

F5 Feedback Unit Installation and Operation Manual



Manufacturers declaration • Hersteller-Erklärung • Déclaration de fabricant

GB

Manufacturers declaration

in compliance with EC directive 89/392/EEC/91/368/EEC, 89/336/EEC, 73/23/EEC and 93/68/EEC.

We hereby confirm that the appliances described in this sheet has been manufactured in compliance with the applicable standards and is intended for installation in a machine/application, and that commissioning is strictly prohibited until evidence has been provided that the machine/application in question is also in compliance with

EC directive 89/392/EEC/91/368/EEC, 89/336/EEC, 73/23/EEC and 93/68/EEC.

This manufacturers declaration is applicable to the following PMV series:

F5.

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Hersteller-Erklärung

im Sinne der EG-Richtlinie 89/392/EWG/91/368/EWG, 89/336/EWG, 73/23/EWG und 93/68/EWG.

Hiermit erklären wir, daß die in diesem Blatt beschriebenen Geräte entsprechend den gültigen Normen gebaut und zum Einbau in eine Maschine oder Applikation bestimmt sind, sowie daß deren Inbetriebnahme so lange untersagt ist, bis festgestellt wurde, daß diese

Maschine/Applikation ebenfalls der EG-Richtlinie

89/392/EWG/91/368/EWG, 89/336/EWG, 73/23/EWG und 93/68/EWG entspricht.

Diese Herstellererklärung hat für folgende PMV-Serien Gültigkeit:

F5.

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Déclaration de fabricant

au sens de la directive de la 89/392/CEE/91/368/CEE, 89/336/CEE, 73/23/CEE et 93/68/CEE.

Nous déclarons par la présente que les appareils décrits sur cette page sont construits en conformité avec les normes en vigueur et qu'ils sont destinés à être montés dans une machine ou une application, nous déclarons également que leur mise en service est interdite tant qu'il n'a pas été constaté que cette machine/application satisfait

également à la directive 89/392/CEE/91/368/CEE, 89/336/CEE, 73/23/CEE et 93/68/CEE.

Cette déclaration de fournisseur est valable pour les types d'appareils PMV suivants:

F5.



Mr. Jan-Eric Andersson
President, Palmstiernas Instrument AB

PMV Feedback module storage and handling procedures

PMV feedback modules are precision instruments which should be stored and handled accordingly to avoid problems or damage.

Feedback modules contain electronic components which can be damaged by exposure to water. Appropriate precautions should be taken to protect units while in storage.

Warehouse storage

-Stored in original PMV shipping containers, units should be stored in an environmentally controlled area, i.e. clean, cool (15-26°C, 60-80°F) and dry, out of direct sunlight or weather exposure.

Field storage

- If feedback units must be stored outdoors, make sure front covers are tightened, all conduits entries are sealed and that units not are exposed to direct sunlight, rain or snow.

Potential damage mechanism

When units are stored in hot, humid climates, the daily heating/cooling cycle will cause air to expand/contract and be drawn in and out of the feedback housing through ports left open. Dependent on the local temperature variations, humidity and dew points and time in storage, condensation could occur and accumulate inside causing erratic operation or failure due to water and corrosion. The potential for condensation damage is especially high in southern climates and aggravated if units are exposed to direct sunlight.

For further assistance, please contact you nearest PMV office.

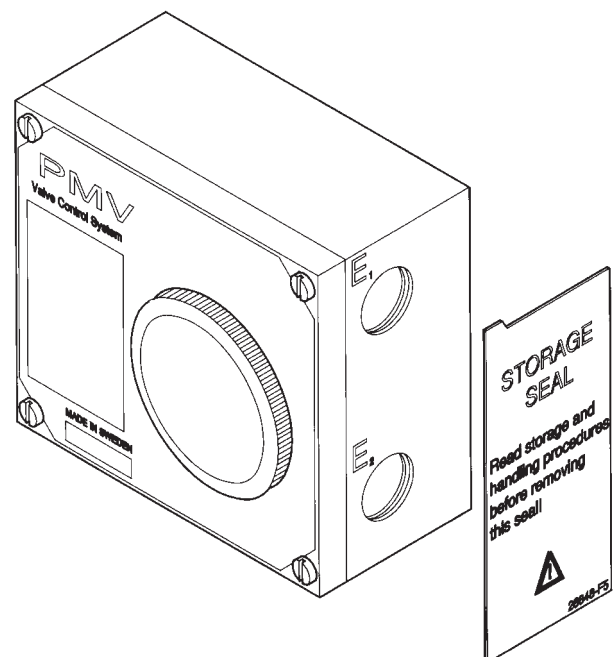
Storage Seal

F5 is supplied with conduit entry points sealed. The seal is only a storage seal, not to be used as seal when F5 is in operation.

If Storage Seal is removed or damaged, make sure conduit entry points are resealed before further shipping or storage.

Use proper cable glands or vapour proof tape.

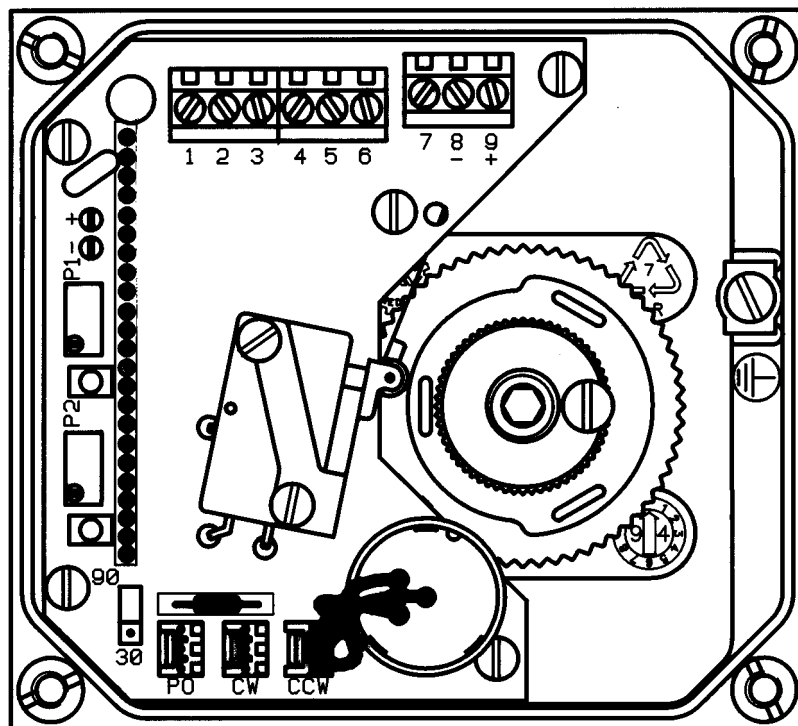
Mount F5 on positioner P5/E5 or actuator/valve package. Remove Storage Seal for conduit entry E_1 & E_2 , make electrical connections, install proper cable glands or plugs to ensure the units sealing.



Description

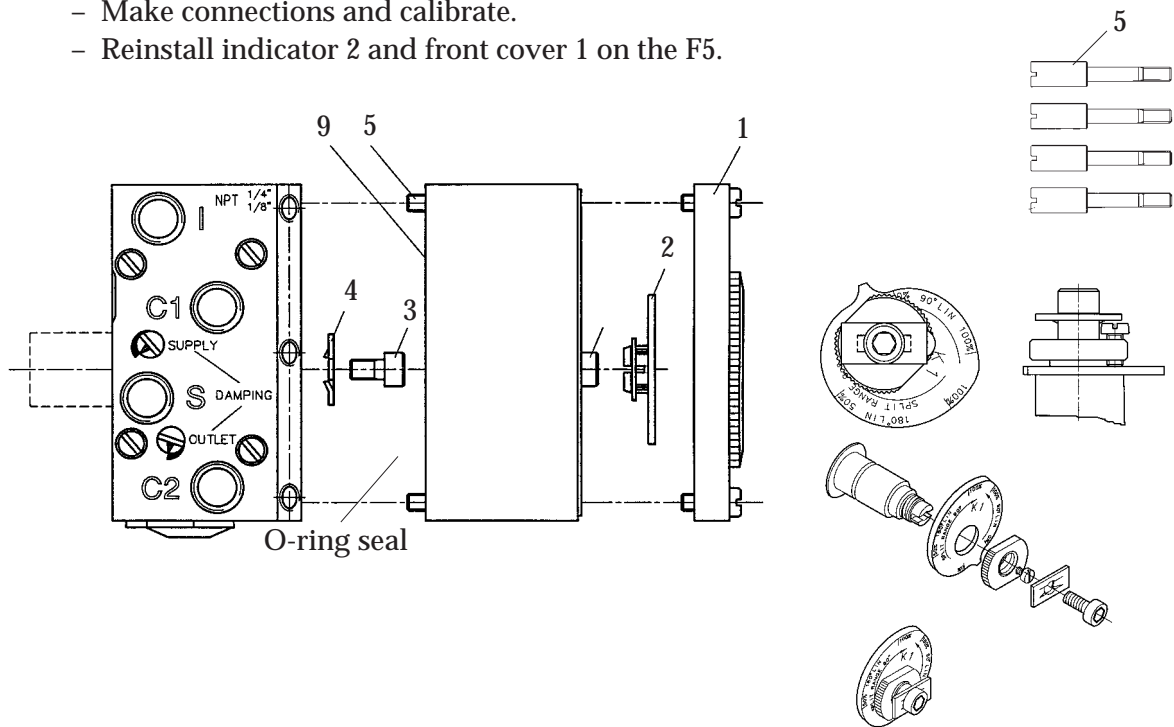
The F5 is a feedback unit uniquely designed to mount on top of the P5 or E5 positioners with minimum parts required. The F5 can also be mounted on actuators with an additional mounting kit. The F5 is available in two different enclosures, standard or explosion proof.

The standard enclosure for F5 offers a gasketed NEMA 4 / IP66 enclosure with optional American and European intrinsically safe approvals. The explosion proof version is approved NEMA 7 / IP66 and carries North American and European approvals. Both enclosures can be furnished with Namur sensors, mechanical or proximity switches, potentiometer or 4-20 mA position transmitter or a combination of these items.



Mounting on P5 or E5

- Remove the front cover and the indicator from the positioner.
- Loosen and remove the Allen head screw (3) (5mm hex-wrench)
- Install drive coupling (4) on the positioner shaft, secure it with screw (3)
- Check that F5 is fitted with 4 nos of screws 5 and O-ring 9, install the F5 on top of the positioner unit, make sure that the coupling is properly engaged before tightening the four screws 5.
- Make connections and calibrate.
- Reinstall indicator 2 and front cover 1 on the F5.

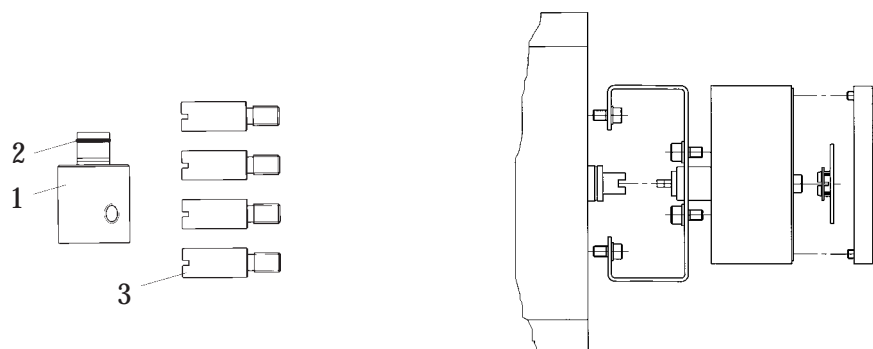


Mounting F5 on actuator (On/Off control valves)

Install the spindle adaptor 1 into F5 shaft, make sure that a spring clip 2 is fitted. A solid click should be heard when the spindle adaptor is properly installed into the F5 shaft.

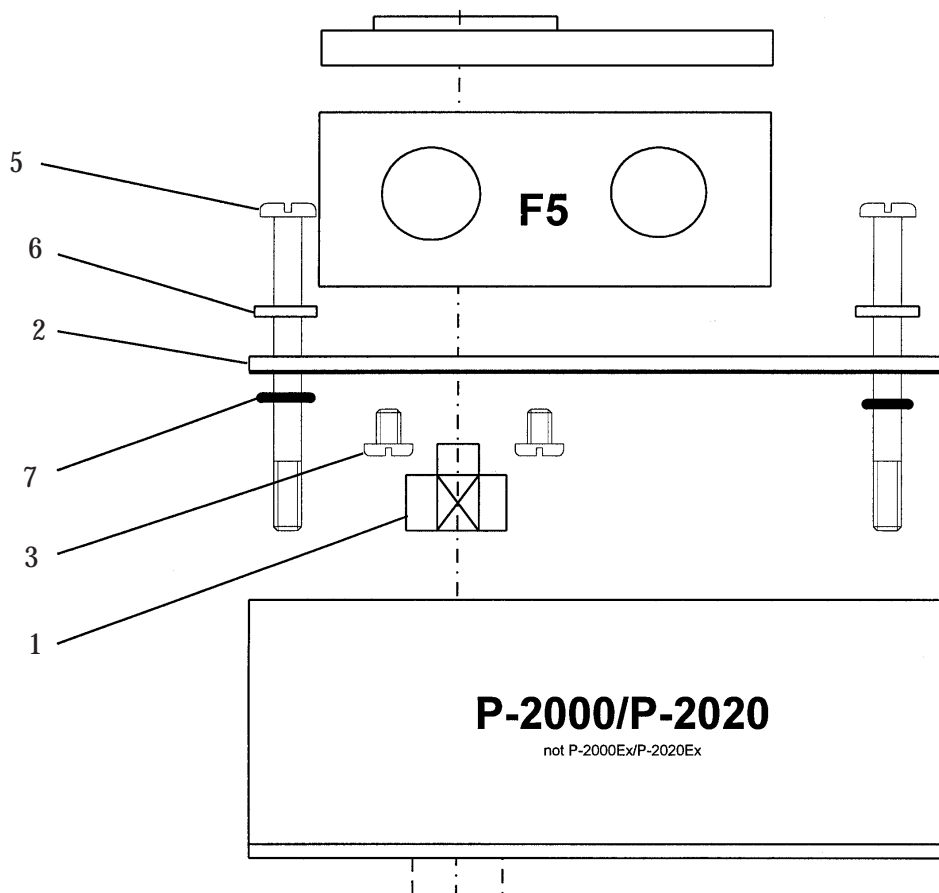
Mount F5 on the actuator using a mounting kit and the ISO F05 mounting holes on the bottom of the F5. Make sure that the F5 spindle is properly aligned on top of the actuator.

Check that the four fasteners 3 are installed into F5.



Mounting on P-2000/P-2020

- Remove front cover, indicator and cam nut from the positioner
- Replace the cam nut with coupling 1, calibrate the positioner.
- Check that the gasket is fitted to the bottom of plate 2, install screws 5 (3x long, 1x short) plastic washer 6 and O-rings 7.
- Secure the F5 to the plate 2 with screws 3.
- Install assembly onto the positioner, make sure that coupling 1 is properly engaged.
- Make electrical connections and calibrate.



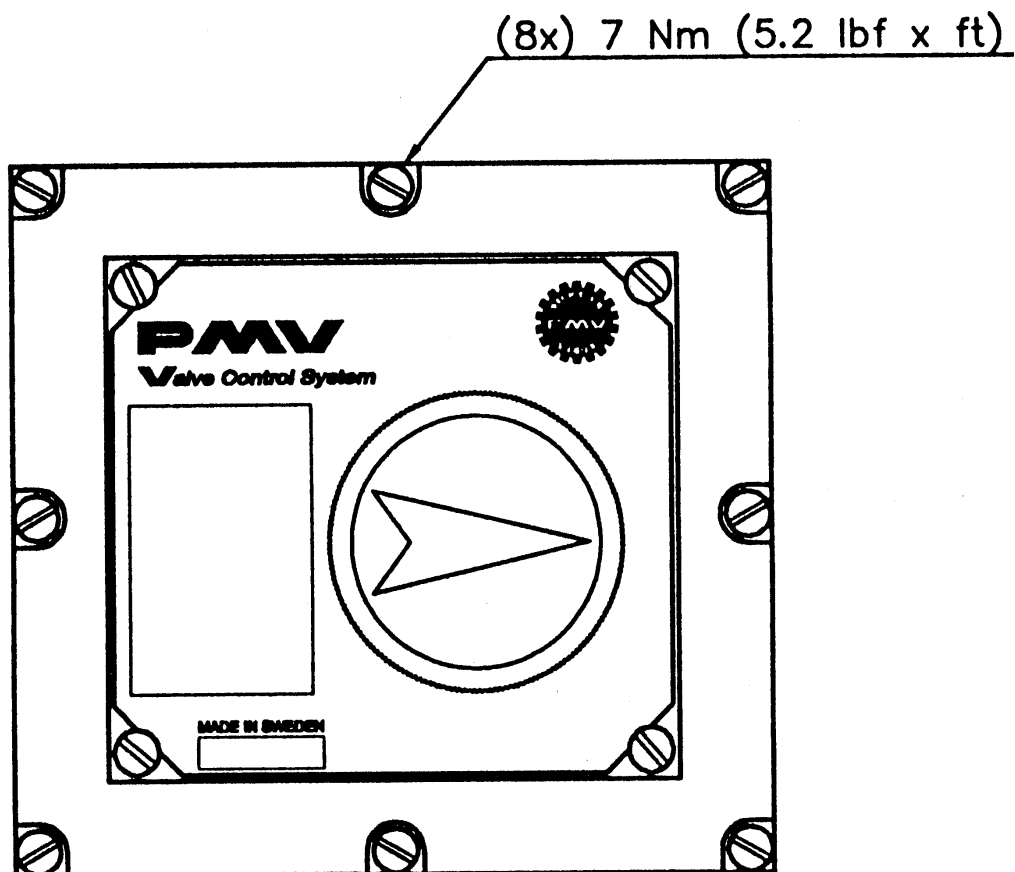
F5-EX

The F5-EX is approved explosion proof by CSA, FM and CENELEC.
Front cover screws shall be tightened 7 Nm (5,2 lbf x ft).

Approvals:

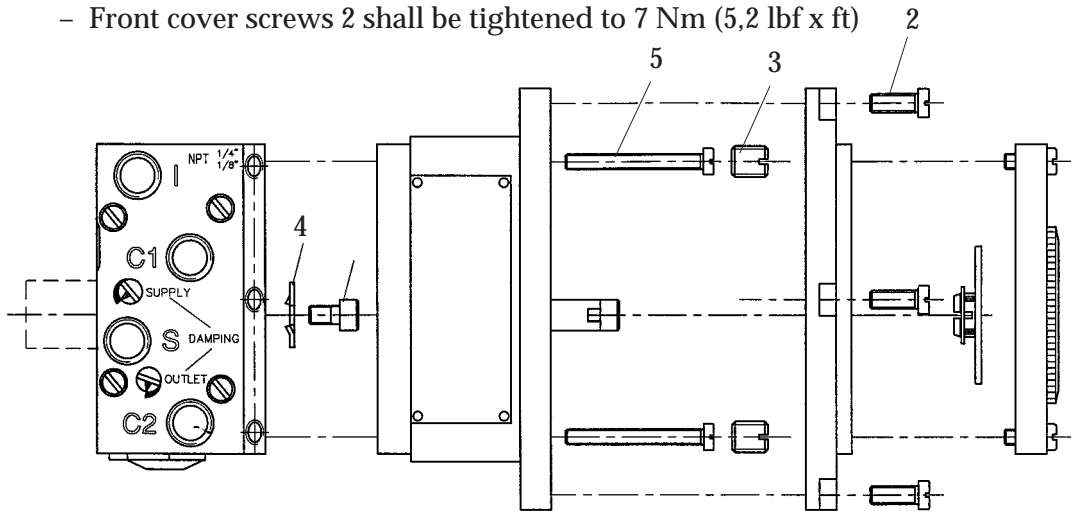
CSA, FM Div. 1, Class 1,2 & 3 Group BCDEFG T4-T6

CENELEC EEx d IIB + H2 T4-T6 LCIE 97.D6140



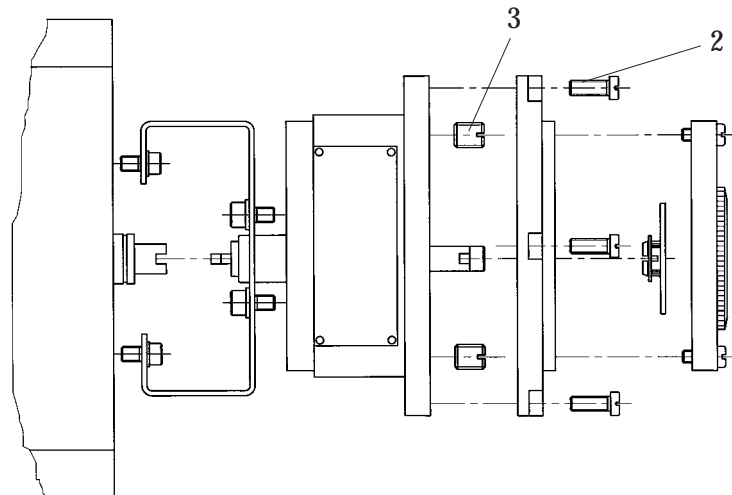
Installing F5-EX on P5/E5

- Remove front cover, indicator and Allen head screw from the positioner.
- Install drive coupling 4 and secure it with the Allen head screw.
- Remove front covers and indicator from the F5-EX unit.
-
- Install F5-EX on P5/E5, , make sure drive coupling is properly engaged before tightening screws 5.
- Reinstall and tight screws 3. Connect and calibrate.
- Reinstall front covers and indicator.
- Front cover screws 2 shall be tightened to 7 Nm (5,2 lbf x ft)



Installing on an actuator

- Remove front covers and indicator from the F5-EX unit.
- Remove screws 3 and (5). Reinstall and tight screws 3.
- Install drive shaft into F5-EX, a solid click should be heard when spindle adapter is properly installed.
- Mount F5-EX on the actuator using the F05 holes and a mounting kit.
- Connect and calibrate, reinstall front covers and indicator.
- Front cover screws 2 shall be tightened to 7 Nm (5,2 lbf x ft).



Connections

WARNING!

Units installed in hazardous locations must have proper agency approvals and be installed according to installation drawing F5-2-4-9516.

Conduit entries are PG13,5 (M20) or NPT 1/2"

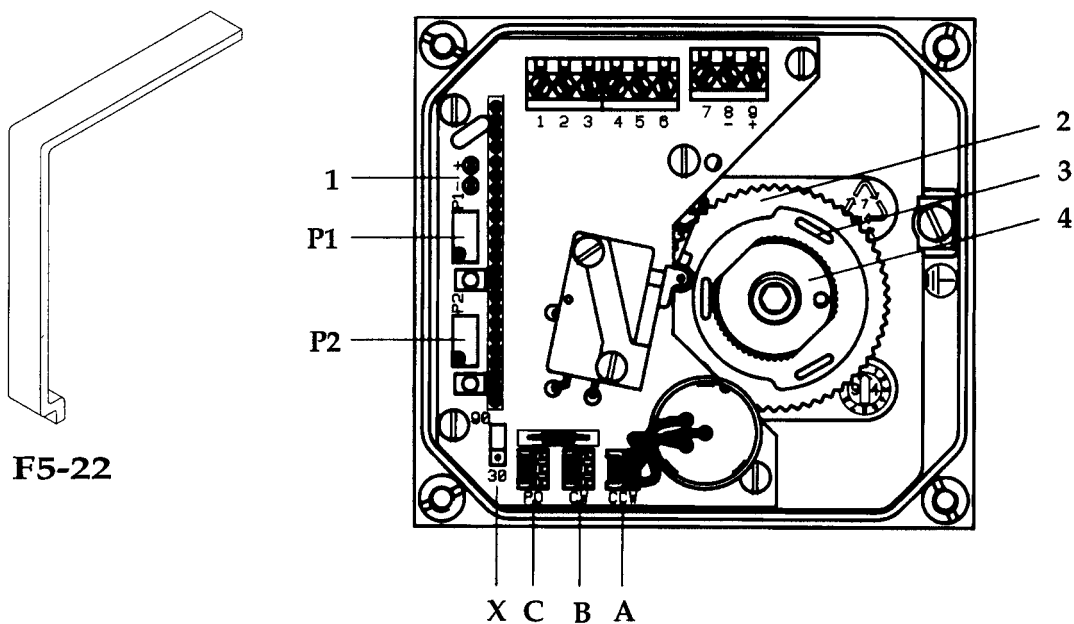
Make electrical connections according to wiring diagrams and tighten cable glands. Terminals are 2.5 mm² (AVG 14) screw terminals.

Adjustments

CAUTION! Moving parts – risk of injury.

The cams/gear wheel are secured in position by friction provided from the cam/shaft assembly. To adjust switches and/or position transmitter, rotate gear wheel 2 and cams 3 to desired position using tool F5-22 or tip of a screw driver that fits snugly in one of the slotted holes. Start calibration procedure by adjusting position transmitter first, then continue with the lower switch and complete with the upper switch.

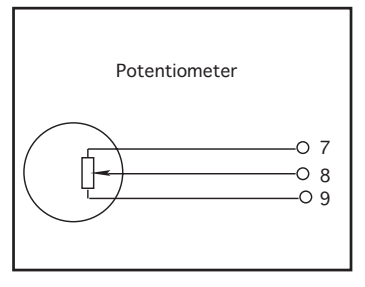
If cams exhibit high stiction, rotate them back and forth rapidly several times. Do not adjust nut 4 or lubricate cams, call PMV for assistance.



Calibration

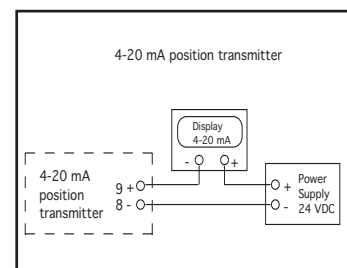
Potentiometer

1. Make electrical connections to terminals 7,8 and 9. Check that the potentiometer is connected to connector C on the printed circuit board.
2. Stroke the actuator to check direction of travel indicated by the potentiometer. To change direction of travel, swap wires at terminals 7 and 9.
3. Stroke the actuator to the position where the minimum potentiometer resistance is desired.
4. Adjust the potentiometer output reading to approx. 50 Ohm by rotating gear wheel 2 with special tool F5-22 or tip of a screw driver placed in one of the slotted holes.
5. Stroke the actuator to desired maximum resistance position and check reading.
6. Repeat steps 3-5 if necessary to obtain desired resistance change.
7. Set switches or install frontcover.



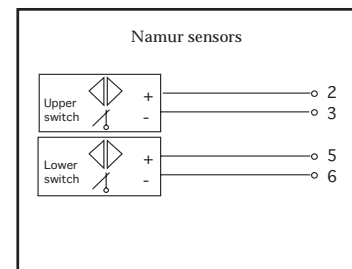
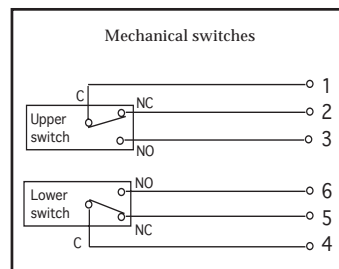
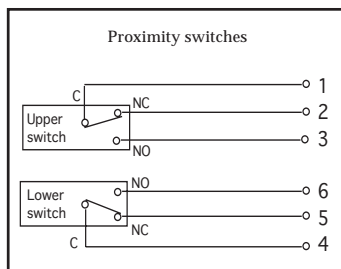
4-20 mA position transmitter

1. Set direction of rotation by placing potentiometer jumper in location A or B. (Location A for counter clockwise CCW valve/actuator rotation (Direct), location B for clockwise CW valve/actuator rotation (Reverse)).
2. Set jumper X to the desired valve rotation angle, for 30 deg or 45 deg rotation choose position 30,
For 60 deg or 90 deg rotation choose position 90, for 180 deg rotation choose position 30 and for 270 deg rotations choose position 90.
For 30° deg - 45° deg choose pos 30.
3. Make electrical connections according to wiring diagram. Power supply should be >9 to <28 VDC (24 VDC recommended).
4. Connect a 4-20 mA meter to testoutlet 1. Adjust potentiometer P1 20 revolutions CW & P2 20 revolutions CCW. Stroke actuator to the desired 4 mA position and check that current deflection is correct. Rotate gear wheel 2 with tool F5-22 or tip of a screw driver placed in one of the slotted holes until minimum valve is reached.
5. Adjust the output signal 4,0 mA with potentiometer P2. LED will illuminate when out put is 4 mA ($\pm 1\%$) or less. Stroke actuator to the desired 20 mA position and adjust the output to 20,0 mA with potentiometer P1. LED will illuminate when out put is 20 mA ($\pm 1\%$) or more.
6. Stroke actuator again, check and adjust 4 mA and 20 mA readings. Install front cover or set switches first, as follows:



Switches & Sensors

Limit switches cams must be adjusted separately with valve in an open and closed position. With the valve in fully open or closed position adjust the lower cam 3 to desired position by rotating it with special tool F5-22 or by the tip of a screw driver placed in one of the slotted holes on the cam. Stroke the valve fully and repeat the procedure above to set the upper cam. Stroke valve open/closed to check proper limit switch operation.



Technical specifications

General		Weight	
Conduit entries	2x 1/2 NPT or 2x PG 13,5 (M20)	Standard enclosure	0.7 kg (lbs 1.5)
Housing material	Die cast aluminum	Explosion proof	2.1 kg (lbs 4.6)
Surface treatment	ED painting		
Mounting	According to VDI/VDE 3845		
Fasteners	Stainless steel A2/A4		
Terminals	2,5 mm ² (AVG 14)		
Enclosure	IP66, NEMA 4		
Switches, mechanical		Switches proximity	
Type	Mechanical SPDT V3	Contact rating	2 W or 2 VA @ 30 VDC/ VAC, 0.1 A
Rating	*6/2,5A 250 VAC *Res/Ind	Maximum operating time	0.5 milliseconds
Approvals	CSA, UL, VDE	Breakdown voltage	200VDC
Temp range	-20°C to 80°C (-4°F to 185°F)	Contact resistance	0.2 Ohms
Sensors, Namur		Switch type	SPDT hermetically sealed in one unit
Type	Proximity DIN 19234 NAMUR	Mechanical and electrical life	>10 million operations
Load Current	≤ 1mA ≥ 3mA		
Voltage range	5-25 VDC		
Hysteresis	0,2%		
Temp range	-20°C to 80°C (-4°F to 185°F)		
Potentiometer			
Out put	5kΩ (4kΩ at 90°)		
Elements	Conductive plastic		
Power rating at 70°	1 W		
Linearity	1%		
Resolution	Essentially infinite		
Temp range	-20°C to 80°C (-4°F to 185°F)		
4-20 mA position transmitter			
Power supply	9-28 VDC (24VDC recommended)		
Out put signal	4-20 mA		
LED indication at 4 mA	±1%		
LED indication at 20 mA	±1%		
Resolution	Infinite		
Minimum rotation travel	30°		
Maximum rotation travel	90°		
Linearity	<1% of full scale		
Hysteresis	<0,5% of full scale		
Out put current limit	24 mA DC		
Load impedance	800 Ω at 24 VDC		
Temp range	-20°C to 80°C (-4°F to 185°F)		

F5 IS



Original in French

ELECTRICAL APPARATUS OR SYSTEM
FOR EXPLOSIVE ATMOSPHERES



English translation

(1)(2) **CERTIFICATE OF CONFORMITY LCIE 95.D6111 X**

(3) This certificate is issued for the electrical apparatus or system:

MONITORING UNIT (FEED-BACK UNIT) type:

<i>F5-SW/MEC</i>	<i>F5-SW/MEC-420</i>	<i>F5-SW/MEC-POT</i>	<i>F5-SW/NAM</i>
<i>F5-SW/NAM-420</i>	<i>F5-SW/NAM-POT</i>	<i>F5-POT</i>	<i>F5-420</i>

(4) manufactured and submitted for certification by:

**PALMSTIERNAS INSTRUMENTS AB
TULEGATAN 15
S 11353 STOCKHOLM SWEDEN**

(5) This electrical apparatus or system and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(6) LCIE being an approved certification body in accordance with article 14 of the European Communities Council Directive 76/117/EEC of December 18, 1975,

- certifies that the electrical apparatus has been found to comply with the harmonized European standards:

*EN 50014 (1977), NF C 23514 (1982) + amendments 1 to 5
EN 50020 (1977), NF C 23520 (1982) + amendments 1 to 5*

and has successfully met the examination and test requirements specified in these standards,

- certifies to have issued a confidential test report of these examinations and tests.

(7) The code of the electrical apparatus is as follows:

EEx ia IIC T4

(10) By the marking of the apparatus delivered, the supplier confirms under his sole responsibility, that the apparatus conforms to the descriptive documents listed in the schedule to this certificate and that it has satisfied the individual examinations and tests set forth by the harmonized European standards mentioned above under item (6).

(11) The electrical apparatus delivered may bear the distinctive community mark specified in annex II to the Council Directive 79/196/EEC of February 6, 1979. This mark figures on page 1 of this certificate; it must be affixed on the electrical apparatus in a visible, readable and durable manner.

(12) If the letter X figures after the certificate of conformity number, it indicates that the electrical apparatus is submitted to special conditions for safe operation, as listed in the schedule to the present certificate.

(13)(14) Fontenay-aux-Roses, on August 30, 1995

For the Certification Body Director,



M. BRENON
Head of Department
Apparatus for explosive atmospheres

Timbre sec/dry seal

(7) CODE: EEx ia IIC T4

(8) This document may only be reproduced in full.

■ LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES
Siège social : 33, avenue du Général Leclerc - F 92260 Fontenay-aux-Roses - Tél. : 33-(1) 40 95 60 60

F5 IS

LCIE (9) CERTIFICATE OF CONFORMITY LCIE 95.D6111 X dated August 30, 1995

SCHEDULE

(A1) NAME OF THE CERTIFIED ELECTRICAL APPARATUS OR SYSTEM:

MONITORING UNIT (FEED-BACK UNIT) type:
F5-SW/MEC F5-SW/MEC-420 F5-SW/MEC-POT F5-SW/NAM
F5-SW/NAM-420 F5-SW/NAM-POT F5-POT F5-420

(A2) DESCRIPTION OF THE CERTIFIED ELECTRICAL APPARATUS OR SYSTEM:

The electrical apparatus detects the position and the direction of displacement of a disk or a shaft. Depending on integrated sensors, there are eight different models. Some of the models include a 4/20 mA transmitter.

(A3) DESCRIPTIVE DOCUMENTS

- Certification file No. F5-24.Doc Rev. 1 dated 06.07.1995, including 30 chapters in 33 pages.

(A4) SPECIFIC PARAMETERS OF THE PROTECTION MODE OR MODES CONCERNED:

- 4/20 mA transmitter - Terminals 8-9
U_i = 28 V I_i = 100 mA L_i = 0 C_i = 68 nF
- Inductive sensors - Terminals 2-3 and 5-6
U_i = 15.5 V I_i = 31 mA L_i = 190 µH and C_i = 70 nF
- Potentiometer - Terminals 7-8-9
U_i = 28 V P_i = 0.85 W

(A5) MARKING OF THE CERTIFIED ELECTRICAL APPARATUS:

The marking must be visible, readable and durable and must include the following indications:

Palmstiernas or PMV
Type F5... (1)
Serial number
LCIE 95.D6111 X
EEx ia IIC T4

(1) to be completed according to the variants defined in (A1)

Furthermore, the electrical apparatus or system must bear the usual standard marking for the concerned manufactured electrical apparatus.

(A6) INDIVIDUAL EXAMINATIONS AND TESTS:

Not applicable.

(A7) SPECIAL CONDITIONS FOR SAFE OPERATION:

The various circuits of the electrical apparatus must only be connected to intrinsically safe certified electrical apparatus or to intrinsically safe accessories, and these associations must be compatible with the rules of intrinsic safety.

The various circuits may be considered as separated if none of the voltages applied exceeds 30 V.

(7) CODE: EEx ia IIC T4

(8) This document may only be reproduced in full.

Connection of F5 intrinsically safe version

NR	ANDRNG	DATUM	ANORI
1	ALT.4 STAHL 9001/01-168-50-10 wgs STAHL 9001/01(00)-168-50-10	960117	CE CE

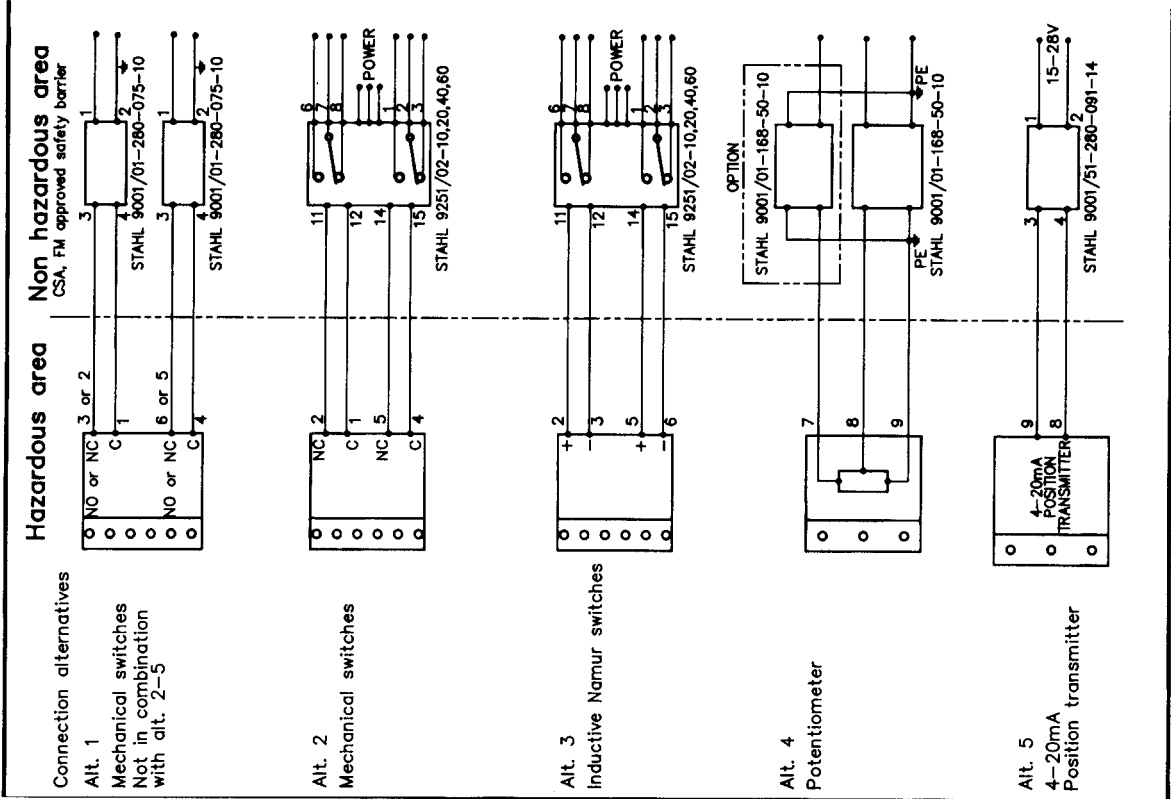
INSTALLATION INSTRUCTIONS:

1. Barriers must be installed in accordance with manufacturer's instructions.
2. Maximum non-hazardous voltage must not exceed 250V.
3. (For FM and CSA NRTL) Install in accordance with the NEC (ANSI/NFPA 70) and ANSI/ISA RPI2.6
4. (For CSA) Install in accordance with the Canadian electrical code, part 1
5. **WARNING!** Substitution of components may impair intrinsic safety.

AVERTISSEMENT! La substitution de composants peut compromettre la sécurité intrinsèque.

F5 TYPE	CONNECTION ALTERNATIVE	HAZARDOUS APPROVALS CLASS, DIV. 1, T. CLASS
F5-SW/MEC	ALT.1	C.D T6
F5-SW/MEC	ALT.2	A.B.C.D T6
F5-SW/MEC-420	ALT.2 + ALT.5	C.D T6
F5-SW/MEC-POT	ALT.1 + ALT.4	A.B.C.D T6
F5-SW/MEC-POT	ALT.2 + ALT.4	A.B.C.D T6
F5-SW/NAM	ALT.3	A.B.C.D T6
F5-SW/NAM-420	ALT.3 + ALT.5	C.D T6
F5-SW/NAM-POT	ALT.3 + ALT.4	A.B.C.D T6
F5-POT	ALT.4	A.B.C.D T6
F5-420	ALT.5	A.B.C.D T6

DET.NR	BENAMING	MATERIAL	ANML
1	PMV Feedback unit F5	YTA	
VAL. TEL.	SI UTMATA TELERAMAT DIL.	DIMENSION	PROJEKSI BAWA
			RTAO CE
			SKALA 1:1
			DATUM 951219
PMV Feedback unit F5			STALNR
PALMSTIERNAS INSTRUMENT AB			F5-2-4-9516
<small>TJUEGATAN 1B, B, TR. - 113 45 STOCKHOLM - TEL. 08-9739779/206-191495 FAX 08-9739835</small>			



F5-EX



Certificate of Compliance

Certificate Number: LR 69005-12

Revision:

Issued to: PALMSTERNAS INSTRUMENTS AB

Tallegatan 15, 3 tr.
Stockholm S-113 53,
Sweden

Attention: Mr. Mats Ragnarsson

Date Issued: July 3, 1997

The products listed below are eligible to bear the CSA Mark

Issued by:

Y. Khitrov, P. Eng.
Toronto, ON Canada

Signature:

CLASS 2258 02 - PROCESS CONTROL EQUIPMENT - For Hazardous Locations

PRODUCTS

Class I, Groups B, C, and D, Class II, Groups E, F and G; Class III:

- Model F5EX Series feedback units, rated 28V dc max; 24mA max; Models F5EX-MEC, -MEC/POT, -MEC/420, -NAM, -NAM/POT, -NAM/420, -POT and -420, enclosure Type 4X, Temperature Code T6 (amb, +50C max), T5(amb + 60C max), T4 (amb + 80C)

APPLICABLE STANDARDS

CSA Std C22.2 No. 25-1966 - Enclosures for Use in Class II, Groups E, F and G Hazardous Locations
CSA Std C22.2 No. 30-M1986 - Explosion-Proof Enclosures for Use in Class I Hazardous Locations
CAN/CSA-C22.2 No. 94-M91 - Special Purpose Enclosures
CSA Std C22.2 No. 142-M1987 - Process Control Equipment

DQJ 507

Canadian Standards Association Offices: Montreal, Toronto, Edmonton, Vancouver, Tokyo, Hong Kong



MATERIEL OU SYSTEME ELECTRIQUE POUR ATMOSPHERES EXPLOSIVES

CERTIFICAT DE CONFORMITE

LCIE 97 D6140

Le présent certificat est délivré pour :

Module de contrôle antidéflagrant

Type F5EX...

construit et soumis à la certification par :

PALMSTERNAS INSTRUMENT AB

Tallegatan 15

S-113 53 STOCKHOLM

SUEDE

Ce matériel ou système électrique et ses variantes éventuelles acceptées sont décrits dans l'annexe du présent certificat et dans les documents descriptifs qui y sont mentionnés.

LCIE, organisme agréé conformément à l'article 14 de la directive CEE du 19 décembre 1975,

certifie que ce matériel électrique est conforme aux normes européennes suivantes :

EN 50014 (1977), NF C 23-514 (1982)

+ amendements 1 à 5

+ amendements 1 à 3

et qu'il a subi avec succès les vérifications et épreuves de type prescrites par ces normes.

certifie avoir établi un procès-verbal confidentiel de ces vérifications et épreuves.

Le code de ce matériel électrique est :

EEC d IIB + H₂ T6, T5 ou T4

Par le marquage du matériel livré, le fournisseur atteste, sous sa propre responsabilité, que ce matériel est conforme aux documents descriptifs cités dans l'annexe du présent certificat et dans les documents descriptifs qui y sont mentionnés, individuelles prescrites par les normes européennes harmonisées mentionnées au point 6 ci-dessus.

Le matériel électrique livré est autorisé à porter la marque distinctive communautaire définie dans l'annexe II de la directive 79/569/CEE du 6 février 1979. Cette marque figure sur le matériel et est accompagnée d'un pictogramme apposé sur le matériel électrique de manière à être visible, lisible et durable.

Le signe X lorsqu'il est placé à la suite du numéro du certificat de conformité indique que ce matériel électrique est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe du présent certificat.

Le signe X lorsqu'il est placé à la suite du numéro du certificat de conformité indique que ce matériel électrique est soumis aux conditions spéciales pour une utilisation sûre, mentionnées dans l'annexe du présent certificat.

Whereas an X appears after the certificate number, special conditions apply to the electrical equipment for its safe use. These are specified in the annex to this certificate.

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Le Directeur de l'organisme certificateur

Manager of the certification body

Par déléation

Michel BRÉNON

Chef du Département

Environnements et Haques

Timbre security seal

Code EEX d IIB + H₂ T6, T5 ou T4

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LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES

Société anonyme à Direction et Conseil de surveillance au capital de 99 992 000 Francs - RCS Nanterre B 408 363 174

Siège social : 33, avenue du Général Leclerc - F 92260 Fontenay-aux-Roses - Tél. : +33 (0) 1 40 50 60 60



ELECTRICAL EQUIPMENT OR SYSTEM FOR EXPLOSIVE ATMOSPHERES

CERTIFICATE OF CONFORMITY

LCIE 97 D6140

The present certificate is issued for :

Flameproof Feedback Unit

Type F5EX...

Manufactured and submitted for certification by :

PALMSTERNAS INSTRUMENT AB

Tallegatan 15

S-113 53 STOCKHOLM

SUEDE

This electrical equipment or system and any accepted variations thereof are specified in the annex to this certificate and in the descriptive documents therein referred to.

LCIE, as an approved certification body in accordance with article 14 of the European Communities Council Directive 79/117/EEC of December 16, 1975,

certifies that the electrical equipment complies with the following European standards :

EN 50014 (1977), NF C 23-514 (1982)

+ amendments 1 to 5

+ amendments 1 to 3

and that it has fully satisfied the type examination and test requirements of these standards.

certifies that a confidential test report has been completed on these type examinations and tests.

The code of this electrical equipment is :

EEC d IIB + H₂ T6, T5 or T4

By marking the electrical equipment supplied, the manufacturer attests on his own responsibility that this electrical equipment complies with the descriptive documents mentioned in this certificate and in the documents referred to therein, individually prescribed by the standards required by the harmonized European standards specified in (6) above.

The electrical equipment supplied is authorized to display the distinctive European Community mark specified in annex II of the directive 79/569/EEC of February 6 1979. The mark shall be visible, legible and durable.

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Whereas an X appears after the certificate number, special conditions apply to the electrical equipment for its safe use. These are specified in the annex to this certificate.

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Par déléation

Michel BRÉNON

Chef du Département

Environnements et Haques

Timbre security seal

Code EEX d IIB + H₂ T6, T5 ou T4

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F5-EX



(9) CERTIFICAT DE CONFORMITE
LCIE 97.D6140

ANNEXE

(A1) DESIGNATION DU MATERIEL OU SYSTEME ELECTRIQUE CERTIFIE :

Module de controle antidéflagrant
Type F5EX...

(A2) DESCRIPTION DU MATERIEL OU SYSTEME ELECTRIQUE CERTIFIE :

Le matériel monté sur une valve de positionnement donne les informations concernant la position par l'intermédiaire d'un interrupteur mécanique ou induit et/ou un mouvement angulaire par l'intermédiaire d'un transmetteur de courant.

(A3) DOCUMENTS DESCRIPTIFS :

Dossier de certification, n° FSX-970526-1 du 26/05/97 incluant 27 rubriques (30 pages).

(A4) PARAMETRES SPECIFIQUES DU OU DES MODES DE PROTECTION CONCERNES :

Tension max : 28 V.C.C.
Courant : 0 - 20 mA
Puissance max : 1 W

(A5) MARQUAGE DU MATERIEL CERTIFIE :

Le marquage doit être visible, lisible et durable ; il doit comporter les indications suivantes :

PALMSTERNAS INSTRUMENT AB
Type F5 Ex. (suivant modèles)
N° de fabrication : ...
EEX d IIB + H₂
T6 (température ambiante + 50 °C),
T5 (température ambiante + 60 °C) et
T4 (température ambiante + 80 °C)
LCIE 97.D6140
NE PAS OUVRIR SOUS TENSION

(9) CERTIFICATE OF CONFORMITY
LCIE 97.D6140

SCHEDULE

(A1) NAME OF THE CERTIFIED ELECTRICAL EQUIPMENT SYSTEM :

Frameproof Feedback Unit
Type F5EX...

(A2) DESCRIPTION OF THE CERTIFIED ELECTRICAL EQUIPMENT OR SYSTEM :

The equipment mounted on top of a valve positioner gives information about positioning via mechanical or inductive switch and/or rotating angle via potentiometer or current transmitter.

(A3) DESCRIPTIVE DOCUMENTS :

Certification file n° FSX-970526-1 dated 26/05/97 including 27 items (30 pages).

(A4) SPECIFIC PARAMETERS OF THE MODE(S) PROTECTION CONCERNED :

Voltage max : 28 V.D.C.
Current range : 0 - 20 mA
Power max : 1 W

(A5) MARKING OF THE CERTIFIED EQUIPMENT :

The marking must be visible, legible and permanent, and it include the following information :

PALMSTERNAS INSTRUMENT AB
Type F5 Ex. (according models)
Serial number : ...
EEX d IIB + H₂
T6 (ambient temperature + 50 °C),
T5 (ambient temperature + 60 °C) and
T4 (ambient temperature + 80 °C)
LCIE 97.D6140
DO NOT OPEN WHILE ENERGIZED

Le matériel devra également comporter le marquage normalement prévu par les normes de construction du matériel électrique concerné.

(A6) VERIFICATIONS ET EPREUVES INDIVIDUELLES :

Sans objet.

(A7) CONDITIONS SPECIALES POUR UNE UTILISATION SURE :

Néant.

The equipment must also carry the usual marking required by manufacturing standards applying to such equipments

(A6) INDIVIDUAL EXAMINATIONS AND TESTS :
Not applicable.

(A7) SPECIAL CONDITIONS FOR SAFE USE :
None.

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FACTORY MUTUAL

Factory Mutual Research Corporation
1151 Boston-Providence Turnpike
P.O. Box 9102
Norwood, Massachusetts 02062

J1.1B549AE
(3615)

October 14, 1997

**SERIES F5EX FEEDBACK UNIT
FOR
HAZARDOUS (CLASSIFIED) LOCATIONS**

from
PALMSTERNAS INSTRUMENT AB
TULEGATAN 15
S-113 53 STOCKHOLM
SWEDEN

I INTRODUCTION

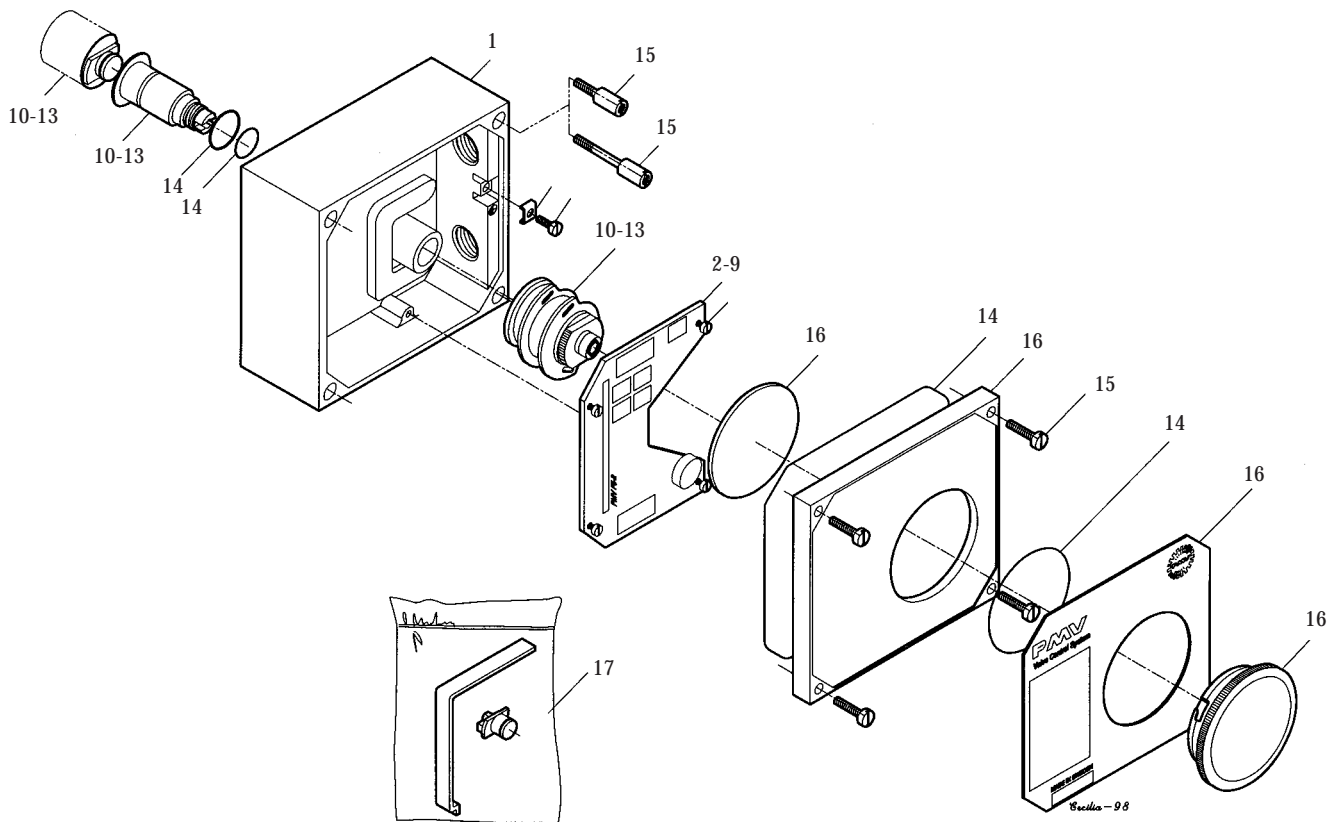
1.1 Palmsternas Instrument AB (manufacturer) requested Factory Mutual Research Corporation (FMRC) Approval of their Series F5EX Feedback Unit as explosionproof for Class I, Division 1, Groups B, C and D; dust-ignitionproof for Class II, Division 1, Groups E, F and G hazardous (classified) locations, indoors and outdoors (NEMA Type 4X). Canadian Standards Association (CSA) performed the examination and testing for possible FMRC Approval based on the inter-laboratory agreement between FMRC and CSA.

1.2 The Listing in the FMRC Approval Guide for the Series F5EX Feedback Unit will appear in the FMRC Approval Guide as follows:

XP/LL/BCD; DIP/II/LL/EEG

Feedback Unit, Models F5EX-MEC, F5EX-MEC/420, F5EX-MEC/POT, F5EX-NAM, F5EX-NAM/420, F5EX-NAM/POT, F5EX-POT and F5EX-420.

Spare Parts

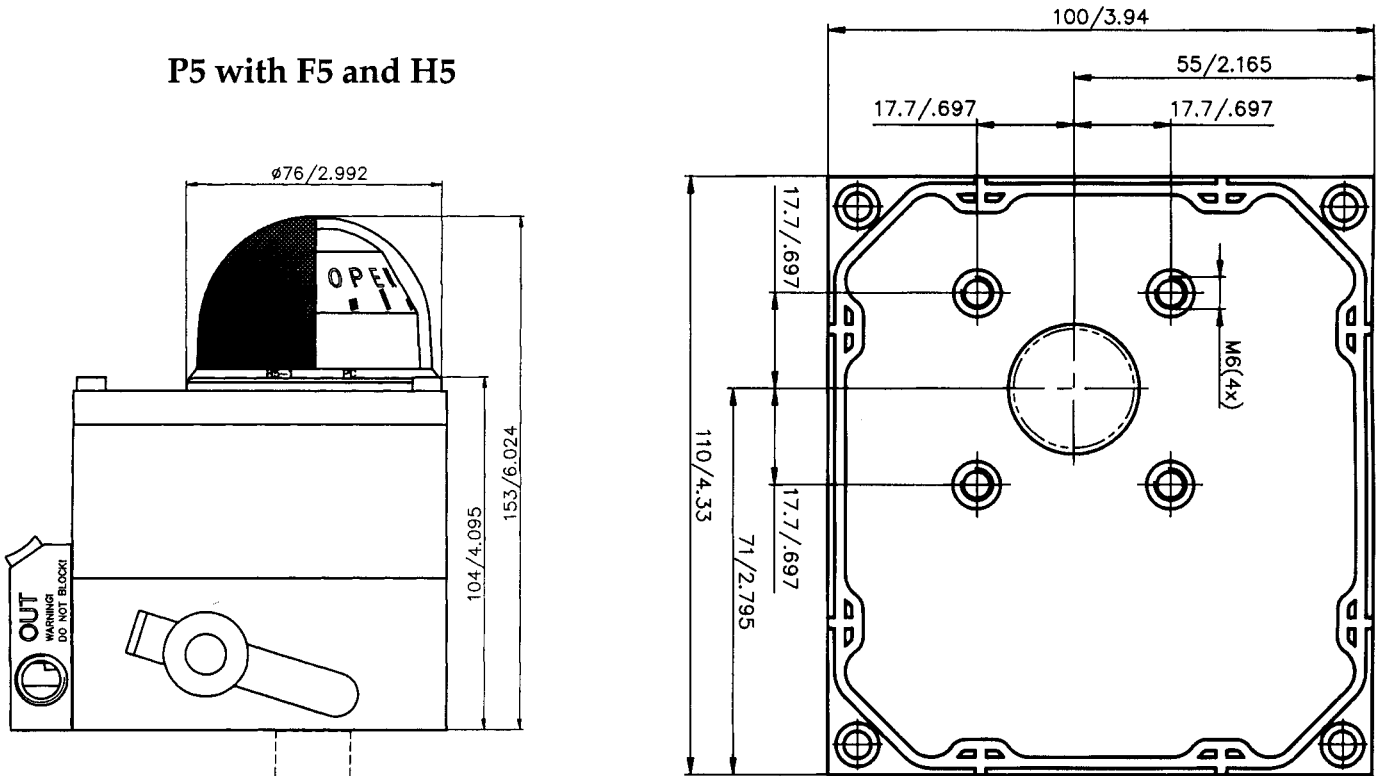


Spare Parts List

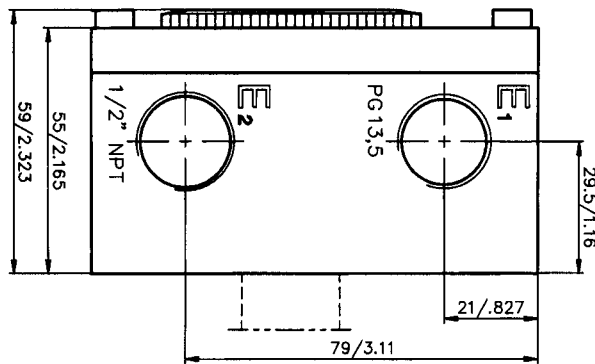
DWG No	PMV Part no	Description	Qty	Set
1		Housing		
2	28176	PC board incl. 2 x Mechanical switches	1	
3	28177	PC board incl. 2 x Mechanical switches and potentiometer	1	
4	28178	PC board incl. 2 x Mechanical switches and 4-20 mA transmitter	1	
5	28179	PC board incl. 2 x Namur sensors	1	
6	28181	PC board incl. 2 x Namur sensors and 4-20 mA transmitter	1	
7	29272	PC board incl. 2 x Proximity switches	1	
8	29270	PC board incl. 2 x Proximity switches and potentiometer	1	
9	29271	PC board incl. 2 x Proximity switches and 4-20 mA transmitter	1	
10	29227	Cam & shaft assy for Mechanical switches or Namur sensors	1	
11	29275	Cam & shaft assy for Proximity switches	1	
12	29228	Cam & shaft assy for Mechanical switches or Namur sensors + transmitter	1	
13	29276	Cam & shaft assy for Proximity switches + transmitter	1	
14	F5-SEAL-NBR	Elastomer kit, Nitrile NBR	1	
15	F5-SCREWS	Screw kit F5	1	
16	F5-AS2-PV90	Front cover assembly incl.flat indicator	1	
17	F5-SP22	Coupling F5-S00 and Adjusting Tool F5-22	1	

Dimension drawing

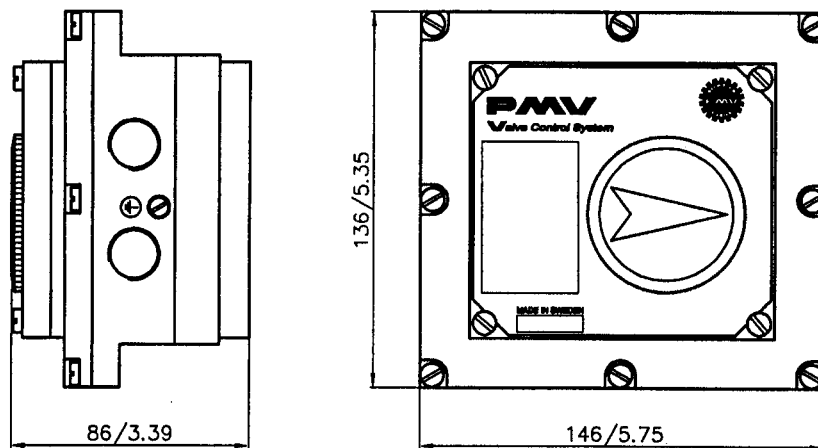
P5 with F5 and H5



For selection of the feedback-spindle pls see "Drive shaft dimension drawing" SPNDLS. P5 DWG.



F5-EX



Trouble shooting

Switches

Check electrical connections and cam settings.

Potentiometer

If there is no output signal, check electrical connections and for open circuit, check that potentiometer is not out of its mechanical range.

If output deflection is wrong reverse connection terminals 7 and 9.

4-20 mA position transmitter

If there is no output signal, check electrical connections, polarity, loop power supply, and that the potentiometer is within its range.

If full output signal cannot be achieved by adjustment, check supply voltage and jumper X settings.

If output signal increases and decreases in the wrong direction, move connector from A to B or vice versa.

If the 4 mA fine adjustment P2 does not have enough span, zero must be mechanically realigned as follows: Turn P2 20 revolutions counter clockwise, then repeat the transmitter calibration procedure.

