

496 Series

Position Transmitter and Limit Switch

US and Canada Instruction Manual (Rev.B)



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THESE INSTRUCTIONS ASSUME THAT OPERATORS ALREADY HAVE A GENERAL UNDERSTANDING OF THE REQUIREMENTS FOR SAFE OPERATION OF MECHANICAL AND ELECTRICAL EQUIPMENT IN POTENTIALLY HAZARDOUS ENVIRONMENTS. THEREFORE, THESE INSTRUCTIONS SHOULD BE INTERPRETED AND APPLIED IN CONJUNCTION WITH THE SAFETY RULES AND REGULATIONS APPLICABLE AT THE SITE AND THE PARTICULAR REQUIREMENTS FOR OPERATION OF OTHER EQUIPMENT AT THE SITE.

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Warning

BEFORE installing, using or carrying out any maintenance tasks associated with this instrument, READ THE INSTRUCTIONS CAREFULLY.

These instruments comply with the essential safety requirements of North American and Canadian standards. They are certified to be used in Gas or Dust explosive atmospheres:

- zones 0, 1, 2, 20, 21 and 22 for the protection mode “ia”
- zones 1, 2, 21 and 22 for the protection mode “db” and “tb”

Products certified as **explosion proof equipment MUST BE:**

- a. Installed, put into service, used and maintained in compliance with national and local regulations and in accordance with the recommendations contained in the relevant standards concerning potentially explosive atmospheres.
- b. Used only in situations those comply with the certification conditions shown in this document and after verification of their compatibility with the zone of intended use and the permitted maximum ambient temperature.
- c. Installed, put into service and maintained by qualified and competent professionals who have undergone suitable training for instrumentation used in areas with potentially explosive atmosphere. Such trainings are not supported by Baker Hughes.

It is the end user’s responsibility to:

- **Verify material compatibility with the application**
- **Ensure proper use of fall protection when working at heights, per Safe Site Work Practices**
- **Ensure use of proper Personal Protective Equipment**
- **Take the appropriate actions to ensure that site personnel who are performing installation, commissioning and maintenance have been trained in proper site procedures for working with and around equipment, per Safe Site Work Practices**

Baker Hughes reserves the right to discontinue manufacture of any product or change product materials, design, or specifications without notice.

1. Instrument Operation

1.1 The 496-• position limit switch

Allow switching 1 or 2 electrical circuits. This function is provided by 1 or 2 micro- switch(es) . This device can be mounted on both rotary and reciprocating valves. The enclosure is rated NAMA 4X (IP66/67).

1.2 The 496-8 position transmitter

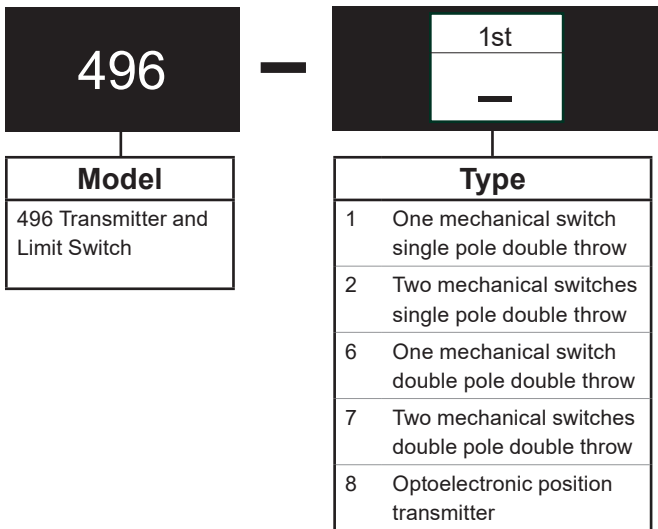
The 496 Series instrument is a non-contact opto- electronic positioner transmitter which provides a 4-20mA analog output signal proportional to the valve position. This device can be both mounted on rotary and reciprocating valves. The enclosure is rated NAMA 4X (IP66/67).

The opto-electronic sensor has the same function than a standard potentiometer and its output voltage is proportional to the rotation of its axis.

An electronic circuit amplifies this voltage to a 4-20 mA signal proportional to the angle of rotation. This equipment has many advantages:

- Non-electrical noise typical of potentiometer with cursor
- Frictionless
- Unlimited life
- Non-sensitive to vibration and electrical noise
- Very low operating torque: 0.02 N.m

2. Numbering System



3. US and Canadian Standards



Conforms to UL Standards:

- 60079-0, 60079-1, 60079-11, 60079-31, 61010-1.

Certified to CAN/CSA Standards:

- C22.2 No. 60079-0, 60079-1, 60079-11, 60079-31, 61010-1.

4. Intrinsic Safety protection

4.1 Marking US and Canada

The marking is on the serial plate stamped on the 496 cover (rep 14).

- Name and address of the manufacturer: Dresser Produits Industriels S.A.S.14110 CONDE SUR NOIREAU - FRANCE
- Type designation:
 - **496-8** for position transmitter
 - **496-•** for position switches, the “•” can take the values **1, 2, 6, 7**
- Specific Ex marking string:
 - Class I, Zone 0 AEx ia IIC T6...T4 Ga
 - Ex ia IIC T6...T4 Ga
 - Class I, Division 1, Groups A, B, C, D
 - Zone 20 AEx ia IIIC T₂₀₀85°C or T₂₀₀100°C or T₂₀₀135°C Da
 - Ex ia IIIC T₂₀₀85°C or T₂₀₀100°C or T₂₀₀135°C Da
 - Class II, Division 1, Groups E, F, G

*Ambient temperatures ranges and surface temperatures for the temperature classifications T6, T5 and T4 are given in **Annex I** with:

- Tables 1, 2 and 3 for the transmitter alone, the mechanical switch(es) alone and the proximity switch(es) alone.
- Serial number
- Year of manufacturing
- ETL logo with control number 5030814
- Certificate number: ETL24CA105686455a

WARNING

WARNING: POTENTIAL DANGER OF ELECTROSTATIC CHARGES. SEE INSTRUCTIONS.
AVERTISSEMENT : DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES. VOIR INSTRUCTIONS.

4.2 Electrical safety parameters

4.2.1 Type 496-•

4.2.1.1 Option with 1 or 2 Micro-Switch(es)

- Type identification is: **496-1 and 496-2**
- Mechanical switch(es): type BZ-2R-72-A2, manufacturer: HONEYWELL
- They are supplied by a certified power source for explosible atmospheres group IIC with the maximal characteristics:
 - Constant power supply: $U_i = 30V$, $I_i = 0.5A$, $C_i = 0F$ and $L_i = 0H$
 - Alternative power supply: $U_i = 90V$, $I_i = 1.4A$, $C_i = 0F$ and $L_i = 0H$
- The wiring connection is done directly on mechanical switch(es).

4.2.1.3 Maximum Characteristics

Variation		Ui (V)	Ii (A)	Ci (nF)	Li (µH)	Pi (W)
With Micro-Switch	DC Source	30	0.5	0	0	-
	AC Source Peak Value	90	1.4	0	0	-

4.2.2 Types 496-8:

The position transmitter is connected to a certified linear power supply for explosible atmospheres Group IIC, IIB or IIA and its output circuit is recognized for an intrinsic safety used per **IEC 60079-11**.

Maximum characteristics:

Ui (V)	Ii (A)	Ci (nF)	Li (µH)	Pi (W)
28	0.11	30	0	0.77

5. Flameproof and Dust Ignition Proof

5.1 Marking US and Canada

The marking is on the serial plate stamped on the 496 cover (rep 14).

- Name and address of the manufacturer
Dresser Produits Industriels S.A.S.
14110 CONDE SUR NOIREAU – FRANCE
- Type designation:
 - **496-8** for position transmitter
 - **496-•** for position switches
The • can be replaced by **1, 2, 6, 7**
- Specific Ex marking string:
 - Class I, Zone 1 AEx db IIC T6 or T5 Gb
 - Ex db IIC T6 or T5 Gb
 - Class I, Division 2, Groups A, B, C, D
 - Zone 21 AEx tb IIIC T85°C or T100°C Db
 - Ex tb IIIC T85°C or T100°C Db
 - Class II, Division 2, Groups F, G
- Ambient temperature range:
 - T6 / T85°C Ambient: $-55^{\circ}\text{C} \leq T_{\text{amb}} \leq +70^{\circ}\text{C}^*$
 - T5 / T100°C Ambient: $-55^{\circ}\text{C} \leq T_{\text{amb}} \leq +85^{\circ}\text{C}^*$

(*) Depending on the nature of the mechanisms mounted inside the 496 series the temperature range can be reduced.

(*) Ambient temperatures ranges and surface temperatures for the temperature classifications T6, T5 and T4 are given in **Annex II** with the different possible combinations allowed.

- Serial number
- Year of manufacturing
- ETL logo with control number 5030814
- Certificate number: ETL24CA105686455a

WARNING

WARNING: DO NOT OPEN WHEN ENERGIZED. SEE INSTRUCTIONS.
AVERTISSEMENT : NE PAS OUVRIR SOUS TENSION. VOIR INSTRUCTIONS.

WARNING

WARNING: POTENTIAL DANGER OF ELECTROSTATIC CHARGES. SEE INSTRUCTIONS.
AVERTISSEMENT : DANGER POTENTIEL DE CHARGES ELECTROSTATIQUES. VOIR INSTRUCTIONS.

WARNING

WARNING: DO NOT OPEN WHEN AN EXPLOSIVE GAS ATMOSPHERE IS PRESENT. SEE INSTRUCTIONS.
AVERTISSEMENT: NE PAS OUVRIR SI UNE ATMOSPHERE EXPLOSIVE GAZEUSE EST PRESENTE. VOIR INSTRUCTIONS.

- T cable:

Wiring must be rated for at least 9°C above the highest expected ambient temperature.

Le câble d'alimentation électrique doit être dimensionné pour une température de fonctionnement de 9°C supérieure à la plus haute température ambiante.

Mandatory mention when the ambient temperature is higher than 65°C.

T ambient	T cable
65°C	74°C
70°C	79°C
75°C	84°C
80°C	89°C
85°C	94°C

5.2 Electrical safety parameters

- Maximum dispersed power = 5W
- Voltage supply allowable:

Type	Min Voltage	Max Voltage
496-1 or 496-2 or 496-6 or 496-7	-	220Vcc (direct current) or 250Vac (alternative current)
496-8	9.0V (direct current)	36V (direct current)

6. Position Transmitter 496-8 Electrical data

- Power supply:

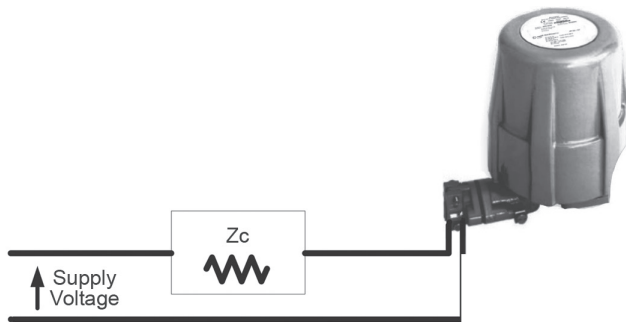
Voltage Supply U (V)	Mini	Maxi
Flameproof	9.0V	36V
Intrinsic Safety	9.0V	28V

- Lightning protection (in standard): 1500W 10/1000µs
- Output current 4-20mA (two wires)
- Zero range adjustment: ±0.5mA
- Span range adjustment: ±2.5mA
- Protected against polarity inversion
- Maximum load $Z_c(\Omega) = \frac{\text{Supply Voltage (V)} - 9.0 \text{ (V)}}{I_{maxi} \text{ (A)}}$

This means for 20mA:
 $Z_c = 950 \text{ Ohm}$ max with for an
 intrinsically safe loop

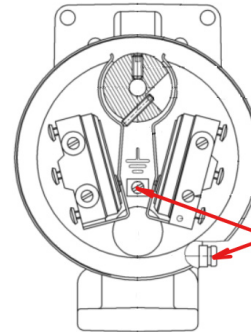
and

$Z_c = 1350 \text{ Ohm}$ for Flameproof.



7. Electrical Connection, Installation and Start-up

- Comply with current national and local regulations for electrical installation work.
- Must be installed and put into service in conformance with IEC 60079-14 and/or national and local regulations applicable for explosible atmospheres.
- Before carrying out any work on the device, power off the instrument or make sure that the local conditions in the potentially explosive atmosphere permit – the safe opening of the cover.
- Connect the wires to the instrument terminals, taking care of complying with polarities and maximum voltage allowed.
- Before power up or after doing any work on the device always check the cover (12) is fully screwed, O-ring (10) is free of any damage and security screw (9) is well locked.
- Check the earth terminals are well connected.



Note: Before installation, check that the device is undamaged. In the event of damage, inform the Manufacturer whose address is shown on the serial plate.

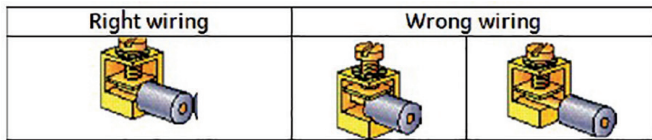
7.1 Conduit entry in flameproof application

The connections can be done with different variations taking into account approved manufacturer and requested approvals:

- A cable entry of a certified type **Ex db or tb** can be mounted directly on the single 3/4" NPT (ANSI/ ASME B1.20.1) housing conduit connection.
- Adaptor or reducer if NEC or CEC apparatus certified (type Cooper CAPRI CODEC)
- The cable entry with or without its adaptor/reducer must be installed in conformance with Annex III.

7.2 Electrical connection for type 496-•

- The electrical cables are connected either directly on to the micro switch(es) or to the proximity switch(es) terminal block.
- Connect the device to the earth using the earth connections provided inside and outside the housing of the device.
- Basic rule for wiring:
 - **Must be used in addition to local regulation for electrical installation**
 - **Connector slot approval:**



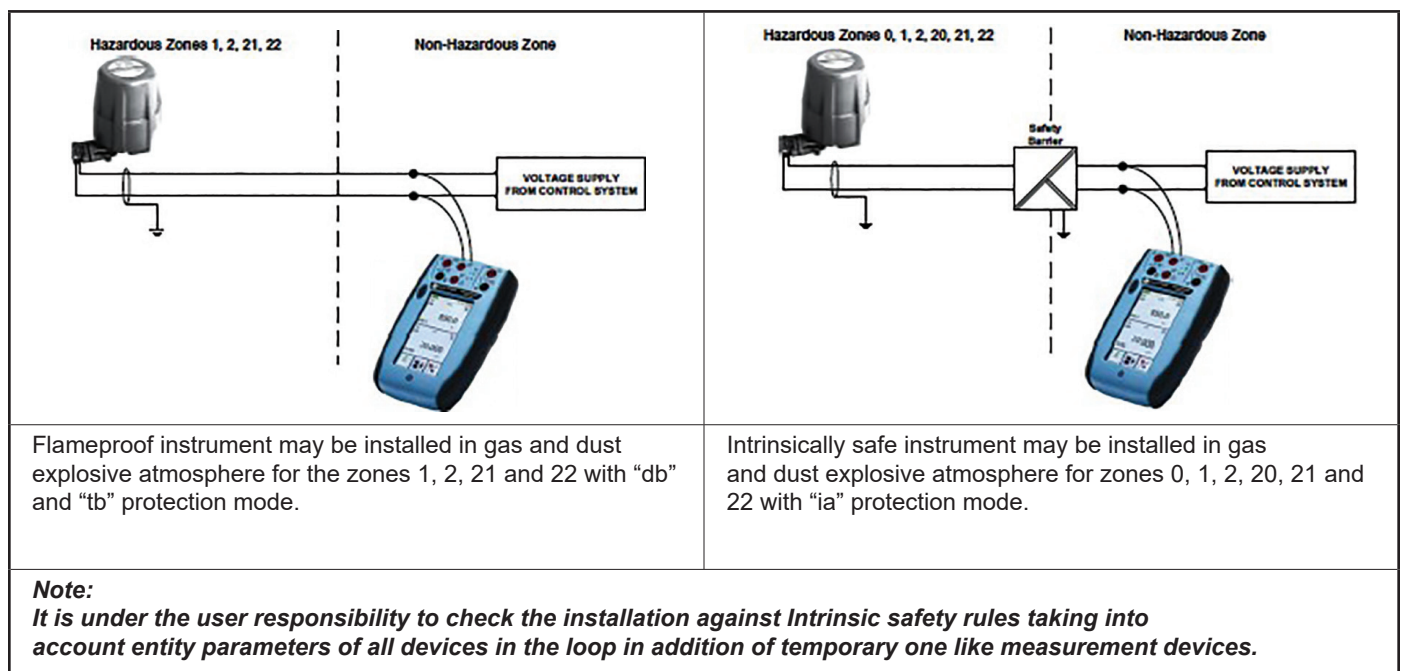
- **Insulation must be free of any damage along the wires inside the housing**
- **Tightening must be sufficient to bring constant contact in time without being excessive to cut or damage connection.**

7.3 Electrical connection for type 496-8

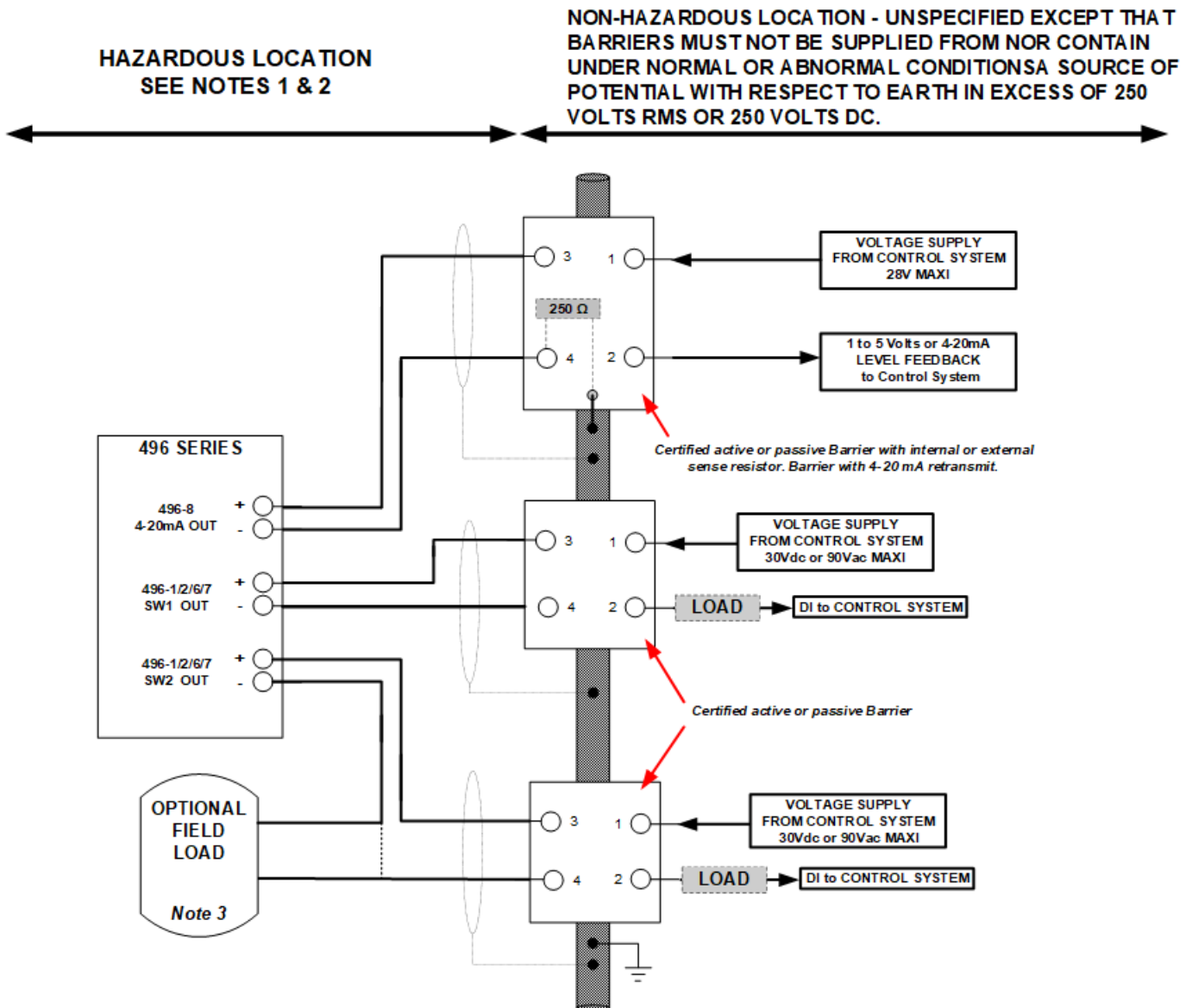
Connect the electrical cables to the position transmitter terminal block located on the printed circuit board. Respect the polarities + and – and the maximum voltage allowed.

7.4 Installation and start-up

7.4.1 Installation Overview



7.4.2 Intrinsically Safe Installation Wiring Requirements



Note 1: Hazardous Location

Refer to the device label description I for the of the environment in which the device may be installed.

Note 2: Field Wiring

Intrinsically Safe wiring must be made with grounded shielded cable or installed in grounded metal conduit.

(Le câble utilisé en sécurité intrinsèque doit inclure un blindage de mise à la terre ou doit être installé dans un conduit en métal mis à la terre).

The installation including the barrier earthing requirements must comply with the installation requirements of the country of use.

Requirements:

(USA): ANSI/ISA RP12.6 (Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations) and the National Electrical Code, ANSI/NFPA 70.

CSA (Canada): Canadian Electrical Code Part 1.

Note 3: Entity Requirement

Cable capacitance and inductance plus the I.S. apparatus unprotected capacitance (Ci) and inductance (Li) must not exceed the allowed capacitance (Ca) and inductance (La) indicated on the associated apparatus. If the optional Multimeter or recorder is used on the Area Hazardous side of the barrier, then its capacity and inductance must be added and the Multimeter or recorder must be agency approved for use in the hazardous area.

The barriers may be active or passive and from any certified manufacturer as long as the barriers comply with the listed entity parameters.

Note 4: Installation restriction

A device which has previously been installed without an approved IS barrier must NEVER be used subsequently in an intrinsically safe system. Installing the device without a barrier can permanently damage the safety related components in the device making the device unsuitable for use in an intrinsically system.

7.4.3 Start-up

- **Before power up or after doing any work on the device always check the cover (12) is fully screwed, O-ring (10) is free of any damage and security screw (9) is well locked.**
- **Check that the cable gland is certified for the intended use and that the electrical data are suitable for the operating zone.**

Before start-up, proceed, if required, with instrument calibration as per §8 and/or ensure that all the safety instructions in the preceding paragraphs have been strictly followed.

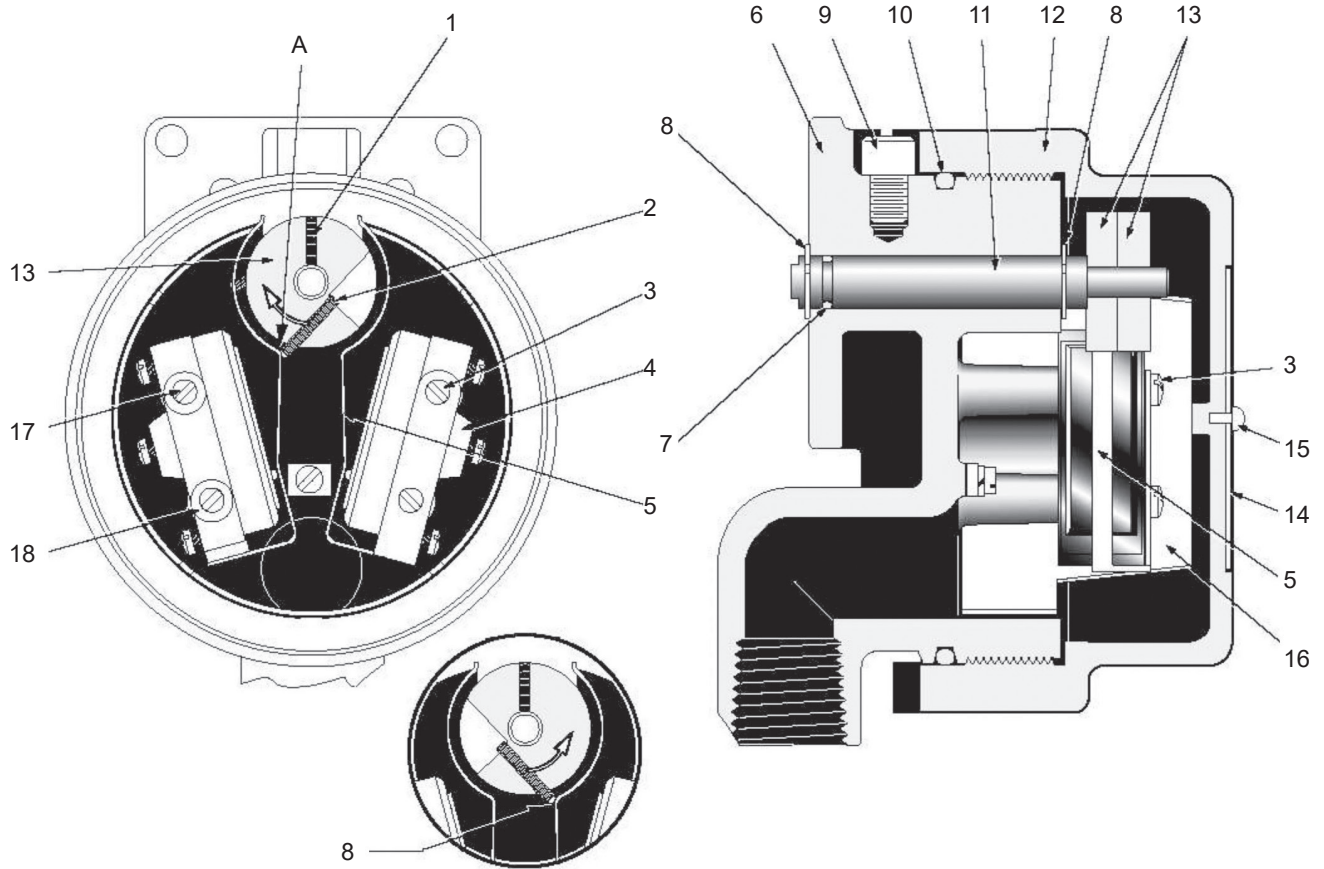
8. Calibration

Before power up the device to proceed with calibration carefully read the following safety warnings.

- **Comply with current national and local regulations for electrical installation work.**
- **Must be installed and put into service in conformance with IEC 60079-14 and / or national and local regulations applicable for explosible atmospheres.**
- **Before carrying out any work on the device, power off the instrument or make sure that the local conditions in the potentially explosive atmosphere permit- the safe opening of the cover.**
- **Connect the wires to the instrument's terminals, taking care of complying with polarities and maximum voltage allowed.**
- **Before power up or after doing any work on the device always check the cover (12) is fully screwed, O-ring (10) is free of any damage and security screw (9) is well locked.**

8.1 Calibration of rotary limit switch 496-1, 496-2, 496-6, 496-7

- The concave portion of the lever (5) must be strictly concentric to the cam (13) when the micro-switch is actuated.
- This is an important caution to make sure the lever is properly depressed when not actuated.
- If not, loosen the screws (3 & 17) and slightly move the lever upwards or downwards. Tighten the screws.
- Slightly loosen the cam locking screw (1) using a 3/32" socket hex head wrench.
- Move the plug stem to the position required to actuate the switch.
- It is important to note that the cam operating the right hand micro-switch must actuate the lever (5) at the end of the counterclockwise rotation. (See detail figure below).
- This makes sure the screw (2) has free the lever (5) when the valve is throttling. The remaining concave portion only ensures micro-switch actuation in case of over travel. Conversely, the cam operating the left hand micro-switch must actuate the lever (5) at the end of the clockwise rotation. (See front view below).
- To meet the above requirement when only one micro-switch is provided (type 496-1) it may be necessary to change the location of the micro-switch.
- Rotate the cam (13) until the micro-switch is actuated. Lock the cam (13) tightening the screw (1).
- Fine tune adjustment with screw (2). Use a 1/16" socket hex head wrench. The screw (2) must come out the cam enough to properly depress the lever (5).
- **Strictly follow safety instructions under §7.4 before putting into service.**



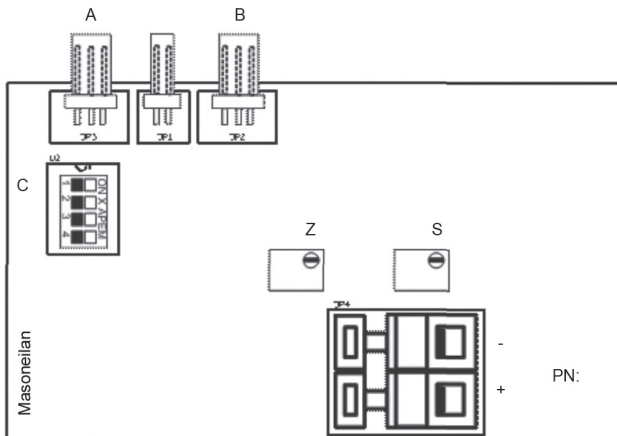
Parts List

Rep.	Designation	Rep.	Designation	Rep.	Designation
1	Adjusting screw	8	Snap ring		
2	Adjusting screw	9	Safety screw	16	Insulating
3	Screw (1 micro switch)	10 (1)	O-ring	17	Screw (second micro switch)
4	Micro switch	11	Axis	18	Washer
5	Lever	12	Cover	19 (2)	Spacer (Not shown)
6	Housing	13	Cam	A	Contact point for the left micro switch
7 (1)	O-ring	14	Serial plate	B	Contact point for the right micro switch
(1) Recommended spare parts		(2) Only for 496-2 model			

8.3 Calibration of position transmitter 496-8

Action

The action sense of the valve (open or closed valve, compared to the 4 - 20 mA of the loop signal), determines the position of the connector 3 points of the optoelectronic sensor on one of the two connectors of electronic circuit A or B. The operation rule is: for a clockwise rotation of the pinion of the control shaft (view cover side), the output current increases (4→20 mA) when the connector of the optoelectronic sensor is connected in A and decreases when connected in B.



Linkage adjustment

When mounted on reciprocating valves, adjust the turnbuckle to get the instrument lever perpendicular to the plug stem at mid-travel.

Position transmitter adjustment

- Position the connector 3 points on connector A or B in function of the chosen action.
- Preset mid travel the zero adjustment (Z) if necessary*.
- Preset mid travel the span adjustment (S) if necessary**.
- Configure the switch C (see Annex IV) on the rotation angle of the control axle.
- Position the valve to the origin of travel that should correspond to the minimum of the signal (4 mA).
- Install a milliamp meter in series in the loop and power up the instrument.
- Rotate the primary pinion on the control axle to get an output signal around 4 mA.
- Fine tune-up of the 4 mA signal with the zero potentiometer (Z).
- Full stroke the valve to the rated travel and adjust the output signal to 20 mA with the span potentiometer (S).

- Check the zero and span calibration compared to the valve stroke. Repeat the zero and span calibration operations if necessary.
- * In case of problem of Zero adjustment due to the physical limits of the potentiometer, turn of 5 turns in the reverse direction that desired and turn the primary pinion to obtain an output current nearest to 4 mA.
- ** In case of problem of span adjustment due to the physical limits of the potentiometer, turn of 5 turns in the reverse direction that desired and configure the switch C (see Annex IV) for a higher or lower angle than that basis.

- **Adjustment of micro-switch(es) or proximity switch(es)**
Refer to paragraph §8.1 or §8.2 to adjust micro-switch(es) or proximity switch(es).
- **Strictly follow safety instructions under §7.4 before putting into service.**

9. Maintenance

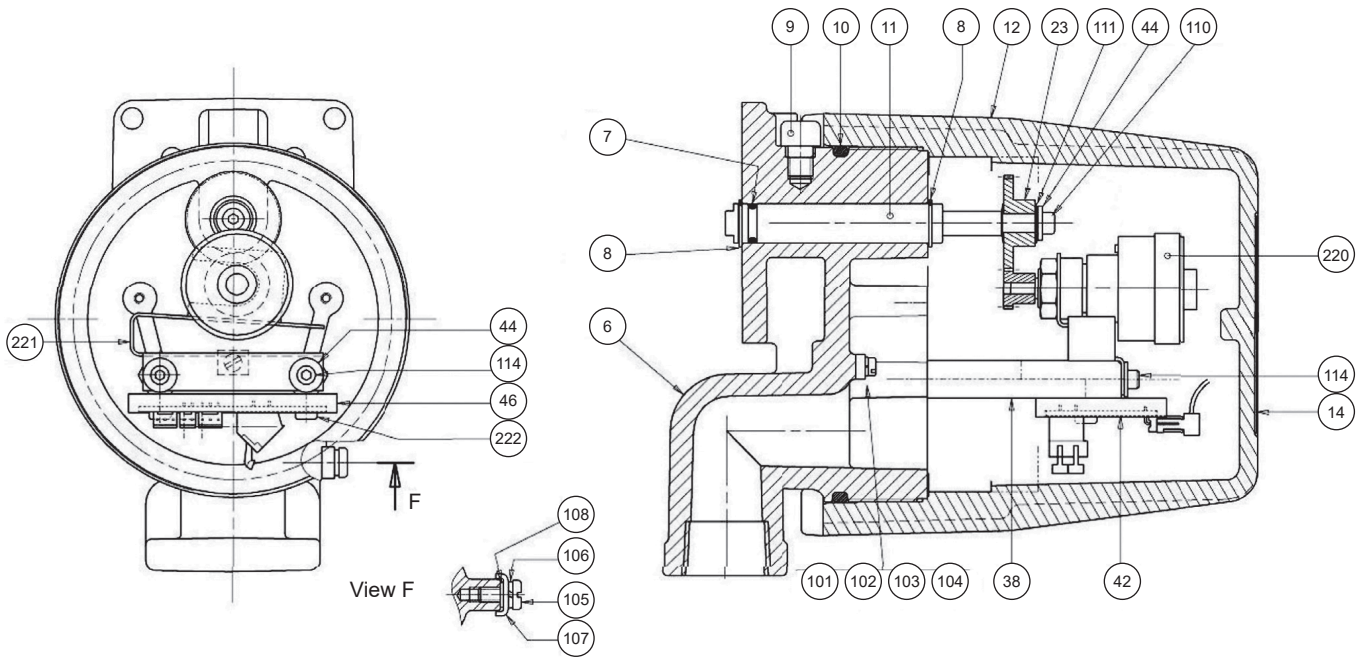
- **Before carrying out any work on the device, power off the instrument or make sure the local conditions are free of potentially explosive atmosphere for safe opening of the cover.**
- **These operations must be done in conformance with IEC 60079-17 and / or national and local regulations applicable for explosible atmospheres.**
- **Before power up or after doing any work on the device always check the cover (12) is fully screwed, O-ring (10) is free of any damage and security screw (9) is well locked.**

- Check that no part of the 496 is damaged. In the event of damage replace the defective parts with genuine manufacturer's replacement part.
- Pay particular attention to the following:
 - Check device, mechanical link and general aspect.
 - Check the cable gland and the electrical connections.
 - Check the condition of the O-ring (10) of cover (12) and O-ring (7) of the shaft (11).
 - Make sure that shaft (11) is not worn out or damaged.
 - If the shaft (11) must be removed, make sure the original circlips (8) is put back in place. Check that neither the housing nor the shaft are damaged.
- Instruments installed in zones 20, 21 and 22 must be cleaned to prevent any dust build up on the walls. See instruction §11.1 b & c for safe cleaning.

10. Special Conditions of Work

A training session must be followed by person usually recognized to use apparatus in explosible atmospheres.

This training session is not supported by Dresser Produits Industriels S.A.S.



Parts List

Rep.	Designation	Rep.	Designation	Rep.	Designation
6	housing	38	spacer	106	Grower washer
7	O-ring	42	electronic card	107	stirrup
8	circlips	44	washer	108	washer
9	CHC screw	46	card support	110	screw
10	O-ring	101	ground screw (inside)	111	spring washer
11	shaft	102	Grower washer	114	CHC screw
12	cover	103	stirrup	220	detector set
14	serial plate	104	washer	221	detector support
23	pinion	105	ground screw (outside)	222	screw

11. Special Conditions of Use

11.1. For Intrinsic Safety & Flameproof

- a. It is under the user responsibility to check once a year the gaskets and in the event of damage to replace the defective parts with manufacturer’s replacement parts only.
- b. For use in dusty hazardous areas, the user will have to proceed to a cleaning regularly the different sides of the enclosure to avoid the deposits of dusts, the maximum thickness must be <5 mm. This cleaning will be done using recommendations defined in §c.

For safe operation, this can be done only if the local conditions around the device are free of potentially explosive atmosphere.

- c. To avoid any spark due to electrostatic discharges, it is requested to follow the instructions of *IEC/TS 60079-32-1*. For example, the user will proceed a cleaning of the device and mainly the plastic label with a wet rag to.

For safe operation, this can be done only if the local conditions around the device are free of potentially explosive atmosphere.

- d. The user will have to check the temperature increase on the 496 head coming from the mechanical part in contact with the 496 housing or through the process thermal radiation be less or equal than the temperature classification allowed. This must be done in conformance with *IEC 60079-14* and/or national and local regulations applicable for explosible atmospheres.

11.2 Intrinsically safe apparatus

- The cable entry must have a protection level at least equal to IP6X according to IEC 60529 standards.
- For using in zone 0 (Ga application) and with aluminum housing, precautions must be taken to prevent that apparatus is not subject to any mechanical shocks.
- The linear power supply of the position transmitter / position contactor must be of a certified type for a use in the explosive atmospheres of IIC, IIB or IIA group and its output circuit recognized of intrinsic safety.
- The maximum characteristics of these sources should not exceed the characteristics indicated in § 4.2

11.3 Explosion proof apparatus

- When the ambient temperature is higher than 65°C, the user will have to choose a cable entry and a cable compatible with the data of the table below:

T ambient	T cable
65°C	74°C
70°C	79°C
75°C	84°C
80°C	89°C
85°C	94°C

- The minimal temperature of the cable is indicated on the serial plate.
- When the ambient temperature is lower than -20°C, the user will have to chose a cable entry and a cable compatible with the lowest possible ambient temperature. For reminder, 496-series are certified up to -55°C.
- The cable entry must have a degree of protection at least equal to IP66/67.
- Use only the following greases for the explosion- proof gaskets, shaft, cover threads and cable gland.

Type	Manufacturer
SI 33	ORAPI
GRAPHENE 702	ORAPI
MOLYKOTE 111 COMPOUND	MOLYKOTE®
MULTILUB	MOLYKOTE®
GRIPCOTT NF	MOLYDAL

- All mechanical parts coupled with the limit switch or transmitter and likely to generate a spark or a hot surface will have to be the object, on behalf of the user, an analysis of the risks.
- Explosion-proof joint:
 - The explosion-proof shaft joint tolerance is lower than one defined by the standard IEC 60079-1. It must be respected with a maximum radial gap of 0.133mm.
 - The length of explosion-proof joints is greater than the one defined in the sheets of IEC 60079-1.
 - The explosion-proof joints are not intended to be repaired.

Annex I - Intrinsic Safety

TABLE 1 Position transmitter			MIN and MAX PERMISSIBLE AMBIENT TEMPERATURES FOR APPLICATION IN THE FOLLOWING TEMPERATURE CLASS (in °C)						
TYPE 496-8	Ci	Li	1G/2G/1D (EPL Ga, Gb, Da)	1G/ 2G (EPL Ga, Gb)			1D (EPL Da)		
	nF	µH	MIN	T6	T5	T4	T ₂₀₀ 85°C	T ₂₀₀ 100°C	T ₂₀₀ 135°C
Position transmitter	30	0	-40	65	80	80	65	80	80

TABLE 2 HONEYWELL Manufacturer			MIN and MAX PERMISSIBLE AMBIENT TEMPERATURES FOR APPLICATION IN THE FOLLOWING TEMPERATURE CLASS (in °C)						
TYPE 496-1, 496-2	Ci	Li	1G/2G/1D	1G/ 2G (EPL Ga, Gb)			1D (EPL Da)		
	nF	µH	MIN	T6	T5	T4	T ₂₀₀ 85°C	T ₂₀₀ 100°C	T ₂₀₀ 135°C
BZ-2R-72-A2	0	0	-55	76	80	80	76	80	80

Annex II – Flameproof

TABLE 1		MIN and MAX PERMISSIBLE AMBIENT TEMPERATURES FOR APPLICATION IN THE FOLLOWING TEMPERATURE CLASS (in °C)				
TYPE 496-8	2 G/D	2 G (EPL Gb)		2 D (EPL Db)		
	MIN	T6	T5	T85°C	T100°C	
Transmitter	-40	70	80	70	80	

TABLE 2		MIN and MAX PERMISSIBLE AMBIENT TEMPERATURES FOR APPLICATION IN THE FOLLOWING TEMPERATURE CLASS (in °C)				
TYPE 496-1 and 496-2	2 G/D	2 G (EPL Gb)		2 D (EPL Db)		
	MIN	T6	T5	T85°C	T100°C	
Honeywell	1HS1	-55	70	85	70	85
	BZ-2R-72-A2	-55	70	85	70	85
	BZ R-A2	-55	70	85	70	85

TABLE 3		MIN and MAX PERMISSIBLE AMBIENT TEMPERATURES FOR APPLICATION IN THE FOLLOWING TEMPERATURE CLASS (in °C)				
TYPE 496-6 and 496-7	2 G/D	2 G (EPL Gb)		2 D (EPL Db)		
	MIN	T6	T5	T85°C	T100°C	
Honeywell	DT-2R-A7	-55	70	85	70	85

Annex III

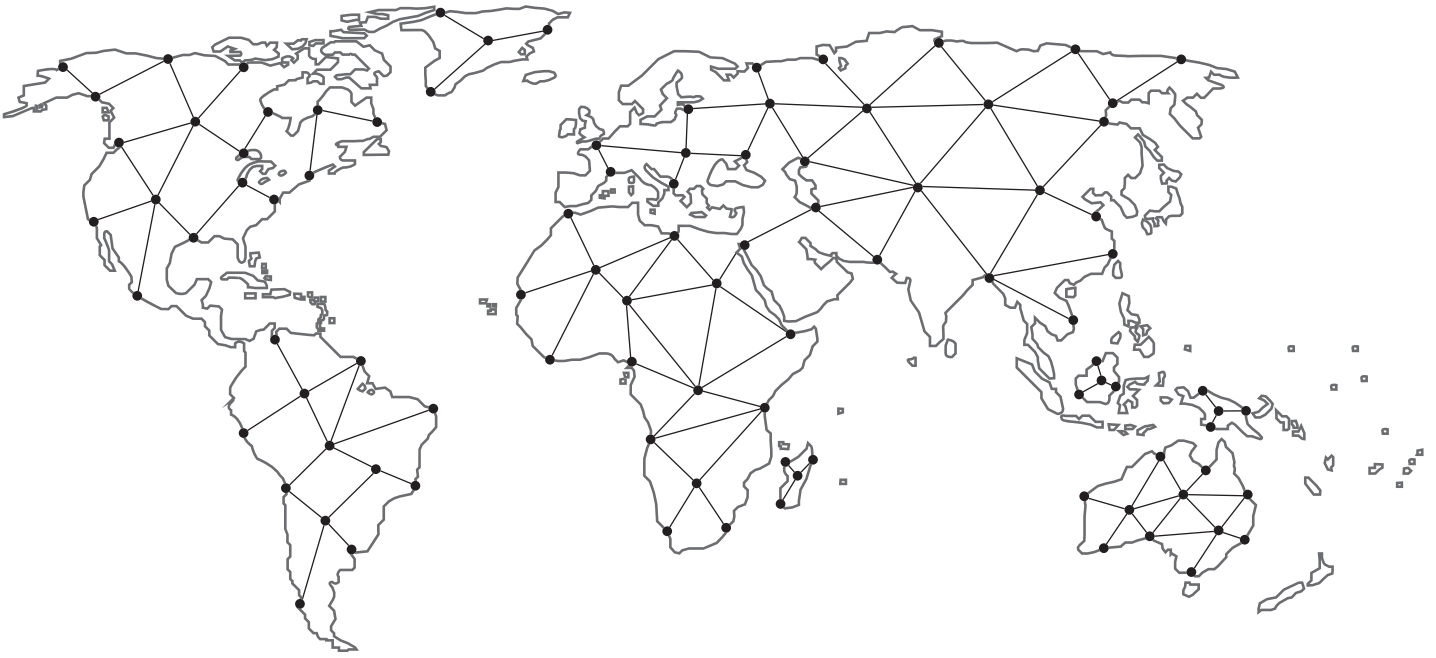
CABLE GLAND – ADAPTOR - REDUCER MOUNTING RULES			
CABLE GLAND		ADAPTOR - REDUCER	
496 Housing certified Ex db IIC / Ex tb IIIC	Cable gland certified Ex db IIC / Ex tb IIIC	Housing certified Ex db IIC / Ex tb IIIC	Adaptor-Reducer certified Ex db IIC / Ex tb IIIC
<p>TYPE</p> <p>Male Taper (conical) threaded joint: ¾" NPT</p> <ul style="list-style-type: none"> Conform to NPT requirements of ANSI/ASME B1.20.1 A minimum of 5 threads provided on each part <p>MOUNTING RULE</p> <ul style="list-style-type: none"> Thread cleaning with Loctite 7063 or equivalent product with similar efficiency. Cemented with Loctite 5400 (low strength thread sealant) or equivalent product with similar efficiency. This is mandatory to meet an IP67. Tightening torque (see Cable Gland instruction manual) Check threads engagement (see Cable Gland instruction manual) 		<p>A:</p> <p>TYPE</p> <p>Male Taper (conical) threaded joint: ¾" NPT</p> <ul style="list-style-type: none"> Conform to NPT requirements of ANSI/ASME B1.20.1 A minimum of 5 threads provided on each part <p>MOUNTING RULE</p> <ul style="list-style-type: none"> Thread cleaning with Loctite 7063 or equivalent product with similar efficiency. Cemented with Loctite 2700 (high-strength threadlocker) or equivalent product with similar efficiency. This is mandatory to meet an IP67. Tightening torque (see Adaptor-Reducer instruction manual) Check threads engagement (see Adaptor-Reducer instruction manual) <p>B:</p> <p>TYPE</p> <p>Female Taper (conical) thread joints: ½" NPT or other NPT size</p> <ul style="list-style-type: none"> Conform to ISO 965-1 and ISO 965-3 requirements Minimum thread engaged: 5 Depth of engagement: ≥ 8 mm <p>MOUNTING RULE</p> <ul style="list-style-type: none"> Thread cleaning with Loctite 7063 or equivalent product with similar efficiency. Cemented with Loctite 5400 (low strength thread sealant) or equivalent product with similar efficiency. This is mandatory to meet an IP67. Tightening torque (see Cable Gland instruction manual) Check threads engagement (see Cable Gland instruction manual) 	

Annex IV

Switch Configuration According to the Rotation Angle of the Control Axle								
$\leq 24^\circ$ and $< 30^\circ$	$\leq 30^\circ$ and $< 36^\circ$	$\leq 36^\circ$ and $< 42^\circ$	$\leq 42^\circ$ and $< 48^\circ$	$\leq 48^\circ$ and $< 54^\circ$	$\leq 54^\circ$ and $< 62^\circ$	$\leq 62^\circ$ and $< 70^\circ$	$\leq 70^\circ$ and $< 80^\circ$	$\leq 80^\circ$ and $\leq 90^\circ$
Concerned Apparatus								
<ul style="list-style-type: none"> • 87/88 strokes $\frac{1}{2}$" to 0,8" • 37/38 strokes $\frac{1}{2}$" to $\frac{3}{4}$" • Sigma F stroke $\frac{3}{4}$" 		<ul style="list-style-type: none"> • Varimax • 67/68 stroke 5" 		<ul style="list-style-type: none"> • Camflex • Varipak • 3100 • 87/88 strokes 1" to 2,5" • 37/38 strokes 1" to 4" • Sigma F strokes 1,5" to 2" • 67/68 stroke 6" 		<ul style="list-style-type: none"> • 67/68 stroke 8: 	<ul style="list-style-type: none"> • Minitork 	<ul style="list-style-type: none"> • Ball

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