



# Certificate of Compliance

Certificate: 2537178

Master Contract: 160686

Project: 70037193

Date Issued: September 1<sup>st</sup>, 2015

Issued to: Endress+HauserFlowtec AG  
Kägenstrasse 7  
4153 Reinach  
SWITZERLAND  
Attention: Klaus Schmidt

*The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only*



Issued by: E Giusti  
E Giusti

## PRODUCTS

**CLASS 2258 02** - PROCESS CONTROL EQUIPMENT - For Hazardous Locations

**CLASS 2258 82** - PROCESS CONTROL EQUIPMENT - For Hazardous Locations - Certified to US Standards

**Class I, Division 2, Groups A, B, C and D**

**Ex nA IIC T6...T1 Gc;**

**Class I, Zone 2, AEx nA IIC T6...T1 Gc**

Proline Promass b 100 Types 8b1d\*\*-C4\*\*\*\*\*+###, 8b1d\*\*-C6\*\*\*\*\*+###, 8b1d\*\*-CS\*\*\*\*\*+###, O8b1d\*\*-C4\*\*\*\*\*+###, O8b1d\*\*-C6\*\*\*\*\*+###, O8b1d\*\*-CS\*\*\*\*\*+### and Cubemass C 100 Types 8C1B\*\*-C4\*\*\*\*\*+###, 8C1B\*\*-CS\*\*\*\*\*+###, O8C1B\*\*-C4\*\*\*\*\*+###, O8C1B\*\*-CS\*\*\*\*\*+### with (b=A, E, F, G, H, I, O, P, S or X and d=B) and with (b=E or S and d=C), rated U<sub>max</sub> = 30Vdc for supply and communication circuits, when connected per installation drawing FES0198 (for Promass A/E/F/G/H/I/O/P/S/X 100) or FES0200 (for Cubemass C 100), which also specifies the maximum temperature code T6...T1 function of maximum ambient temperature -50°C to 60°C and maximum process temperature up to 205°C (+140°C for sensor Promass E potted neck version). Enclosures type 4X.

Transmitters composed of Promass A, E, F, G, H, O, P, S, X and Sensor C sensors are dual seal devices. Promass E sensor, potted neck version (8E1B... and O8E1B...) is dual seal device only when equipped with optional rupture disk.



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CNGmass, LPGmass, LNGmass Types D8aB\*\*- C4\*\*\*\*\*+###, D8aB\*\*- C6\*\*\*\*\*+###, D8aB\*\*- CS\*\*\*\*\*+###, OD8aB\*\*- C4\*\*\*\*\*+###, OD8aB\*\*- C6\*\*\*\*\*+###, OD8aB\*\*- CS\*\*\*\*\*+### with a = C, E or L (C for CNGmass, E for LPGmass, L for LNGmass), rated Umax = 30Vdc for supply and communication circuits, when connected per installation drawing FES0215, which also specifies the maximum temperature code T6...T1 function of maximum ambient temperature -50°C to 60°C and maximum process temperature up to 150°C. Enclosures type 4X.

Transmitters composed of Promass G, E and L sensors are dual seal devices.

Proline Promag D/E/H/L/P/W 100 Types 5a1B\*\*-C6\*\*\*\*\*+###, O5a1B\*\*-C6\*\*\*\*\*+###, 5a1B\*\*-CS\*\*\*\*\*+###, O5a1B\*\*-CS\*\*\*\*\*+### with a = D, E, H, L, P or W depending on the sensors, rated Umax = 30Vdc for supply and communication circuits, when connected per installation drawing FES0216, which also specifies the maximum temperature code T6...T1 function of maximum ambient temperature -40°C to 60°C and maximum process temperature up to 150°C. Enclosure type 4X.

**CLASS 2258 03** - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations

**CLASS 2258 83** - PROCESS CONTROL EQUIPMENT - Intrinsically Safe and Non-Incendive Systems - For Hazardous Locations - Certified to US Standards

**Class I, Division 1, Groups A, B, C and D**

**Class II, III, Division 1, Groups E, F and G**

**Ex ia IIC T6...T1 Gb;**

**Class I, Zone 1, AEx ia IIC T6...T1 Gb**

**Ex tb IIIC Txx°C Db;**

**Zone 21, AEx tb IIIC Txx°C Db**

Proline Promass b 100 flowmeters Types 8b1d\*\*-C2\*\*\*\*\*+###, 8b1d\*\*-C5\*\*\*\*\*+###, 8b1d\*\*-CM\*\*\*\*\*+###, 8b1d\*\*-CN\*\*\*\*\*+###, 8b1d\*\*-84\*\*\*\*\*+###, 8b1d\*\*-85\*\*\*\*\*+###, O8b1d\*\*-C2\*\*\*\*\*+###, O8b1d\*\*-C5\*\*\*\*\*+###, O8b1d\*\*-CM\*\*\*\*\*+###, O8b1d\*\*-CN\*\*\*\*\*+###, O8b1d\*\*-84\*\*\*\*\*+###, O8b1d\*\*-85\*\*\*\*\*+### and Cubemass C 100 Types 8C1B\*\*-C2\*\*\*\*\*+###, 8C1B\*\*-CM\*\*\*\*\*+###, 8C1B\*\*-85\*\*\*\*\*+###, O8C1B\*\*-C2\*\*\*\*\*+###, O8C1B\*\*-CM\*\*\*\*\*+###, O8C1B\*\*-85\*\*\*\*\*+###, with (b=A, E, F, G, H, I, O, P, S or X and d=B) and with (b=E or S and d=C), intrinsically safe with entity parameters Um=260 Vac for supply and communication circuits, when connected per installation drawing FES0197 (for Promass A/E/F/G/H/I/O/P/S/X 100) or FES0199 (for Cubemass C100), which also specifies the maximum temperature code T6...T1 function of maximum ambient temperature -50°C to 60°C and maximum process temperature up to 205°C (+140°C for Promass E, potted neck version). Enclosures type 4X.

Transmitters composed of Promass A, E, F, G, H, O, P, S, X and Sensor C sensors are dual seal devices. Promass E sensor, potted neck version (8E1B... and O8E1B...) is dual seal device only when equipped with optional rupture disk.

CNGmass, LPGmass, LNGmass flowmeters Types D8aB\*\*-C2\*\*\*\*\*+###, D8aB\*\*-CM\*\*\*\*\*+###, D8aB\*\*-85\*\*\*\*\*+###, OD8aB\*\*-C2\*\*\*\*\*+###, OD8aB\*\*-CM\*\*\*\*\*+###, OD8aB\*\*-85\*\*\*\*\*+### with a = C, E or L (C for CNGmass, E for



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LPGmass, L for LNGmass), intrinsically safe with entity parameters  $Um=260V_{ac}$  for supply and communication circuits, when connected per installation drawing FES0214, which also specifies the maximum temperature code T6...T1 function of maximum ambient temperature -50°C to 60°C and maximum process temperature up to 150°C. Type 4X enclosure.

Transmitters composed of Promass G, E and L sensors are dual seal devices.

**Note:**

When the safety barrier Promass 100 is located in Class I Division 2 (respectively safe area) it shall be mounted inside an additional enclosure which meets the requirements of CSA C22.2 No. 213, CAN/CSA 60079-15, ANSI/ISA 60079-15 and FM 3611 (respectively as CAN/CSA C22.2 No. 61010-1 and FM 3810).

**APPLICABLE REQUIREMENTS**

CSA C22.2 No. 0-M91-General Requirements - Canadian Electrical Code, Part II

CAN/CSA C22.2 No. 61010-1-12 - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1: General Requirements - Second Edition

CSA C22.2 No. 157-M1992 - Intrinsically Safe and Non-Incendive Equipment for Use in Hazardous Locations

CSA C22.2 No. 213-M1987 - Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations

CSA C22.2 No 60079-0:11 - Explosive atmospheres - Part 0: Equipment - General requirements

CSA C22.2 No 60079-11:14 - Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

CSA C22.2 No 60079-15:12 - Electrical apparatus for explosive gas atmospheres - Part 15: Construction, test and marking of type of protection "n" electrical apparatus

CSA C22.2 No. 60079-31:12 - Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

CAN/CSA C22.2 No. 25-1966-Enclosures for Use in Class II Groups E, F, G Hazardous Locations

CAN/CSA C22.2 No.94.1-07-Enclosures for Electrical Equipment for Measurement, Control, and Laboratory Use  
FM 3810: 2005 - Approval Standard for Electrical Equipment for Measurement, Control, and Laboratory Use

ANSI/ ISA-61010-1 (82.02.01): 2012 - Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use - Part 1 General Requirements

FM 3600:2011 - Approval Standard for Electrical Equipment for use in Hazardous (Classified) Locations General Requirements

FM 3610:2010 - Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, III, Division 1, Hazardous (Classified) Locations

FM 3611:2004 - Nonincendive Electrical Equipment for Use in Class I and II, Division 2, and Class III Divisions 1 and 2, Hazardous (Classified) Locations

FM 3616:2011 - Dust-Ignitionproof Electrical Equipment General Requirements

ANSI/ NEMA 250: 2006 - Enclosures for Electrical Equipment (1,000 Volts Maximum)

ANSI/ ISA 60529: 2004 - Degree of Protection Provided by Enclosures (IP Code) (identical national adoption)

ANSI/ ISA 60079-0 (12.00.01): 2013 - Electrical Apparatus for Use in Class I, Zone 0, 1 & 2 Hazardous (Classified) Locations: General requirements

ANSI/ ISA 60079-11 (12.02.01): 2013 - Electrical Apparatus for Use in Class I, Zone 0, 1 & 2 Hazardous (Classified) Locations - Intrinsic Safety "i"

ANSI/ ISA 60079-15 (12.12.02): 2013 - Electrical Apparatus for Use in Class I, Zone 2 Hazardous (Classified) Locations: Type of protection "n"



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ANSI/ ISA 60079-31 (12.10.03): 2009 - Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure “t”

ANSI/ ISA 12.27.01: 2011 - Requirements for Process Sealing Between Electrical Systems and Flammable or Combustible Fluids

### **MARKINGS**

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

### **Nameplate adhesive label material approval information:**

Markings appear (laser printed) on self-adhesive nameplate label as per Letter of Attestation 1593474 (LR 82598-10)

Or on self-adhesive nameplate label 3M Type 7847 on powder coated aluminum IGP Type Durapol 6403A or stainless steel

Or stamped, engraved, etched, laser printed or embossed on the metallic enclosure

Or stamped, engraved, etched, laser printed or embossed on stainless steel nameplate mechanically fixed by welding, rivets, screws or key ring.

Nameplates are as per drawings 322541-0001, 322738-0000, 322927-0001, 322927-0003, 322928-0001, 323096-0001, 323097-0001 and 340934-0001. Applicable installation drawings FES0197, FES0198, FES0199, FES0200, FES0214, FES0215 and FES0216 are shipped with each product.

# Hazardous Locations

## Safety Barrier:

Class I Division 2 Groups ABCD or Class I Zone 2 Group IIC or Nonhazardous area

## Transmitter/Sensor:

Class I Division 1 Groups ABCD, Class II Division 1 Groups EFG and Class III;

Ex ia IIC T6...T1 Gb, Ex tb IIIC Txx °C Db;

Class I Zone 1, AEx ia IIC T6...T1 Gb; Zone 21, AEx tb IIIC Txx °C Db

8b1d\*\*- ff\*\*\*\*\*+###, 08b1d\*\*- ff\*\*\*\*\*+###

with b=A, E, F, G, H, I, O, P, S or X and d=B, and with b=E or S and d=C, with ff=CM, CN, C2, C5, 84 or 85

Ambient temperature range: - 50 °C ... +60 °C (standard: Ta,min = -40 °C)

Medium temperature range: - 50 °C ... +150 °C (- 40 °C ... +140 °C for Promass E, potted neck version) - 50 °C ... +205 °C (for extended temperature version)

Temperature table (Tmed, max = 150 °C)

Type of Sensor:	Approval:	Housing:	Ambient Temp. Ta [°C]	Max. medium temperature Tmed [°C]			
				T6 (85°C) <sup>1)</sup>	T5 (100°C) <sup>1)</sup>	T4 (135°C) <sup>1)</sup>	T3-T1 (200°C) <sup>1)</sup>
A, E, F, G, H, I, O, P, S, X	CM, CN, C2, C5, 84, 85	A, B	35	50	85	120	150 <sup>2)</sup>
			50	--	85	120	150 <sup>2)</sup>
			60	--	--	120	150 <sup>2)</sup>
		C	35	50	85	120	150 <sup>2)</sup>
			45	--	85	120	150 <sup>2)</sup>
			50	--	--	120	150 <sup>2)</sup>

<sup>1)</sup> Txx for group IIIC

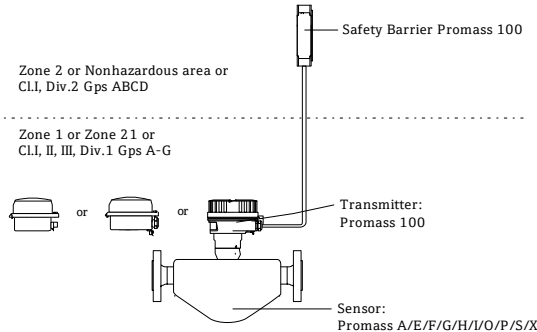
<sup>2)</sup> For Proline Promass E 100 (8E1B... and 08E1B...), the max. medium temperature is +140°C (potted neck sensor version)

Temperature table (Tmed, max = 205 °C for extended temperature version only)

Type of Sensor:	Approval:	Housing:	Ambient Temp. Ta [°C]	Max. medium temperature Tmed [°C]				
				T6 (85°C) <sup>1)</sup>	T5 (100°C) <sup>1)</sup>	T4 (135°C) <sup>1)</sup>	T3 (200°C) <sup>1)</sup>	T2-T1 (300°C) <sup>1)</sup>
A, E <sup>3)</sup> , F, H, O, P, S, X	CM, CN, C2, C5, 84, 85	A, B	35	50	85	120	170	205
			50	--	85	120	170	205
			60	--	--	120	170	205
		C	35	50	85	120	170	205
			45	--	85	120	170	205
			50	--	--	120	170	205

<sup>1)</sup> Txx for group IIIC

<sup>3)</sup> Proline Promass E 100 (8E1C... and 08E1C...), non-potted neck sensor version



## Notes:

- Control room equipment shall not use or generate more than 250 V rms.
- Caution: Use supply wires suitable for 20 °C above ambient temperature, but at least for 80 °C.
- Installation of transmitter circuit wiring according to Canadian Electrical Code (CEC) resp. National Electrical Code (NEC) ANSI/NFPA 70 using threaded conduit or other wiring methods in accordance with articles 500 to 510.
- Install all intrinsically safe circuits per Canadian Electrical Code (CEC) Part I Section 18 and Appendix F resp. per National Electrical Code (NEC) ANSI/NFPA 70 and ISA RP 12.6 respecting the Explosionproof Integrity of the enclosure.
- Class II Group G: The surface temperature of the apparatus cannot exceed 165 °C/329 °F.
- Sensor circuits intrinsically safe for Cl. I, II, III Div. 1 Group A, B, C, D, E, F, G except limited versions of

Promass E DN80 (sensor version Group C-D)  
 Promass I DN41/50/51/80 (sensor version Group C-D)  
 Promass F/O DN80/100/150/250 (sensor version Group C-D)  
 Promass H/P/S DN50 (sensor version Group C-D)  
 Promass X DN350 (sensor version Group C-D)

which are only suitable for Cl. I, II, III Div. 1 Group C, D, E, F, G

- For transmitter allowed cable glands NPT 1/2", G 1/2", M20x1.5 or M12x1.0 connectors.
- The following sensors are Dual Seal devices in accordance with ANSI/ISA-12.27.01-2003: Promass A, E, F, G, H, O, P, S and X. Promass E, potted neck version (8E1B... and 08E1B...) is a Dual Seal device if the optional rupture disk is present.
- The service interface FXA 291 can be connected to transmitter when explosive atmosphere is present.
- WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY.**

AVERTISSEMENT - RISQUE D'EXPLOSION - LA SUBSTITUTION DES COMPOSANTS RISQUE DE NUIRE À LA SÉCURITÉ INTRINSÈQUE DU PRODUIT.

Aenderungen:		A 30.01.2013/SCHK F		Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Ersetzt durch:
B 25.02.2014/SCHK G		C 20.10.2014/SCHK H			
D		E			
J		K			
E					
<b>cCSA<sub>us</sub> Control Drawing</b> <b>Class I Division 1 / Class I Zone 1</b> <b>IS, Ex i version</b> <b>Proline Promass A/E/F/G/H/I/O/P/S/X 100</b>				Gezeichnet 30.01.2013 SCHK Geprüft Ex-geprüft 20.10.2014 SCHK Gesehen	
Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach				FES0197C 1/2	

## Hazardous Locations

8b1d\*\*- ff\*\*\*\*\*+###, O8b1d\*\*- ff\*\*\*\*\*+###

with b=A, E, F, G, H, I, O, P, S or X and d=B, and with b=E or S and d=C,

with ff=CM, CN, C2, C5, 84 or 85

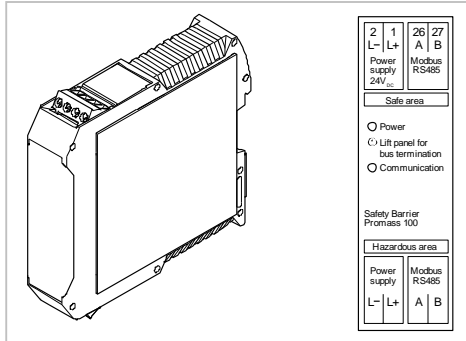
### Safety Barrier:

**Class I Division 2 Groups ABCD or Class I Zone 2 Group IIC or Nonhazardous area**

### Safety Barrier Promass 100 (Non-IS circuits)

Terminals 1 (L/+) and 2 (L/-)  
(Power Supply, Non-IS)  
 $U_n = 24 \text{ Vdc}$  (20Vdc ... 30Vdc)  
 $U_m = 260 \text{ Vac}$   
 $P_{max} = 4.8 \text{ W}$

Terminals 26, 27  
(Modbus RS 485 A/B, Non-IS)  
 $U_n = 5 \text{ Vdc}$   
 $U_m = 260 \text{ Vac}$

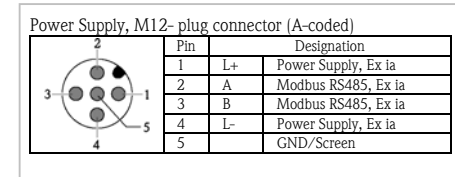
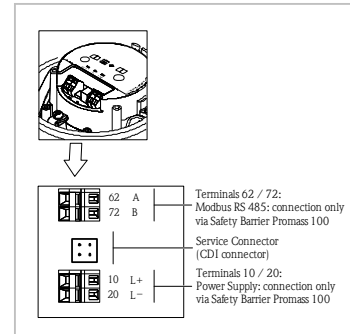


### Transmitter/Sensor:

**Class I Division 1 Groups ABCD, Class II Division 1 Groups EFG and Class III;**

**Ex ia IIC T6...T1 Gb and Ex tb IIIC Txx °C Db;**

**Class I Zone 1, AEx ia IIC T6...T1 Gb; Zone 21, AEx tb IIIC Txx °C Db**



### Intrinsically safe installation, Transmitter Promass 100:

#### Transmitter Promass 100

##### 1. Terminals 10 and 20:

$V_{max}/U_i$	$I_{max}/I_i$	$P_{max}/P_i$	$C_i$	$L_i$
16.24 V	623 mA	2.45 W	6 nF	0

##### 2. Terminals 62 and 72:

$V_{max}/U_i$	$I_{max}/I_i$	$P_{max}/P_i$	$C_i$	$L_i$
16.24 V	623 mA	2.45 W	6 nF	0

3. Promass 100 transmitter is intended for installation (Power Supply, Modbus) via Safety Barrier Promass 100 only.

4. Promass 100 transmitter is intended for installation to E+H Service Interface with  $U_o \leq 7.5 \text{ V}$ , e.g. FXA291.

### Intrinsically safe installation Ex ia, Safety Barrier Promass 100:

#### 1. Terminals 10 (+) and 20 (-):

$V_t / U_o$	$I_t / I_o$	$P_o$		Ca/Co	La/Lo	La/Ra, Lo/Ro
16.24 V	623 mA	2.45 W	IIC	0.433 $\mu\text{F}$	92.8 $\mu\text{H}$	14.6 $\mu\text{H}/\Omega$
			IIB	2.57 $\mu\text{F}$	372 $\mu\text{H}$	58.3 $\mu\text{H}/\Omega$

#### 2. Terminals 62 (A) and 72 (B):

$V_t / U_o$	$I_t / I_o$	$P_o$		Ca/Co	La/Lo	La/Ra, Lo/Ro
16.24 V	623 mA	2.45 W	IIC	0.433 $\mu\text{F}$	92.8 $\mu\text{H}$	14.6 $\mu\text{H}/\Omega$
			IIB	2.57 $\mu\text{F}$	372 $\mu\text{H}$	58.3 $\mu\text{H}/\Omega$

3. When the Safety Barrier Promass 100 is located in Class I Division 2 (respectively safe area) it shall be mounted inside an additional enclosure which meets the requirements of CSA C22.2 No.213, CAN/CSA 60079-15, ANSI/ISA 60079-15 and FM 3611 (respectively as CAN/CSA C22.2 No. 61010-1 and FM 3810).

#### 4. Cable parameters for Intrinsic Safety:

$$C_{\text{cable}} \leq C_o \text{ (Ca)} - 6 \text{ nF}$$

$$L_{\text{cable}} \leq L_o \text{ (La)}$$

$$L_{\text{cable}} / R_{\text{cable}} \leq L_o / R_o \text{ (La/Ra)}$$

5. Safety Barrier Promass 100 is intended for installation to Promass 100 (Cubemass 100) transmitter only.

Aenderungen:	A	30.01.2013/SCHK	F		Alle gesetzlichen Urheberrechte vorbehalten. Diese Zeichnung darf ohne unsere Genehmigung weder vervielfältigt werden noch dritten Personen und Konkurrenzfirmen zugänglich gemacht werden.	Ersetzt durch:
	B	25.02.2014/SCHK	G			Erstellt durch: FES
	C	20.10.2014/SCHK	H			FILE:
	D		J			
	E		K			

**cCSA<sub>us</sub> Control Drawing**  
**Class I Division 1 / Class I Zone 1**  
**IS, Ex i version**  
**Proline Promass A/E/F/G/H/I/O/P/S/X 100**



Flowtec AG, Kägenstrasse 7, CH-4153 Reinach BL1, Postfach

Gezeichnet	30.01.2013	SCHK
Geprüft		
Ex-geprüft	20.10.2014	SCHK
Gesehen		

FES0197C

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