



Non-Contact Absolute Position Transducer

Leading technology revolutionary determine who will hold the competitive advantage today and tomorrow.

MAGNETOSTRICTIVE
TECHNOLOGY

Germanjet®
PART OF YOUR POSITIONING



*...Experts in
non-contact sensing*

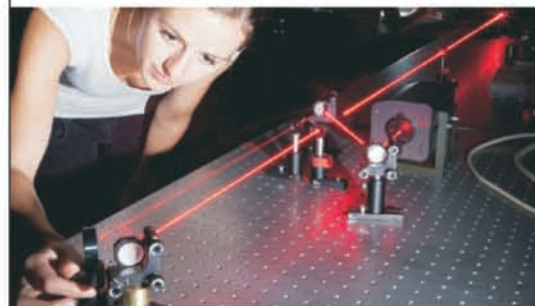
*for extremely accurate, low-noise, and wear-free
absolute position feedback*

Our philosophy ...

Leading technology revolutionary can determine who will hold the competitive advantage today and tomorrow. Germanjet has been in the position to be the trendsetter for sensing revolution. Recognizing promising ideas and identify new approach to challenge has always been one of the most significant elements in our technology planning. To accomplish all this, we closely align our R&D activities toward our business strategy.

Our team is young, dynamic, and committed. Their excellent qualifications allow them to provide exceptional support to customers all around the world. Open and devoted cooperation results in an extraordinarily high degree of identification with the company.

In order to act proactively to our customers' technological needs, Germanjet Advance Sensing and Control Technology (ASCT) group was formed to specialize in designing intelligent product and solution. No matter how diverse and difficult the requirement is, our goal is to provide the highest possible performance with the most optimum service and price.





Worldwide Vision

Our team excellent qualifications allow them to provide exceptional support to customers all around the world.



Parisan control is an advance close-loop control system for blow molding machine. Non-contact absolute position transducer feedbacks the valve position to controller to precisely control the thickness of the bottle.



Non-contact Technology

Absolute Position

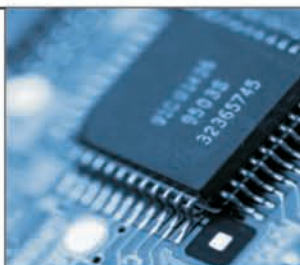
IP 67 Protection

Easy Installation



The fundamental principle of the magnetostrictive transducer is by analyzing the feedback sonic wave induced by an interaction of two magnetic fields. The first magnetic field is produced by the moveable magnetic cursor which attached at the moving component of a machine. The second field is generated by the pulse initiator. After the two magnetic fields interact, a sonic wave is induced and detected by the sonic wave analyzer.

By examining the characteristic of the wave pattern, the embedded microprocessor is able to generate the corresponding analog output signal to indicate the position of the machine. As a result, precise non-contact position is achieved with absolutely no wear to the sensing components.



high precision & reliability...



Electromagnetic Compatibility refers to the ability of equipment to perform satisfactorily in its electromagnetic environment without introducing intolerable interference into any thing in that environment.

The equipment must have a certain level of "immunity" to the Electromagnetic Interference (EMI) present in its environment so that it is not "susceptible" to that EMI. Product, in certain country, has to fulfill EMC test in order to be distributed legally.

Our EMC laboratory is fully compatible with ISO/IEC 17025:1996 standard. And our product are passed all required EMC tests and meet the CE standard.

EN 61000-6-3

EN 61000-6-2

EN 61000-4-2

EN 61000-4-3

EN 61000-4-4

EN 61000-4-6

EN 61000-4-8

Emission standard for residential, commercial and light-industrial environments

Immunity for industrial environments

Electrostatic discharge immunity test

Radiated, radio-frequency, electromagnetic field immunity test

Electrical fast transient/burst immunity test

Immunity to conducted disturbances, induced by radio-frequency fields

Power frequency magnetic field immunity test

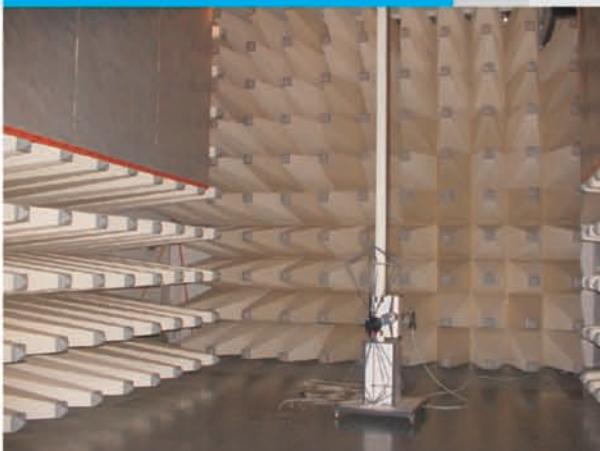
Temperature fatigue test

Liquid and dust protection test

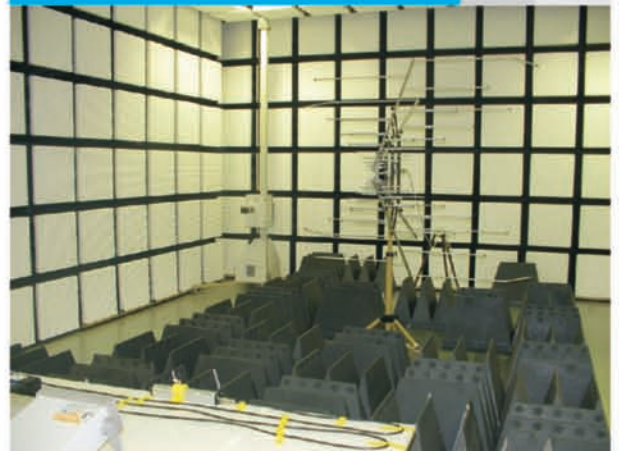
Shock and vibration test

On site shock and vibration test

Emission standard for residential commercial and light-industrial environments



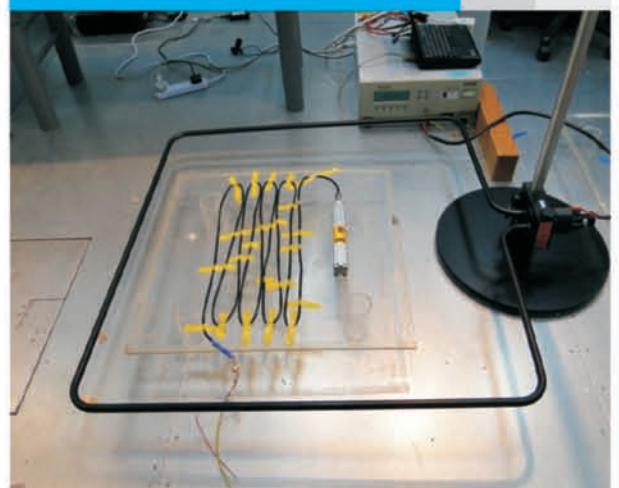
Radiated, radio-frequency, electromagnetic field immunity test



Shock and vibration test laboratory



Power frequency magnetic field immunity test



CE *Quality and certification....*



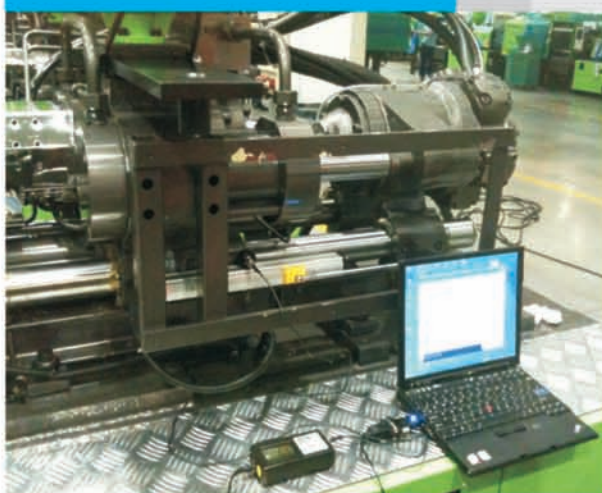
Temperature fatigue test



Product in most working environment would experience certain degree of shock and vibration. The purpose of shock and vibration test is to have product going through a similar simulated environment.

During design phase and pre-production cycle, our product would undergo a series of intensive shock and vibration tests. Machine such as plastic injection machine induces a severe level of vibration. In order to make sure our product overcome the actual challenge, we also perform a series of on-site test.

On-site shock and vibration test

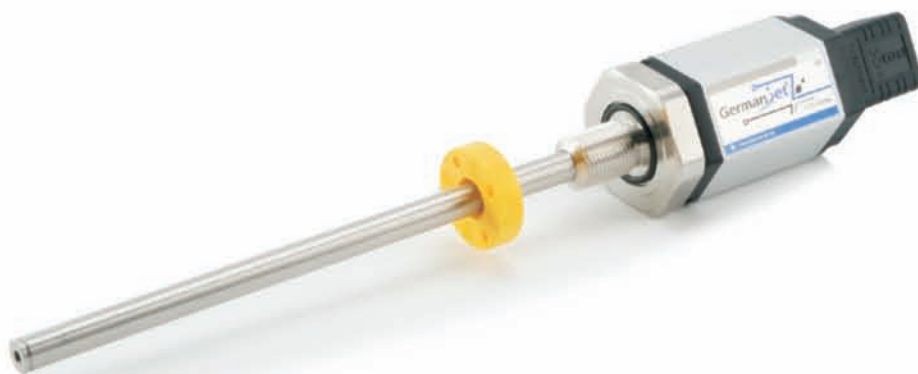


Liquid and dust protection



The 17 series non-contact absolute position transducer is specially designed for hydraulic cylinder to provide precise, direct and absolute position feedback. Hydraulic body is made by stainless steel; it can be inserted directly into hydraulic cylinder. Electronic component and hydraulic body are modular design which can be detached easily.

The transducer is rated for IP65 which offers full protection against outside agents for use in harsh environments with high contamination and presence of dust. The connector is common for use in hydraulic device and easy for field connection. Besides for hydraulic system, it is also suitable for machine installation. The absence of electrical contact eliminates all wear and guarantees almost unlimited mechanical life expectancy.



Specifications

Order Code	170	171	172	174	175	173
Output	0 - 10 V 10 - 0 V	0 - 20 mA	20 - 0 mA	4 - 20 mA	20 - 4 mA	Start/Stop
Measurement Type	Linear displacement					
Resolution	Infinite, restricted by output ripple					0.1 / 0.01 / 0.005mm
Input Voltage	+24Vdc (20.4 - 28.8Vdc)					
Input Protection	Polarity protection up to -30Vdc, Over voltage protection up to 36Vdc					
Current Consumption	50-140mA (stroke range dependent)					
Dielectric Strength	500Vdc (DC ground to machine ground)					
Repeatability	< ±0.005% of full scale					
Non-Linearity	< ±0.02% of full scale (minimum ±90µm)					
Update Time	0.5 ms up to 1200 mm / 1.0 ms up to 2500 mm					
Operation Temp.	-40 to 75°C, Humidity 90% non-condensing					
Sealing	IP65 (with 4 pin connector) / IP67 (with D60 and M12 connectors)					
Vibration Rating	15g / 10-2000Hz / IEC standard 68-2-6					
Shock Rating	100g single hit per IEC standard 68-2-27					
EMC	Emission EN 61000-6-3, Immunity EN 61000-6-2					
	EN 61000-4-2/3/4/6					
Pressure Rating	350 bar / 600 bar peak					
Mounting	M18 x 1.5					
Housing Material	Anodized aluminum sensor cartridge, Stainless steel tube and flange, Plastic cartridge cover					

Non-contact technology ...

Wiring



	Voltage	Current	Start/Stop
1	0-10V output	Signal output	Stop (-)
2	Pin 1 DC Gnd.	Signal Gnd.	Stop (+).
3	10-0V output	N.C.	Start (+)
4	Pin 3 DC Gnd.	N.C.	Start (-)
5	+24 Vdc	+24 Vdc	+24 Vdc
6	0 Vdc	0 Vdc	0 Vdc

D60 connector

(View toward sensor pins)



	Voltage	Current
1	+24Vdc	+24Vdc
2	0-10V output	Signal output
3	0 Vdc	0 Vdc
4	10-0V output	n.c
5	DC Gnd	Signal Gnd

5 pins M12 connector

(View toward sensor pins)

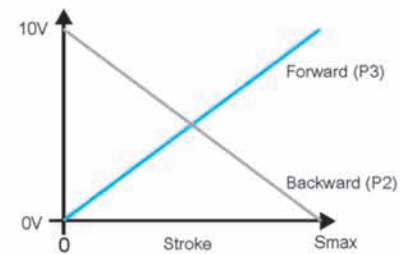
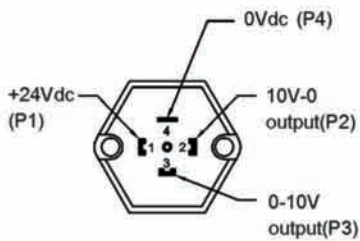


	Start/Stop
1	Start (+)
2	Start (-)
3	Stop (+)
4	Stop (-)
5	N.C
6	N.C
7	+24 Vdc
8	0 V d c

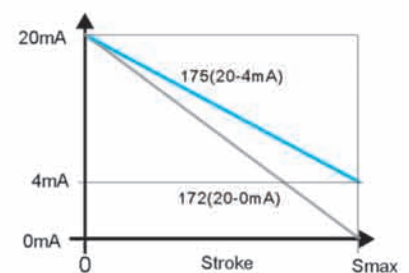
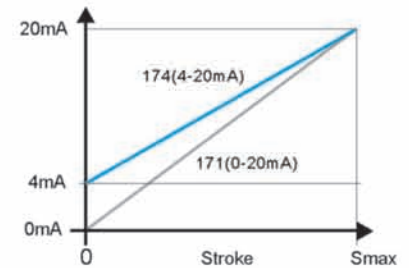
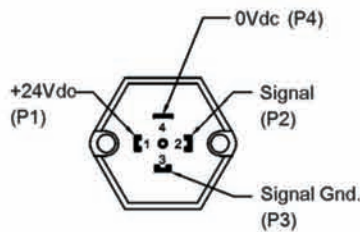
8 pins M12

(View toward sensor pins)

Analog voltage output



Analog current output



Order Code

1 7 X X X X X X X X

Output

0 = 0-10 Vdc and 10-0 Vdc

1 = 0-20 mA

2 = 20-0 mA

4 = 4-20 mA

5 = 20-4 mA

3 = Start/Stop

Connector (Voltage / Current)

0 = 4 pins connector (IP65)

3 = 4 pins connector (IP67)

4 = 5 pins M12 connector (not include 5 pins female connector)

8 = Cable outlet (P.A4 to select cable length)

9 = D60 armor sensor cartridge

Connector (Start/Stop)

6 = 8 pins M12 connector (not include M12 female connector)

8 = Cable outlet (P.A4 to select cable length)

9 = D60 armor sensor cartridge

Mounting thread

2 = M18 x 1.5

Magnet Type

1 = Dia. 33mm ring

2 = Dia. 25mm ring

3 = Floating ball

4 = Dia. 60mm ring

Stroke Length

0 0 7 5 , 0 1 0 0 , 0 1 2 5 , 0 1 5 0 , 0 1 7 5 , 0 2 0 0 , 0 2 2 5

0 2 5 0 , 0 2 7 5 , 0 3 0 0 , 0 3 2 5 , 0 3 5 0 , 0 3 7 5 , 0 4 0 0

0 4 2 5 , 0 4 5 0 , (25mm increment after and up to 2500mm)

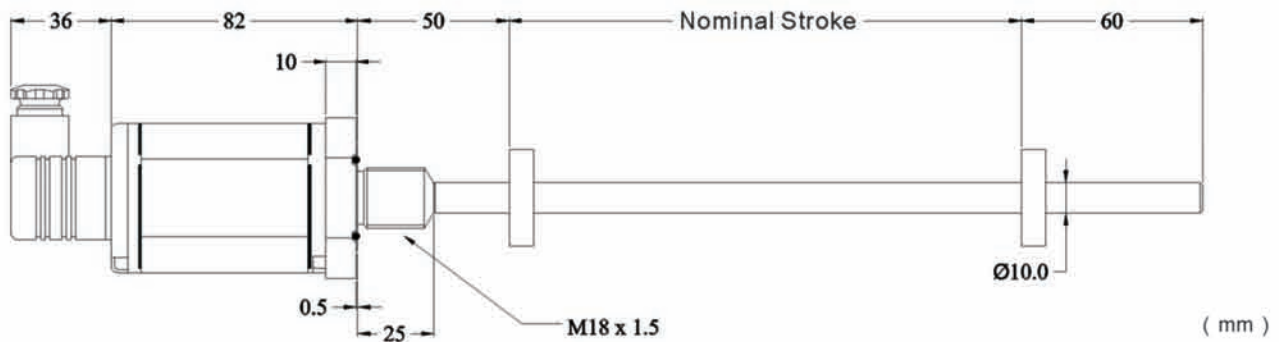
Sensor cartridge replacment

The sensor cartridge can be removed from the flange while still installed in the cylinder. This allows quick sensor cartridge replacement without the loss of hydraulic pressure.

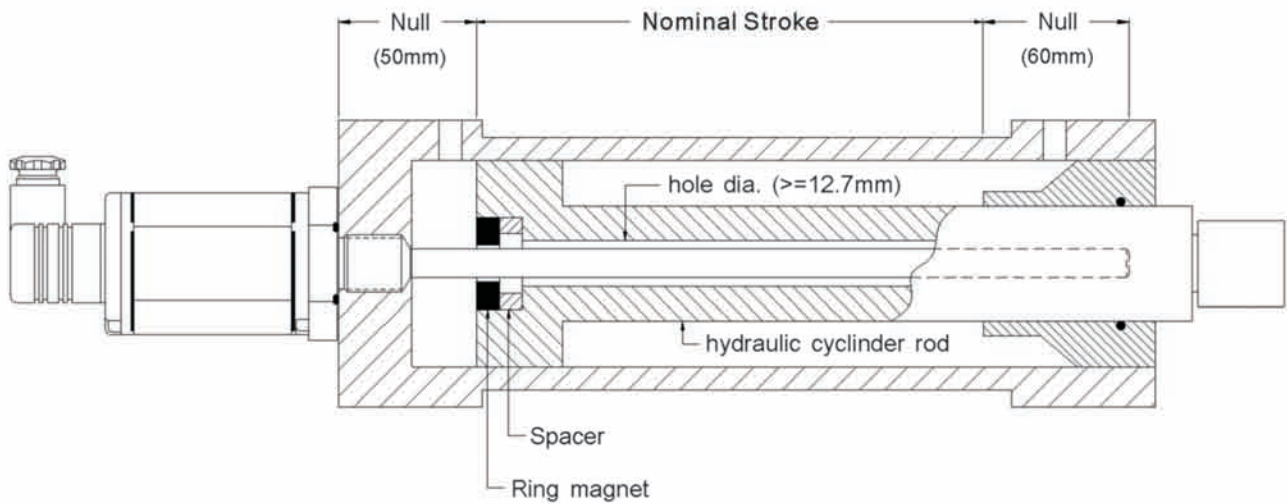


Spacer

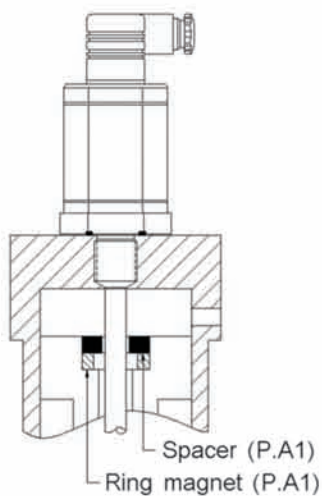
Dimension



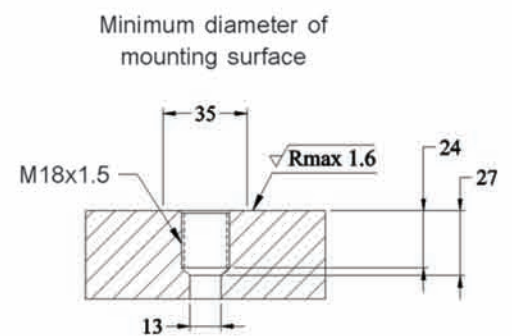
Installation



Magnet installation



Mounting surface requirement



Installation hole must be perpendicular with mounting surface and center with sensor rod.

Remarks:

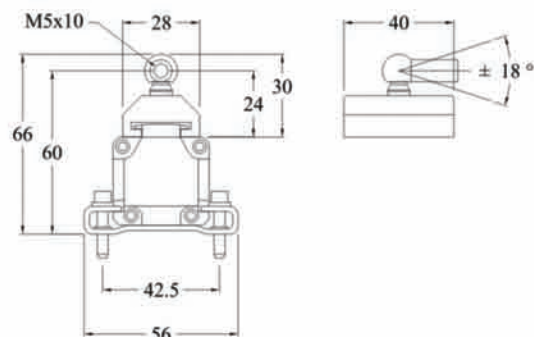
Mounting screw must be made of non-magnetizable materials. If cylinder is made of magnetizable materials, ring spacer must be installed

Discription

For series

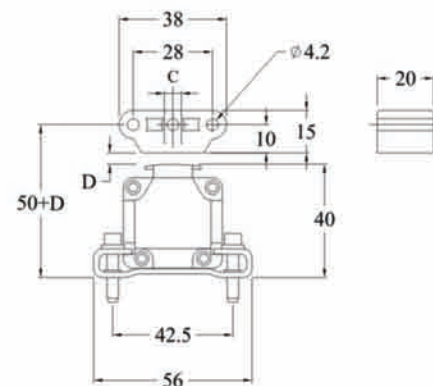
Captive

18 Series



Floating

18 Series



Order Code

1800 951 001

Material

Plastic

Weight

~30g

Vertical distance (D)

Fixed

Lateral offset (C)

Fixed

Operation Temperature

-40 to 75°C

1800 951 002

Plastic

~12g

0.1 - 4mm

±8 mm

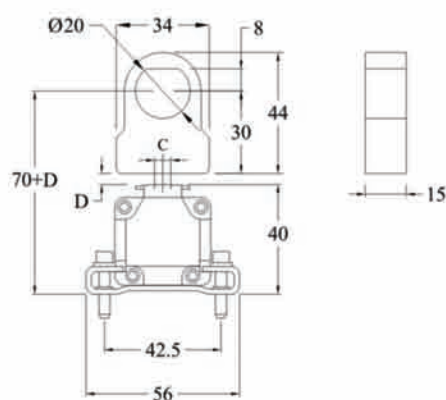
-40 to 75°C

Discription

For series

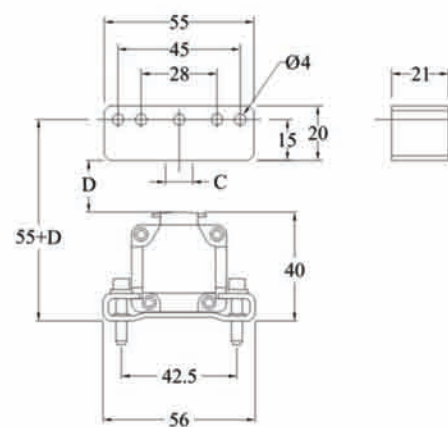
Die-cast

18 Series



Large floating

18 Series



Order Code

1800 951 003

Material

Plastic

Weight

~12g

Vertical distance (D)

0.1 - 4mm

Lateral offset (C)

±8 mm

Operation Temperature

-40 to 75°C

1800 951 004

Plastic

~40g

0.1 - 10mm

±20 mm

-40 to 75°C

Level Sensing Accessories



Discription	Floating Ball	Floating Ball	Floating Ball	Floating Ball
Order Code	1700 951 005	1700 951 006	1700 951 007	1700 951 008
Material	304 SS	304 SS	304 SS	304 SS
Inside Dia. (ID)	15 mm	23 mm	23 mm	9 mm
Out Dia./Height	52 x 52 mm	75 x 70 mm	125 x 120 mm	28 x 28 mm
Density	0.7	0.7	0.7	0.7
Pressure Rating	40 bar	40 bar	40 bar	40 bar



Discription	Floating Marker	Floating Marker	Floating Marker	Floating Marker
Order Code	1700 951 009	1700 951 010	1700 951 011	1700 951 012
Material	PP Plastic	PP Plastic	PP Plastic	PP Plastic
Inside Dia. (ID)	8 mm	8 mm	9 mm	9 mm
Out Dia./Height	18 x 8 mm	19 x 17 mm	24 x 10 mm	26 x 17 mm
Density	0.7	0.7	0.7	0.7

* use for special 7mm Stainless Steel tube



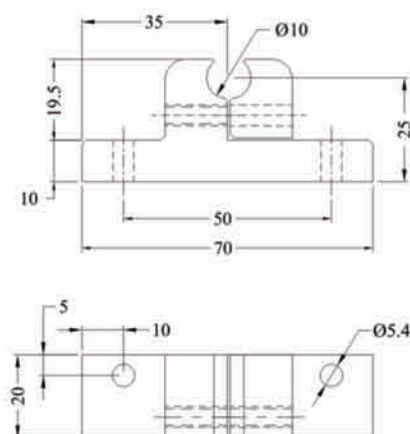
Discription	Floating Ball Stopper	Floating Ball Stopper
Order Code	1700 951 013	1700 951 014
Material	304 SS	304 SS
Inside Dia. (ID)	10 mm	7 mm
Out Dia./Height	20 x 13 mm	16 x 13 mm

Discription
For series
Order Code

10mm dia. housing pipe mounting

17/19 Series

1900 951 002



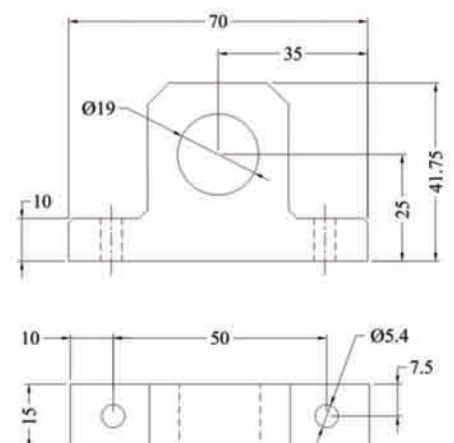
Material
Weight

Aluminium
~30g

M18x1.5 flange external mounting

17/19 Series

1900 951 003



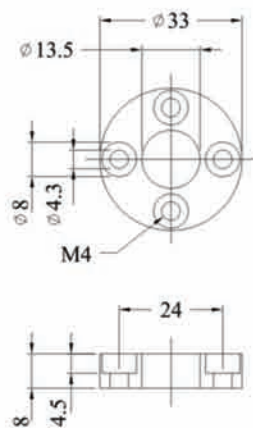
Aluminium
~45g

Discription
For series
Order Code

Dia. 33mm ring

12/17/19 Series

1700 951 001



Material
Weight

Plastic

~8g

Discription
Order Code
Material

Dia. 33mm Spacer

1700 951 002

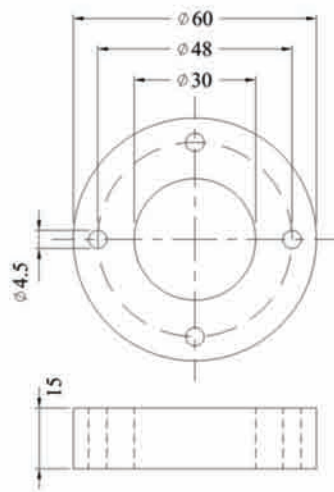
Plastic

Discription
For series
Order Code

Dia. 60mm ring

17/19 Series

1900 951 004



Material
Weight

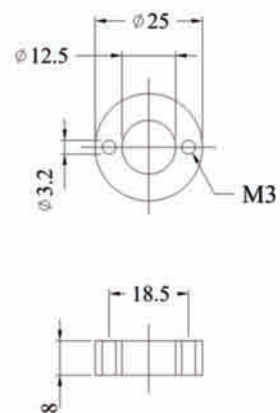
Plastic

~30g

Dia. 25mm ring

12/17/19 Series

1700 951 003



Plastic

~8g

Dia. 25mm Spacer

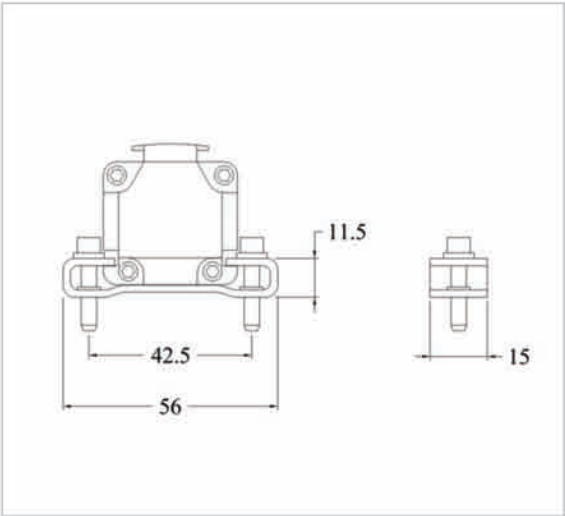
1700 951 004

Plastic

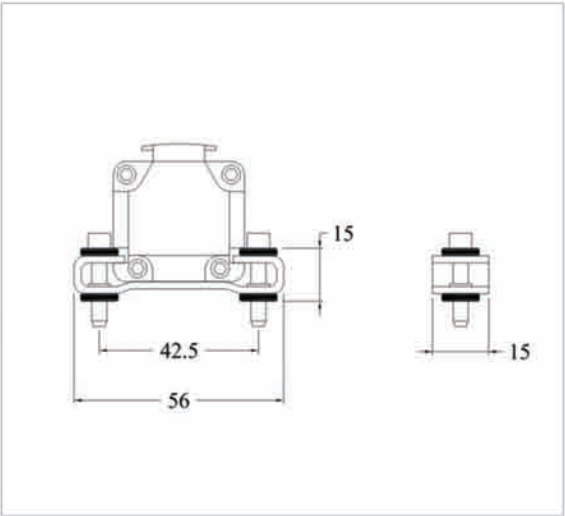


Discription
For series

42.5mm Mounting
18 Series



42.5mm Isolation Mounting
18 Series



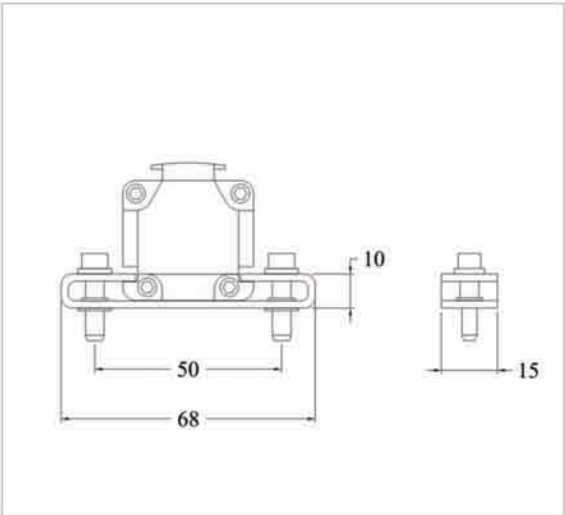
Order Code
Material
Installation
Torque

1800 951 007
Stainless Steel
M4 x 20 (not included)
Max. 4 Nm

1800 951 008
Stainless Steel
M4 x 20 (not included)
Max. 0.5 Nm

Discription
For series

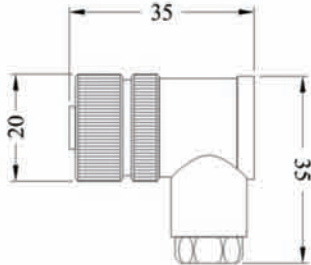
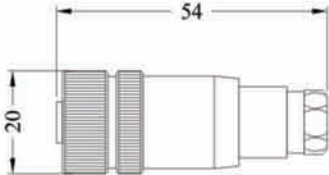
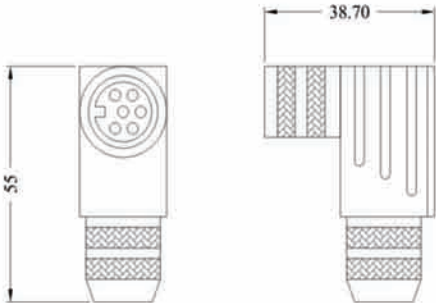
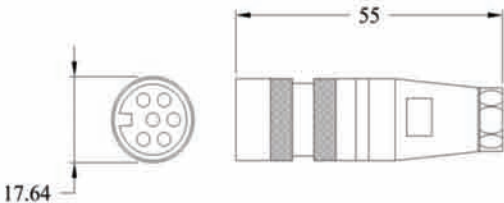
50mm Mounting
18 Series



Order Code
Material
Installation
Torque

1800 951 009
Stainless Steel
M5 x 20 (not included)
Max. 5 Nm



Discription	M12 90Deg Connector (Female)		M12 Connector (Female)	
Cable Diameter	6 - 8 m m		6 - 8 m m	
Material	Cu Zn / Plastic		Cu Zn / Plastic	
				
Model	5 Pins	8 Pins	5 Pins	8 Pins
				
Order Code	1800 951 018	1800 951 027	1800 951 017	1800 951 026
Discription	90Deg. 6/7pin. Connector(female)		6/7pin. Connector(female)	
Model	D60	D70	D60	D70
				
Order Code	1800 951 011	1800 951 013	1800 951 010	1800 951 012
Material	Housing: Zinc nickel plated		Housing: Zinc nickel plated	
Weight	~ 60 g		~ 40 g	



Order Code	1800 951 028
Discription	Profibus Terminator

Profibus operates at high frequencies transmission medium called RS485. This terminator absorbs reflections of the signal where the copper cable segment ends.



Order Code	1800 951 032
Discription	Profibus Simulator

The master simulator can be used to check the sensors functions and to change the slave address. The magnet positions can be read out and diagnostic data.



Order Code	1700 951 018
Discription	19 Analog Programmer

This service tools is used for modifying sensor active measuring stroke (null and span) via external cable. There is no need to open the sensors electronic cartridge.

3 Twisted Pairs Cable Order Code

1 8 0 0 9 5 1 1 X X

Cable Length

Please select the cable length in unit Meter
For example, 01 = 1 Meter
(Cable price not include connector)
If purchase the connector together, we can install the connector with cable for free of charge.

PVC shield twisted pair 3 x 2 x 0.2mm²

Color Code	D60	D70	4 Pins Voltage	4 Pins Current
Black	1	1	P3	N.C
White	2	2	P3 Gnd.	N.C
Yellow	3	3	P2	P2
Green	4	4	P2 Gnd.	P2 Gnd.
Red	5	5	P1	P1
Blue	6	6	P4	P4

Color Code	5P M12 Voltage	5P M12 Current	8P M12 Digital
Black	2	2	4
White	5	5	3
Yellow	4	N . C	1
Green	5	N . C	2
Red	1	1	7
Blue	3	3	8

D60 90Deg Connector



D60 Connector



easy of installation ...



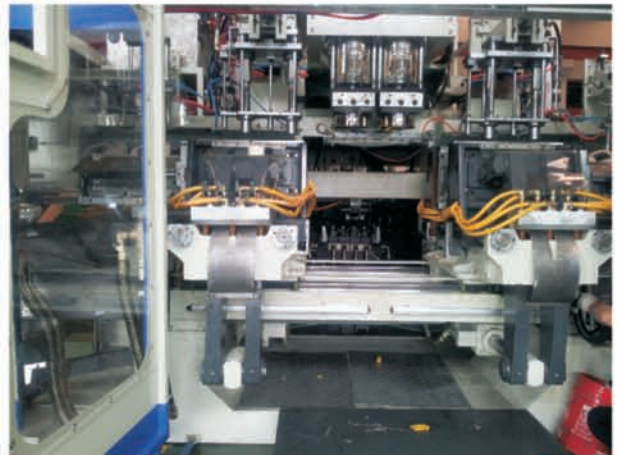
Two plates plastic injection machine use Germanjet fully digital solution



Wood forming machine use Germanjet 17 and 18 series



Mold closing at die-cast machine. injection speed at 10m/s



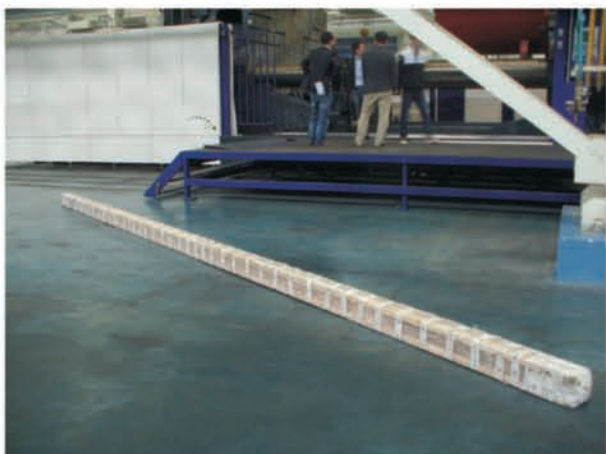
Fast mold shifting at blow molding machine



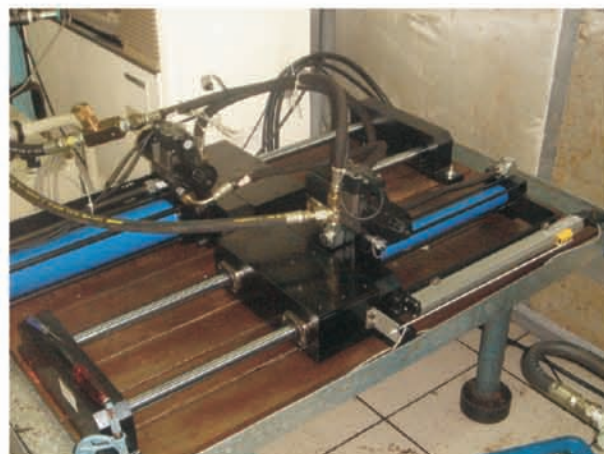
Automatic Control Valve use 17 series



Product unloading machine



6600 ton two plates plastic injection machine
Germanjet 19 series 7600mm CANBus



University laboratory testing equipment



Packaging machine used IP67 Germanjet
18 series



Garbage burning gasifiers use 19 series



Heavy duty hydraulic press



Hot chamber die-cast machine
used Germanjet 17 series



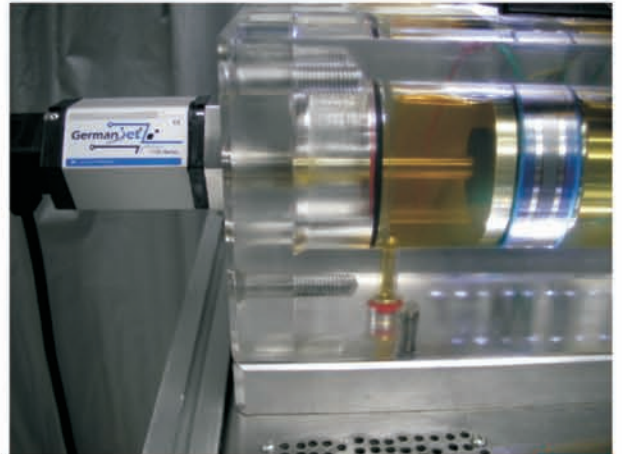
Hydro-forming machine



Stainless Steel Rolling Machine used
Germanjet 19 series



Steel Mill used Germanjet 19 series SSI



Crystall cylinder demo at university



6550mm hydraulic cylinder
uses 19 series



Handheld testing equipment



Large two-plate plastic injection machine used Germanjet 12 Series



Automotive exhaust pipe bending machine used Germanjet 17 series



Multi-color plastic second injector



Sand cast molding machines use 18 series



Large hydraulic press uses 19 series

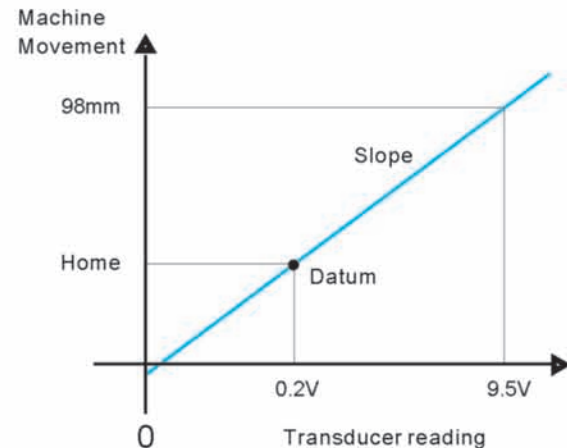


Parisan control used Germanjet 12 series

Transducer on machine calibration

To make sure the nominal stroke length is fully covered, all analog position transducers' output signal were calibrated slightly wider than the stroke. After installation, the machine needs to go through calibration. The step is as follow.

- 1) Move the machine to home position and record the transducer reading.
Example: at home, the transducer reading = 0.2V
- 2) Move the machine away from home position, measure the actual movement and record the transducer reading.
Example: actual movement = 98mm,
transducer actual movement reading = 9.5V
- 3) Calculate the "slope"
Slope = actual movement / (transducer actual movement reading - transducer home reading).
Example: slope = 98mm / (9.5V - 0.2V) = 10.537
- 4) Calculate the "datum"
Datum = slope x transducer home reading
Example: datum = 10.537 x 0.2V = 2.106
- 5) Machine position = (slope x transducer reading) - datum
Example: machine position = (10.537 x transducer reading) - 2.106



International Protection Rating (IP)

IP X X

Solid particle protection

- 4 = >1mm object size protected against
- 5 = Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment;
- 6 = No ingress of dust; complete protection against contact

Liquid ingress protection

- 0 = Not protected
- 5 = Water projected by a nozzle (6.3mm) against enclosure from any direction shall have no harmful effects.
- 7 = Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1 m of submersion).



Transducer may in touch with dust and water, having proper IP rating is needed. Potentiometer IP rating is IP 40 or 50 but non-contact position transducer IP rating is IP 65 or even 67.

Installation of floating magnet



Installation of floating magnet is very simple. Compared to captive magnet, floating magnet can truly demonstrate the advantage of non-contact sensing and eliminate the wear of captive magnet socket.

www.germanjet.de

