

METAL SEPARATOR

P-TRON 05 GM (Version 1)

DETECTION OF ALL TYPES OF METALS

- FERROUS
- STAINLESS STEEL
- ALUMINUM
- COPPER
- BRASS

RELIABLE DETECTION OF FREE OR ENCAPSULATED CONTAMINANTS.

Version 02/18



METAL SEPARATOR FOR BULK MATERIALS FOR THE INSTALLATION INTO HORIZONTAL OR VERTICAL SUCTION OR PRESSURE LINES.

INDUSTRIES

- PLASTIC INDUSTRY
- RECYCLING INDUSTRY
- CHEMICAL INDUSTRY

APPLICATION

- MACHINERY PROTECTION E. G. INJECTION MOULDING MACHINE, ...
- PRODUCT FILLING / -TRANSFILLING

www.mesutronic.de

MESUTRONIC

Metal Detection made in Germany

CONVINCING ARGUMENTS

- FAST REACTING REJECT SYSTEM WITH POWERFUL AND PERMANENTLY MAINTENANCE-FREE PNEUMATIC ACTUATOR.
- TROUBLE FREE INTEGRATION OF THE COIL DIRECTLY INTO THE TUBING WITHOUT ADDITIONAL FIXTURES.
- STANDARD SYSTEMS FOR THE MOST POPULAR TUBING DIAMETERS (38 MM TO 120 MM).
- IMMUNE AGAINST INTERFERENCE WITH THE NEW „LCR COMPACT“. THIS TYPE OF COIL DOES NOT REQUIRE A SENSOR TUBE OPENING AND IS THEREFORE EFFECTIVLY SHIELDED AGAINST INTERFERENCE.
- REPLACEABLE ANTI-STATIC SENSING TUBE IS COMPLETELY INTEGRATED INTO THE DETECTOR HOUSING.
- PRODUCT EFFECT COMPENSATION – GUARANTEES CONTINUOUS SENSITIVITY AND TROUBLE-FREE OPERATION EVEN WITH "DIFFICULT" PRODUCTS. "PRODUCT EFFECT" CANNOT CREATE FALSE EJECTS.
- SELF MONITORING – IN ADDITION TO THE DETECTION UNIT (COIL AND ELECTRONICS) THE OPERATING PRESSURE AND EJECT FUNCTIONS ARE PERMANENTLY MONITORED AS WELL. MALFUNCTIONS ARE INDICATED!
- DETAILED INFORMATION REGARDING THE ELECTRONICS AMD 05, CAN BE FOUND IN THE REAR OF THIS SPECIFICATION SHEET.

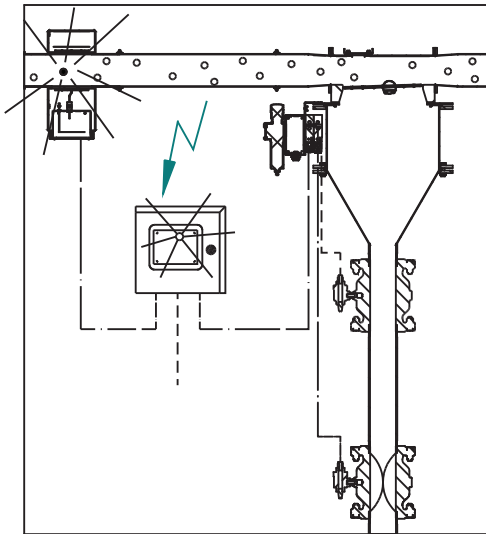
SENSITIVITY

	SIZE 1					SIZE 2				SIZE 3		
APERTURE (MM)	38	45	50	55	60	65	70	75	80	>80	100	120
SENSITIVITY	SPHERE Ø MM					SPHERE Ø MM				SPHERE Ø MM		
FERROUS	0,6					0,9				1,2		
NON-FERROUS	0,6					1,0				1,2		
STAINLESS STEEL	1,0					1,5				1,75		

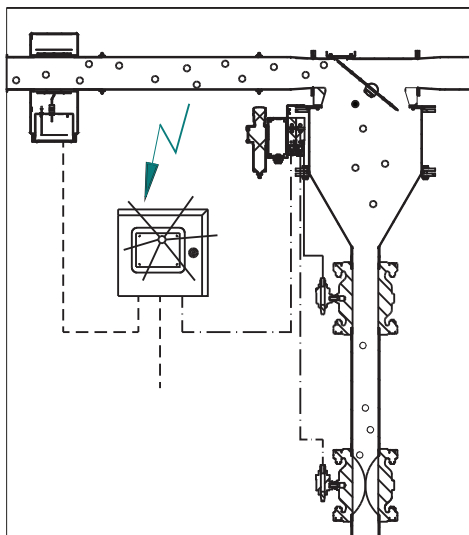
THE SENSITIVITY IS PROPORTIONAL TO THE DIAMETER OF THE APERTURE. THE SMALLER THE APERTURE, THE HIGHER THE SENSITIVITY. THE ABOVE STATED VALUES WERE OBTAINED IN THE CENTRE OF THE APERTURE UNDER SIMULATED PRODUCTION CONDITIONS AND ARE VALID FOR MOST DRY POWDERS AND GRANULATES.

MAXIMUM OBTAINABLE SENSITIVITY VALUES CAN BE ESTABLISHED BY TESTING YOUR PRODUCT SAMPLE IN OUR LABORATORY.

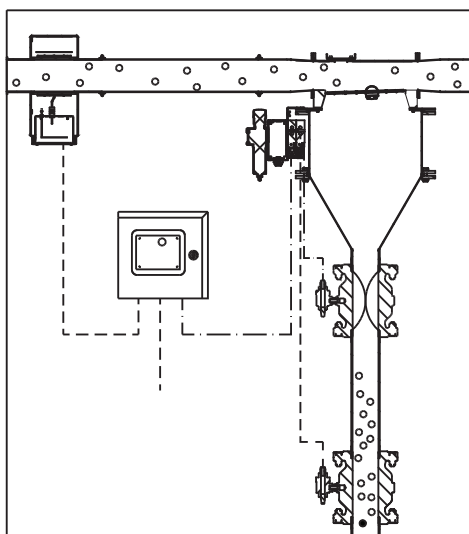
WORKING PRINCIPLE



WITH TRANSMITTER AND RECEIVER COILS AN ELECTRO-MAGNETIC FIELD IS EVALUATED IN THE DETECTOR. IF A METAL PARTICLE ENTERS THE FIELD THE MEASURED SIGNAL IS DEFLECTED IN ONE DIRECTION. WHEN THE METAL PARTICLE LEAVES THE FIELD THE SIGNAL IS DEFLECTED IN THE OPPOSITE DIRECTION. IF THE DETECTION THRESHOLDS ARE EXCEEDED IN BOTH DIRECTIONS A METAL SIGNAL IS CREATED.



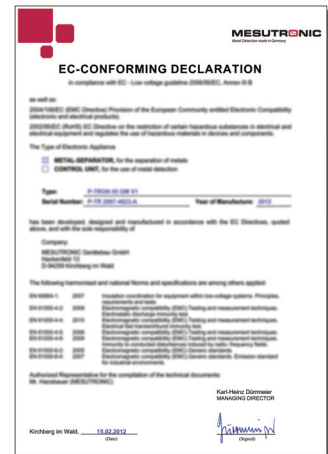
IN CASE OF A METAL SIGNAL THE PNEUMATIC CYLINDER OPENS THE EJECT FLAP. THE METAL PARTICLE IS REDIRECTED INTO THE EJECT BIN TOGETHER WITH A SMALL AMOUNT OF CONVEYED MATERIAL. BECAUSE THE EJECT MATERIAL BIN IS SEALED DURING THE CONVEYING PHASE THE AIR STREAM DOES NOT BREAK DOWN. AFTER THE EJECT DURATION PERIOD THE FLAP IS CLOSED AGAIN AUTOMATICALLY.



A DUAL AIRLOCK DROPS THE EJECTED MATERIAL INTO A EJECT BIN.
THE DUAL AIRLOCK ASSURES AN EVEN PRESSURE IN THE TUBING:

STANDARD SCOPE OF DELIVERY

- THE DETECTION UNIT IS COMPRISED OF THE DETECTION COIL AND THE ELECTRONICS IN A HOUSING
- COMPACT UNIT WITH ROUND PORTS, INCLUDING:
 - FLAP POSITION MONITOR
 - AIR PRESSURE MONITOR
 - "TEST" BUTTON
- EJECT SYSTEM WITH INCORPORATED EJECT MATERIAL BIN AND DUAL AIRLOCK
- INSTALLATION ACCESSORIES AND CONNECTING CABLES
- USER MANUAL INCL. INSTALLATION INSTRUCTIONS, WIRING DIAGRAM AND SPARE PARTS LIST (LANGUAGE AS PER AGREEMENT).
- EC CONFORMITY DECLARATION



OPTIONS

- OPTICAL AND ACOUSTICAL SIGNAL UNITS
 - BEACON
 - BUZZER
 - BEACON WITH SIREN
- SOFTWARE SOLUTIONS
 - mesuSET (DETECTOR OPERATION VIA LAPTOP)
 - mesuNET (DETECTOR NETWORKING AND REMOTE MONITORING)
- TURBINE VIBRATOR FOR NON- FREE FLOWING MATERIAL

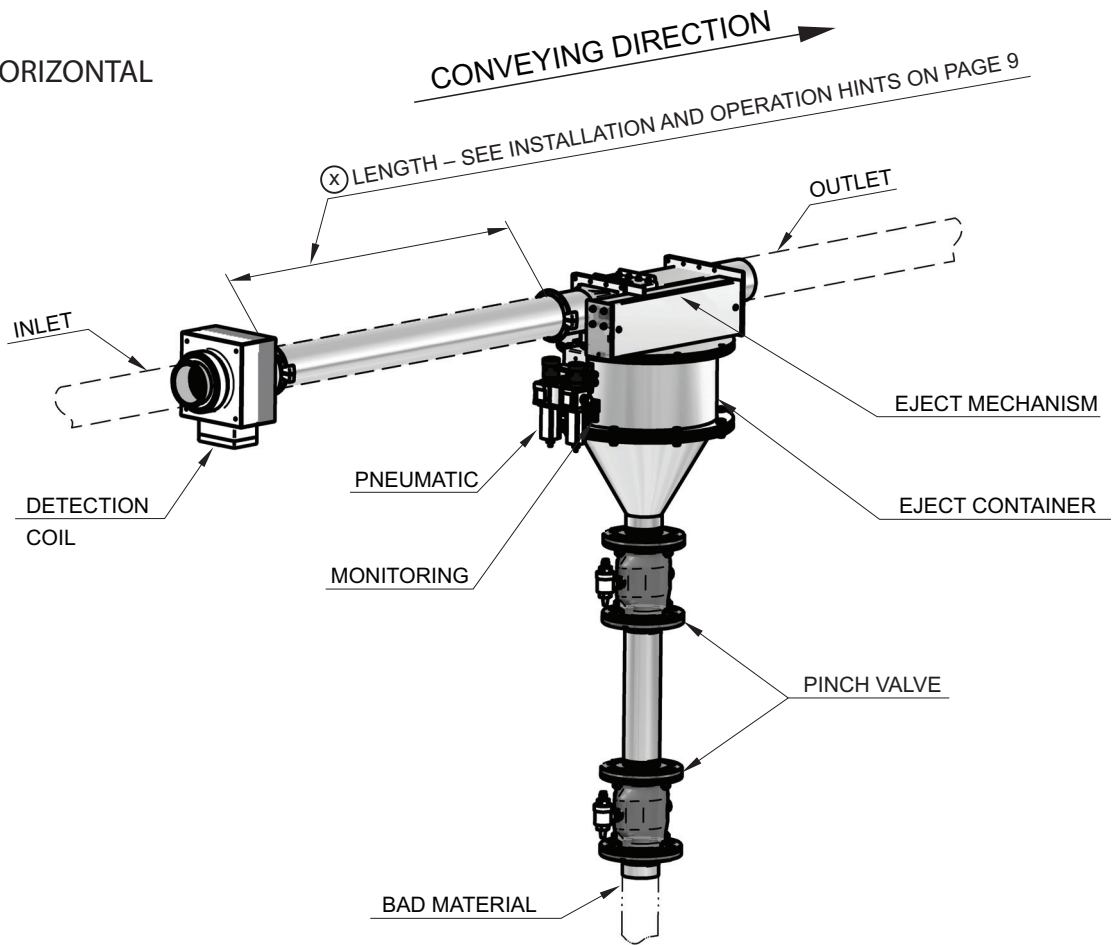
SPECIAL VERSIONS

- EXPLOSION PROOF
- CUSTOM PAINT
- SPECIAL POWER SUPPLY
- EJECT GATE FOR POWDER (P)
- POLISHED TRANSITIONS AND EJECT GATE
- EJECT GATE IN STAINLESS STEEL (1.4404 / 316L OR 1.4571 / 316Ti)
- TUBING CONNECTORS AS PER CUSTOMER'S REQUIREMENTS (FLANGE, CLAMP,...)
- DIAGONAL VERSION
- PINCH VALVE MEMBRANE FOR FOODS OR ABRASIVE MATERIALS
- EJECT BIN WITH LARGER VOLUME



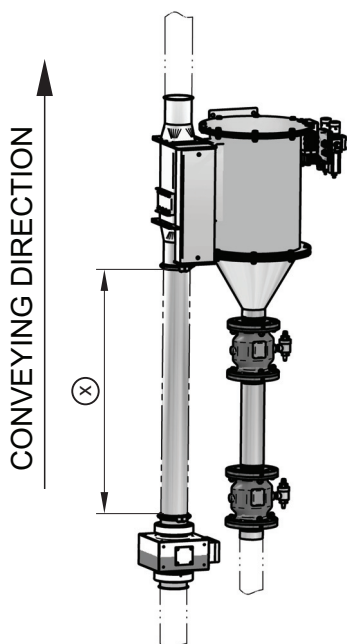
DEVICE VERSIONS

HORIZONTAL



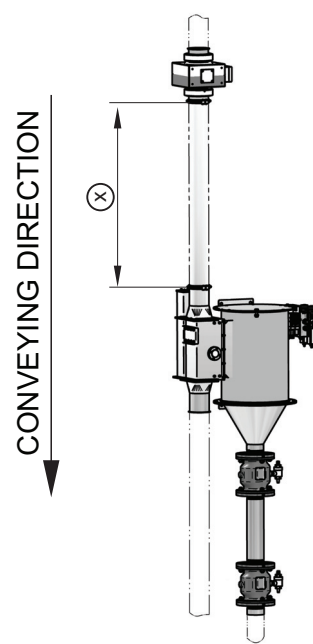
VERTICAL UP

(CONVEYING DIRECTION FROM BOTTOM TO TOP)

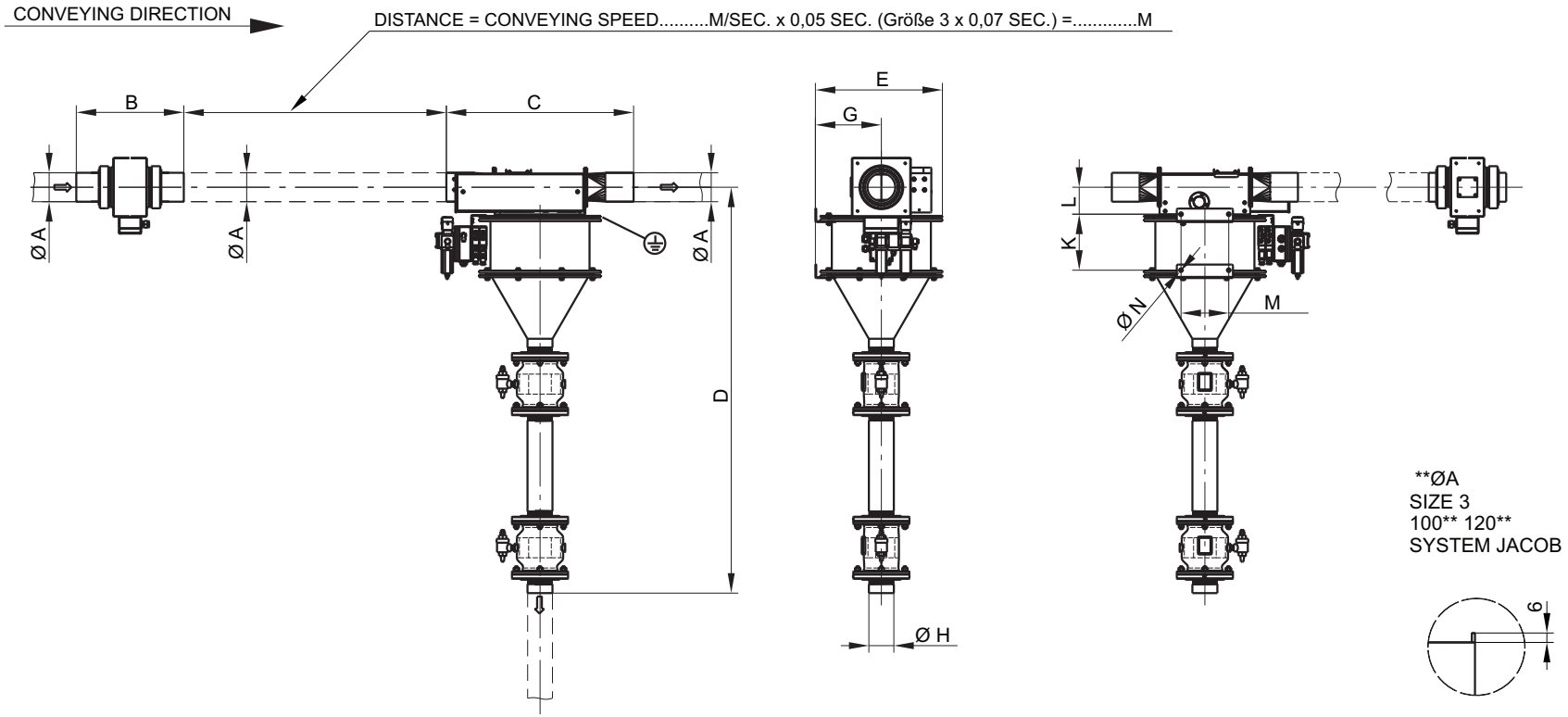


VERTICAL DOWN

(CONVEYING DIRECTION FROM TOP TO BOTTOM)



DIMENSIONS HORIZONTAL



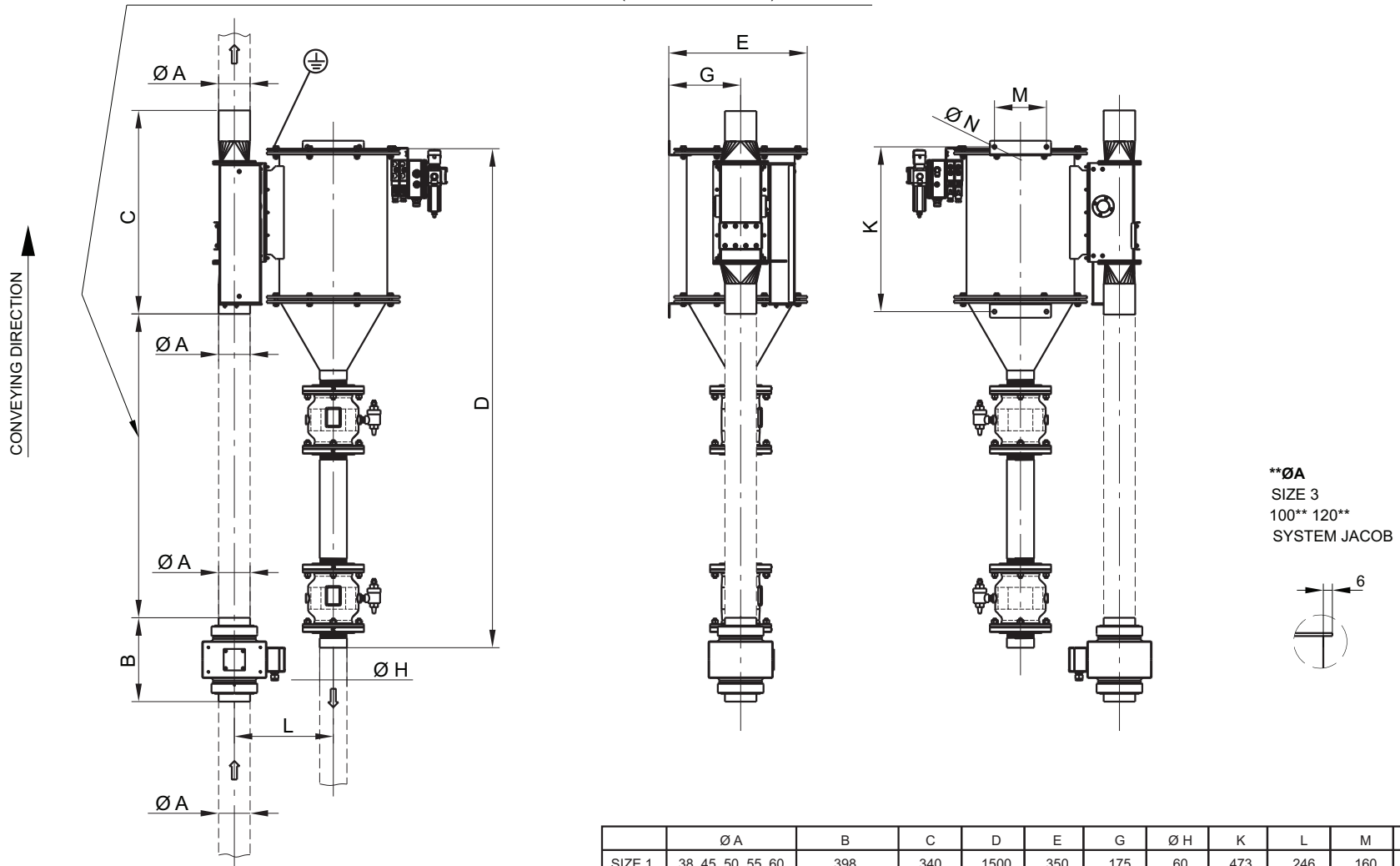
	Ø A	B	C	D	E	G	Ø H	K	L	M	Ø N
SIZE 1	38, 45, 50, 55, 60	270	340	1286	350	175	60	187	90	160	11,5
SIZE 2	60, 70, 75, 80	310	430	1410	350	175	89	187	98	160	11,5
SIZE 3	85, 100**, 120**	430/280/280	669	1116	453	235	89	200	96	170	13

ALL DIMENSIONS IN MM.

DIMENSIONS

VERTICAL UP

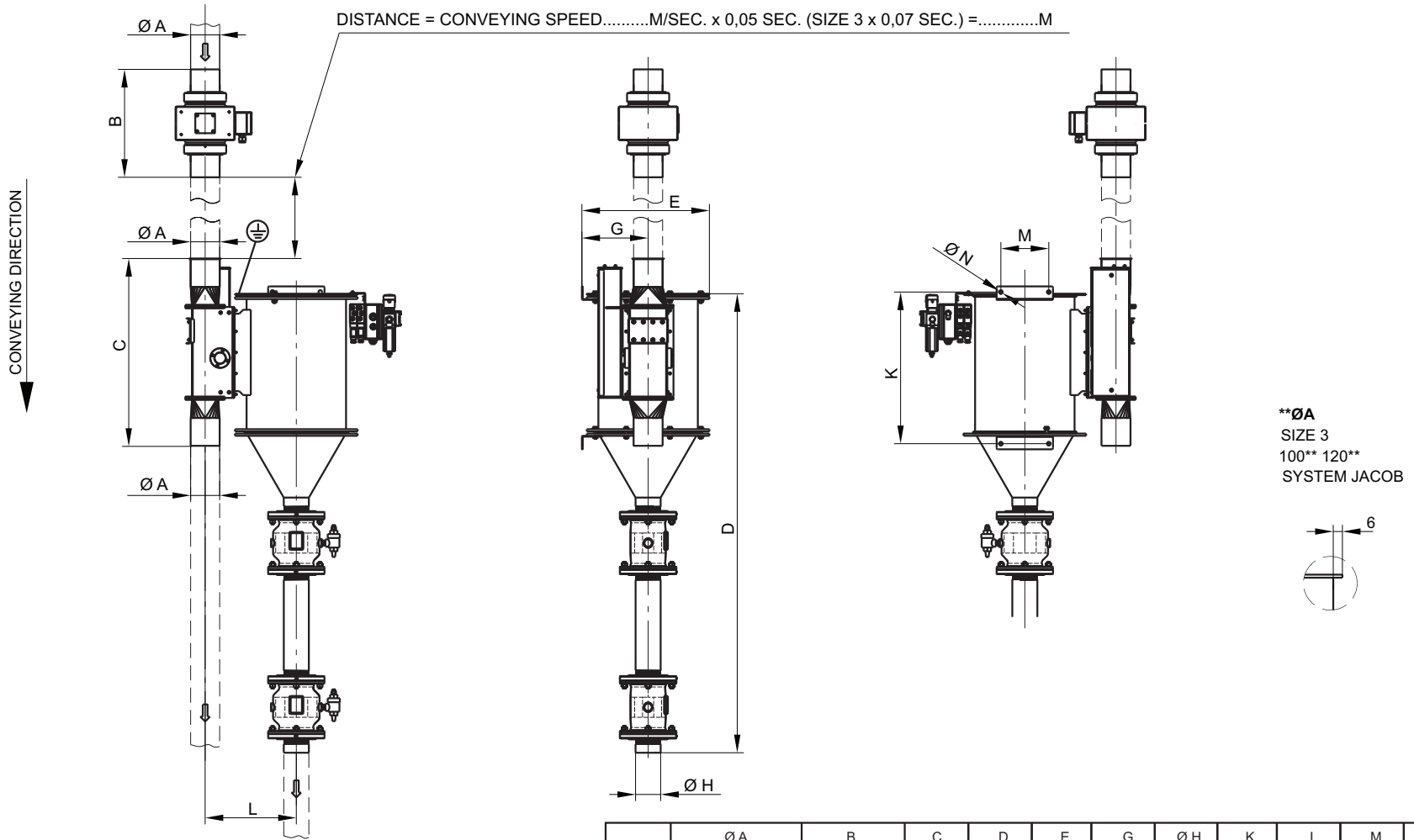
DISTANCE = CONVEYING SPEED.....M/SEC. x 0,05 SEC. (SIZE 3 x 0,07 SEC.) =.....M



	Ø A	B	C	D	E	G	Ø H	K	L	M	Ø N
SIZE 1	38, 45, 50, 55, 60	398	340	1500	350	175	60	473	246	160	11,5
SIZE 2	60, 70, 75, 80	480	430	1620	350	175	89	473	250	160	11,5
SIZE 3	85, 100**, 120**	660/296/310	669	1630	453	235	89	538	324	170	13

ALL DIMENSIONS IN MM.

DIMENSIONS VERTICAL DOWN



	Ø A	B	C	D	E	G	Ø H	K	L	M	Ø N
SIZE 1	38, 45, 50, 55, 60	398	340	1500	350	175	60	473	246	160	11,5
SIZE 2	60, 70, 75, 80	480	430	1620	350	175	89	473	250	160	11,5
SIZE 3	85, 100**, 120**	660/296/310	669	1630	453	235	89	538	324	170	13

ALL DIMENSIONS IN MM.

MATERIALS EMPLOYED

	STANDARD
EJECT GATE:	STAINLESS STEEL (1.4301 / SS 304)
FLAP SEAL:	PUR (POLYURETHANE)
DETECTOR COIL:	HOUSING AND CONNECTIONS IN ALUMINUM
SENSOR AREA:	PE-el (POLYETHYLENE, ELECTRICALLY CONDUCTIVE)
ELECTRONIC HOUSING:	STEEL (S235), PAINTED
PINCH VALVE:	APERTURE 50 MM / HOUSING = POM (POLYACETAL)) APERTURE 80 MM / HOUSING = ALUMINUM SEAL = NATURAL RUBBER
BEARING / CYLINDER SUPPORT:	STAINLESS STEEL (1.4301 / SS 304)

AS AN OPTION WE USE OTHER MATERIALS SUCH AS STAINLESS STEEL (1.4571 / 316Ti) OR PINCH VALVES WITH A EPDM (ETHYLENE PROPYLENE DIENE MONOMER) DIAPHRAGM. PLEASE CONSULT OUR TECHNICIANS.

INSTALLATION AND OPERATION INSTRUCTIONS

- THE DISTANCE BETWEEN THE COIL AND THE REJECT SYSTEM IS DETERMINED ACCORDING TO THIS RULE OF THUMB: CONVEYING SPEED (M/SEC.) x EJECT DURATION (UNIT SIZE 1 und 2 = 0,05 SEC. OR UNIT SIZE 3 = 0,07 SEC.)

$$\text{DISTANCE} = \text{CONVEYING SPEED (M/SEC.)} \quad \times \quad \text{EJECT DURATION (SEC.)}$$

EXAMPLE: CONVEYING SPEED = 15 M/SEC.
REJECT DURATION = 0,05 SEC.

$$\text{DISTANCE} = \quad 15 \text{ M/SEC.} \quad \times \quad 0,05 \text{ SEC.} \quad = 0,75 \text{ M}$$

- THE DETECTOR COIL HAS TO BE FIRM AND TORSION FREE INSTALLED INTO THE SYSTEM BY THE OWNER. POTENTIAL DIFFERENCES HAVE TO BE COMPENSATED. THE EJECT SYSTEM IS TO BE FIXED ON THE 4 INSTALLATION POINTS. THE ASSEMBLY HAS TO BE ABLE TO SUPPORT THE WEIGHT OF THE UNIT.
- THE ELECTRONICS HOUSING IS TO BE INSTALLED IN THE PROPER POSITION. THE ELECTRICAL CABLES NEED TO BE SECURED. INSTALL THE AIR PRESSURE CONNECTIONS ON THE MAINTENANCE UNIT. SYSTEM AIR CONNECTION MIN. 6 BAR.
- IF POSSIBLE, DO NOT INSTALL THE METAL SEPARATOR NEAR STRONG ELECTROMAGNETIC INTERFERENCE FIELDS. POTENTIAL INTERFERENCE MAY BE CAUSED BY LARGE ELECTRIC MOTORS, HIGH VOLTAGE LINES, INSUFFICIENT SHIELDED FREQUENCY CONVERTERS AND SUCH.
- KEEP THE METAL SEPARATOR UNDER POWER. THE INITIALIZATION PERIOD AFTER POWER UP IS 15 SECONDS.

CONTROL UNIT AMD 05 (Version 5.2)

ADVANTAGES THAT WILL CONVINC YOU!

SINGLE BOARD DESIGN WITH BUILT IN REGULATED POWER SUPPLY FOR RELIABLE PERFORMANCE AND EASE OF SERVICE.

AUTO-SETUP-ROUTINE WITH INTERFERENCE SIGNAL SUPPRESSION AND AUTOMATIC SENSITIVITY CALIBRATION.

MULTI-FILTER SYSTEM USING DIGITAL FILTRATION FOR MAXIMUM STABILITY IN HARSH ENVIRONMENTS.

AUTO-BALANCE AUTOMATICALLY DETECTS AND COMPENSATES FOR ANY CHANGES IN THE SIGNAL DURING NORMAL OPERATION. (E.G. TEMPERATURE VARIATIONS)

SELF MONITORING SYSTEM ENSURES ALL IMPORTANT COMPONENTS ARE FUNCTIONING PROPERLY. IN CASE OF A FAULT, RELAY OUTPUTS ARE AVAILABLE. FAULTS ARE DISPLAYED AS TEXT IN REAL TIME.

NARROW DETECTION ZONE PROVIDES AN ACCURATE LOCATION OF THE METALLIC PARTICLE IN THE DETECTION FIELD ALLOWING PRECISE SEPARATION.

MEMBRANE KEYPAD MODERN DESIGN. RUGGED TOUCHSCREEN FOIL WITH ERGONOMIC CONTROLS.

4-KEY KEYPAD CONTROLS SUPPORTED BY EASY TO UNDERSTAND MENUS FAST ACCESS TO ALL OPERATING PARAMETERES. USER SELECTABLE DIALOG LANGUAGE.

5-LINE BACK-LIT LCD DISPLAY WITH METAL SIGNAL INDICATION. ADDITIONAL LED INDICATOR LAMPS ARE BUILT IN TO INDICATE METAL DETECTION OR FAULTS.

METAL COUNTER CAN BE DISPLAYED ON THE LCD SCREEN OR INTERFACED WITH A PRINTER OVER A SERIAL INTERFACE.

3-LEVEL PASSWORD PROTECTION WITH INTER-CHANGEABLE CODE NUMBERS.



PRODUCT STORAGE MEMORY BACKUP FOR UP TO 500 INDIVIDUAL PRODUCTS. EACH PRODUCT HAS A COMPLETE SET OF ADJUSTMENT DATA ASSIGNED, SUCH AS SENSITIVITY, REJECT TIME ETC. THE DISPLAY OF TIME RELEVANT DATA IS IN REAL-TIME. INDIVIDUAL PRODUCT NAMES CAN BE STORED AS WELL.

METAL DETECTOR NETWORK AND REMOTE SERVICE

EVERYTHING IS DO-ABLE! SEVERAL OPTIONAL SOFTWARE-PACKAGES ARE AVAILABLE. EXAMPLE: WITH THE BUILT-IN CAN-BUS-DATA PORT A NETWORK OF UP TO 125 METAL DETECTORS / SEPARATORS CAN BE OPERATED. THE UNITS CAN THEN BE REMOTE CONTROLLED AND OPERATED VIA A CENTRAL PC. ALSO REMOTE DIAGNOSIS, PARAMETER CHANGE AND SOFTWARE UPDATES VIA MODEM ARE POSSIBLE.

SERIAL DATA PORTS

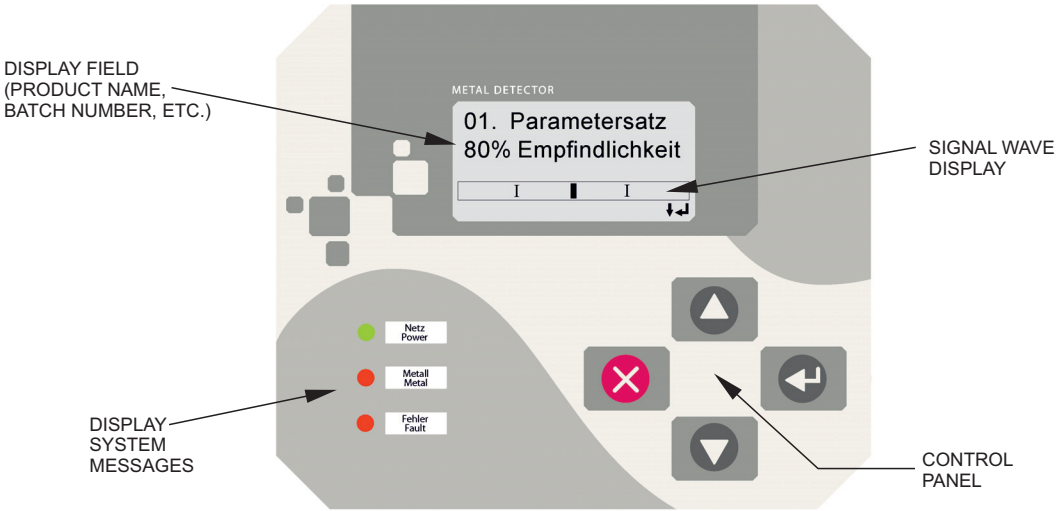
FOR DIFFERENT TASKS. THE METAL DETECTOR IS EQUIPPED WITH 2 SERIAL DATA PORTS (RS 232). HOWEVER ONE OF THIS PORT IS RESERVED FOR FACTORY SERVICE ACCESS SUCH AS ADJUSTMENT DATA LOGGING, SOFTWARE UPDATES ETC.). THE SECOND INTERFACE POINT CAN BE USED FOR A PRINTER, A PLC (P3964R-PROTOKOL) OR A CARD READER: THE PROTOCOL LAYOUT CONFORMS TO ISO 9000 AND HACCP GUIDELINES. BI-DIRECTIONAL DATA COMMUNICATION WITH CUSTOMER'S PLC OR PC SYSTEMS IS AVAILABLE (OPTIONAL SOFTWARE PACKAGE).

ACTIVE QUALITY ASSURANCE

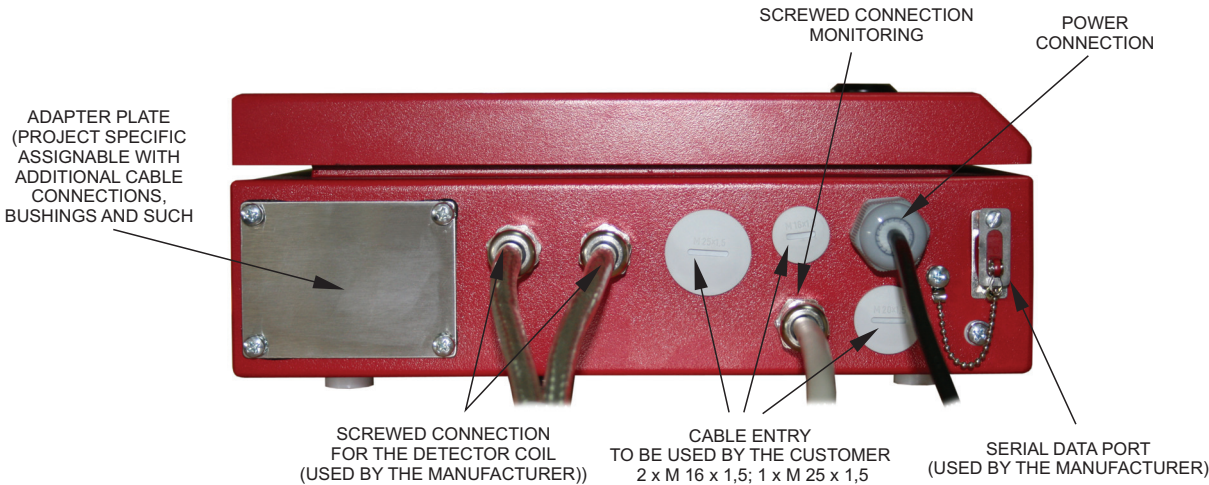
ALL MESUTRONIC PRODUCTS ARE DEVELOPED UNDER DIN, EN AND UVV STANDARDS AND COMPLY WITH THE STRICT CE STANDARDS AS WELL.

CONTROLS

EXAMPLE OF AN INPUT DISPLAY (DEPENDING UPON THE SELECTED MENU THE DISPLAY SHOWS DIFFERENT FUNCTIONS !)



ELECTRONIC BOX

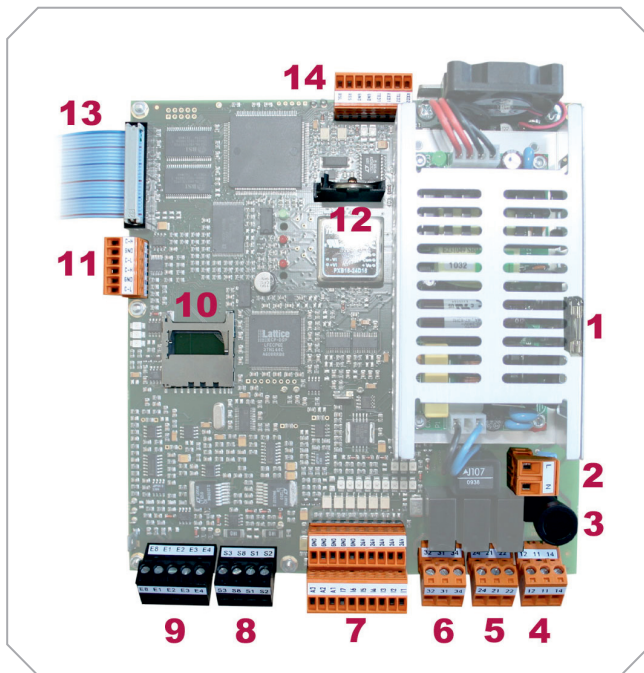


TECHNICAL DATA

POWER SUPPLY:	100 - 240 V AC, 50/60 HZ
CURRENT CONSUMPTION:	MAX. 50 W
FUSED:	1,25 A (SLOW BLOW), 5 x 20 MM ACCORDING TO DIN
TYPE OF PROTECTION:	IP 54
WORKING TEMPERATURE RANGE:	- 5° C TO + 50° C
STORAGE TEMPERATURE RANGE:	- 10° C TO + 60° C
RELATIVE HUMIDITY:	0 TO 95 % (WITHOUT CONDENSATION)
EJECT DURATION:	0,1 TO 10 SEC., ADJUSTABLE
AIR SUPPLY:	6 - 10 BAR (AIR PLUG 7,2)
AIR CONSUMPTION:	< 0,2 NORM-LITRES PER EJECT
BULK MATERIAL SIZE (STANDARD VERSION)	Ø 0,5 MM – 8 MM
DELIVERY PRESSURE:	MAX. +/-0,5 BAR (TO 1,5 BAR OVER PRESSURE OPTIONAL)
CONVEYING SPEED:	TO 30 M/SEC. (HIGHER SPEEDS ON REQUEST)
PAINTED:	STRUCTURE PAINT RAL 3027
CONNECTING CABLE:	2 M (ELECTRONIC / EJECT UNIT/ DETECTION COIL)
POWER CABLE:	APP. 1,8 M CABLE WITH PLUG (TWO POLE AND EARTHING PIN) (US-VERSION WITH US-STANDARD PLUG)

OTHER VERSIONS AVAILABLE

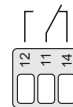
LAYOUT AMD 05



- 1** SPARE FUSE
- 2** POWER SUPPLY 100 - 240 VAC, 50/60 HZ
- 3** DEVICE FUSE 1,25 A (SLOW BLOW) 5 x 20 MM ACCORDING TO DIN



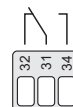
- 4** RELAY 1 (SWITCHES NORMALLY ON METAL)
POTENTIAL FREE CONTACT
FROM FACTORY (IF NOT REQUESTED OTHERWISE)
RELAY 1 IS DESTINATED AS METAL-RELAY
MAX. CONTACT LOAD: 250 V/3 A



- 5** RELAY 2 (SWITCHES NORMALLY ON OPERATION)
POTENTIAL FREE CONTACT
ASIDE FROM THE OPTICAL DISPLAY A POTENTIAL FREE
CONTACT IS AVAILABLE TO POLL THE UNIT CONDITION
MAX. CONTACT LOAD: 250 V/3 A



- 6** RELAY 3 (TO BE CONFIGURED BY THE MANUFACTURER)
POTENTIAL FREE CONTACT
MAX. CONTACT LOAD: 250 V/3 A

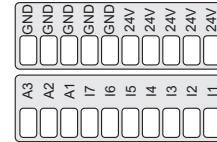


LAYOUT AMD 05

- 7** SEVEN (7) FREE PROGRAMABLE INPUTS (24V DC)
AND THREE (3) FREE PROGRAMABLE OUTPUTS (24V DC)

INPUTS (STANDARD CONFIGURATION)

- I 1 - INITIATOR / BUTTON „NORMAL POSITION“
- I 2 - NOT CONNECTED
- I 3 - AIR PRESSURE MONITOR (PRESSURE SWITCH)
- I 4 - NOT CONNECTED
- I 5 - INITIATOR / BUTTON „EJECT POSITION“
- I 6 - NOT CONNECTED
- I 7 - NOT CONNECTED



OUTPUTS (STANDARD CONFIGURATION)

- A 1 - CONTROL FOR EJECT RELAY
- A 2 - CONTROL FOR PINCH VALVE
- A 3 - NOT CONNECTED

ADDITIONAL CONTACT POSSIBILITIES: LEVEL SENSORS AND MORE

MAX. LOAD FOR ALL INPUTS AND OUTPUTS $I_{TOTAL} \leq 300 \text{ MA CUMULATIVE!}$

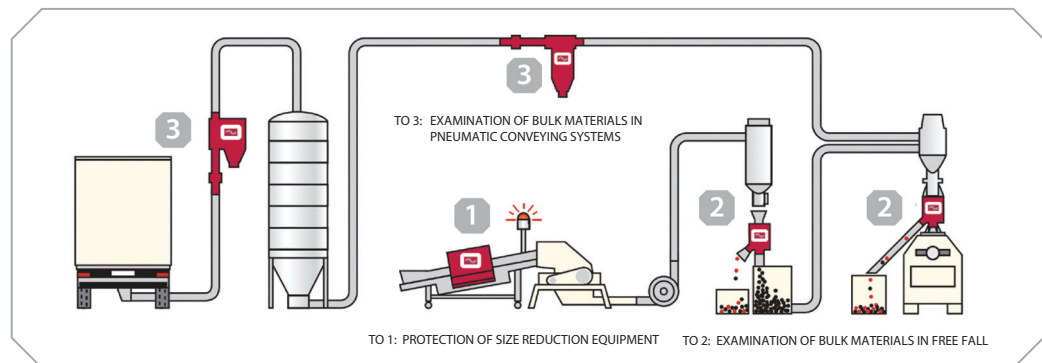
- 8** CONNECTION SENDER (USED BY FACTORY)
- 9** CONNECTION RECEIVER (USED BY FACTORY)
- 10** SLOT FOR SD MEMORY CARD
- 11** CAN – BUS DATA PORT
- 12** BATTERY
- 13** CONNECTION DISPLAY (USED BY FACTORY)
- 14** TWO SERIAL DATA PORTS (ONE PORT IS USED BY FACTORY)

THE MESUTRONIC GERÄTEBAU GMBH IS A GLOBALLY ACTIVE COMPANY IN THE FIELD OF INDUSTRIAL METAL DETECTION TECHNOLOGY WITH HEADQUARTERS IN GERMANY.

A TEAM OF SPECIALISTS FOCUSES FOR DECADES SUCCESSFULLY ON THE DEVELOPMENT, MANUFACTURING AND DISTRIBUTION OF ELECTRONIC METAL DETECTORS AND SEPARATORS FOR ALL INDUSTRIES. DAILY WE TAKE UP THE CHALLENGE TO SOLVE INDIVIDUAL PROBLEMS RELIABLE AND TAILORED TO THE CUSTOMER. WHERE OTHERS SAID "NO" LONG AGO OUR TASK JUST STARTS. TRUE TO THE MOTTO: "NOTHING IS IMPOSSIBLE."

THOUSANDS OF DETECTOR COILS, VARIOUS TRANSMITTERS AND A VARIETY OF EJECTORS AND MECHANICAL COMPONENTS CAN BE COMBINED DEPENDING ON THE TASK AND SERVE AS A BASIS FOR PRACTICAL AND FLEXIBLE SOLUTIONS. THROUGH YEARS OF CLOSE COLLABORATION WITH OUR CUSTOMERS FROM VARIOUS INDUSTRIES, WE HAVE SHAPED OUR EQUIPMENT PROGRAM CONTINUAL WITH THE RESULT THAT ALL MESUTRONIC PRODUCTS ARE NOW LEADING THE WAY IN PERFORMANCE, QUALITY, RELIABILITY AND HANDLING.

IN ADDITION, OUR WORLDWIDE SALES AND SERVICE NETWORK ENSURES THAT ON ALL CONTINENTS OF THE WORLD A PROFESSIONAL COMPETENT CONTACT PERSON IS AVAILABLE FOR YOU.



MESUTRONIC

Metal Detection made in Germany

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