

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.

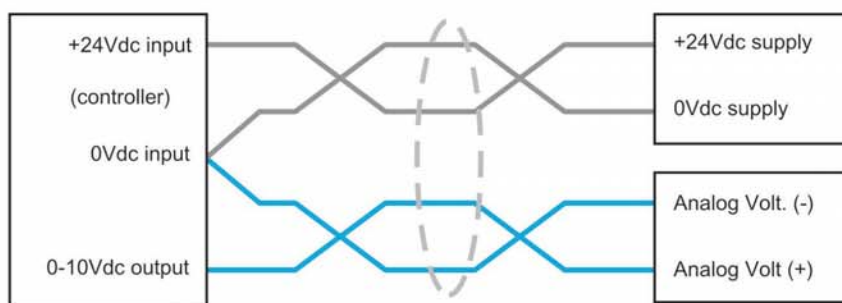
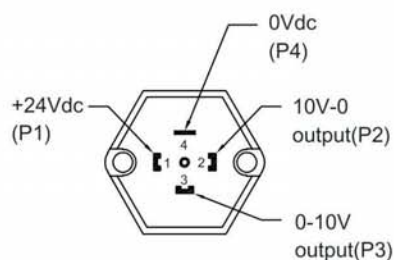
The transducer is rated for IP65 which offers full protection against outside agents for use in harsh environments with high contamination and presence of dust. The connector is common for use in hydraulic device and easy for field connection. Besides for hydraulic system, it is also suitable for machine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



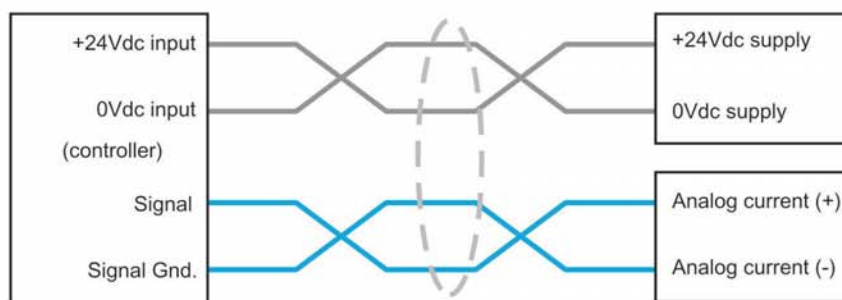
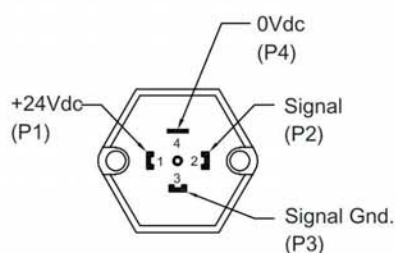
Specifications

Order Code	170	171	172	174	175
Output	0 - 10 V 10 - 0 V	0 - 20 mA	20 - 0 mA	4 - 20 mA	20 - 4 mA
Measurement Type	Linear displacement				
Resolution	Infinite, restricted by output ripple				
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	< $\pm 0.005\%$ of full scale				
Non-Linearity	< $\pm 0.01\%$ of full scale (minimum $\pm 90 \mu\text{m}$)				
Update Time	0.5 ms up to 1200 mm / 1.0 ms up to 2400 mm 2.0 ms up to 4800 mm / 5.0 ms up to 7600 mm				
Operation Temp.	-40 to 75°C, Humidity 90% non-condensing				
Sealing	IP65 / IP67 (with connector)				
Vibration Rating	15g / 10-2000Hz / IEC standard 68-2-6				
Shock Rating	100g single hit per IEC standard 68-2-27				
EMC	Emission EN 68000-6-3, Immunity EN 61000-6-2 EN 68000-4-2/3/4/6				
Pressure Rating	350 bar / 600 bar peak				
Mounting	1 / 2" NPT or M18 x 1.5				
Housing Material	Anodized aluminum sensor cartridge Stainless steel tube and flange				

Analog voltage output



Analog current output



Order Code

1 7 X X X X X X X X

Output

0 = 0-10Vdc and 10-0Vdc
1 = 0-20mA
2 = 20-0mA
4 = 4-20mA
5 = 20-4mA

Connector

0 = 4 pins connector (IP65)
3 = 4 pins connector (IP67)

Mounting thread

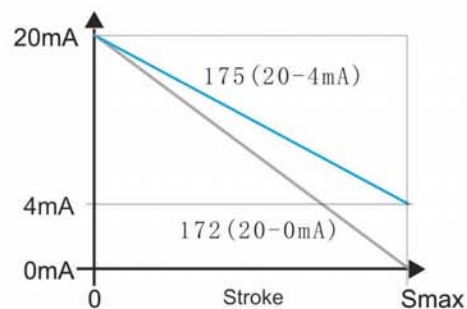
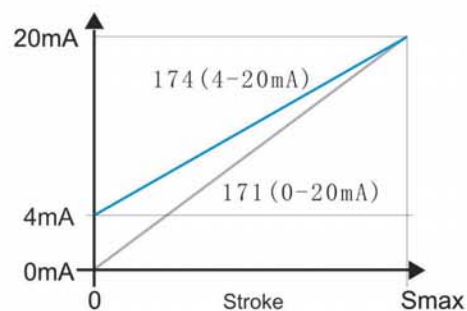
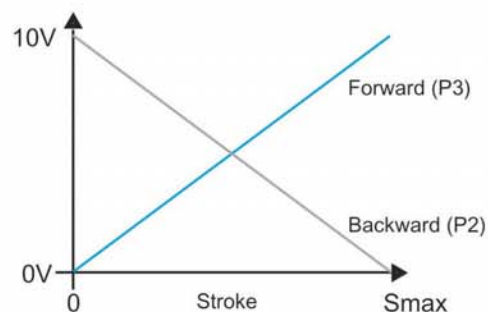
1 = 1/2" NPT
2 = M18 x 1.5

Magnet Type (P.18)

1 = Dia. 33mm ring
2 = Dia. 25mm 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, 0 4 7 5, 0 5 0 0 (25mm increment after)



Specifications

Order Code
Output
Measurement Type
Version
Baud rate
Resolution
- Position
- Velocity
Input Voltage
Input Protection
Current Consumption
Dielectric Strength
Repeatability
Non-Linearity
Update Time
Operation Temp.
Sealing
Vibration Rating
Shock Rating
EMC

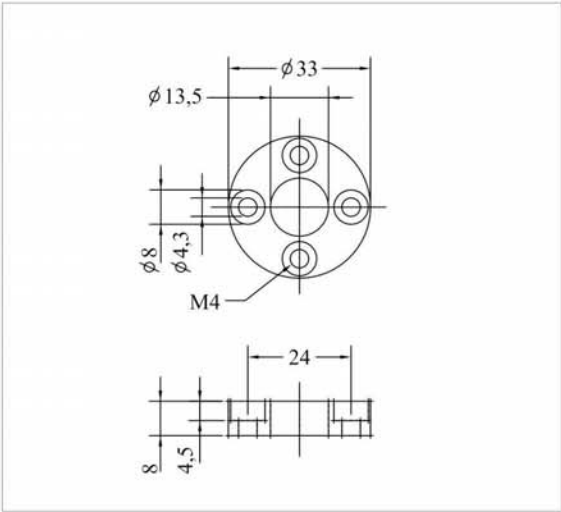
1 7 6									
CANbus Digital Output									
Linear displacement									
CANopen: CIA Standard DS-301 V3.0									
CANbasic : CAN 2.0A									
Baud rate	:	1000	800	500	250	125	50	20	kbit/s
Cable length	:	<25	<50	<100	<250	<500	<1000	<2500	(m)
CANopen					CANbasic				
5 μ m	2 μ m				5 μ m	2 μ m			
0.5mm/s	0.2mm/s				1.0mm/s	0.1mm/s			
+24Vdc (20.4 - 28.8Vdc)									
Polarity protection up to -30Vdc, Over voltage protection up to 36Vdc									
50-140mA (stroke range dependent)									
500Vdc (DC ground to machine ground)									
< ±0.005% of full scale									
< ±0.01% of full scale (minimum ±90 μ m)									
0.5 ms up to 1200 mm / 1.0 ms up to 2400 mm									
2.0 ms up to 4800 mm / 5.0 ms up to 7600 mm									
-40 to 75°C, Humidity 90% non-condensing									
IP65 / IP67 (with connector)									
15g / 10-2000Hz / IEC standard 68-2-6									
100g single hit per IEC standard 68-2-27									
Emission EN 68000-6-3, Immunity EN 61000-6-2									
EN 68000-4-2/3/4/6									

Specifications

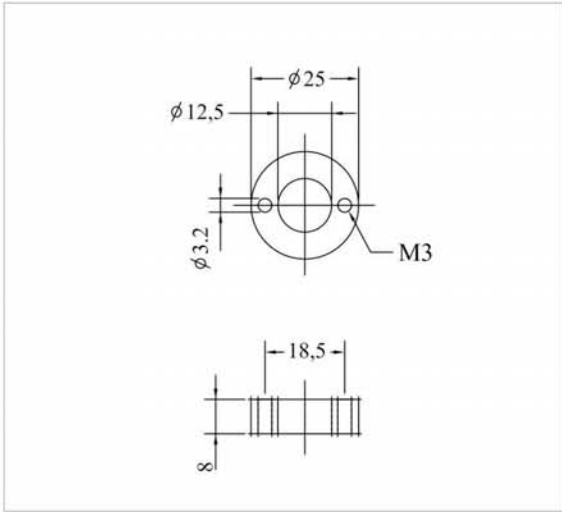
1	7	6	X	X	X	X	X	X	X	C	X	X	X	X	X
<u>Output</u>										<u>Protocol</u>					
CANbus digital output										101 = CANbasic					
										207 = Multi-magnet CANbasic					
										304 = CANopen					
<u>Connector</u>										<u>Baud rate</u>					
0 = 4 pins connector (IP65)										1 = 1000 kBit/s					
3 = 4 pins connector (IP67)										2 = 500 kBit/s					
										3 = 250 kBit/s					
										4 = 125 kBit/s					
<u>Mounting thread</u>										<u>Resolution</u>					
1 = 1 / 2" NPT										1 = 5µm					
2 = M18 x 1.5										2 = 2µm					
<u>Magnet Type (P.18)</u>															
1 = Dia. 33mm ring															
2 = Dia. 25mm ring															
<u>Stroke Length</u>										Notes: CANbus output format is chosen by customer and controller, not by Germanjet.					
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 , 0 4 7 5 , 0 5 0 0 (25mm increment after)															

Discription
For series
Order Code

Dia. 33mm ring
17 Series
1700 951 001



Dia. 25mm ring
17 Series
1700 951 003



Material
Weight

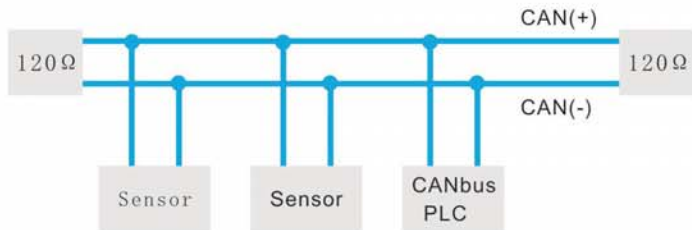
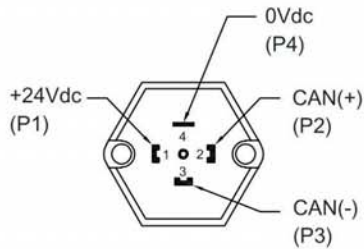
Plastic
~8g

Plastic
~8g

Discription
Order Code
Material

Dia. 33mm Spacer
1700 951 002
Plastic

Dia. 25mm Spacer
1700 951 004
Plastic

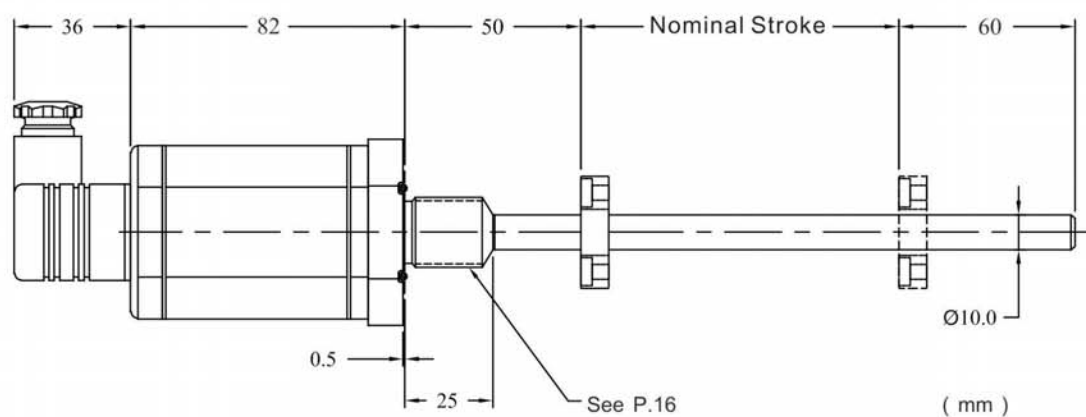


Sensor Cartridge Replacment

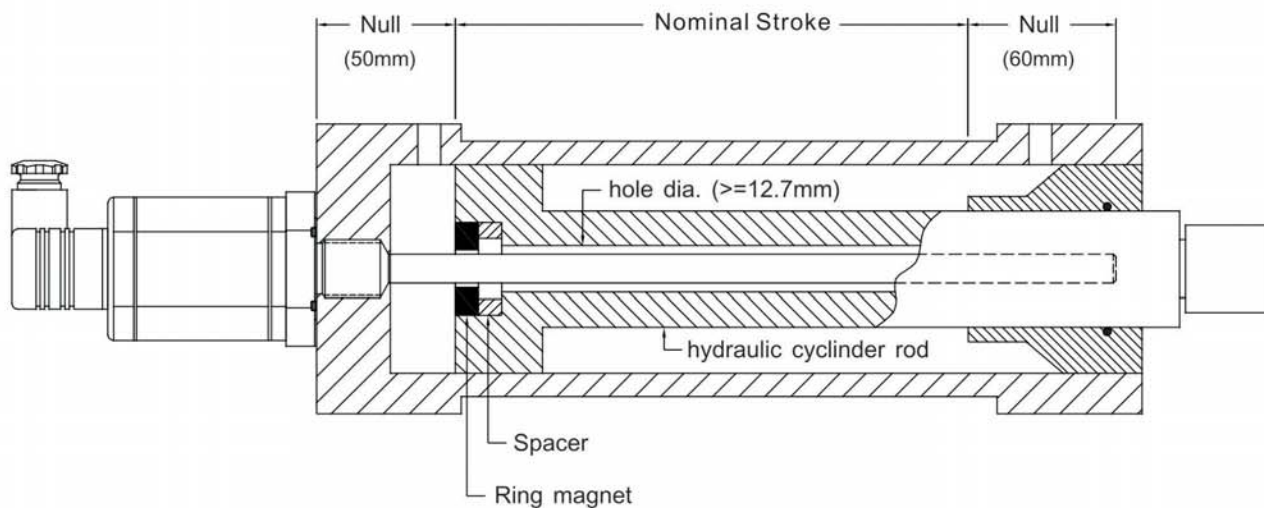


The sensor cartridge can be removed from the flange while still installed in the cylinder. This allows quick sensor cartridge replacement without the loss of hydraulic pressure.

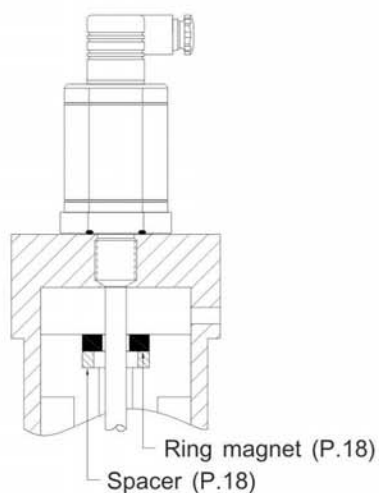
Dimension



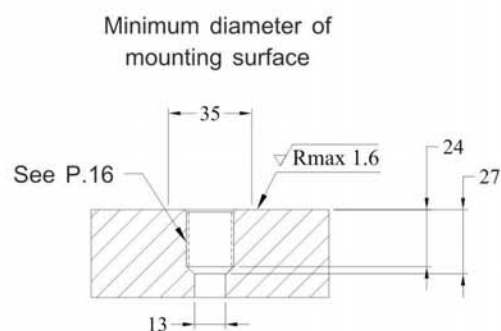
Installation



Magnet installation



Mounting surface requirement



Remarks:

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

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

4 pins connector (IP67)



4 pins connector (IP65)

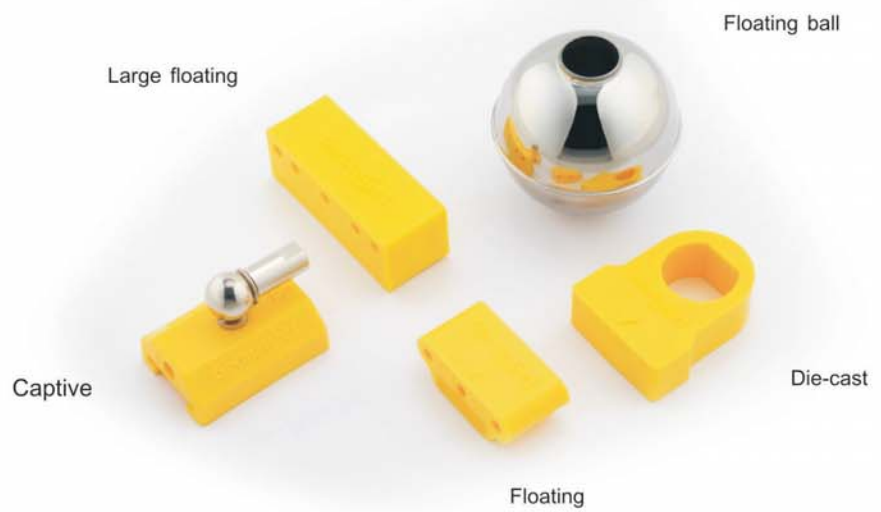
42.5mm insulation mounting

50mm mounting



42.5mm mounting

Easy of installation ...



This cardholder is for mounting Euro standard controller card. The card is installed by slowly slide into the card holder. Both ejector buttons need to be pushed down to release the card. The holder can be mounted on DIN rail or screwed down.

Part of your positioning ...



Features

Compression screw terminals for wire connections.
Terminal connections on both sides of card holder.
Fastens to 35mm DIN rail or directly screw to panel.
Circuit board hold downs.
Ejector buttons smoothly release card.

Technical Data

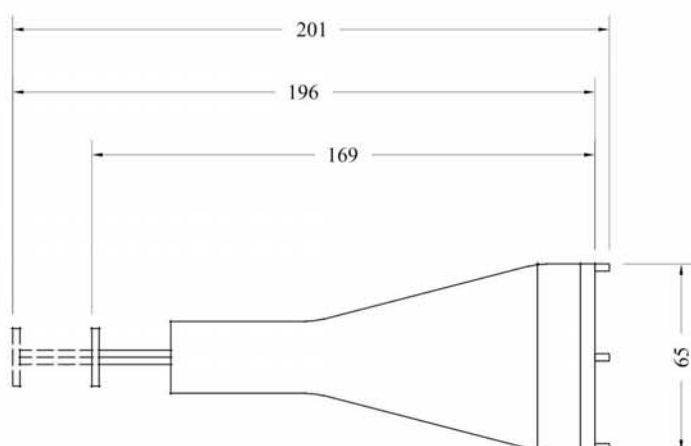
Maximum wire size - 4mm² (12 AWG).
Recommended 225mm (9" or larger) box depth with card inserted.
0.5lb to 0.75lb Weight.

Mounting

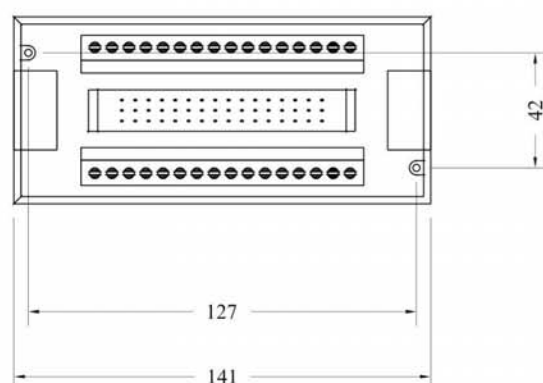
2 clearance holes.
4.2 mm (0.165in.) dia. X 9.5 mm (3/8 in.) depth



Format	Pins	Pins Config.	Order Code
DIN 41612, Form F	32	row b, z	1 834 486 001
	48	row z, b, d	1 834 486 003
DIN 41612, Form C	32	row a, c	1 834 486 004
	64	row a, c	1 834 486 002
	96	row a, b, c	1 834 486 006
DIN 41612, Form B	64	row a, b	1 834 486 005
DIN 41612, Form D	32	row a, c	1 834 486 007
DIN 41612, Form G	64	row z, b, d, f	1 834 486 008
DIN 41612, Form M	24+7	row z, b, d	1 834 486 009
DIN 41617	31	all	1 834 486 010



screw terminal for fast connection.





Injector and carriage position at plastic injection machine



4000mm transducer installed at 6000 ton machine



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



Fast mold shifting at blow molding machine



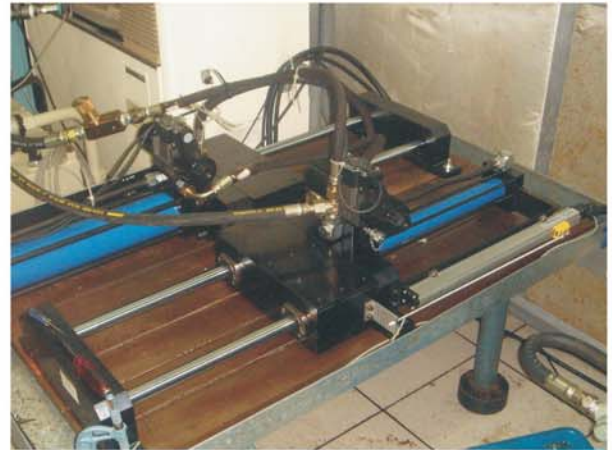
Rubber injection machine



Product unloading machine



Machine manufacturer standardized using Germanjet 18 series



University laboratory testing equipment



Packaging machine used IP67 Germanjet 18 series



Hot chamber die-casting machine used Germanjet 18 series



Heavy duty hydraulic press



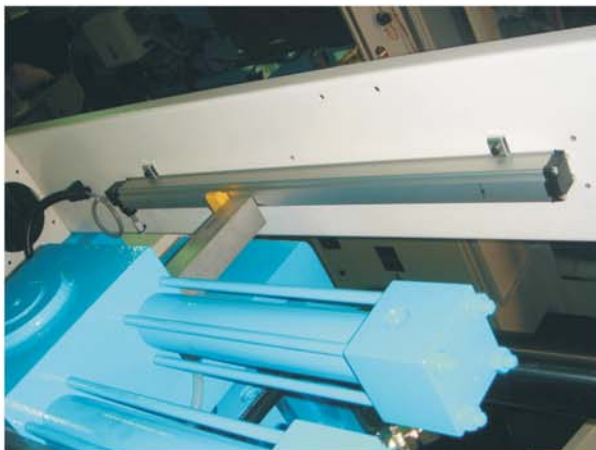
Hot chamber die-cast machine used Germanjet 17 series



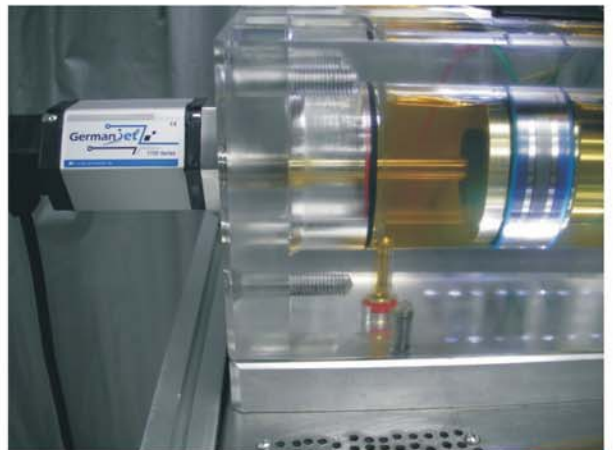
Hydro-forming machine



Heavy duty servo hydraulic cylinder



Molding automation



Crystall cylinder demo at university



Vertical hydraulic press



Handheld testing equipment



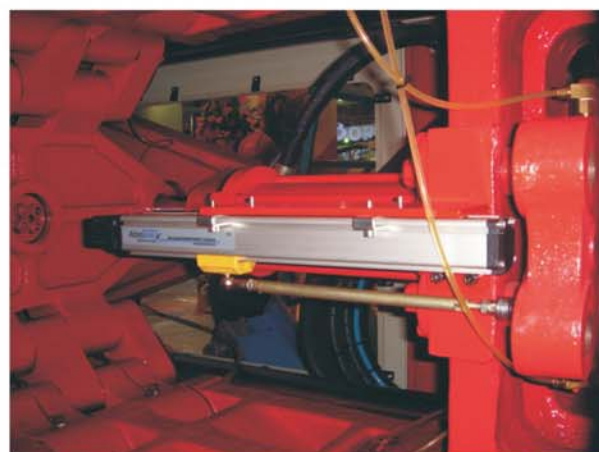
Large two-plate plastic injection machine used
4000mm Germanjet 18 Series



High speed ejector



Multi-color plastic second injector



High speed thin wall plastic injection machine



Rubber forming machine

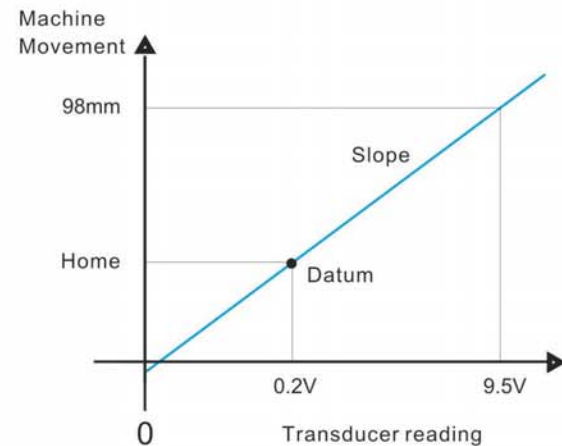


Two-plate injection machine
high pressure cylinder

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.

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