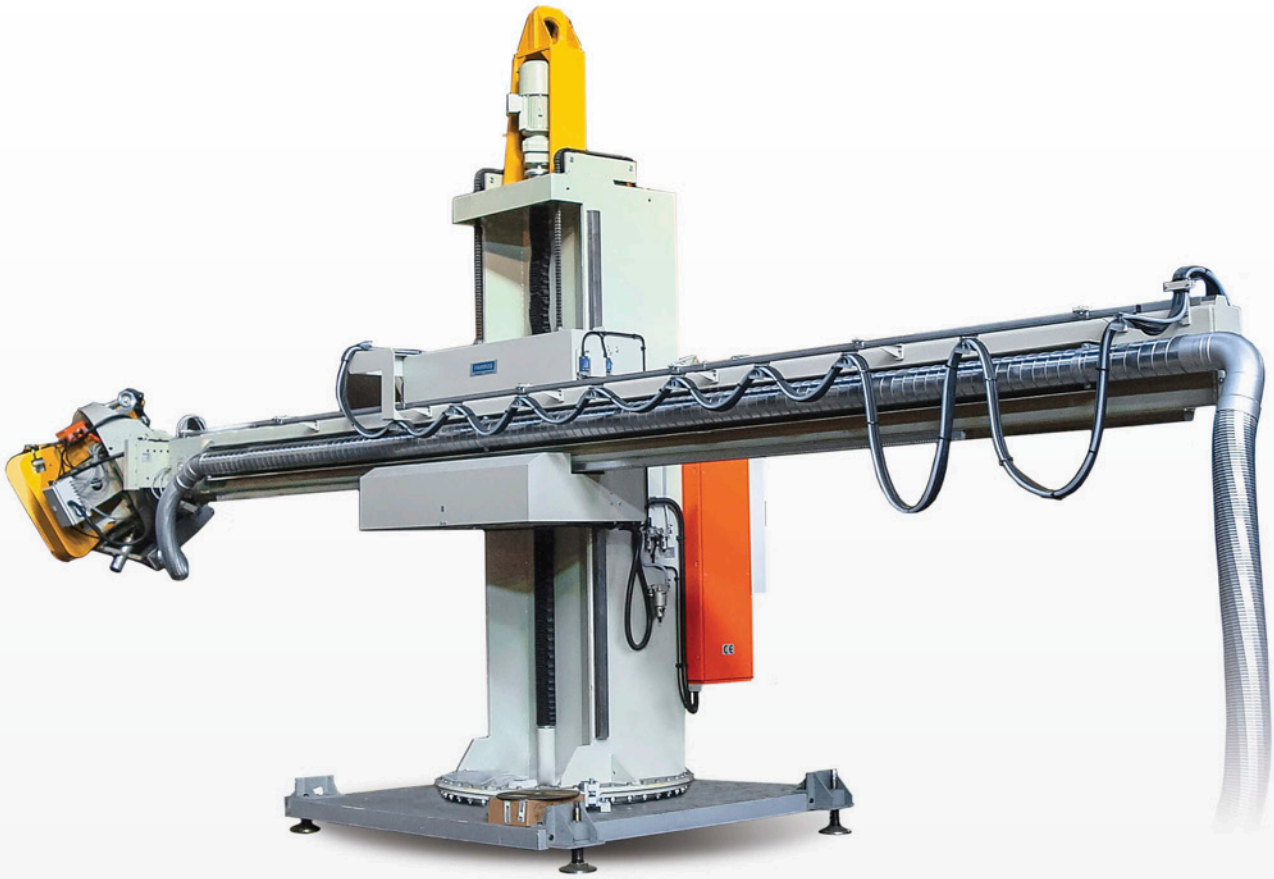
FST

FABRICATION SOLUTIONS & TECHNOLOGIES



FARROS

GRINDING & POLISHING SYSTEMS

903-663-8500
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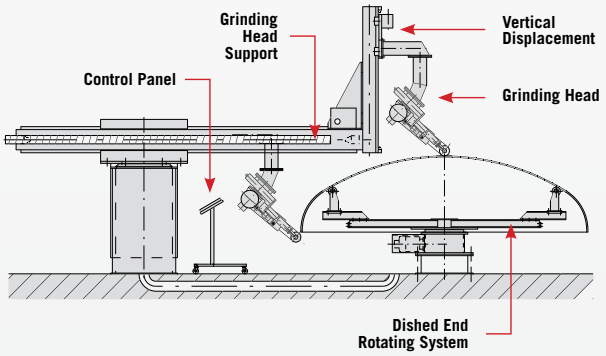
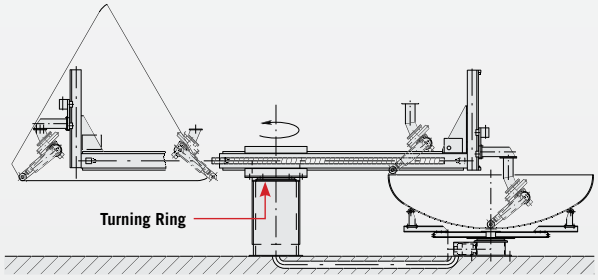
www.FSTsteelfab.com

GRINDING INSTALLATIONS

SCHEMATICS





TECHNOLOGY

BSA 1000

The BSA 1000 is designed specifically for grinding dished ends with diameters ranging from 23 - 236". The vertical stroke is articulated by a grinding head mounted directly to a vertical adjustment arm and fixed at the end of the boom. The horizontal and vertical feeds are driven electronically via adjustable servo-motors and speeds are regulated with closed-loop control units.

The BSA 1000 can also be customized for internal cone grinding applications with a minimum 60° angle depending on the diameter. A turning ring mounted between the articulating arm and grinding head support allows the system to rotate into position. A separate grinding head is not required as the cones are ground along with the dished end.

The electrical cabinet can be self-supporting or mounted to the back of the machine. This cabinet will power and control all contactors, time-lag relays, electronic controllers, etc. A smaller cabinet houses all necessary electronically controlled pneumatic valves. The mobile control panel will contain all the required components for operation of the machine.

BSA 2000 | 3000 | 4000 | 5000

Each model is designed to fit specific applications including, but not limited to, dished ends, cones, vessel (shells), pipes, heavy dished ends, and heavy vessels sections.

The column and boom are welded and fit together for solid cohesion of components. Guide bars on all models are made of special flame-hardened steel. All guide rolls are hardened and come equipped with industrial grade, self-lubricating ball bearings. The inside of the main column consists of a counter weight that helps to reduce the weight applied to the vertical lifting spindle.

The motor that controls the horizontal movement of the boom is mounted underneath the boom on the main column by a specialized rack and a threaded jack-screw/spindle controlled via electric motor is used for the vertical movement of the boom. This jack-screw also comes equipped with a safety mechanism to catch the boom in an emergency. The jack screw is protected from dust and mill scale by a bellows attached on both ends.

ELECTRONICS & PNEUMATICS

The electrical cabinet and valve box are separately mounted to the rear of the machine. The electrical cabinet contains all necessary components for control of the equipment by a Siemens SPS – control system. The mobile control panel contains all functions needed for operation of the machine.

The water separator and self-lubricating oil system are mounted on the side of the main cabinet.

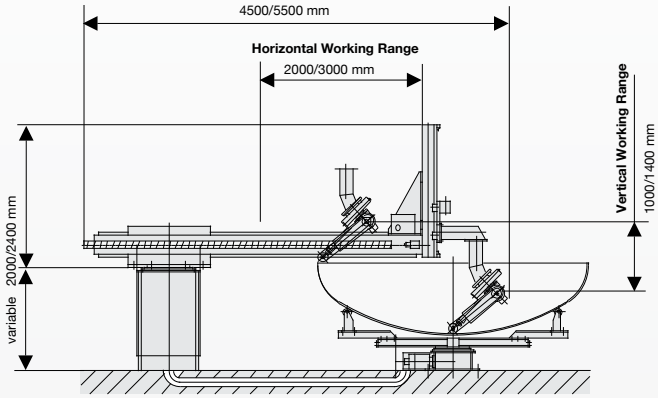
BSA 1000 SERIES

DISHED ENDS | CONES

INSTALLATION	BSA 1000 SERIES
Horizontal Working Range	6.5' - 9.84'
Horizontal Feed (Infinitely Variable)	0 - 7.86 ft/min
Vertical Working Range	3.28'
Max Depth of Dished End	max. 2.95'
Vertical Feed (Infinitely Variable)	0 - 6.88 ft/min
Power Input (without head)	2.68 hp

MEASUREMENTS	
Total Height (w/out Subconstruction)	6.56' - 7.87'
Total Length	14.76' - 18.04'

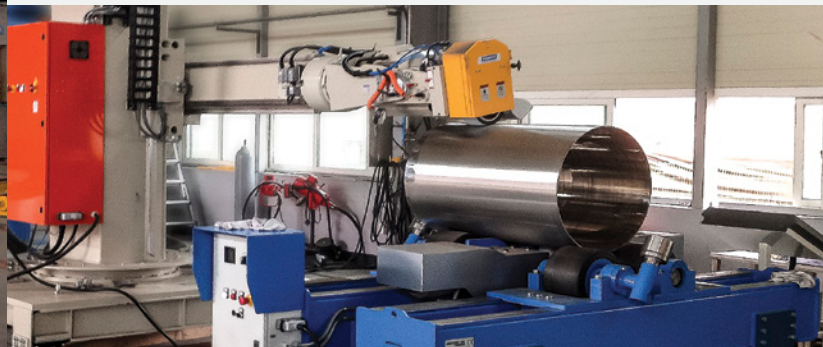
WEIGHT	
Weight (w/out Subconstruction)	approx. 3,970 - 4,850 lbs



BSA 2000 SERIES

DISHED ENDS | VESSEL (SHELLS)

INSTALLATION	BSA 2000 SERIES
Horizontal Working Range	9.84' - 13.12'
Vertical Working Range	3.28' - 4.59'



BSA 3000 SERIES

VESSELS (SHELLS) | PIPES

INSTALLATION	BSA 3000 SERIES
Horizontal Working Range	14.76'
Horizontal Feed (Infinitely Variable)	.06' - 8.2 ft/min
Vertical Working Range	3.28' - 4.59'
Vertical Feed, 2-speed	.03 ft/min | 3.6 ft/min
MEASUREMENTS	
Total Height (w/out Subconstruction)	12.63'
Total Length of Boom	20.37'
WEIGHTS	
Weight (w/out Subconstruction)	approx. 7720 lbs

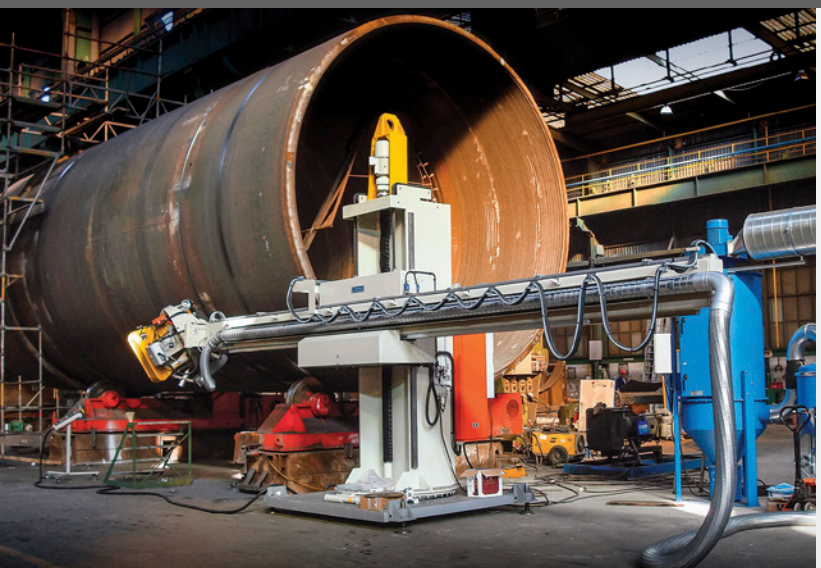
BSA 4000 SERIES

DISHED ENDS | VESSEL (SHELLS)

INSTALLATION	BSA 4000 SERIES
Horizontal Working Range	9.84 - 13.12'
Vertical Working Range	3.28 - 4.59'
MEASUREMENTS	
Total Height (w/out Subconstruction)	12.63'
Total Length of Boom	20.37'
WEIGHTS	
Weight (w/out Subconstruction)	approx. 7720 lbs

BSA 5000 SERIES

HEAVY DISHED ENDS | HEAVY VESSELS



INSTALLATION	BSA 5000 SERIES
Horizontal Working Range	19.69'
Horizontal Feed (Infinitely Variable)	.03 - 8.2 ft/min
Vertical Working Range	11.48'
Vertical Feed, 2-speed	0.41 ft/min | 4.1 ft/min
MEASUREMENTS	
Total Height (w/out Subconstruction)	17.06'
Total Length of Boom	26.25'
WEIGHTS	
Weight (w/out Subconstruction)	approx. 9260 lbs

OUTSIDE GRINDING INSTALLATIONS

TECHNOLOGY

ASA & ASA-R outside grinding applications can both be used with either a grinding belt or cleaning wheel. With a belt, the external grinding of circumferential weld seams and outer surfaces on pipes and vessels can be achieved. Replace the belt with a disk for external back-gouging and bevel edge grinding on butted plates for both longitudinal and circumferential weld seams on pipes and vessels.

While both models maintain a very high material removal rate, the major difference between the two models is that the ASA-R can be used with both a KS-1200 & KS-760 Kombi grinding head, While the ASA is limited to the KS-1200 Kombi grinding head.

These grinding heads can be equipped with grinding belts, wheels, and steel brushes. If the application will be used to grind the entire surface area of a vessel or longitudinal seam, the equipment is equipped with a nearly infinitely adjustable gear-motor unit.

Any welding defects are largely prevented by the reproducible groove shapes with clean metallic surfaces — no carbonization, no hardening cracks.

ASA INSTALLATION SPECIFICATIONS

INSTALLATION		ASA-R	ASA
Free Play of Grinding Head		± 2"	± 2.36"
Travel of Cross Slide		23"	55"
Upward Adjustable Angle, manually		max. 30°	max. 30°
Downward Adjustable Angle, manually		max. 20°	max. 20°
Grinding Pressure (adjustable)		0 to 157.37 lbf	0 to 225 lbf
Installed Power (without dust extractor)		10 hp	27 hp
MEASUREMENTS			
Length		55"	126"
Width		59"	118"
Height		67"	102"
DIMENSIONS			
Contact Wheel		8.86 x 2.95"	ø 12" x 2" | 4" | 5"
Grinding Belt(s)		2.95 x 59"	2" | 4" | 5" x 110"
Grinding Wheel	Diameter	15.75"	26"
	Thickness	0.24 – 0.63"	0.25" - 0.75"
WEIGHT			
Installation Incl. Carriage (without dust extractor)		approx. 2,900 lbs	approx. 7,700 lbs

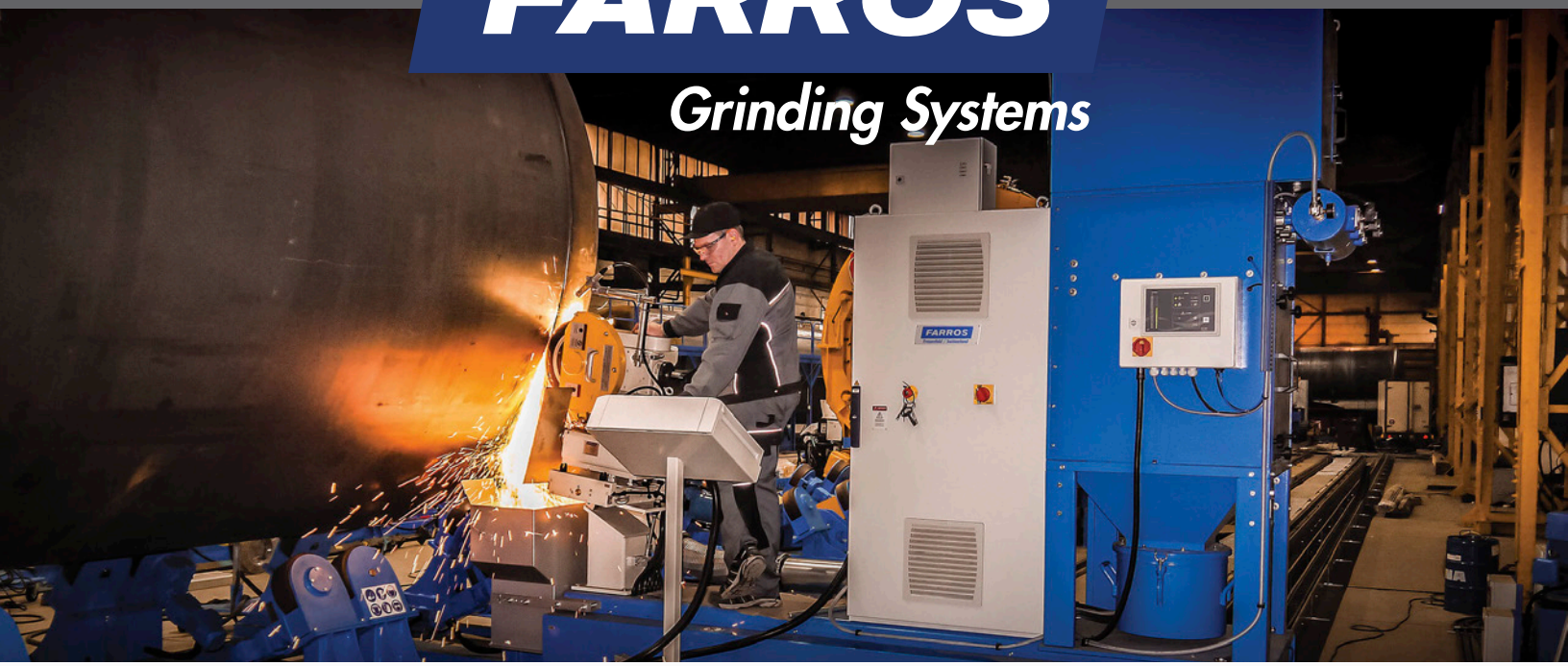
GRINDING HEAD SPECIFICATIONS

	Kombi			Vessel					Dished End	
INSTALLATION	**KS - 760**	**KS - 1200**	**KS - 1210**	**MS - 230**	**MS - 400**	**MS - 500**	**MS - 1050**	**U - 1100**	**H-660**	**H-1450**
Applications	Back Gouging Weld Seam Grinding	Back Gouging, Weld Seam Grinding	Back Gouging, Weld Seam Grinding	Small Vessels, Pipes, Tubes	Small Vessels	Vessels	Heavy Vessels	Dished Ends "Light" Cones Hemisphere	Heavy Dished Ends	Dished Ends Cones Vessels
Dimensions * Smallest Inner Diameter	ø 2.49' *	ø 4.76' *	ø 5.25' *	ø 9.0625" * LENGTH 8.2'	ø 1.51' *	ø 1.8' *	3.44' *	ø 1.97' - 16.4'	ø 8.2' - 32.8'	ø 3.94' *
Motor	10.06 hp	24.80 hp	29.50 hp	5.36 hp	10.06 hp	12.07 hp	14.75 hp	12.07 hp	14.75 hp	14.75 hp
Grinding Disc	ø 15.75" THICKNESS .23 - .625"	ø 25.59" THICKNESS .313 - .78"	ø 900 mm THICKNESS 8 - 20 mm	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Contact Wheel	ø 8.86"	ø 11.81"	ø 11.81"	ø 3.94"	ø 7.88"	ø 11.81"	ø 11.81"	ø 2.17" - 5.9"	ø 7.875"	ø 8.86"
Belt Dimension	2.33" x 4.92'	3.94" x 9.19'	3.94" x 10.66'	1.525'	2" | 3" x 39.38" 2" | 3" x 59.06"	2" | 4" x 43.31" 2" | 4" x 66.92"	2" | 4" x 88.58"	7.38'	3.16" x 8.53'	2- 3.94" x 7.38'
EXTERNAL										
ASA	■	□	□			■	■			
COMBINED										
BSA 1000									□	
BSA 2000 / 13.12'	■			□	□	□		□	□	
BSA 3000 / 13.12'	□	□	□	□	□	□	□	□	□	□
BSA 5000 / 26.25'	□	□	□	□	□	□	□	□	□	□

Ideal Application □ **Possible Application** ■

FARROS

Grinding Systems



FARROS HISTORY

Farros was established in 1940 by Ernest Blatter under the name Blatter AG and was located in Winterthur, Switzerland. Farros Blatter grew into the world leading manufacturer and supplier of specialized grinding machines for many different products including rolls for the paper industry and weld preparation facilities for pressure vessels. Due to the increasing demand in high-quality grinding equipment, Farros Grinding Systems continued to be at the forefront of new markets.

In 2004, Marc Hones and Jürg Widmer (two former employees) purchased a division of the company, renamed it FARROS Grinding Systems GmbH, and relocated the factory to Matzingen, Switzerland. By 2011, FARROS Grinding Systems GmbH was able to build a state-of-the-art facility in Frauenfeld, Switzerland.

PHILOSOPHY

Since 1968 Farros Blatter envisioned and believed that joint efforts between manufacturer and customer will lead to the ultimate success and satisfaction of both parties. Thanks to an innovative and brilliant team of experts and years of experience, Farros Grinding Systems can provide optimal solutions for every need in the grinding and polishing industry.

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