

TI SSR

SSR Current Sensors for KSR

Ausgabe

109

TI SSR

SSR Current Sensors for KSR

Technical Information

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1. Application

Bosch SSR 81 ... current sensors pick up the secondary current in resistance welding installations.

Their main application is preferably in conjunction with weld timers with constant current regulation (KSR) or weld current monitoring (SSU).

Bosch SSR 81 ... current sensors consist of a measuring coil with plug connector and different mounting brackets for a wide variety of mounting types.

2. SSR 81.00–08 current sensors

Bosch SSR 81 ... current sensors are ironless toroid coils which are placed around the conductor, and which produce a voltage signal proportionate to the current variation.

The amplitude of the output voltage is largely independent of the geometric shape of the enclosed conductor and adjacent external fields.

The voltage signal is converted by integration into a signal proportionate to the current and processed further by an associated measuring circuit (such as KSR).

2.1 Technical data

output	150 mV/kA \pm 1.5% for sinusoidal current (50 Hz) and a load of 1 kOhm, with the conductor running centrally and straight through the sensor.
internal resistance	approx. 20 Ohm

measuring range	up to max. 100 kA
protection standard	IP 55
max. admissible ambient temperature	+80 °C
max. admissible temperature of welding splashes	<250 °C (when hitting the sensor surface)
max. impact pressure	8 g
weight	0.3 kg

2.2 Dimensions of SSR 81.00–08

For dimensioned drawings, see pp. 15 to 23.

3. SSR 81.50 current sensor

Bosch part no. 1070 050 724

3.1 Application

When welding involves low secondary welding currents, e.g. thin-wire welding, the voltage signal induced by the SSR 81.00-08 sensors may be too low to be processed by the timer module. In this case, the SSR 81.50 current sensor may be used which supplies 10 times the voltage signal of the SSR 81.00-08 sensors. Due to this feature, the SSR 81.50 sensor may also be used at the primary side.

3.2 Technical data

construction	<ul style="list-style-type: none"> - winding-type transformer - ironless toroid coil encapsulated in plastics - without mounting bracket - with 2-core connection cable 1100 mm long (without plug-in connector)
option	5-pole female plug-in connector assembly with cable strain relief, Bosch part no. 1070 913 490
output	1.5 V/kA \pm 1.5% for sinusoidal current (50 Hz) and a load of 1 kOhm, with the conductor running centrally and straight through the sensor.
internal resistance	approx. 30 Ohm
measuring range	up to max. 10 kA
protection standard	IP 55
max. admissible ambient temperature	+80 °C
max. admissible temperature of welding splashes	<250 °C (when hitting the sensor surface)
max. impact pressure	8 g
weight	0.48 kg

For a dimensioned sketch, see p. 5.

3.3 Programming notes

When welding with KSR or SSU:

Current range between 250 A and 2.5 kA (measuring range 1)

Current range between 1 kA and 10.0 kA (measuring range 2)

Since the SSR 81.50 current sensor supplies 10 times the voltage signal of the SSR 81.00-08 sensor, the following must be noted for programming the heat values [kA]:

The actual weld current is 10 times lower than the specified value, or the kA value displayed after welding.

Example:

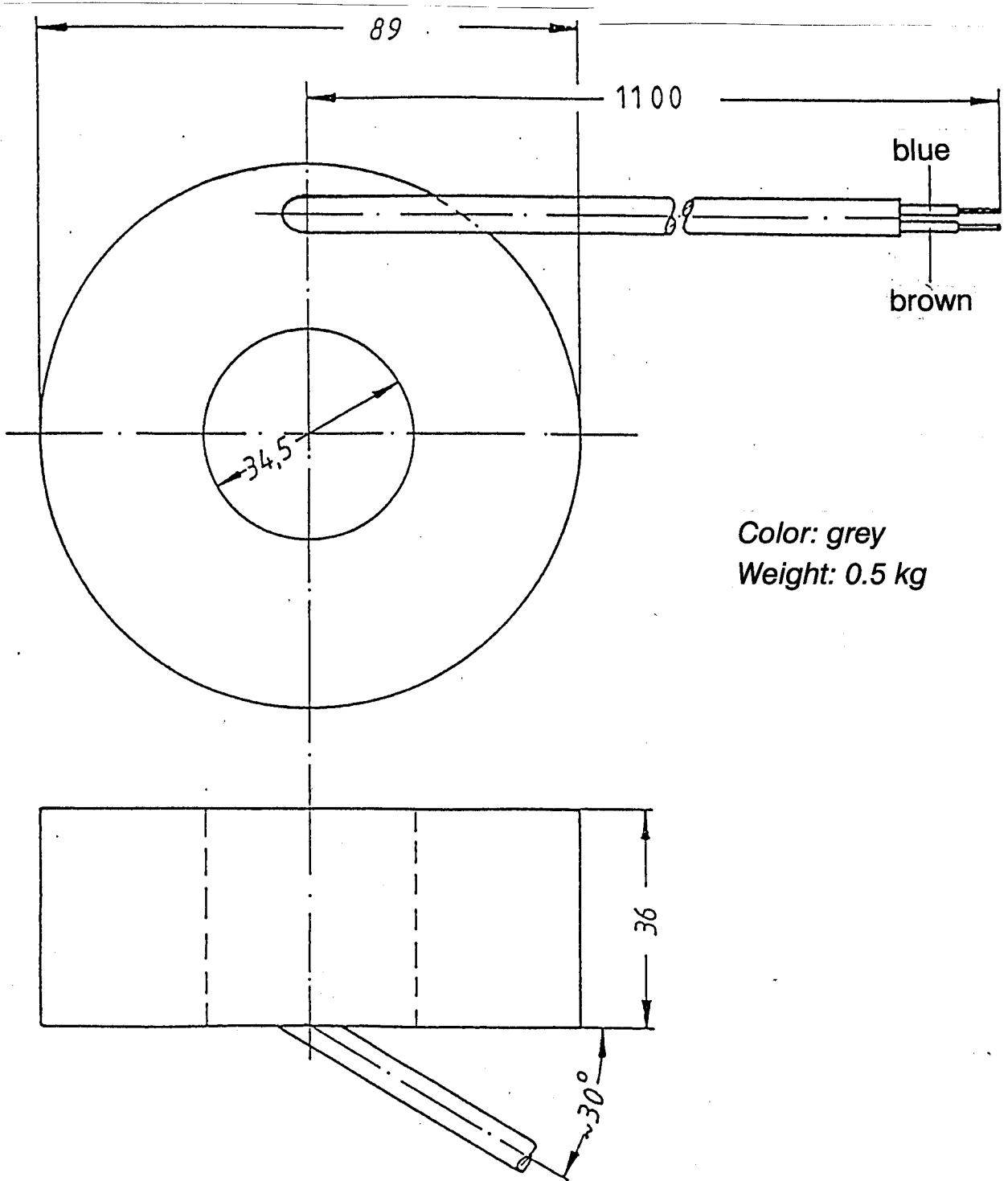
In the first weld pulse	= 1.5 kA;
in the subsequent pulses	= 2 kA is to be applied.

The inputs must be as follows:

for 1st heat	= 15.0 kA
for heat	= 20.0 kA

(These values also apply to the actual current displays.)

3.4 Dimensioned drawing of the SSR 81.50 current sensor



*Color: grey
Weight: 0.5 kg*

Ihre Notizen:

4. MB 260 current measuring belt

Bosch part no. 1070 916 712

For some applications, the internal diameters of 55 mm of the SSR 81 ... current sensors may be too small. Or it may not be possible to pull the sensor over a conductor. In these cases, the MB 260 current measuring belt may be used. It can be opened, it is flexible and in round state, it has an internal diameter of 260 mm.

The MB 260 has been adjusted to:

4.1 Technical data

output	150 mV/kA ± 1.5% for sinusoidal current (50Hz) and a load of 1 kOhm, with the conductor running centrally and straight through the sensor.
absolute tolerance	± 1 %
internal resistance	approx. 25 Ohm
measuring range	up to max. 200 kA
protection standard	IP 55
max. admissible ambient temperature	+90 °C
max. admissible temperature of welding splashes	<200 °C (when hitting the sensor surface)
max. impact pressure	8 g
weight	550 g

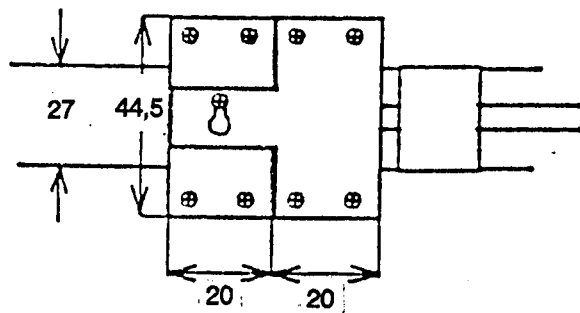
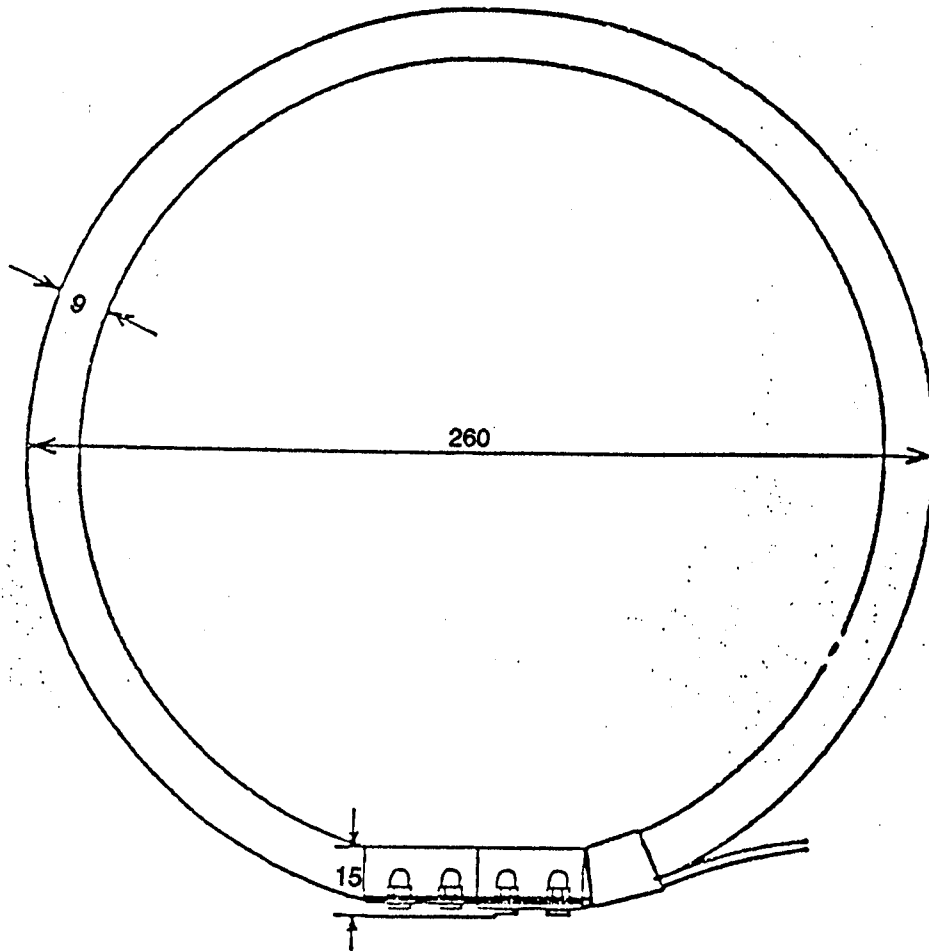
The MB 260 is supplied with the same 5 – pole plug – in connector type as the SSR 81.00 – 08 sensors.

The cable length is approx. 3,000 mm.

For a dimensioned drawing, see page 8.

Other measuring belts are available on request.

4.2 Dimensioned drawing of the MB 260 current measuring belt



5. Fitting instructions

The Bosch current sensor is built into the secondary circuit of the welding installation. The sensor should be mounted so as to be protected against mechanical damage by the workpiece and against welding splashes.

Ready-made mounting brackets are available for a number of transformer lugs. Cf. also the dimensioned drawings of the SSR 81.00-08 sensors.

**NOTE!**

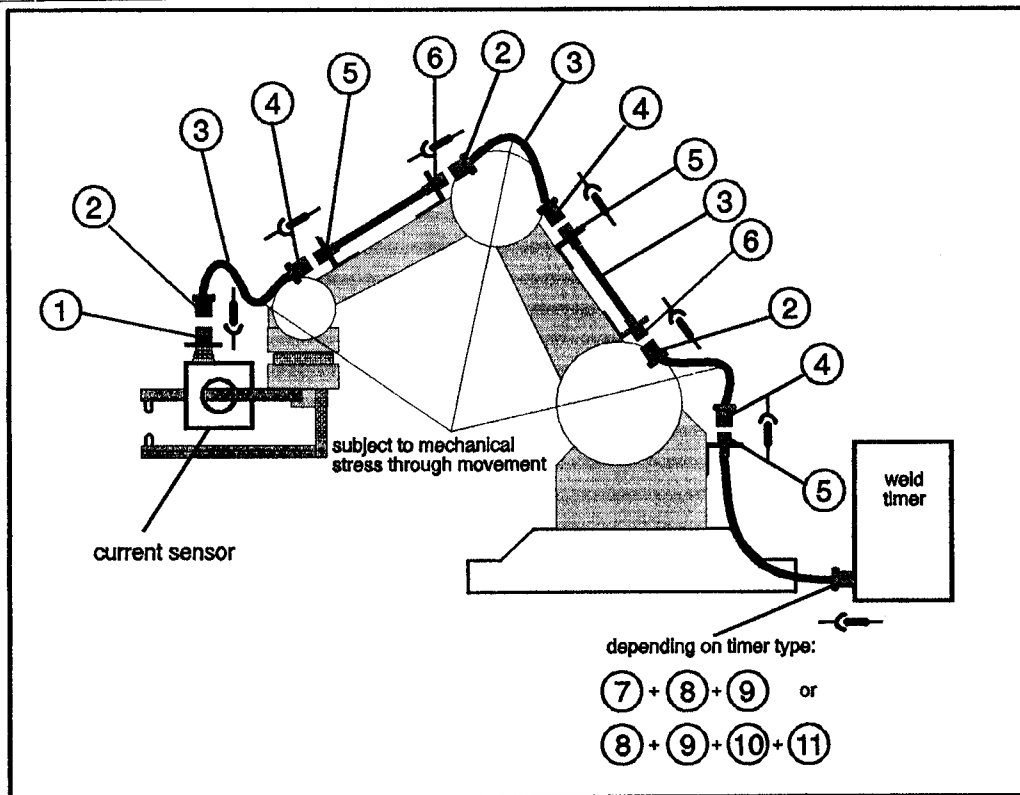
In cases where a coaxial cable is used, the sensor should only be fitted to **one** wire.

In practice, mounting of the sensor in less than ideal electrical conditions can, in some instances, produce additional measuring errors, which can amount to max. $\pm 5\%$ in unfavourable cases. In order to keep these additional measuring errors to a minimum, the following instructions should be followed:

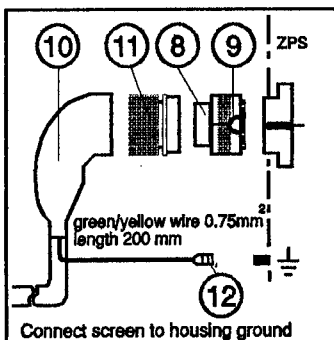
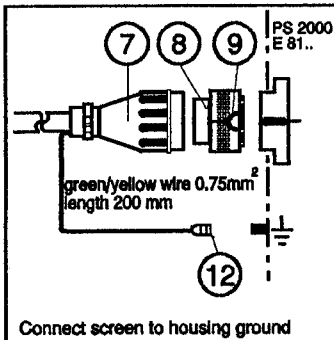
- The conductor should lie as central and straight as possible within the sensor. In order to keep interference from nearby busbars or high-current cables as low as possible, the sensor should be mounted at the largest possible distance from them.
- No magnetizable metal parts may be used for mounting the sensor. Copper or brass should preferably be used.
- The electrical connection should be made in accordance with the suggestions on page 8.
- In order to obtain precise information on the measuring accuracy in specific applications, suitable calibration measurements are to be carried out with a standard ammeter. On request, we may carry out such measurements on the welding installations and produce appropriate measuring protocols.
- The max. distance between SSR 81 ... and the timer module should not exceed a cable length of 100 m.

5.1 Mounting example

When using the SSR sensor on robots, certain parts of the cable are subject to great mechanical stress. In these cases it is advisable to divide the cable into several interconnecting cable sections. See example on page 10.



Mounting accessories



	Bosch part no.
① Female connector housing, 5-pole, for inst. behind wall	1070 913405
③ PVC cabel LIYCY 2 x 2 x 0.75	1070 913494
For SSR connection	
② Plug-in connector assembly, male	1070 913489
④ Plug-in connector assembly, female	1070 913490
⑤ Plug-in connector flange mounting, male	1070 913491
⑥ Plug-in connector flange mounting, female	1070 913492
For PSS 2000 & E 81...D.YD connection	
⑦ Strain relief	1070 912650
⑧ Plug-in connector	1070 913496
⑨ Female contact 4x	1070 902428
For ZPS connection	
⑧ Plug-in connector	1070 913496
⑨ Female contact 4x	1070 902428
⑩ Shrink-on part	1070 913493
⑪ Adaptor	1070 913495
For screen	
⑫ Flat connector 6.3 / 0.3-1.5	1070 902391

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Fig.: Mounting example with marked installation accessories

5.2 Mating connector set

We offer two different sets of complete mating connectors:

1. Mating connector for **SSR** current sensor and mating connector for weld timer type **PSS 2000 / E81...DYG / DYF**.

Bosch part no. 1070 048 134

Consisting of:	Bosch part no.
② Plug-in connector assembly, male	1070 913 489 1 pce.
⑦ Strain relief	1070 912 650 1 pce.
⑧ Plug-in connector	1070 913 496 1 pce.
⑨ Female contact	1070 902 428 4 pce.
⑫ Flat connector	1070 902 391 1 pce.

2. Mating connector for **SSR** current sensor and mating connector for weld timer type **ZPS**.

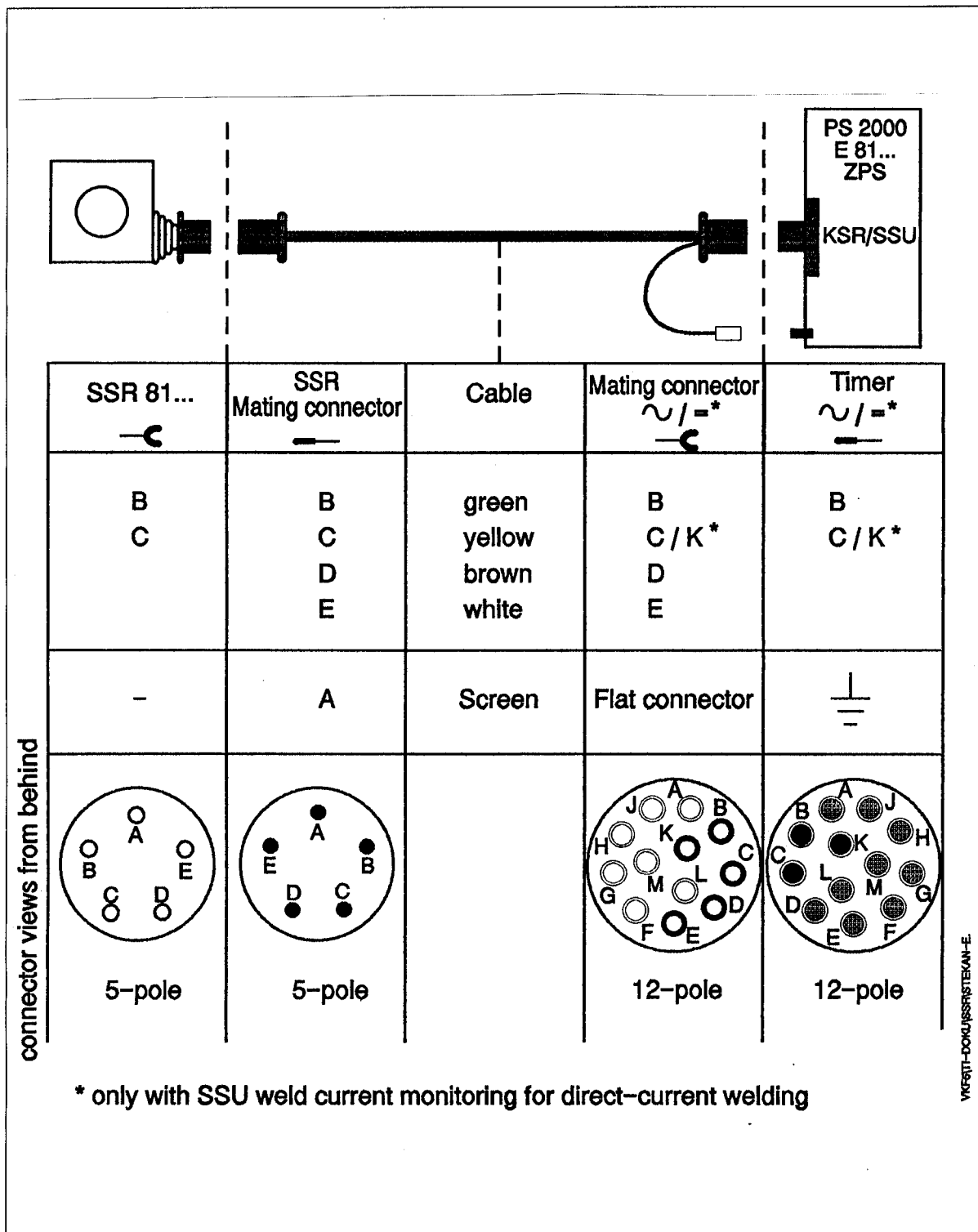
Bosch part no. 1070 048 135

Consisting of:	Bosch part no.
② Plug-in connector assembly, male	1070 913 489 1 pce.
⑧ Plug-in connector	1070 913 496 1 pce.
⑨ Female contact	1070 902 428 4 pce.
⑩ Shrink-on part	1070 913 493 1 pce.
⑪ Adaptor	1070 913 495 1 pce.
⑫ Flat connector	1070 902 391 1 pce.



Ihre Notizen:

6 Connector assignment

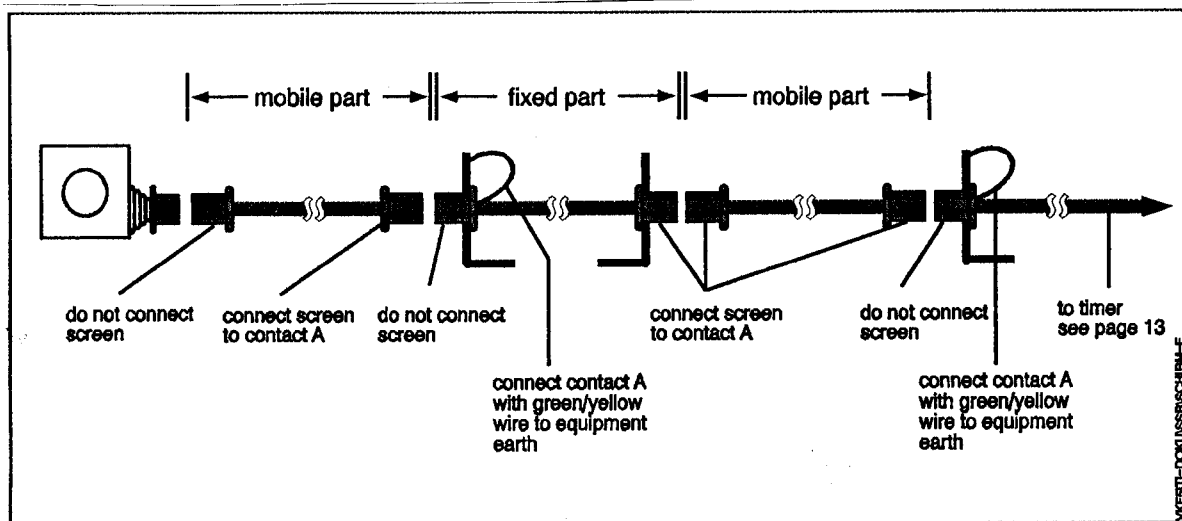


6.1 Screen connection

If the connection between SSR and the weld timer is made of a continuous cable, the screen must be connected to the housing ground of the timer using a green/yellow wire. The screen is not connected to the current sensor.

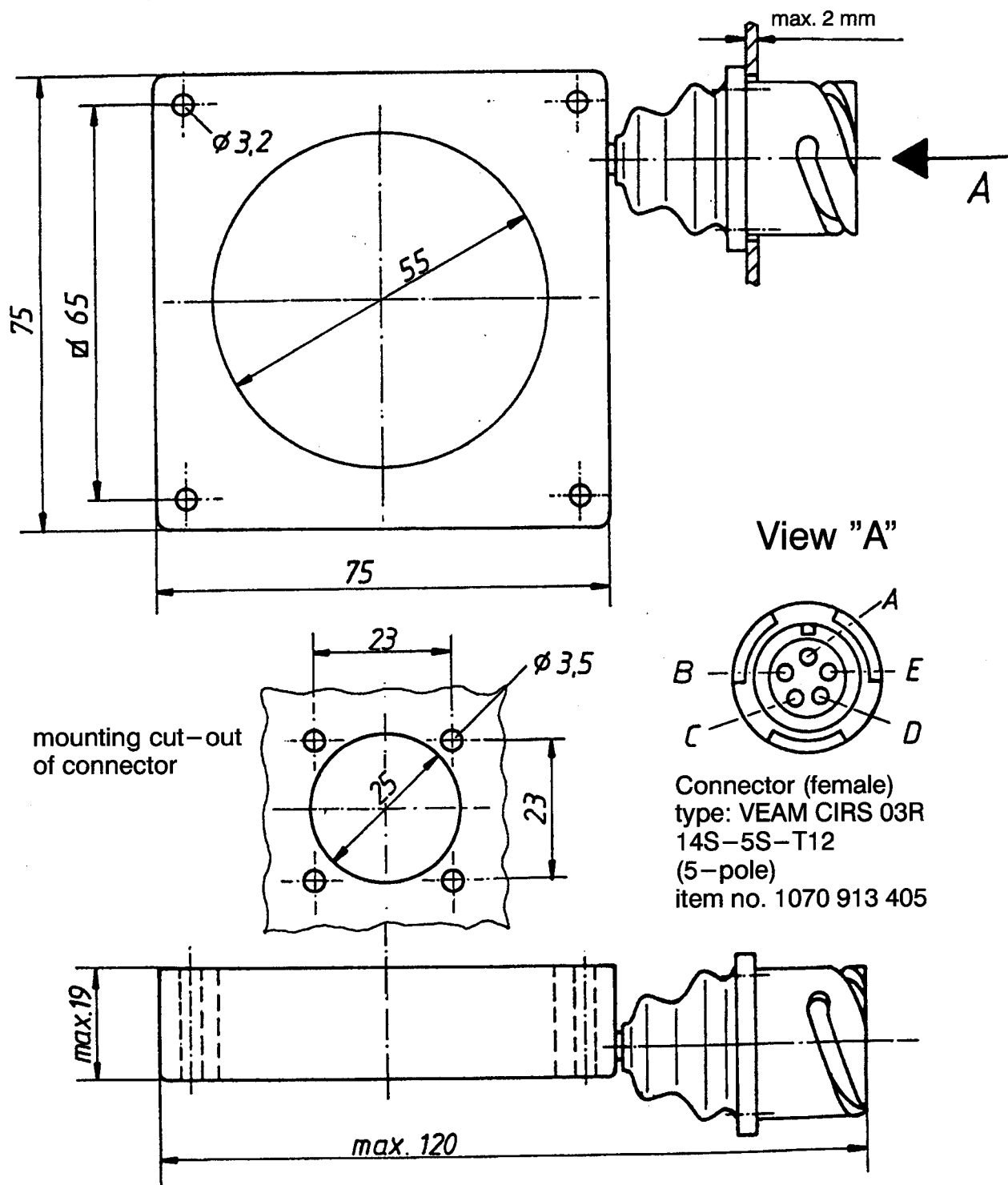
If the cable is subdivided into several cable sections, as shown in our installation example, the screen must be connected to mass as shown in the following sketch.

The total length of the cable should not exceed 100 m!



Dimensioned drawing of SSR 81.00 current sensor

Item no. 1070 048 019



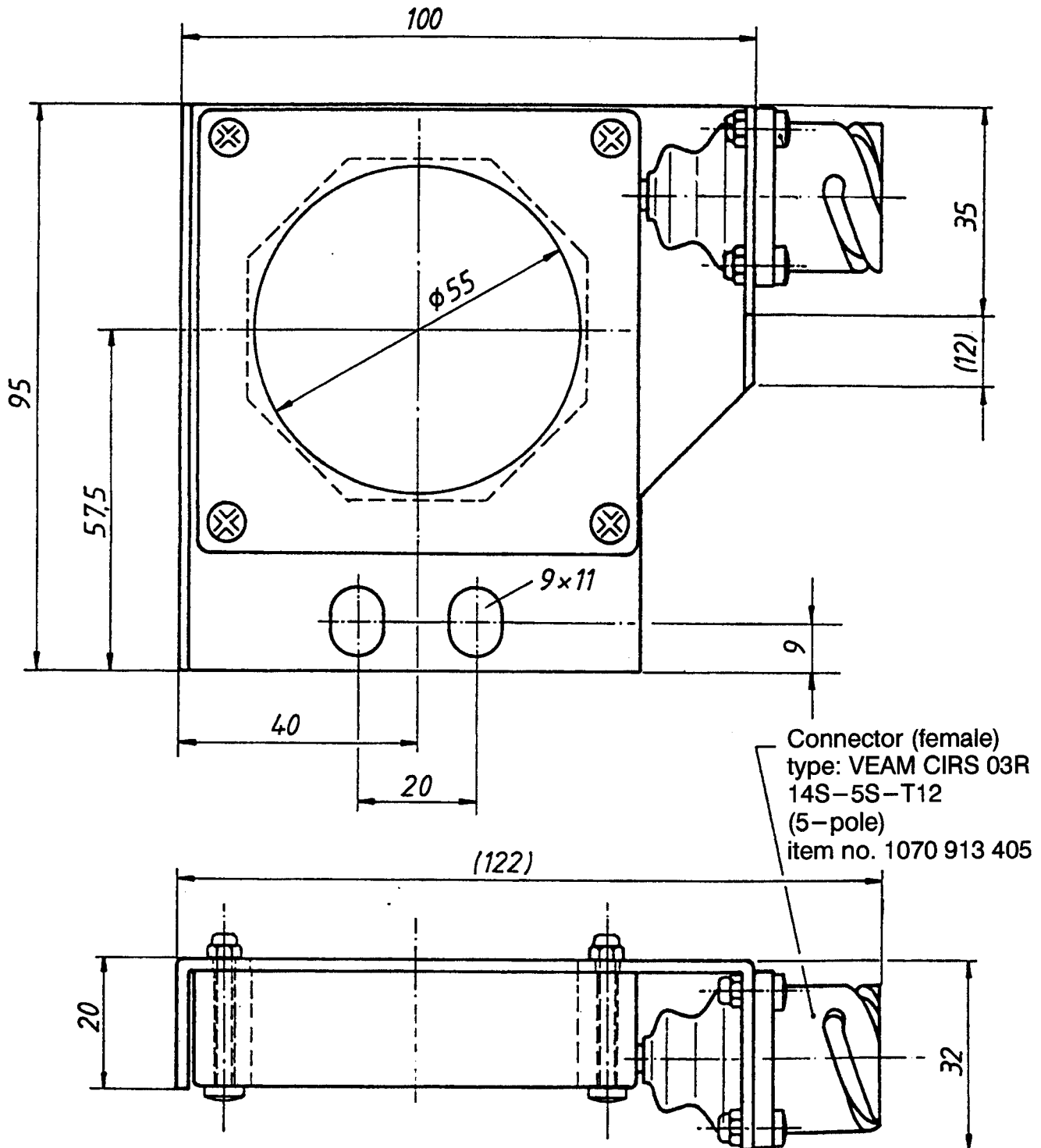
View "A"

Connector (female)
type: VEAM CIRS 03R
14S-5S-T12
(5-pole)
item no. 1070 913 405

This current sensor can only be mounted using a suitable mounting bracket (not included in delivery)

Dimensioned drawing of SSR 81.01 current sensor

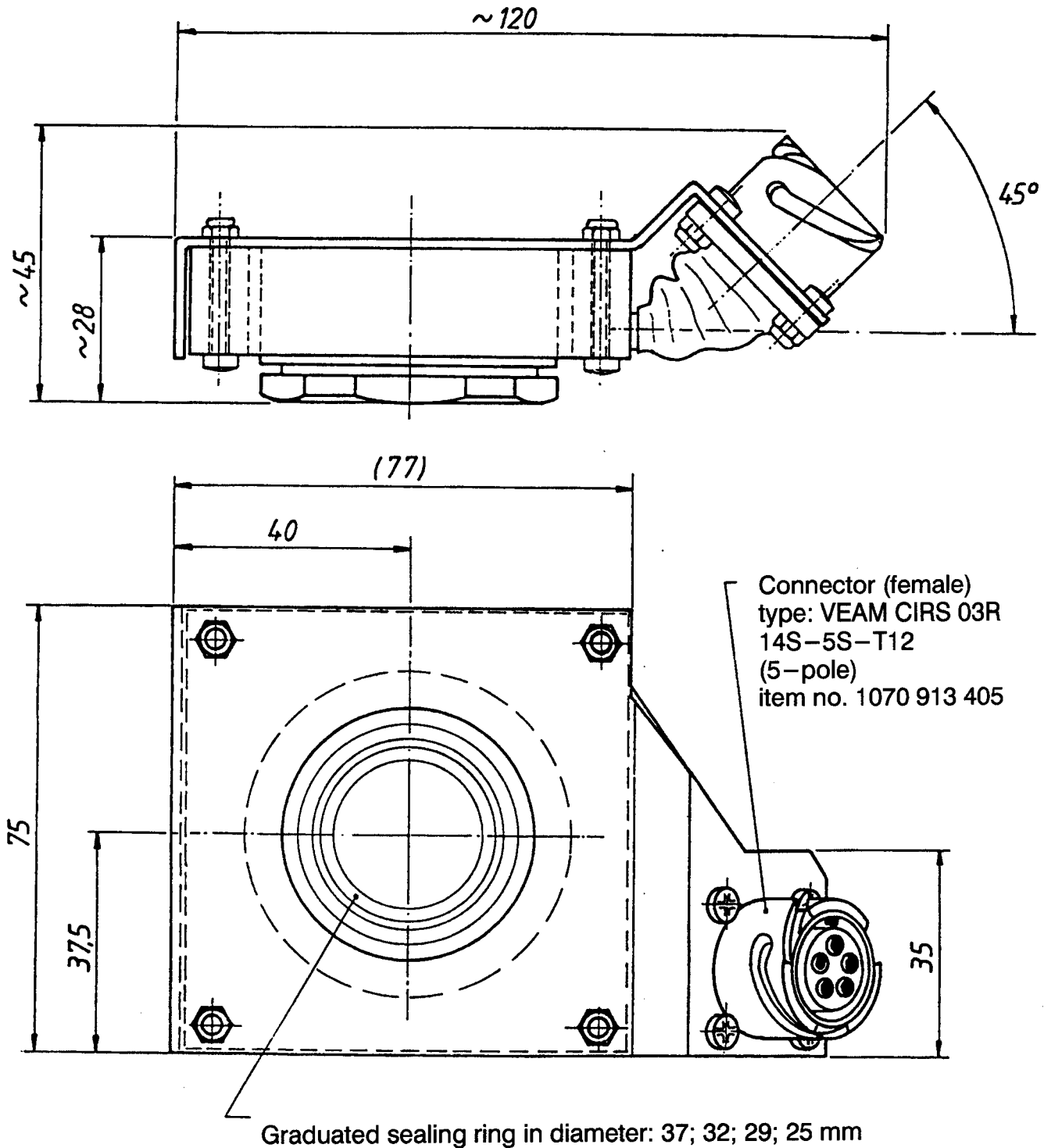
Item no. 1070 046 808



This current sensor is designed for mounting to:
Robot-C-gun CRN 5/25; CRN 6/25, make: NIMAK.

Dimensioned drawing of SSR 81.02 current sensor

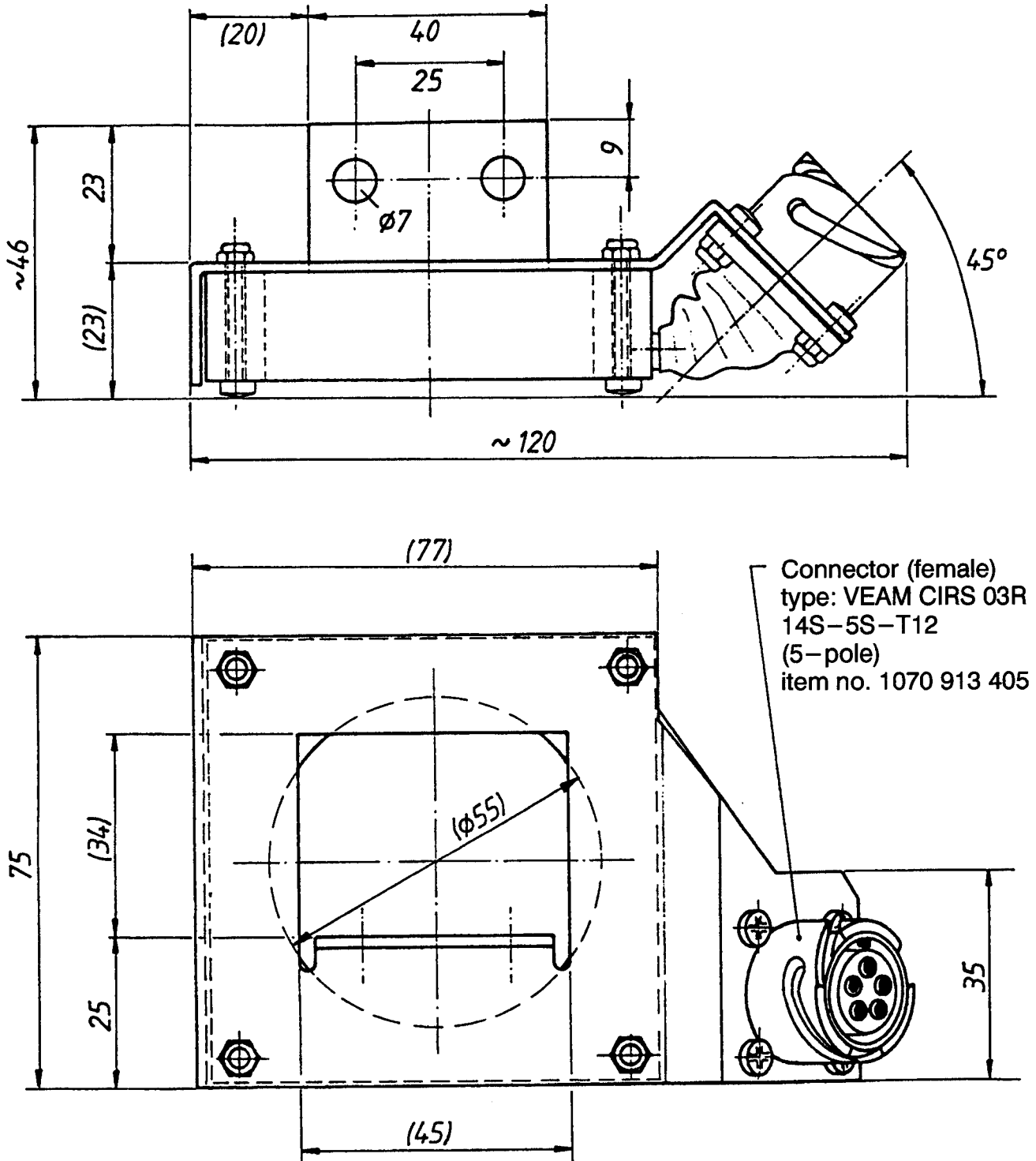
Item no. 1070 046 809



This current sensor is designed for mounting to:
Robot scissor-type gun conditionally for all LRM types, make: NIMAK.

Dimensioned drawing of SSR 81.03 current sensor

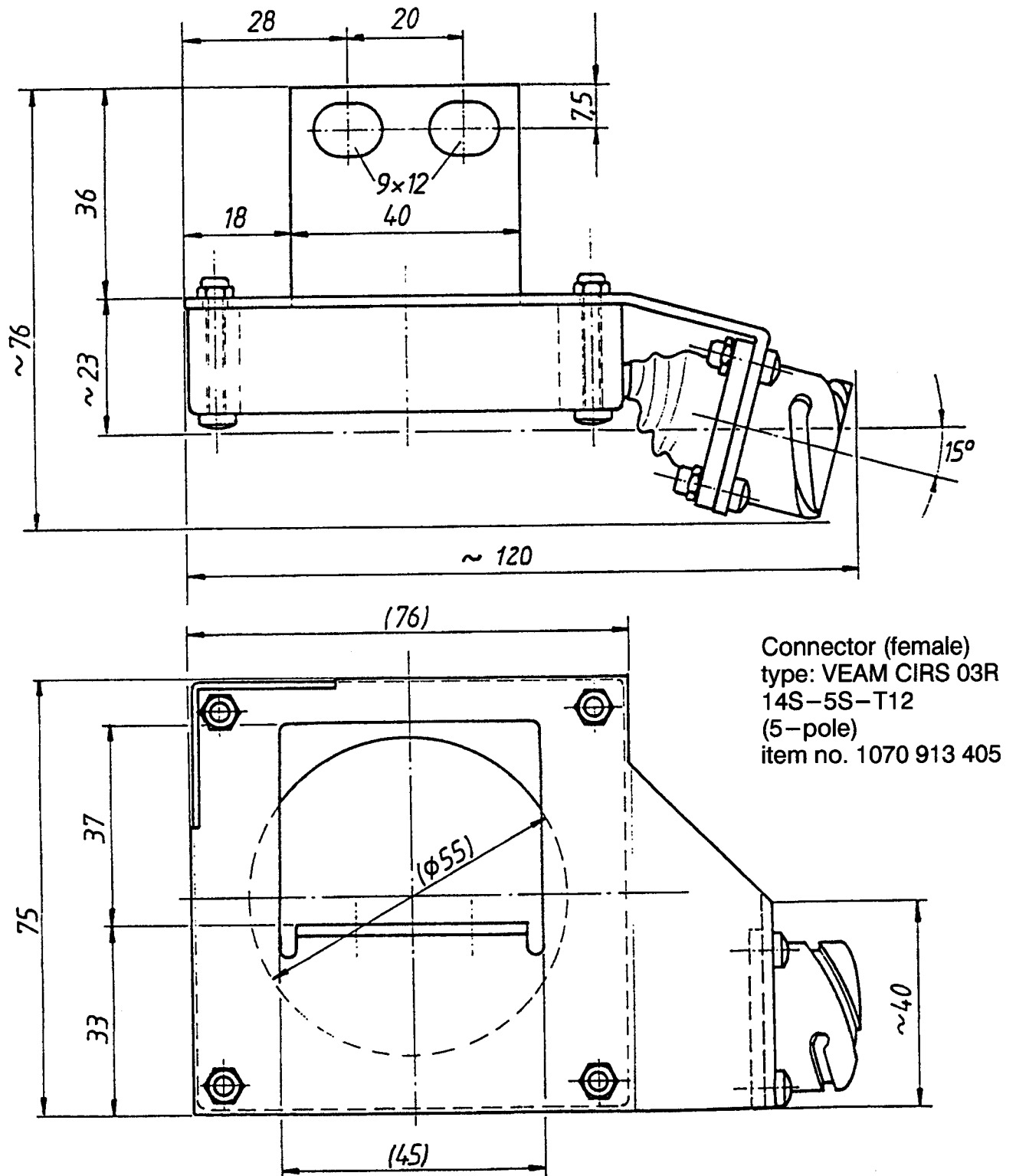
Item no. 1070 047 136



This current sensor is designed for mounting to:
Robot-C-gun, type E 25 P and D 25 P; make: ABB-Solingen.

Dimensioned drawing of SSR 81.04 current sensor

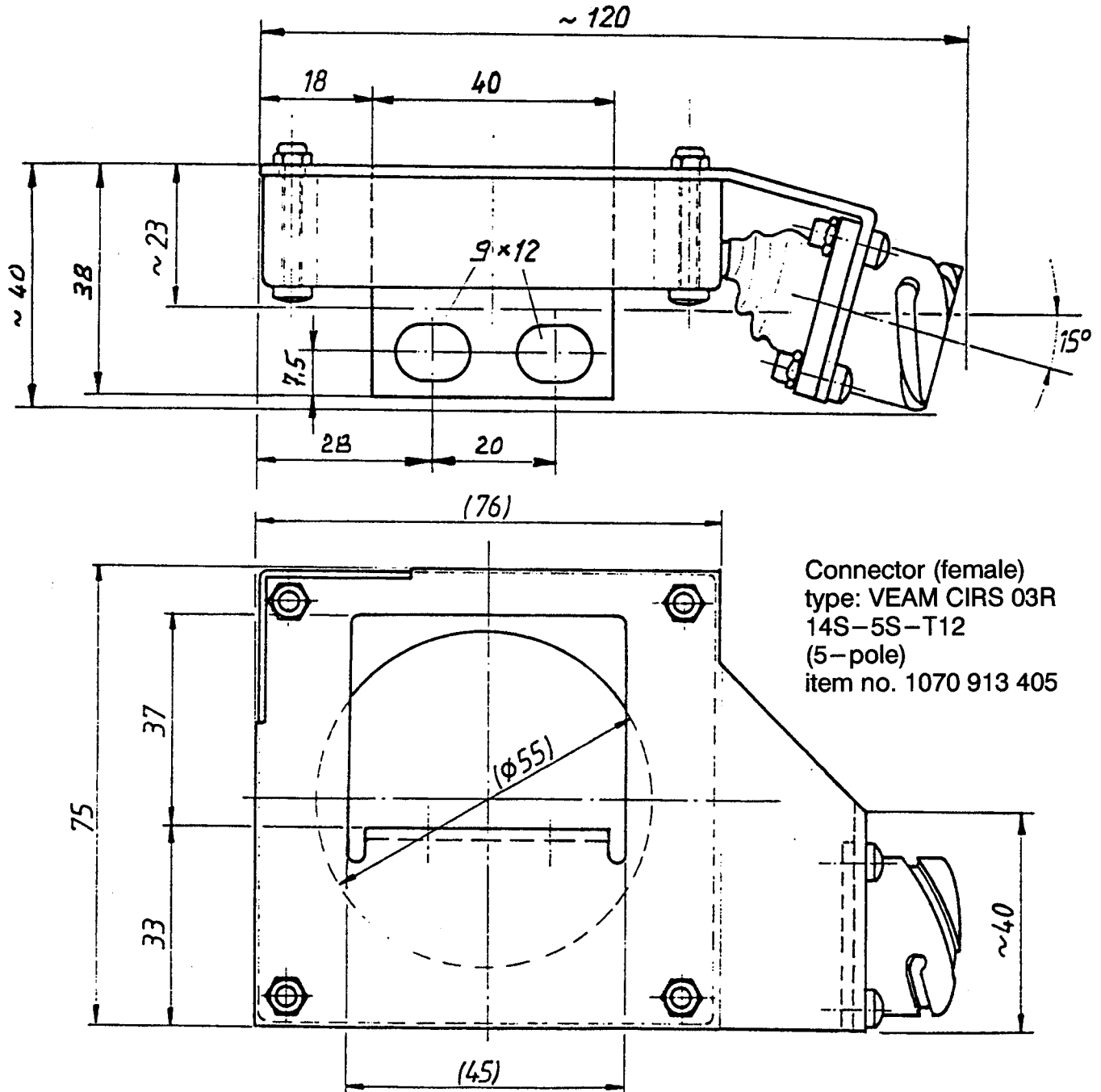
Item no. 1070 07287



This current sensor is designed for mounting to:
 Robot-C-gun, type CRM 1/30; CRM 1/35, make: NIMAK

Dimensioned drawing of SSR 81.05 current sensor

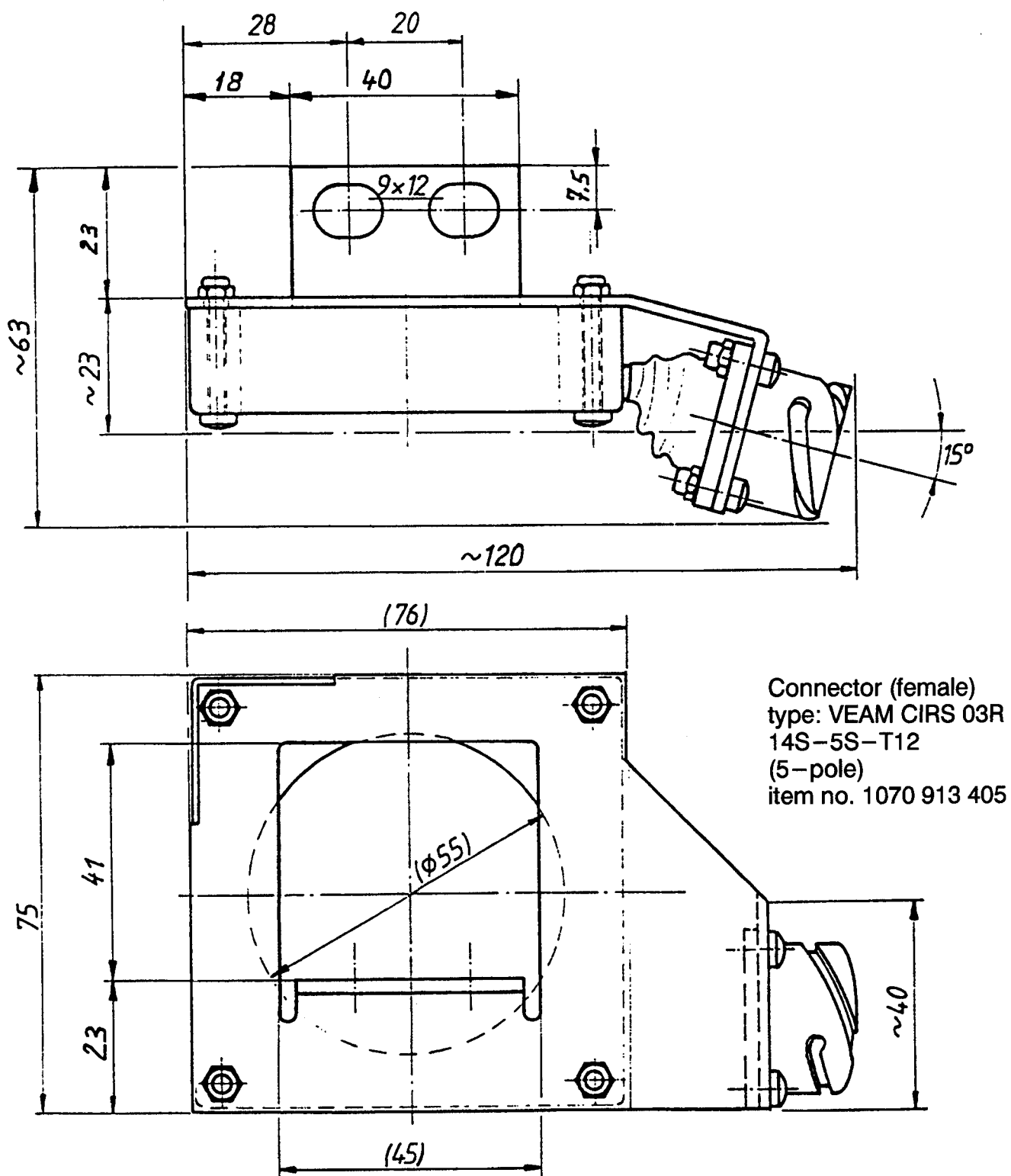
Item no. 1070 047 921



This current sensor is designed for mounting to:
Robot-C-gun, type CRN 6/25; make: NIMAK.

Dimensioned drawing of SSR 81.06 current sensor

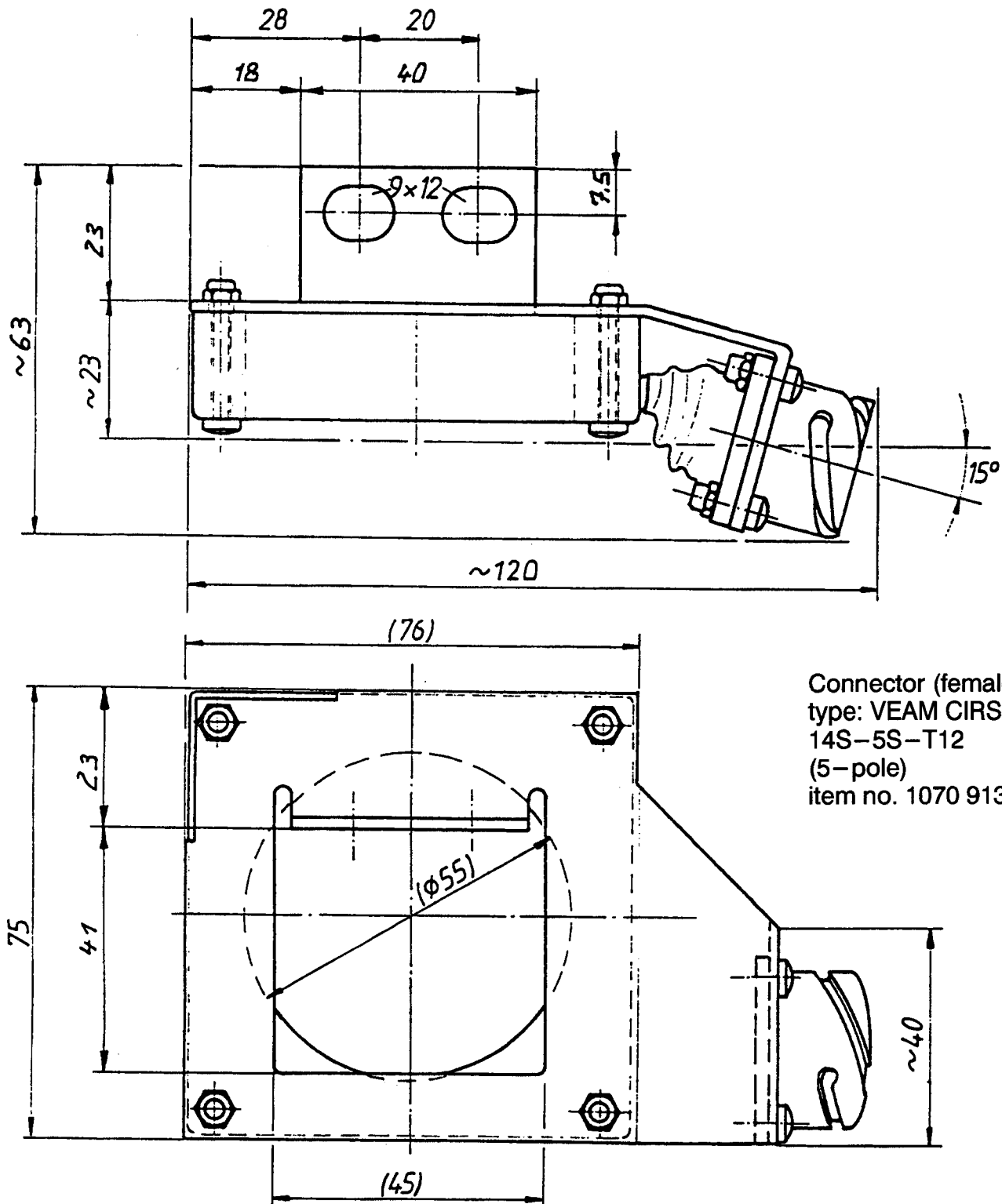
Item no. 1070 047 872



This current sensor is designed for mounting to:
 Robot-C-gun, type CRN 151/30, make: NIMAK.

Dimensioned drawing of SSR 81.07 current sensor

Item no. 1070 047 873

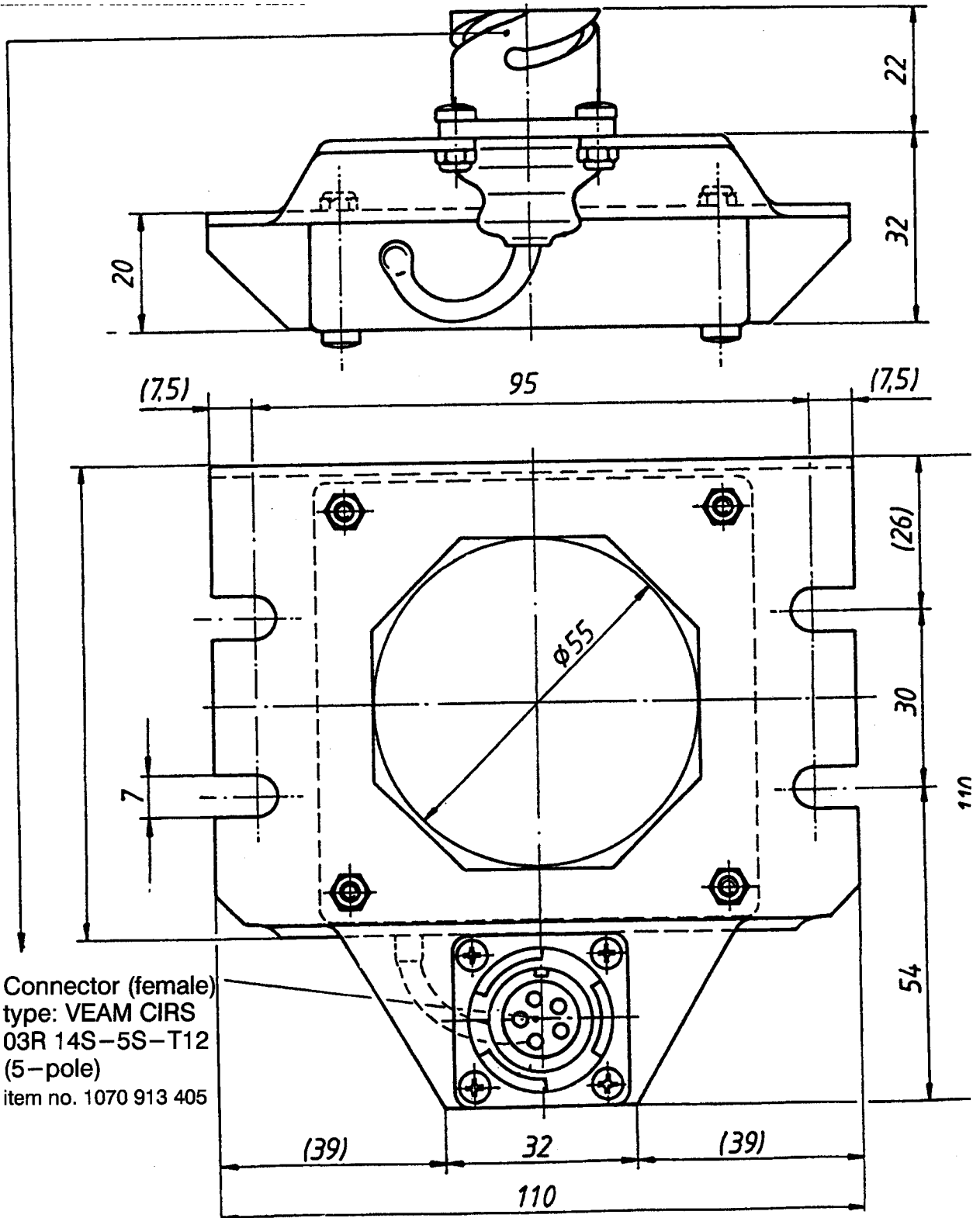


Connector (female)
type: VEAM CIRS 03R
14S-5S-T12
(5-pole)
item no. 1070 913 405

This current sensor is designed for mounting to:
Robot-C-gun, type CRN 161/30, make: NIMAK.

Dimensioned drawing of SSR 81.08 current sensor

Item no. 1070 048 383



This current sensor is designed for mounting to: Guns made by Bisiach & Carru.

