs smoothly and is very sturdy.
- The height adjustment of the welding head is carried out by a high-precision anti-friction slide and a completely protected threaded spindle with hand wheel. The setting range is 350 mm.
- The smallest possible inner diameter of the tube is 1600 mm with the flux suctioning unit being mounted.
- Controls the height slide and the combined cross and steering slide.





OPTIONALLY AVAILABLE:

- Steerable design with combined cross and steering slide. The cross slide of the basis version of the steerable slide is driven by a servomotor while operating the steering at the same time. The setting range of the slide is 100 mm and the smallest steering radius is 1500 mm.
The cross slide and thus the steering can be controlled via a sensor. In addition to the cross and steering slides, a second motor-driven cross slide is provided. This slide allows for the exact positioning of the torch, independently from the steering slide. The setting way, too, is 100 mm.
- Electronic water level for the synchronisation of the tractor feed speed with the advance movement of a roller stand. The water level controls the tractor without cable connection to the roller stand in exact synchrony to the advance speed of the roller stand. The inclination of the tractor can be adjusted from the horizontal position - +/- 2,0° in steps of 0.5° using the operator panel of the CNC control.
- Longitudinal travel device for an easy displacement within one tube. Traverses including 2 rollers each having a diameter of 150 mm, are mounted to each front side of the tractor. The tractor can thus be lifted from its driving wheels and be shifted inside the tube manually. This allows for a quick shifting through the tube and an exact and simple positioning at the single circumferential seams.
- Automatic-pneumatic flux suction through magnet valve.
- Flux store through capacitive level sensor.
- Air filter unit including filter cartridges and automatic-pneumatic dedusting of the filters.
- Sensor guidance of the welding head including height adjustment through servomotor opposite the manual adjustment in the case of the basic design. The tactile sensor controls the height slide and the combined cross and steering slide.

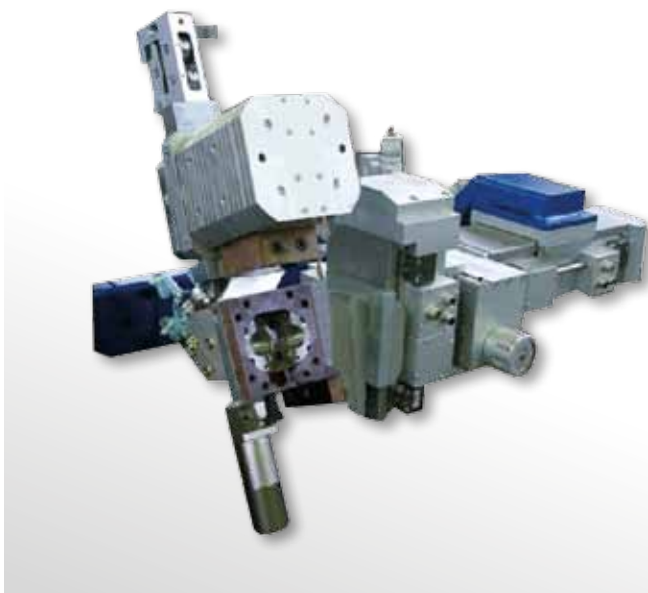
9. PIPEWORK EQUIPMENT



- MAG staple head SPM
- SAW - MAG strip connection seam SPM
- Inside SAW head spiral tubing online
- Outside SAW head spiral tubing online
- Inside SAW head spiral tubing FWM
- Outside SAW head spiral tubing FWM
- Inside SAW head longitudinal wire tubing FWM
- Outside SAW head longitudinal wire tubing FWM
- Flux facility for inside and outside welding heads
- Ground brush device for inside and outside welding heads
- Boom 12, 18, 24 metres FWM
- Outside welding support (see chapter 1 / BZ construction series)



9.1. MAG STAPLING HEAD SPM



TECHNICAL DATA:

- Water-cooled MAG torch including contact jaws
- 1500 A current
- Wire diameter 1.2 mm to 4.0 mm
- Max. wire feed speed : 15000 mm/min.
- Fully automatic stickout and welding head guidance via laser sensors with servo slides
- Gas valve

9.2. SUBMERGED ARC WELDING - MAG STRIP CONNECTION SEAM SPM



TECHNICAL DATA:

- Water-cooled MAG torch with contact nozzles
- Current 600A
- Wire diameter from 1.2 mm to 2.4 mm
- Max. wire feed speed: 15000 mm/min.
- Gas valve
- SAW torch including contact jaws
- Current 1200 A
- Integrated flux container in connection with flux installation



9.3. SAW INSIDE WELDING HEAD WINDING TUBES ONLINE



TECHNICAL DATA:

- SAW torch including contact jaws
- Number of torches 1..3
- Power rating per torch 1500 A
- Cassette system
- Wire diameter from 1.2 mm to 4.5 mm
- Max. wire feed speed: 10000 mm/min.
- Integrated flux container in connection with flux installation
- Stickout and welding head guidance, fully automatically via laser sensors including servoslides
- Spiral angle 45° to 80°
- Min. tube diameter 400 mm (16")

9.4. SAW OUTSIDE WELDING HEAD WINDING TUBES ONLINE

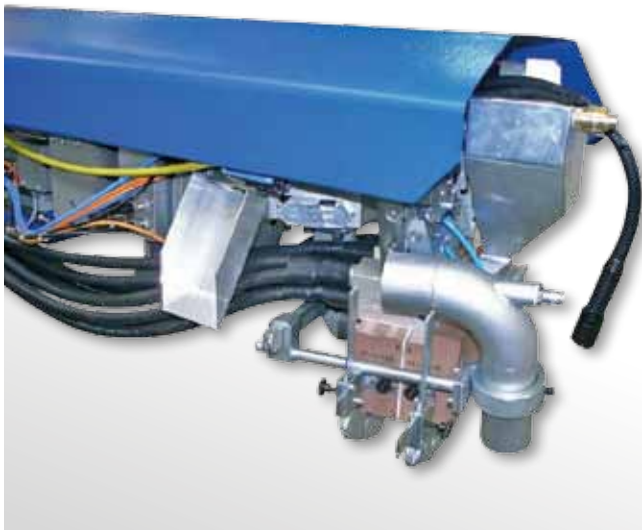


TECHNICAL DATA:

- SAW torch including contact jaws
- Number of torches 1..3
- Power rating per torch 1500 A
- Cassette system
- Wire diameter from 1.2 mm to 4.5 mm
- Max. wire feed speed: 10000 mm/min.
- Integrated flux container in connection with flux installation
- Stickout and welding head guidance, fully automatically via laser sensors including servoslides
- Spiral angle 45° to 80°



9.5. SAW INSIDE WELDING HEAD WINDING TUBES FWM



TECHNICAL DATA:

- SAW torch including contact jaws
- Number of torches 1..3
- Power rating per torch 1500 A
- Wire diameter from 1.2 mm to 4.5 mm
- Max. wire feed speed: 10000 mm/min.
- Integrated flux container in connection with flux installation
- Stickout and welding head guidance, fully automatically via laser sensors including servoslides
- Min. tube diameter 480 mm (18")
- Spiral angle 40° to 80°

9.6. SAW OUTSIDE WELDING HEAD WINDING TUBES FWM

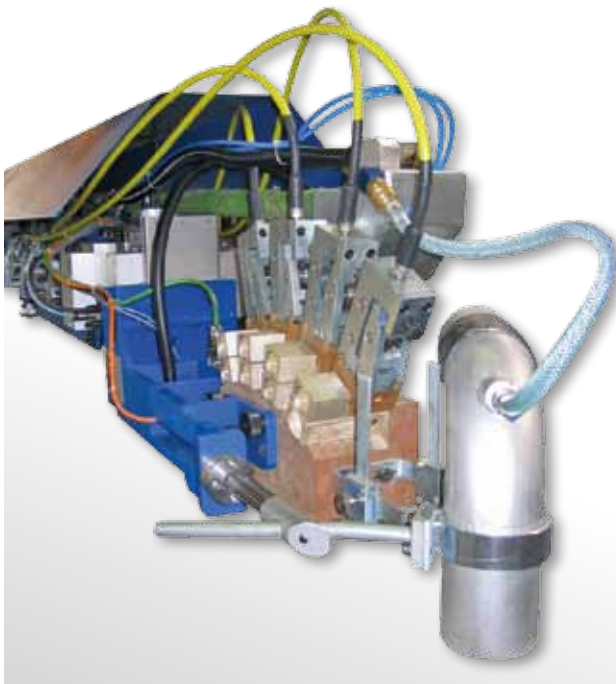


TECHNICAL DATA:

- SAW torch including contact jaws
- Number of torches 1..3
- Power rating per torch 1500 A
- Cassette system
- Wire diameter from 1.2 mm to 4.5 mm
- Max. wire feed speed: 10000 mm/min.
- Integrated flux container in connection with flux installation
- Stickout and welding head guidance, fully automatically via laser sensors including servoslides
- Min. tube diameter 400 mm (16")
- Spiral angle 40° to 80°



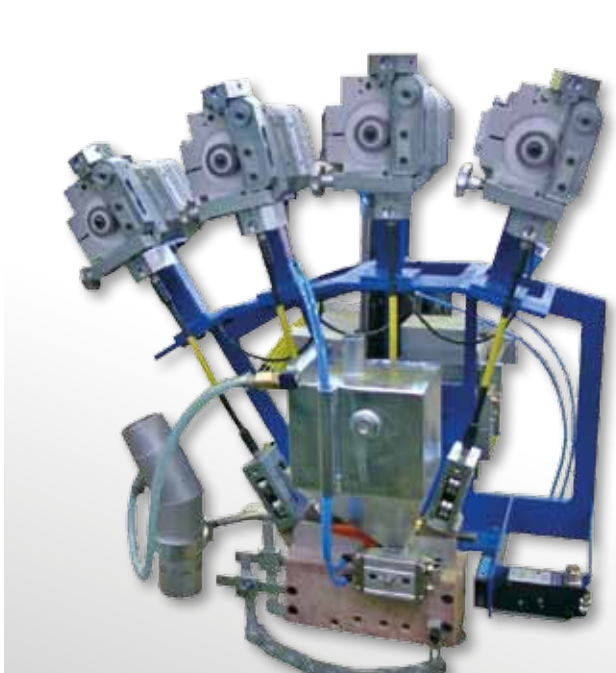
9.7. SAW INSIDE WELDING HEAD STRAIGHT BEAD TUBES FWM



TECHNICAL DATA:

- SAW torch including contact jaws
- Number of torches 1..5
- Power 1500 A
- Cassette system
- Wire diameter from 1.2 mm to 4.5 mm
- Max. wire feed speed: 10000 mm/min.
- Integrated flux container in connection with flux installation
- Stickout and welding head guidance, fully automatically via laser sensors including servoslides
- Min. tube diameter 480 mm (18")

9.8. SAW OUTSIDE WELDING HEAD STRAIGHT BEAD TUBES FWM



TECHNICAL DATA:

- SAW torch including contact jaws
- Number of torches 1..5
- Power 1500 A
- Cassette system
- Wire diameter from 1.2 mm to 4.5 mm
- Max. wire feed speed: 10000 mm/min.
- Integrated flux container in connection with flux installation
- Stickout and welding head guidance, fully automatically via laser sensors including servoslides



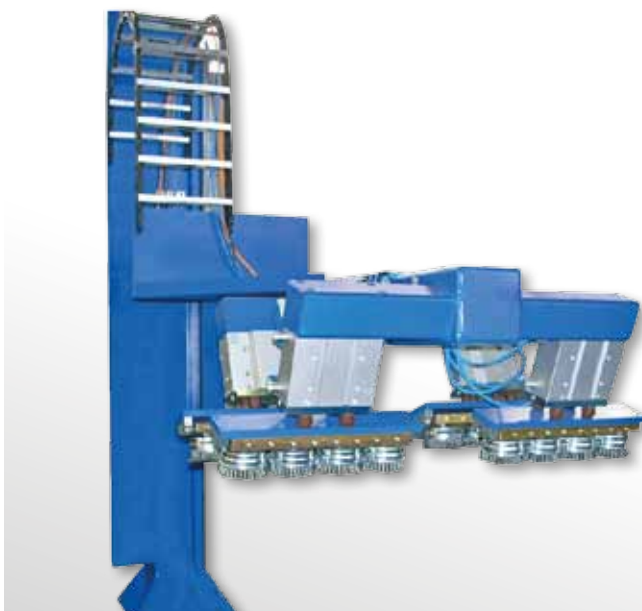
9.9. FLUX SYSTEM FOR INSIDE AND OUTSIDE WELDING HEADS



TECHNICAL DATA:

- Pressure tank 2 x 500 litres / 2 x 1000 litres
- Recycling automat incl. suction cyclone
- Escaping exhaust air corresponding to the Technical Instructions on Air Quality Control (TA-Air)
- Fully automatic slag drawer
- Magnetic separator
- Inlet pressure 6 bar
- Volume 4500 l/min
- Automatic level measuring
- Integrated heating for the avoidance of humidity absorption
- Pneumatic principle of function (without additional compressor)

9.10. GROUND BRUSHES DEVICE FOR INSIDE AND OUTSIDE WELDING HEADS



TECHNICAL DATA:

- Power transmission 4000 A via brushes
- Additional brushes via pneumatic cylinder available
- Height adjustment for differing tube diameters via electromotor



9.11. BOOM WITH 12, 18 OR 24 M FWM



TECHNICAL DATA:

- Boom with massive base column
- Permissible weight at head following problem definition
- Lengths: 12, 18 and 24 m

