Manual F5

PMV Valve Control System

PMV
Valve Control System

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.

D

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.

F

Déclaration de fabricant

au sens dela 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 macine / 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

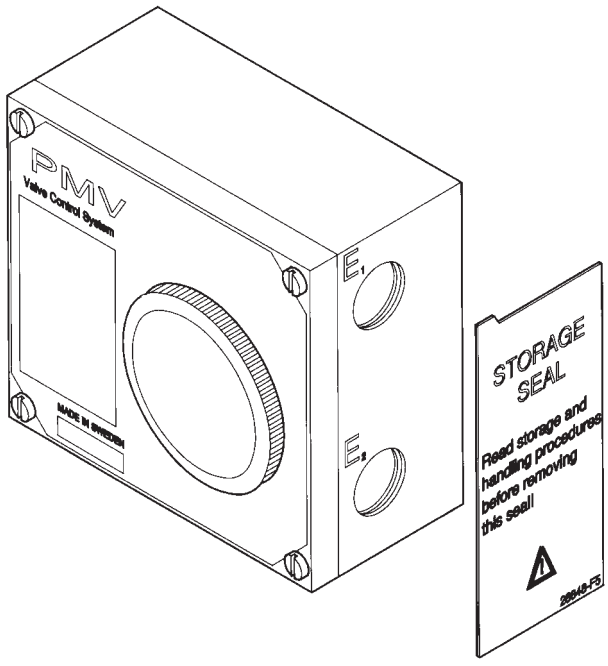
When units are stored in hot, humid climates, the daily heating / cooling cycle will cause air to expand / contract and be drawn in and out of the feedback housing through ports left open. Dependent on the local temperature variations, humidity and dew points and time in storage, condensation could occur 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.

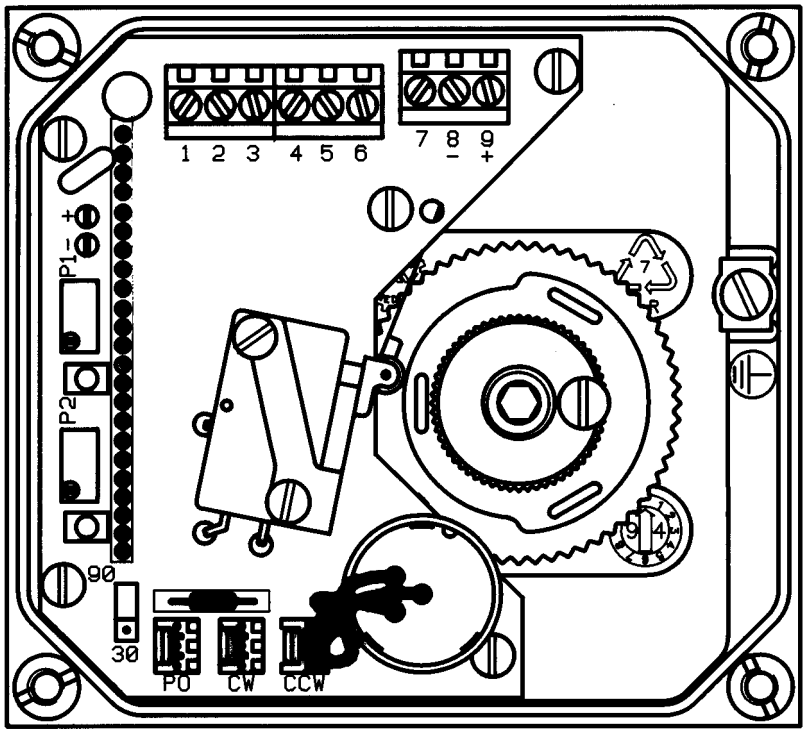
Mount F5 on positioner P5 / EP5 or actuator / valve package. Remove Storage Seal for conduit entry E_1 & E_2, make electrical connections, install proper cable glands or plugs to ensure the units sealing.



Description

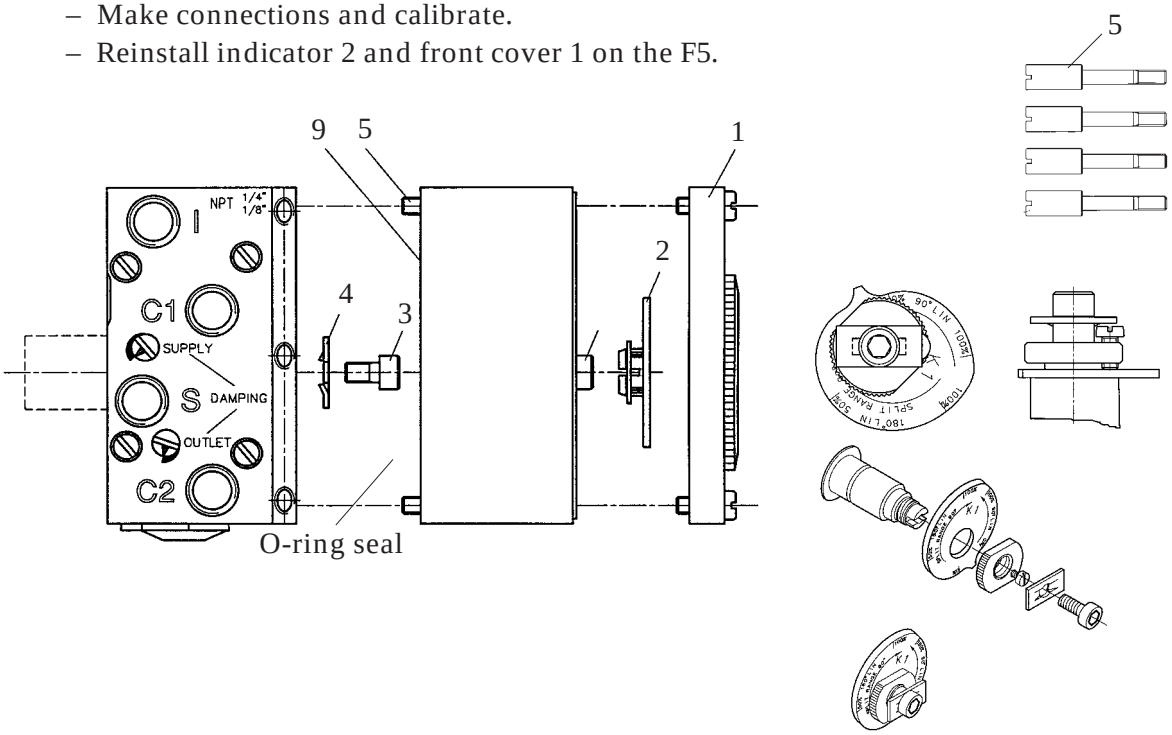
The PMV F5 is a feedback unit uniquely designed to mount on top of the PMV P5, EP5 or P-2000 positioners with minimum parts required. The F5 can also be mounted on actuators with an additional mounting kit. The F5 is available in two different enclosures, standard or explosion proof.

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.



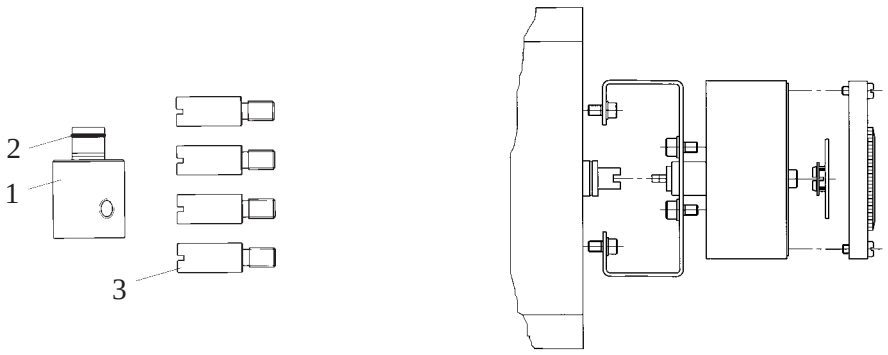
Mounting on P5 or EP5

– 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 F5is 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.



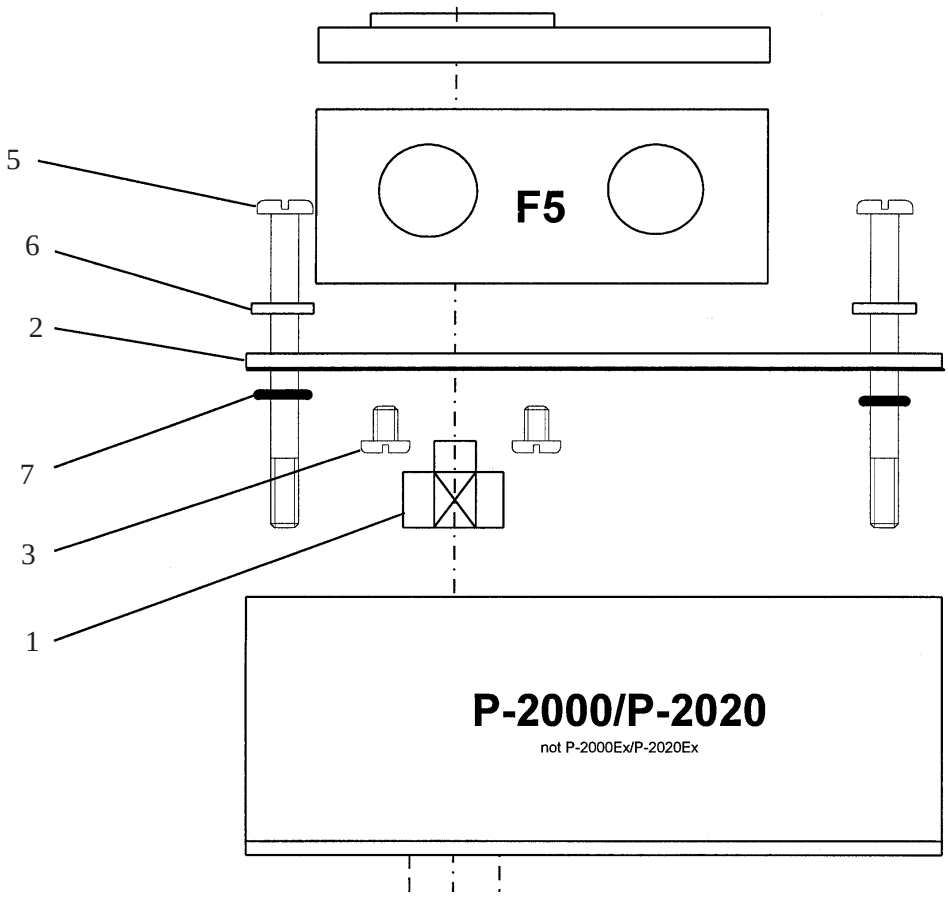
Mounting F5 on actuator (On/Off control valves)

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 alligned 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.

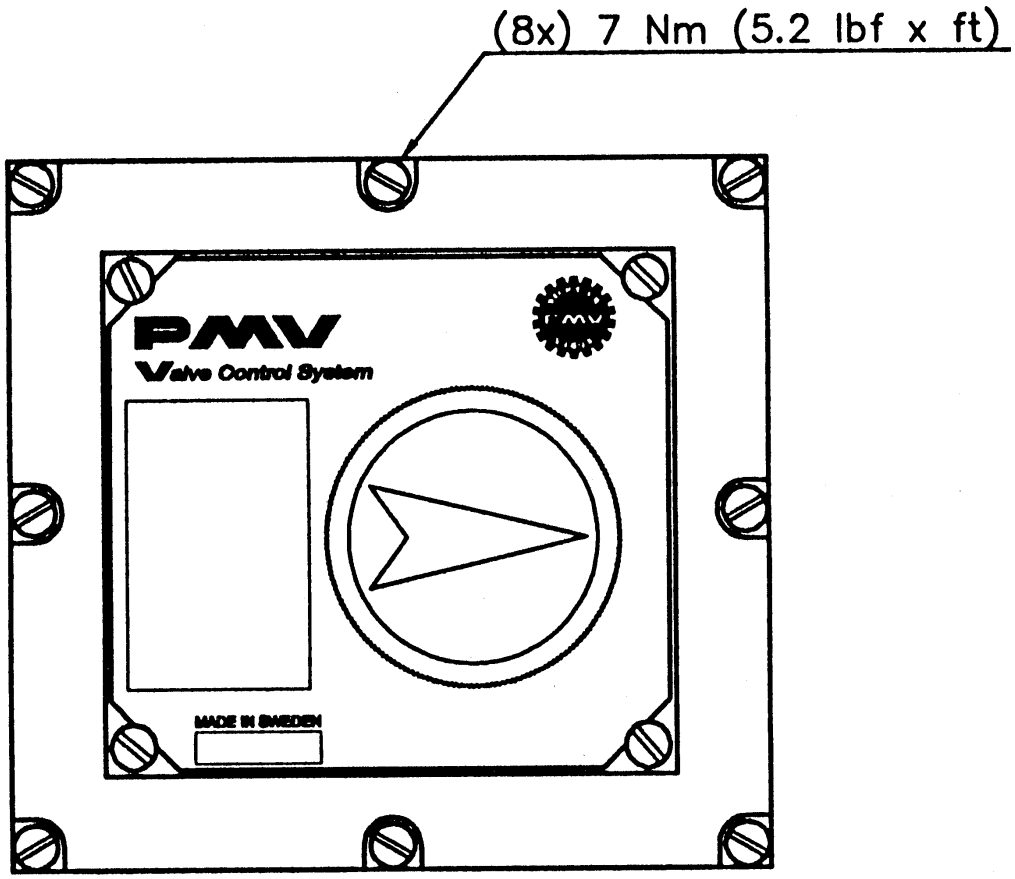


F5-EX

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).

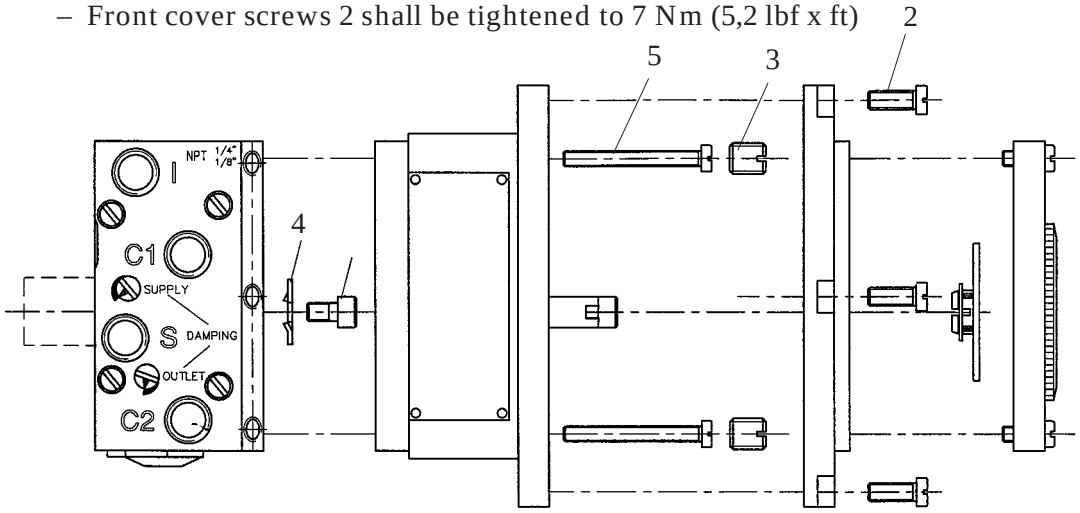
Approvals:
CSA, FM Div. 1, Class 1,2 & 3 Group BCDEFG T4-T6

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



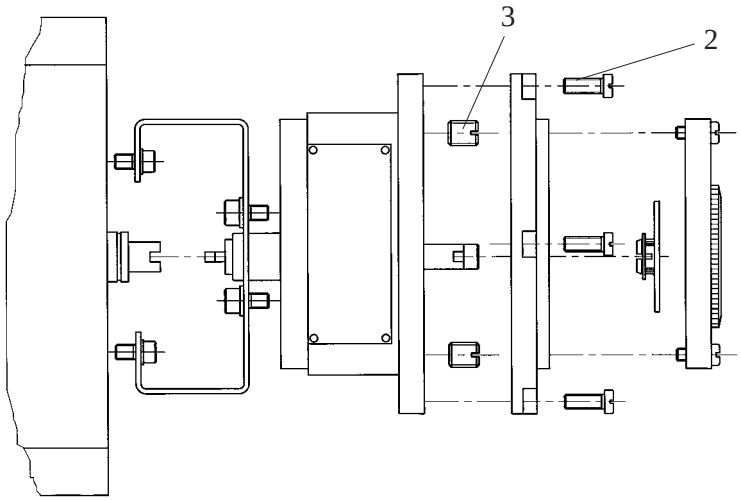
Installing F5-EX on P5/EP5

– 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.
– Remove screws 3.
– Install F5-EX on P5/EP5, , 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).



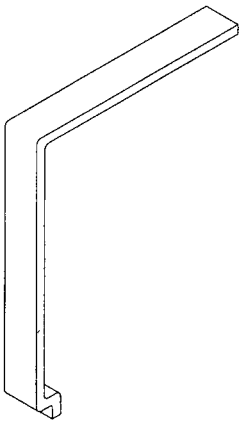
Connections

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

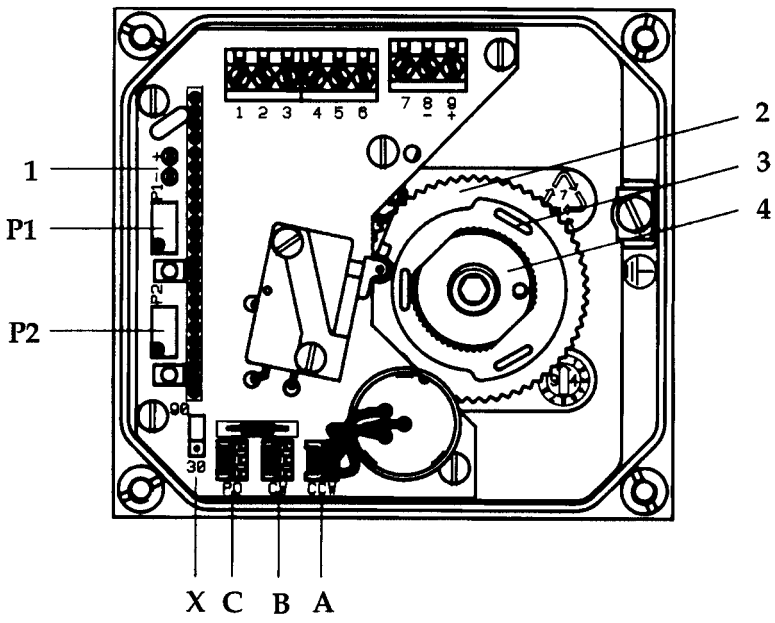
Conduit entries are PG13,5 (M20) or NPT 1/2“
Make electrical connections according to wiring diagrams and tighten cable glands. Terminals are 2.5 mm^2 (AVG 14) screw terminals.

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 snuggly 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.



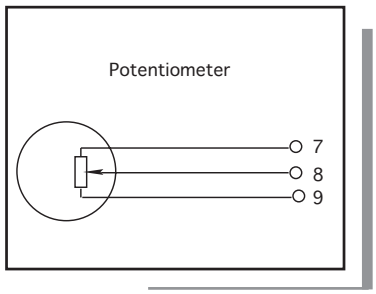
F5-22



Calibration

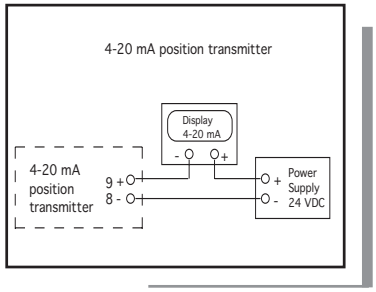
Potentiometer

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.



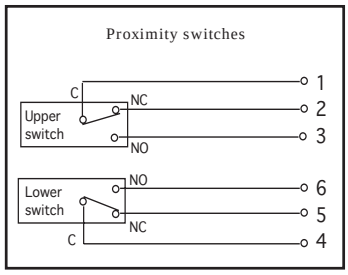
4-20 mA position transmitter

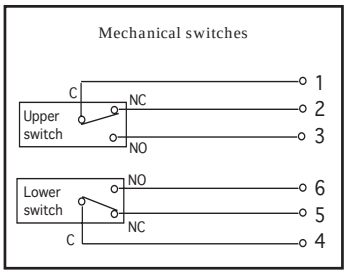
1. Set direction of rotation by placing potentiometer jumper in location A or B. (Location A for counter clockwise CCW valve / actuator rotation (Direct), location B for clockwise CW valve / actuator rotation (Reverse).
2. Set jumper X to the desired valve rotation angle, for 30 deg or 45 deg rotation 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 (±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 (±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:

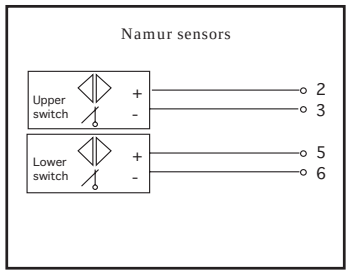


Switches & Sensors

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	
Conduit entries	2x 1/2 NPT or 2x PG 13,5 (M20)
Housing material	Die cast aluminum
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

Weight	
Standard enclosure	0.7 kg (lbs 1.5)
Explosion proof	2.1 kg (lbs 4.6)

Switches, mechanical	
Type	Mechanical SPDT V3
Rating	*6/2,5A 250 VAC *Res/Ind
Approvals	CSA,UL,VDE
Temp range	-20°C to 80°C (-4°F to 185°F)

Sensors, Namur	
Type	Proximity DIN 19234 NAMUR
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)

Switches proximity	
Contact rating	2 W or 2 VA @ 30 VDC/ VAC, 0.1 A
Maximum operating time	0.5 miliseconds
Breakdown voltage	200VDC
Contact resistance	0.2 Ohms
Switch type	SPDT hermetically sealed in one unit
Mechanical and electrical life	>10 million operations

ELECTRICAL APPARATUS OR SYSTEM
FOR EXPLOSIVE ATMOSPHERES

Original in French — 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:

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*

(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

LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES
33, Av. du Général Leclerc
92260 FONTENAY aux-ROSES

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)

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

(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
  Ui = 28 V Ii = 100 mA Li = 0 Ci = 68 nF
- Inductive sensors - Terminals 2-3 and 5-6
  Ui = 15.5 V Ii = 31 mA Li = 190 µH and Ci = 70 nF
- Potentiometer - Terminals 7-8-9
  Ui = 28 V Pi = 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.

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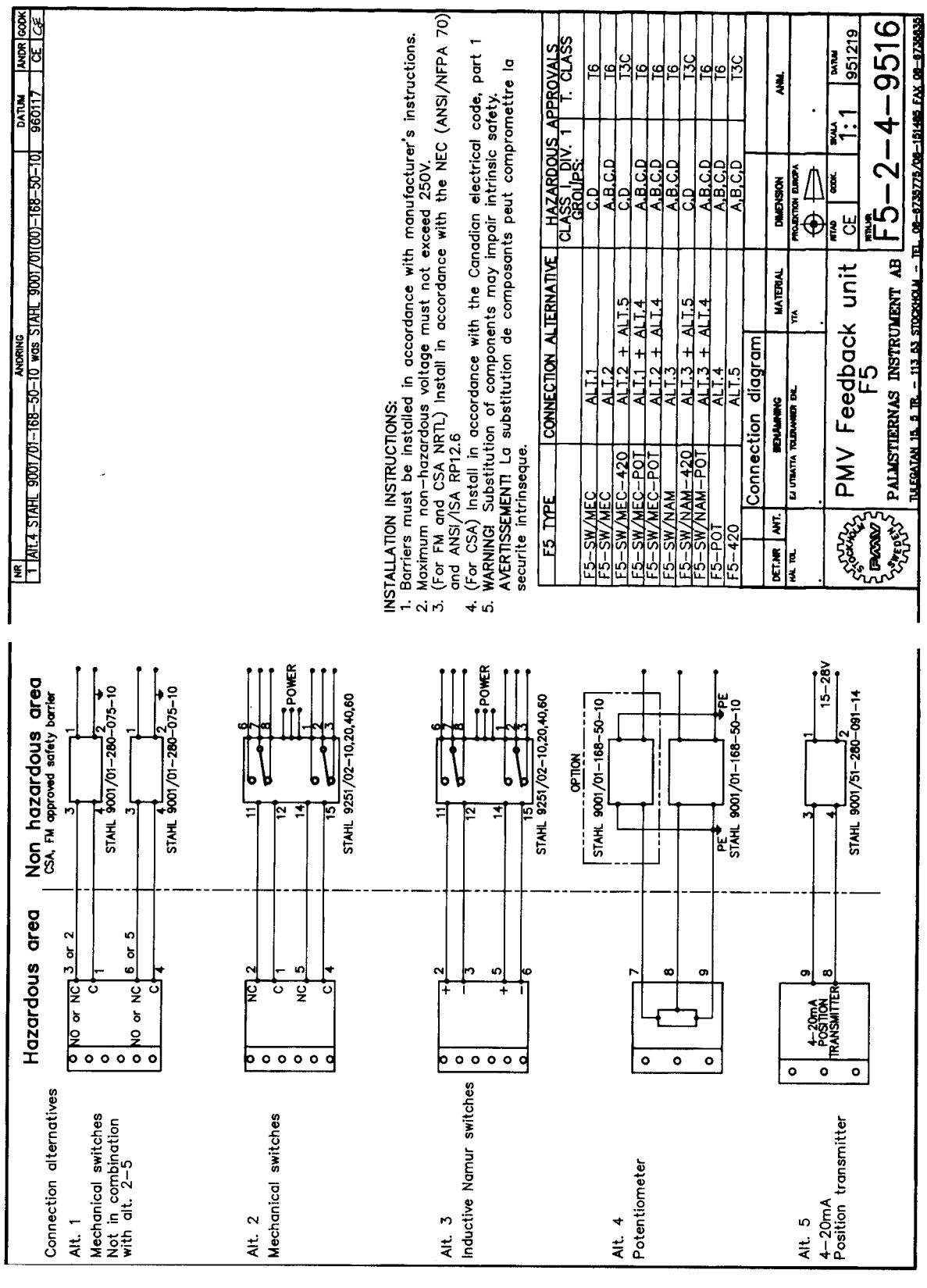
(7) CODE: EEx ia IIC T4

Connection of F5 intrinsically safe version



Certificate of Compliance

Certificate Number: LR 69005-12

Revision:

Date Issued: July 3, 1997

Issued to: **PALMSTIERNAS INSTRUMENTS AB**
Tulegatan 15, 3 tr.
Stockholm S-113 53,
Sweden
Attention: Mr. Mats Ragnarsson

The products listed below are eligible to bear the CSA Mark

Issued by: Y. Khitrov, P. Eng.
Toronto, ON Canada

Signature: Y. Khitrov

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

DQD 507 **Canadian Standards Association Offices: Montréal, Toronto, Edmonton, Vancouver, Tokyo, Hong Kong**

F5-EX

LCIE

MATERIEL OU SYSTEME ELECTRIQUE POUR ATMOSPHERES EXPLOSIVES

(1) **CERTIFICAT DE CONFORMITE**

(2) **LCIE 97.D6140**

(3) Le présent certificat est délivré pour :

Module de contrôle antidéflagrant
Type F5EX-...

(4) construit et soumis à la certification par :

PALMSTIERNAS INSTRUMENT AB
TULEGATAN 15
S-113 53 STOCKHOLM
SUEDE

(5) 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.

(6) Le LCIE, organisme agréé conformément à l'article 14 de la directive du Conseil des communautés européennes 76/117/CEE du 18 décembre 1975,

- certifie que ce matériel électrique est conforme aux normes européennes harmonisées :
  . EN 50014 (1977), NF C 23-514 (1982)
  + amendements 1 à 5
  . EN 50018 (1977), NF C 23-518 (1982)
  + 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.

(7) Le code de ce matériel électrique est :

EEx d IIB + H_2 T6, T5 ou T4

(10) 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 qu'il a subi avec succès les vérifications et épreuves individuelles prescrites par les normes européennes harmonisées mentionnées au point 6 ci-dessus.

(11) Le matériel électrique livré est autorisé à porter la marque distinctive communautaire définie dans l'annexe II de la directive 79/196/CEE du 6 février 1979. Cette marque figure sur la première page du présent certificat ; elle doit être apposée sur le matériel électrique de manière à être visible, lisible et durable.

(12) 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.

ELECTRICAL EQUIPMENT OR SYSTEM FOR EXPLOSIVE ATMOSPHERES

(1) **CERTIFICATE OF CONFORMITY**

(2) **LCIE 97.D6140**

(3) The present certificate is issued for :

Flameproof Feedback Unit
Type F5EX-...

(4) Manufactured and submitted for certification by :

PALMSTIERNAS INSTRUMENT AB
TULEGATAN 15
S-113 53 STOCKHOLM
SUEDE

(5) 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.

(6) LCIE, as 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 equipment complies with the following harmonized European standards :
  . EN 50014 (1977), NF C 23-514 (1982)
  + amendments 1 to 5
  . EN 50018 (1977), NF C 23-518 (1982)
  + amendements 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.

(7) The code of this electrical equipment is :

EEx d IIB + H_2 T6, T5 or T4

(10) By marking the electrical equipment supplied, the manufacturer attests on his own responsability that this electrical equipment complies with the descriptive documents referred to in the annex to this certificate and that it has fully satisfied individual examinations and tests required by the harmonized European standards specified in (6) above

(11) The electrical equipment supplied is authorized to display the distinctive European Community mark specified in annex II of the directive 79/196/EEC of February 6, 1979. The mark appears at the top of this certificate. It must be applied to the electrical equipment so as to be visible, legible and permanent.

(12) Where 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.

(13-14) Fontenay-aux-Roses, le 18 novembre 1997

Le Directeur de l'organisme certificateur
Manager of the certification body

Par délégation
Michel BRÉNON
Chef du Département
Environnements et risques

(7) Code EEx d IIB + H_2 T6, T5 ou T4

Timbre sec/dry seal

(8) Seul le texte en français peut engager la responsabilité du LCIE. Ce document ne peut être reproduit que dans son intégralité, sans aucune modification
The LCIE's liability applies only on the French text. This document may only be reproduced in full and without any change.

LABORATOIRE CENTRAL DES INDUSTRIES ELECTRIQUES
Société anonyme à Directoire et Conseil de surveillance au capital de 99 592 000 Francs - RCS Nanterre B 408 363 174
Siège social : 33, avenue du Général Leclerc - F 92260 Fontenay-aux-Roses - Tél. : +33 (0)1 40 95 60 60

PALMSTIERNAS

Manual F5

LCIE

(9) **CERTIFICAT DE CONFORMITE**
LCIE 97.D6140

ANNEXE

(A1) DESIGNATION DU MATERIEL OU SYSTEME ELECTRIQUE CERTIFIE :

Module de contrôle 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 inductif et/ou un mouvement angulaire par l'intermédiaire d'un transmetteur de courant.

(A3) DOCUMENTS DESCRIPTIFS :

Dossier de certification n° F5X-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 :

PALMSTIERNAS INSTRUMENT AB
Type F5 Ex... (suivant modèles)
N° de fabrication : ...
EEx d IIB + H_2
T6 (température ambiante + 50 °C),
T5 (température ambiante + 60 °C) et
T4 (température ambiante + 80 °C)
LCIE 97.D6140
NE PAS OUVRIR SOUS TENSION

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.

(9) **CERTIFICATE OF CONFORMITY**
LCIE 97.D6140

SCHEDULE

(A1) NAME OF THE CERTIFIED ELECTRICAL EQUIPMENT SYSTEM :

Flameproof Feedback Unit
Type F5EX-...

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

The equipment mounted on top of a valve positioner g informations about positioning via mechanical or inductive swit and/or rotating angle via potentiometer or current transmitter.

(A3) DESCRIPTIVE DOCUMENTS :

Certification file n° F5X-970526-1 dated 26/5/97
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 r include the following information :

PALMSTIERNAS INSTRUMENT AB
Type F5 Ex... (according models)
Serial number : ...
EEx d IIB + H_2
T6 (ambient temperature + 50 °C),
T5 (ambient temperature + 60 °C) and
T4 (ambient temperature + 80 °C)
LCIE 97.D6140
DO NOT OPEN WHILE ENERGIZED

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

(A6) INDIVIDUAL EXAMINATIONS AND TESTS :

Not applicable.

(A7) SPECIAL CONDITIONS FOR SAFE USE :

None.

FACTORY MUTUAL | Factory Mutual System

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

J.I. 1B5A9.AE
(3615)

October 14, 1997

SERIES F5EX FEEDBACK UNIT
FOR
HAZARDOUS (CLASSIFIED) LOCATIONS

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

I INTRODUCTION

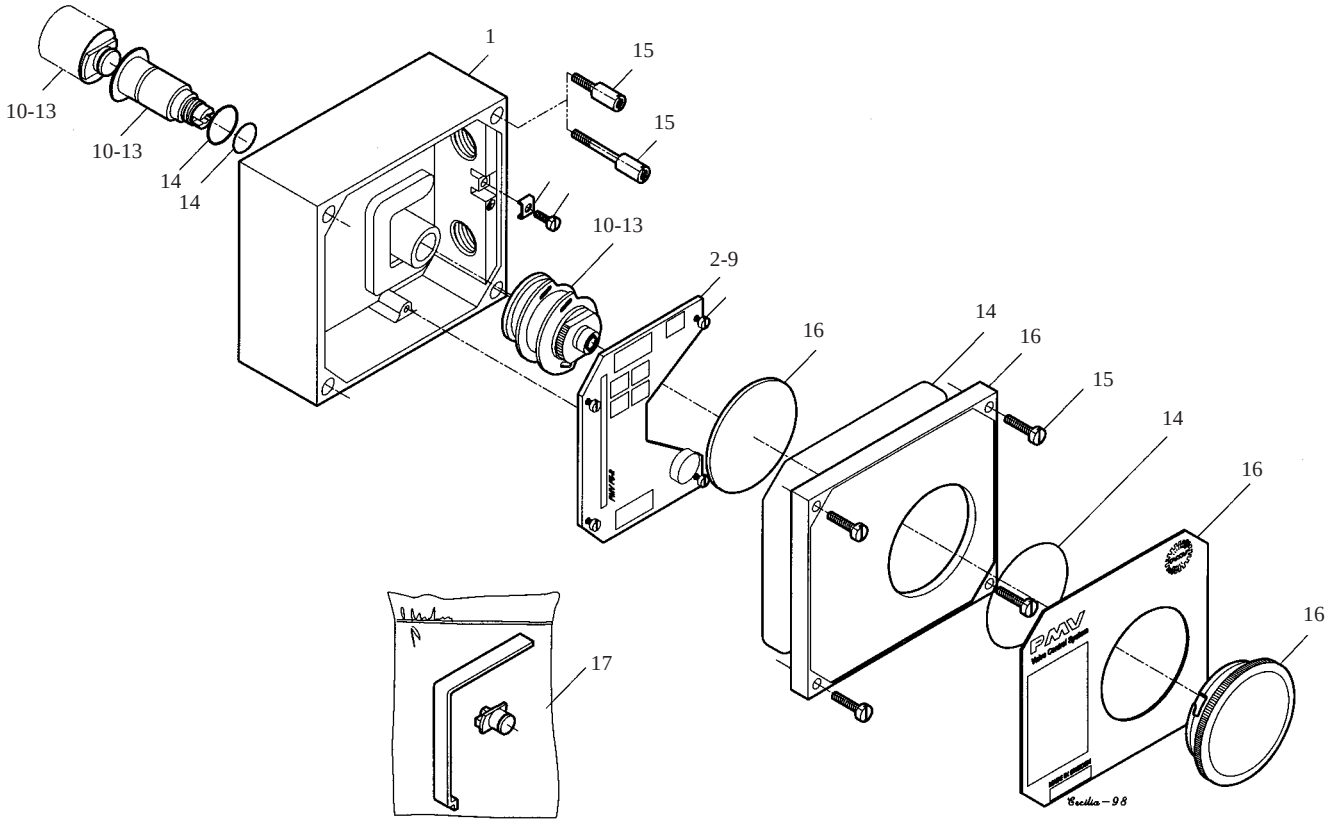
1.1 Palmstiernas Instrument AB (manufacturer) requested Factory Mutual Research Corporation (FMRC) Approval of their Series F5EX Feedback Unit as explosionproof for Class I, Division 1, Groups B, C and D; dust-ignitionproof for Class II, Division 1, Groups E, F and G hazardous (classified) locations, 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 / I / 1 / BCD; DIP / II / 1 / EFG

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

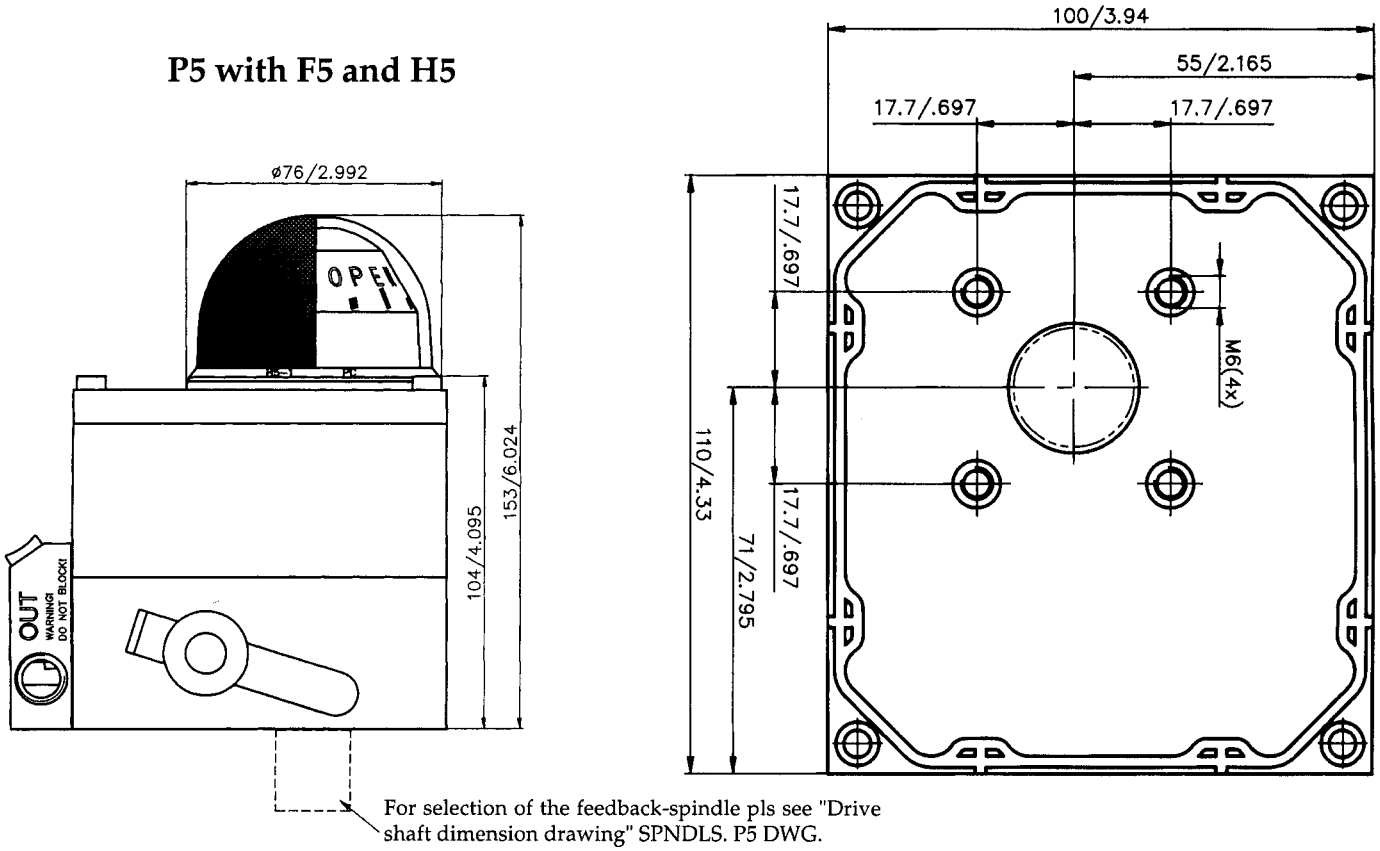


Spare Parts List

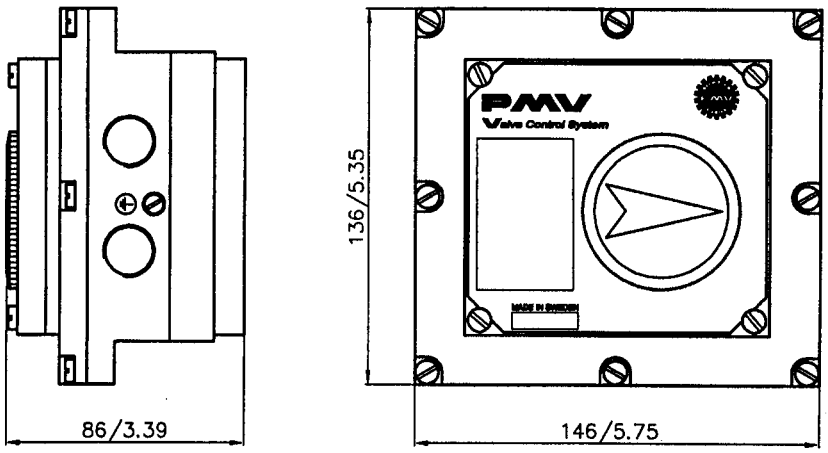
DWG No	PMV Part no	Description	Qty	Set
1		Housing		
2	28176	PC board incl. 2 x Mechanical switches	1	
3	28177	PC board incl. 2 x Mechanical switches and potentiometer	1	
4	28178	PC board incl. 2 x Mechanical switches and 4-20 mA transmitter	1	
5	28179	PC board incl. 2 x Namur sensors	1	
6	28181	PC board 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



F5-EX



Troubleshooting

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 it´s 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.

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