

METAL SEPARATOR

P-TRON 03 FM

DETECTION OF ALL TYPES OF METALS

- FERROUS
- STAINLESS STEEL
- ALUMINUM
- COPPER
- BRASS
-

RELIABLE DETECTION OF FREE OR ENCAPSULATED CONTAMINANTS.

Version 11/19

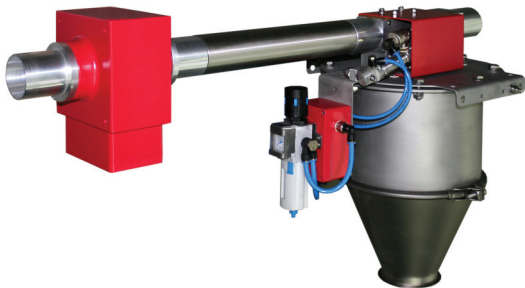
METAL SEPARATOR FOR THE INSTALLATION IN VACUUM TRANSPORT LINES WITH SHORT CONVEYING CYCLES. INCLUDES AN AUTOMATIC EJECTOR WITH BYPASS FUNCTION. DETECTS METAL IN VIRGIN AND REPROCESSED GRANULES OR REGRIND.

INDUSTRIES

- PLASTIC INDUSTRY
- RECYCLING INDUSTRY
- CHEMICAL INDUSTRY
-

APPLICATION

- MACHINERY PROTECTION



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MESUTRONIC

Metal Detection made in Germany

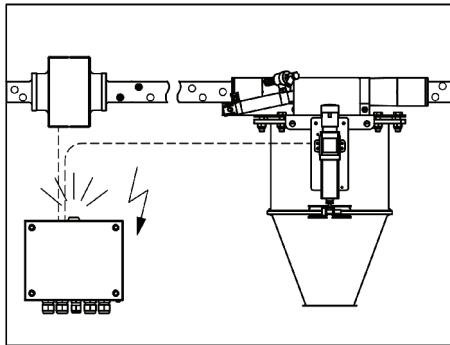
CONVINCING ARGUMENTS

- FAST REACTING REJECT SYSTEM WITH POWERFUL AND PERMANENTLY MAINTENANCE-FREE PNEUMATIC ACTUATOR.
- COMPACT DIMENSIONS AND DESIGN. ROUND PORTS ALLOW FOR A EASY AND TROUBLE FREE INTEGRATION INTO THE EXISTING PROCESS. QUICK AND EFFICIENT INSTALLATION.
- DESIGNED FOR ALL APPLICATIONS AND THROUGHPUTS. APERTURES FROM: 38 MM - 80 MM AVAILABLE!
- IMMUNE AGAINST INTERFERENCE WITH THE NEW „LCR COMPACT“ COIL FEATURING AN INTERFERENCE SHIELD AND A REMOVEABLE ANTI-STATIC SENSING TUBE.
- PRODUCT EFFECT COMPENSATION – GUARANTEES CONTINUOUS SENSITIVITY AND TROUBLE-FREE OPERATION EVEN WITH "DIFFICULT" PRODUCTS. "PRODUCT EFFECT" CANNOT CREATE FALSE REJECTS.
- SELF MONITORING – IN ADDITION TO THE DETECTION UNIT (COIL AND ELECTRONICS) THE OPERATING PRESSURE AND REJECT FUNCTIONS ARE PERMANENTLY MONITORED AS WELL. AN AUTO-TEST BUTTON IS STANDARD. MALFUNCTIONS ARE INDICATED!

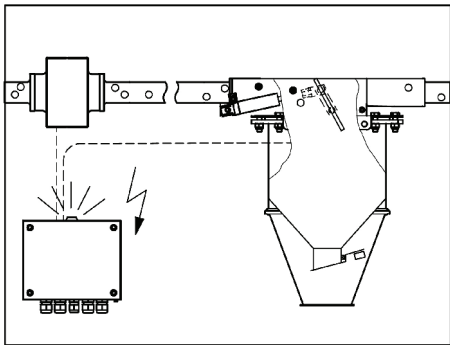


MODELS FOR THE INSTALLATION IN A VERTICAL SUCTION LINE.
DIRECTION SHOWN: FROM TOP TO BOTTOM, ALTERNATE LAYOUT: FROM BOTTOM TO TOP.

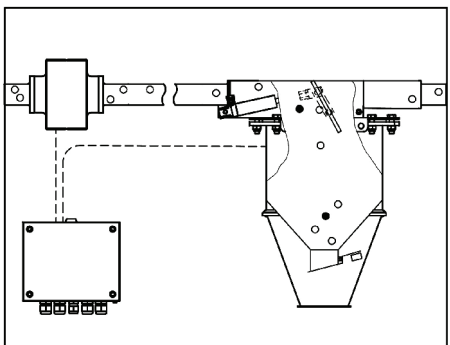
WORKING PRINCIPLE



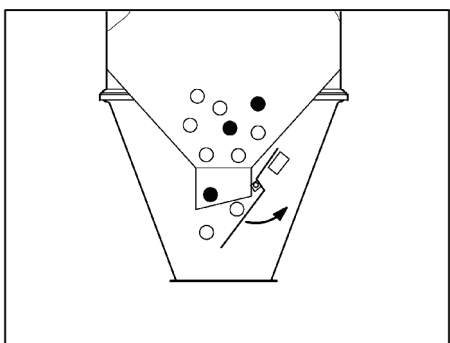
WITH TRANSMITTER AND RECEIVER COILS AN ELECTROMAGNETIC FIELD IS EVALUATED IN THE DETECTOR. IF A METAL PARTICLE ENTERS THE FIELD THE MEASURED SIGNAL IS DEFLECTED IN ONE DIRECTION. WHEN THE METAL PARTICLE LEAVES THE FIELD THE SIGNAL IS DEFLECTED IN THE OPPOSITE DIRECTION. IF THE DETECTION THRESHOLDS ARE 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 MATERIAL BIN.



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.



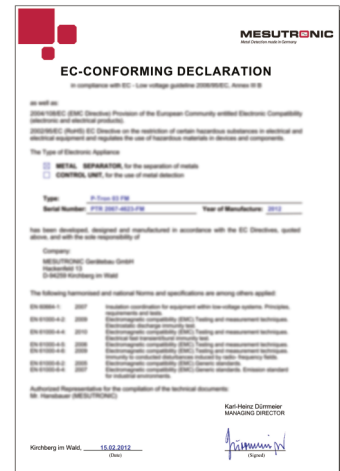
DURING A CONVEYING PAUSE THE EJECT MATERIAL BIN IS EMPTIED. AS SOON AS THE CONVEYING STARTS AGAIN THE PENDULUM FLAP IS SEALED THROUGH THE VACUUM CREATED IN THE EJECT MATERIAL BIN.

STANDARD SCOPE OF DELIVERY

- COMPACT UNIT WITH ROUND PORTS, INCLUDING:
 - FLAP POSITION MONITOR
 - AIR PRESSURE MONITOR
 - "TEST" BUTTON

- USER MANUAL INCL. INSTALLATION INSTRUCTIONS, WIRING DIAGRAM AND SPARE PARTS LIST IN SEVERAL LANGUAGES

- EG CONFORMITY DECLARATION



OPTIONS

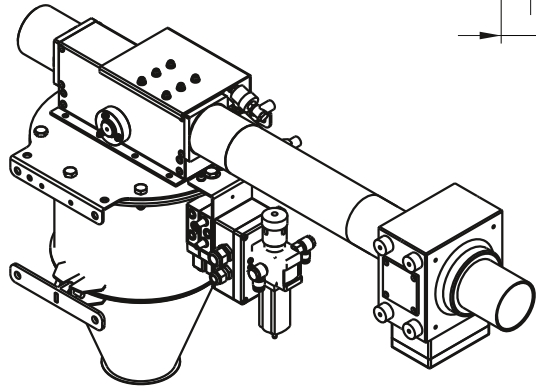
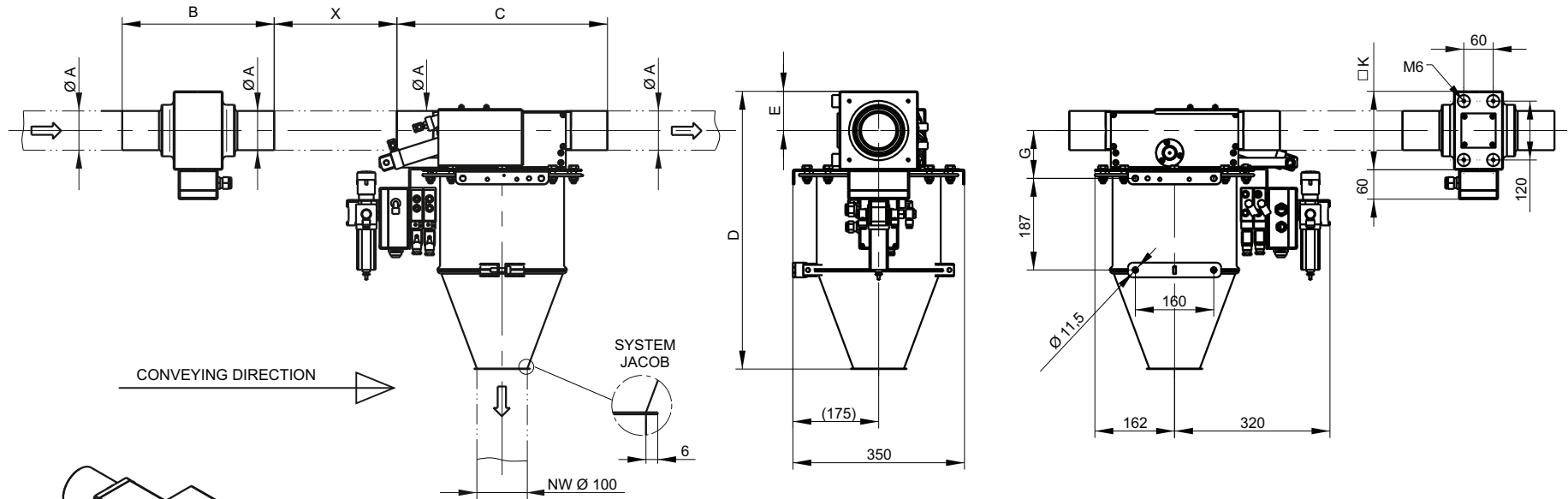
- OPTICAL AND ACOUSTICAL SIGNAL UNITS
 - BEACON
 - BUZZER
 - BEACON WITH SIREN

- REJECTION EVENT COUNTER

- (SPECIAL PORT)TRANSITIONS / FLANGES
 - FOR THE MATERIAL INLET PORT
 - FOR THE "GOOD" MATERIAL PORT
 - FOR THE "REJECT" PORT
 - (SHAPE AND SIZE ARE PROJECT SPECIFIC, FLANGES ARE AVAILABLE AS WELL)

DIMENSIONS

P-TRON FM H (HORIZONTAL INSTALLATION)



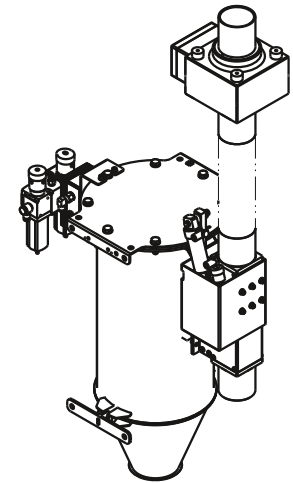
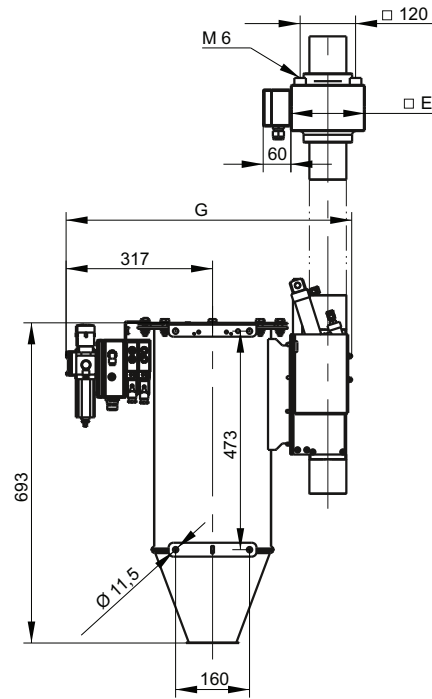
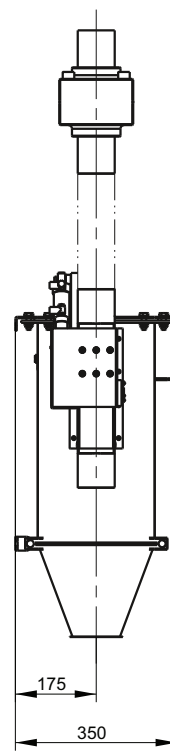
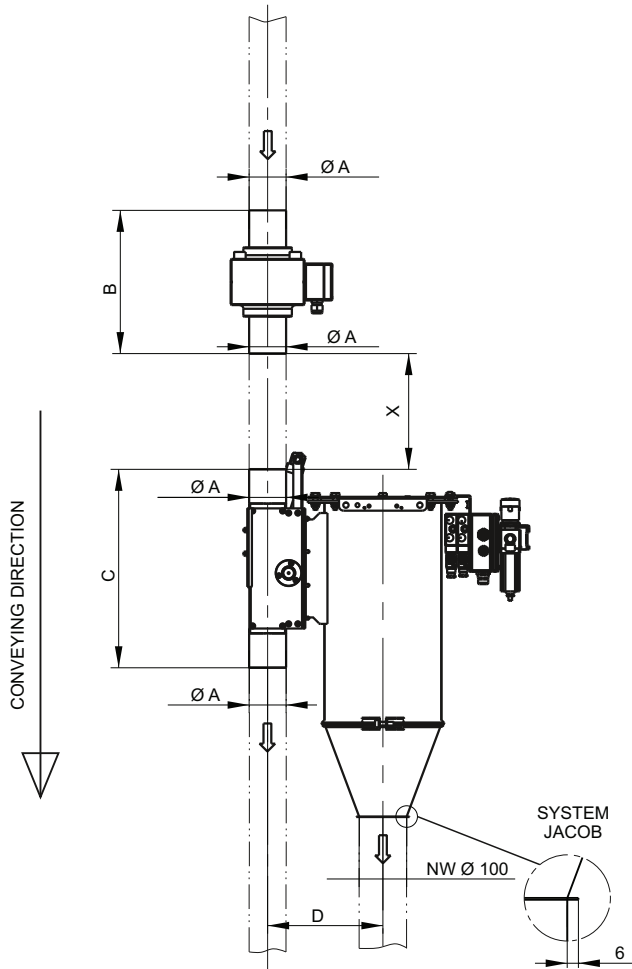
X = THE DISTANCE IS CALCULATED AS FOLLOWS:
 DISTANCE = CONVEYING SPEED M/SEC. x 0,05 SEC. = M

	Ø A	B	C	D	E	G	K
SIZE 1	38, 45, 50, 55, 60	270	340	554	75	90	150
SIZE 2	65, 70, 75, 80	310	430	566	80	98	160

ALL DIMENSIONS IN MM.

DIMENSIONS

P-TRON FM V (VERTICAL INSTALLATION FOR MATERIAL MOVEMENT FROM THE TOP TO BOTTOM)



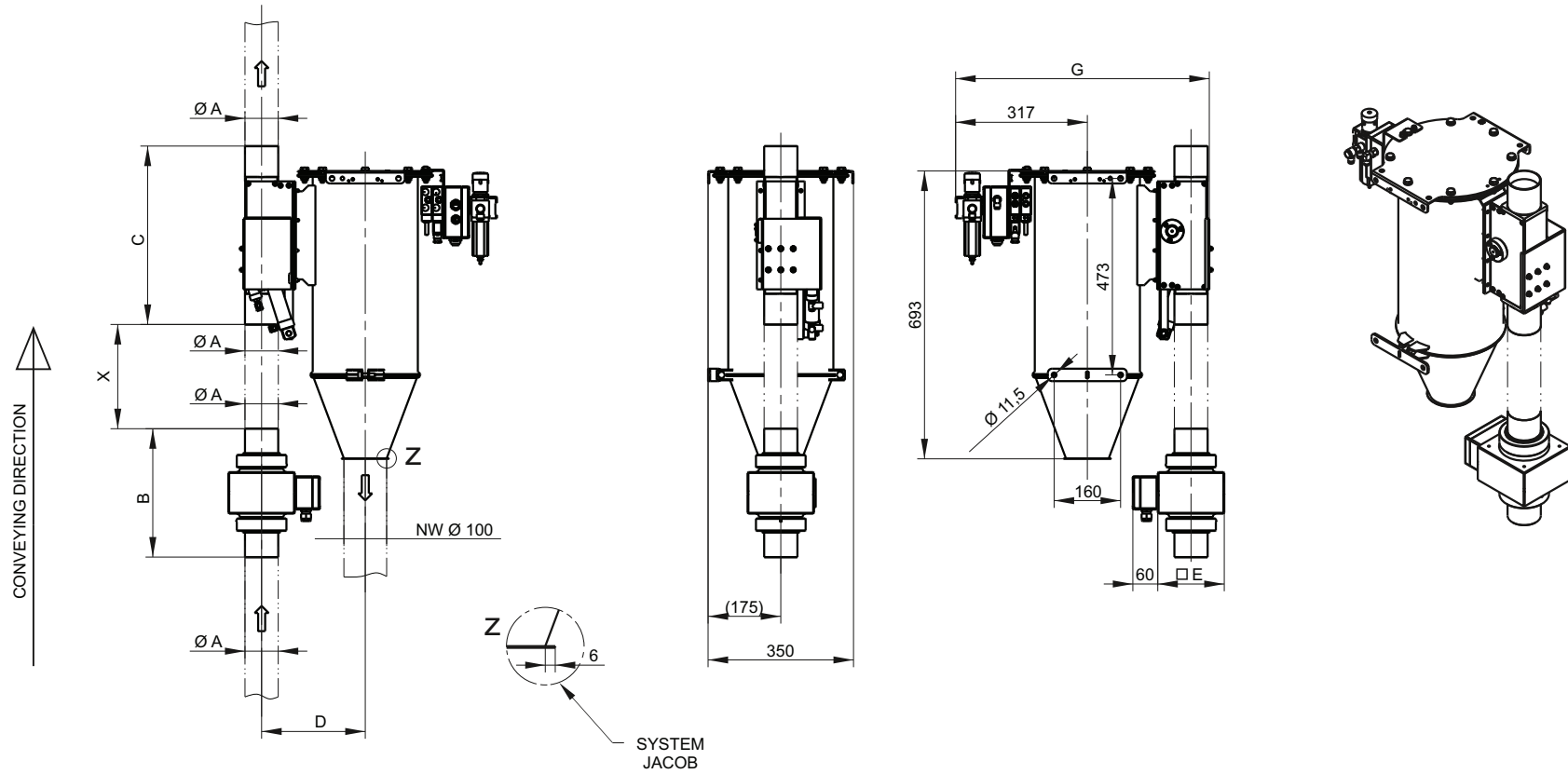
X = THE DISTANCE IS CALCULATED AS FOLLOWS:
 DISTANCE = CONVEYING SPEED M/SEC. x 0,05 SEC. = M

	A Ø	B	C	D	E	G
SIZE 1	38, 45, 50, 55, 60	270	340	246	150	600
SIZE 2	65, 70, 75, 80	310	430	250	160	620

ALL DIMENSIONS IN MM.

DIMENSIONS

P-TRON FM V (VERTICAL INSTALLATION FOR MATERIAL MOVEMENT FROM THE BOTTOM TO TOP)



X = THE DISTANCE IS CALCULATED AS FOLLOWS:
 DISTANCE = CONVEYING SPEED M/SEC. x 0,05 SEC. = M

	A Ø	B	C	D	E	G
SIZE 1	38, 45, 50, 55, 60	270	340	246	150	600
SIZE 2	65, 70, 75, 80	310	430	250	160	620

ALL DIMENSIONS IN MM.

MATERIALS EMPLOYED

	STANDARD	OPTION ABRASIVE PRODUCTS
COIL HOUSING	ALU	ALU
ELECTRONIC HOUSING	ST 37	ST 37
BEARING / CYLINDER SUPPORT	GALVANIZED / ALU	STAINLESS STEEL (1.4301 / SS 304)
PRODUCT CONTACTING PARTS		
TRANSITIONS	ALU	STAINLESS STEEL (1.4301 / SS 304)
REJECT GATE	STAINLESS STEEL (1.4301 / SS 304)	STAINLESS STEEL (1.4301 / SS 304)
FLAP SEAL	PUR	PUR
SENSING TUBE	PE - el	GRP

WE OFFER PROJECT SPECIFIC TRANSITIONS FOR EVERY UNIT IN ALL SHAPES AND SIZES. PLEASE CONSULT THE SALES DEPARTMENT.

INSTALLATION AND OPERATION INSTRUCTIONS

- THE DISTANCE BETWEEN THE COIL AND AND THE REJECT SYSTEM IS DETERMINED ACCORDING TO THIS RULE OF THUMB:

$$\text{DISTANCE} = \text{CONVEYING SPEED (M/S)} \quad \times \quad \text{REJECT DURATION (S)}$$

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

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

- INSTALL THE COILS FREE OF VIBRATIONS. THE METAL SEPARATOR FRAME HAS 4 MOUNTING LUGS. USE FASTENERS ACCORDING TO THE WEIGHT OF THE UNIT.
- 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 AT ALL TIMES. THE INITIALIZATION PERIOD AFTER POWER UP IS 15 SECONDS.
- POLL THE FAULT INDICATOR AT (CONNECTION BLOCK (C)).

SENSITIVITY

	SIZE 1					SIZE 2			
MODEL DN IN MM	38	45	50	55	60	65	70	75	80
SENSITIVITY IN MM									
FE	0,6					0,9			
NFE	0,6					1,0			
SS (304)	1,0					1,5			

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.

CONTROL UNIT AMD 03 (VERSION 3.5)

ADVANTAGES THAT WILL CONVINCEN YOU!

AUTO BALANCING

DURING POWER UP AS WELL AS DURING STANDARD OPERATION, THE CONTROL UNIT CONTINUOUSLY BALANCES ITSELF. OVER TIME, COILS MAY SHIFT AND SENSITIVE COMPONENTS MAY LOOS TOLERANCE. TEMPERATURE ALSO HAS AN EFFECT ON THE PERFORMANCE AND MUST BE COMPENSATED FOR. THIS SELF BALANCING ROUTINE INSURES THAT THE DETECTOR IS CONTINUOUSLY OPERATING AT MAXIMUM PERFORMANCE.

PRODUCT EFFECT COMPENSATION

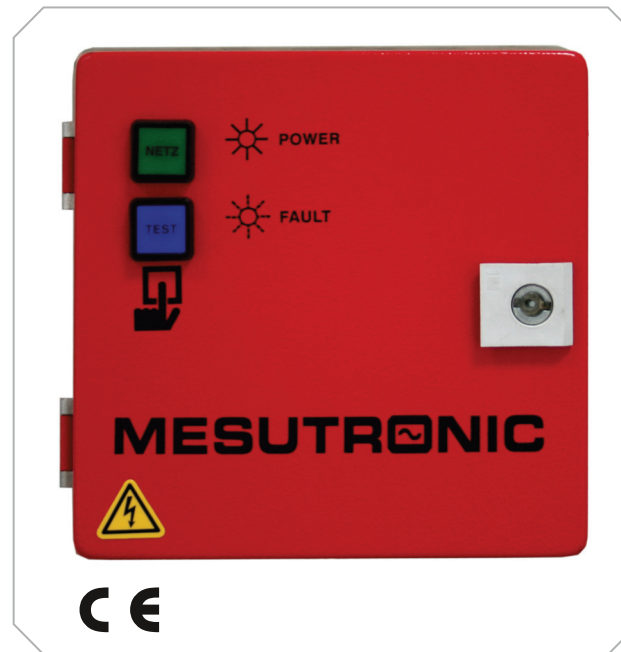
ELECTRICALLY CONDUCTIVE OR HUMID PRODUCTS CAN CAUSE EXTREME LOSS OF SENSIVITY OR EVEN RENDER CONVENTIONAL DETECTORS USELESS. THE EVALUATION ELECTRONIC SYSTEM AMD 03 ELIMINATES THESE PRODUCT EFFECTS ELECTRONICALLY AND GUARANTEES A CONSTANT SENSIVITY.

SERVICE FRIENDLY

EASY TO DIAGNOSE:
OPTICAL FAULT INDICATION WITH LED'S
"DO IT YOURSELF-REPAIRS" ARE EASY. "PLUG AND PLAY" CONNECTORS, A QUARTZ DRIVEN SENDER FREQUENCY AND THE SINGLE MOTHERBOARD CONSTRUCTION GUARANTEE EASE OF REPAIR. ALL AMD 03 MOTHERBOARDS ARE 100% COMPATIBLE!

TEMPERATURE COMPENSATION

CUTTING EDGE TECHNOLOGY! EVEN EXTREME TEMPERATURE FLUCTUATIONS ARE EFFORTLESS COMPENSATED WITHOUT AFFECTING THE FUNCTIONS OF THE METAL SEPARATOR.



EASY TO OPERATE

EASY TO USE CONTROLS ALONG WITH VISUAL DISPLAYS MAKE THE INSTALLATION AND OPERATION OF THE AMD 03 EFFORTLESS.

NOISE SUPPRESSION

BY ADDING DYNAMIC DIGITAL FILTRATION CIRCUITRY, VIBRATIONS WHICH ARE OFTEN TRANSFERRED TO THE DETECTOR CAN NOW BE FILTERED OUT WITHOUT HAVING TO LOWER THE SENSIVITY OF THE SYSTEM.

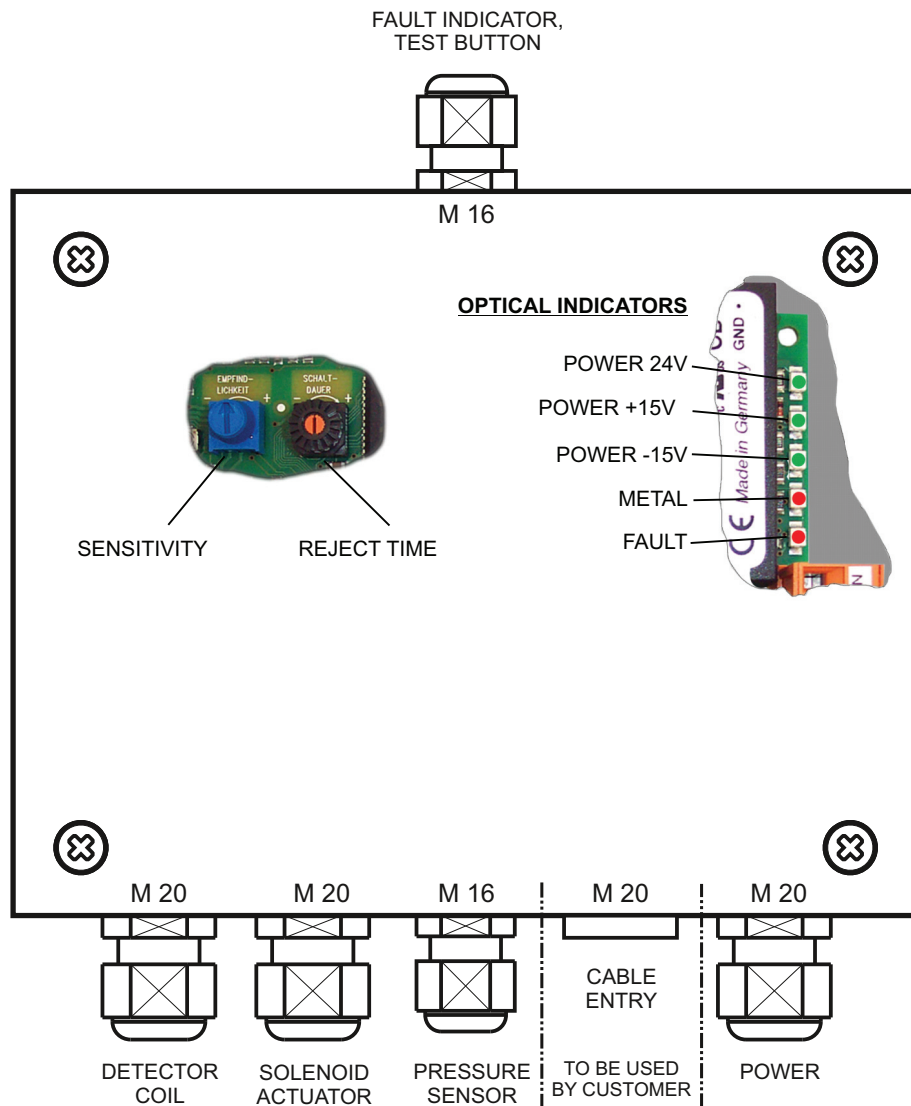
SELF MONITORING FEATURES

THE SYSTEM IS FULLY AUTOMATIC AND CONTINUOUSLY MONITORED. MALFUNCTIONS ARE RELIABLY INDICATED. IN ADDITION FAULT S IN THE MAIN COMPONENTS ARE INDICATED THRU LED'S. THE REJECT FLAP REMAINS IN THE REJECT POSITION IN CASE OF A MALFUNCTION, LOSS OF POWER OR AIR PRESSURE UNTIL THE PROBLEM HAS BEEN ELIMINATED.

QUALITY

SMD (SURFACE MOUNTED DEVICES) ARE USED IN THE PRODUCTION OF THE CONTROLS. THEY NOT ONLY OFFER A COMPACT DESIGN, BUT ALSO PROVIDE HIGHER QUALITY AND MORE ROBUST PERFORMANCE UNDER HARSH CONDITIONS. ALL MESUTRONIC PRODUCTS CONFORM TO THE CE STANDARDS AND ARE DEVELOPED ACCORDING TO TECHNICAL STANDARDS AND NORMS SUCH AS EN, DIN AND UVV.

CONTROLS

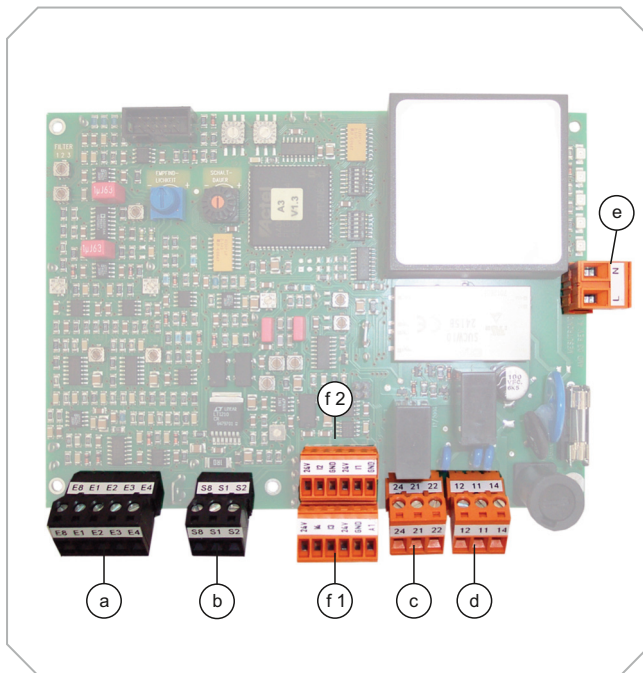


TECHNICAL DATA

POWER SUPPLY:	100 – 240 V AC, 50/60 HZ
CURRENT CONSUMPTION:	MAX. 0,4 A
FUSE:	315 MA SLOW BLOW, 5 x 20 MM TO DIN
TYPE OF PROTECTION:	IP 54
WORKING TEMPERATURE RANGE:	- 5 °C TO +50 °C
STORAGE TEMPERATURE RANGE:	-10 °C TO +60 °C
REL. HUMIDITY:	0 TO 95 % (WITHOUT CONDENSATION)
MAX. CONVEYING SPEED:	30 M/SEC. - HIGHER SPEEDS ON REQUEST
REJECT DURATION:	0,4 TO 3 SEC., ADJUSTABLE
PAINTED:	RAL 3027 = RASPBERRY RED
AIR SUPPLY:	6 - 10 BAR (AIR PLUG 7,2)
AIR CONSUMPTION:	< 0,2 NORM-LITRES PER REJECT
MAX. BULK MATERIAL SIZE:	Ø 8,0 MM
MIN. BULK MATERIAL SIZE:	Ø 0,5 MM, OPTIONAL: DUST-FREE VERSION
DELIVERY PRESSURE:	MAX. TO 0,5 BAR
POWER CABLE:	APP. 1,6 M CABLE WITH PLUG (TWO POLE AND GROUND PIN) (US-VERSION WITH US-STANDARD PLUG)

OTHER VERSIONS AVAILABLE

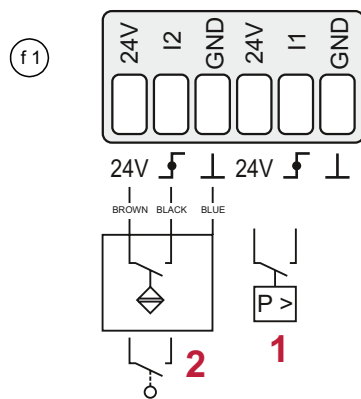
INPUTS AND OUTPUTS



(f1) + (f2) FUNCTION BLOCK + (e) POWER +
 (a) RECEIVER + (b) TRANSMITTER ARE USED BY MANUFACTURER.

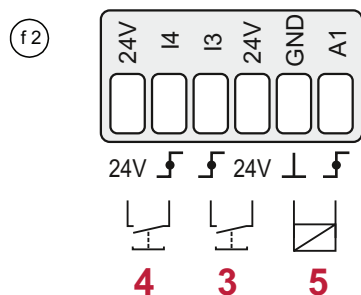
(f1) + (f2) FUNCTION BLOCK

CONNECTING EXAMPLES



INPUTS (STANDARD LAYOUT)

- 1 I1 – PRESSURE MONITOR, CONTACTS CLOSED IF PRESSURE OK.
- 2 I2 – INITIATOR (REJECT) FLAP POSITION SENSOR
- 3 I3 – RESET-BUTTON, EXTERNAL TO REST THE FAULT INDICATION (MAX. CABLE LENGTH 5M)
- 4 I4 – TEST-BUTTON, EXTERNAL TO TEST THE FUNCTION OF THE METAL SEPARATOR (MAX. CABLE LENGTH 5M)



24 VDC- OUTPUTS (STANDARD LAYOUT)

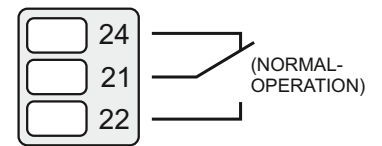
- 5 A1 – ACTIVE OUTPUT SWITCHES WHEN METAL IS DETECTED (OPERATES THE SOLENOID VALVE).

CONNECT ONLY POTENTIAL FREE CONTACTS (NO EXTERNAL SUPPLIED VOLTAGE) ! MAX. (TOTAL) POWER CONSUMPTION ≤ 100 MA (FOR ALL CONNECTIONS / (f1) + (f2))

INPUTS AND OUTPUTS

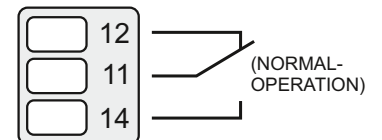
c RELAY 2 (FAULT)

- FLOATING RELAY CHANGE OVER CONTACT ACTUATED BY SELF MONITORING SYSTEM
MAX. CONTACT LOAD: 250V/3A



d RELAY 1 (METAL)

- FLOATING RELAY-CHANGE OVER CONTACT ACTUATED WHEN METAL IS DETECTED
MAX. CONTACT LOAD: 250 V / 3 A
PULSE DURATION (AUTO-RESET): 0,14 SEC. TO 19 SEC. (ADJUSTABLE)



e POWER SUPPLY

- 100 – 240 V AC, 50/60 Hz, CURRENT CONSUMPTION: MAX. 400 MA
OTHER VERSIONS AVAILABLE

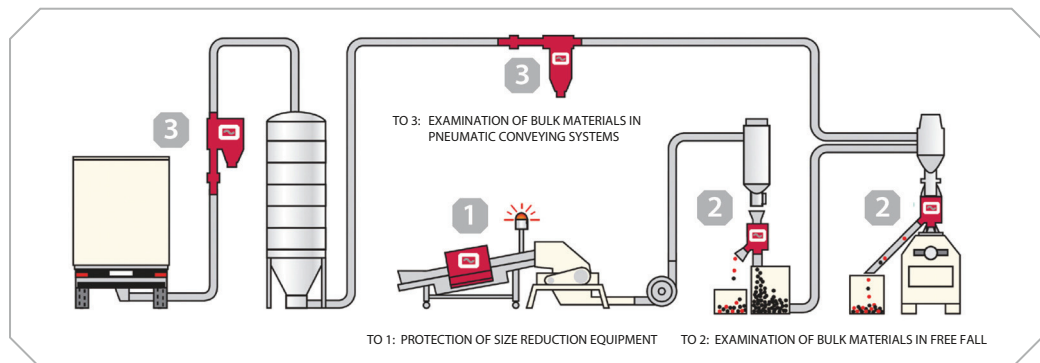


THE MESUTRONIC GERÄTEBAU GMBH IS A GLOBALLY ACTIVE COMPANY IN THE FIELD OF INDUSTRIAL METAL DETECTION TECHNOLOGY WITH HEADQUARTERS IN GERMANY.

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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