

## T 8392 EN

### Type 3710 Reversing Amplifier

#### Application

Reversing amplifier to operate a double-acting pneumatic actuator using a single-acting pneumatic or electropneumatic positioner or limit switch

The reversing amplifier is used in conjunction with single-acting electropneumatic positioners (Type 3725, Series 3730 and 3731) and is also suitable for use with device versions 37xx-x.x.05 and higher of Types 3766, 3767, and 3780 Positioners as well as Type 3768 Limit Switch.

The positioner is mounted either

- Without pressure gauge
- With one pressure gauge (when used with Type 4708-54 Supply Pressure Regulator)
- With two pressure gauges

#### Versions

**Standard version** without pressure gauge, including threaded connections for pressure gauges · Suitable for max. 6 bar supply pressure at a permissible ambient temperature from -25 to +80 °C, degree of protection IP 65 with filter check valve made of polyamide

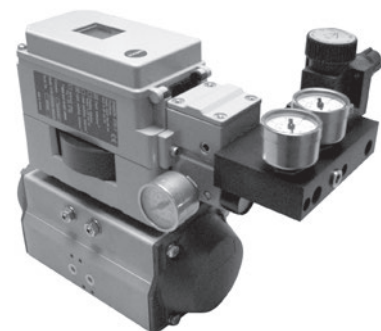
- **Type 3710** (Fig. 1) · Reversing amplifier with pressure gauge connections at the front and back

#### Further versions

- Type 3710 Reversing Amplifier with two pressure gauges (accessories) for  $Y_1$  and  $Y_2$  (see Fig. 1)
- With one pressure gauge for  $Y_2$  when used with Type 4708-54 Supply Pressure Regulator (see Fig. 2)
- Degree of protection IP 65 with filter check valve made of stainless steel
- Low-temperature versions for ambient temperatures from -50 to +80 °C and -60 to +80 °C
- Stainless steel version



**Fig. 1:** Type 3710 Reversing Amplifier without and with two pressure gauges



**Fig. 2:** Type 3710 Reversing Amplifier, Type 4708-54 Supply Pressure Regulator with Type 3730 Positioner mounted on a rotary actuator

## Principle of operation

The reversing amplifier allows double-acting pneumatic actuators to be operated using single-acting positioners or limit switches.

The positioner or limit switch creates an output signal pressure  $Y_1$ , to which the air pressure  $Y_2$  is added. The reversing amplifier uses the supply pressure  $Z$  as auxiliary power.

The following rule applies:

$$Y_1 + Y_2 = Z$$

### Example

$Y_1$ of the positioner	1 bar
Supply pressure $Z$	6 bar
Resulting $Y_2$	5 bar

### NOTICE

Risk of reversing amplifier damage due to incorrect mounting. Before attaching the pressure gauges, remove the corresponding hexagon socket screws from the reversing amplifier. Insert the seals supplied with the reversing amplifier into these holes.

### Note

For older versions (device versions lower than Type 37xx-x..x.05) of Types 3766, 3767, and 3780 Positioner and Type 3768 Limit Switch, a special connecting plate must be used for attachment (see accessories, Table 4).

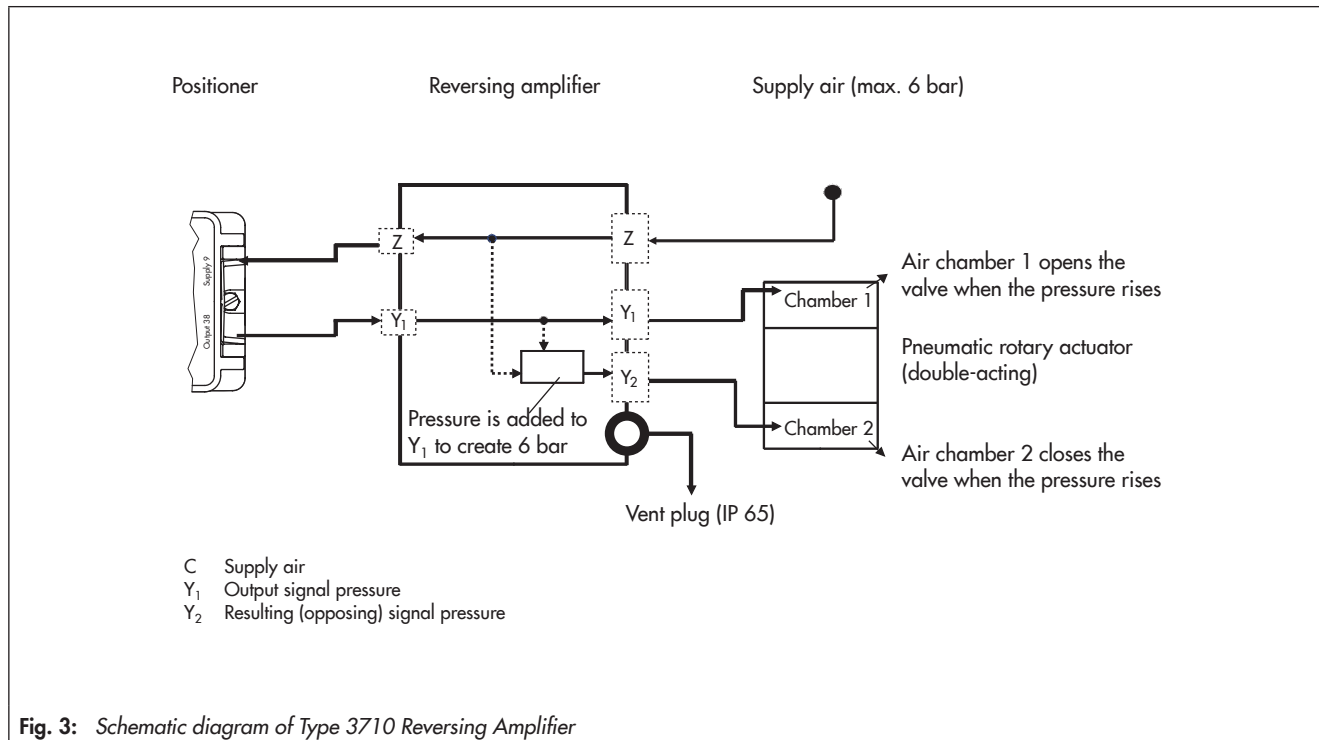


Table 1: Technical data

Type 3710 Reversing Amplifier		
Permissible supply pressure	6 bar	
$K_V$ coefficient	to fill the actuator with air	0.11
	to vent the actuator	0.12
Leakage	Z to $Y_2$	$\leq 20$ l/h when $Y_2 = 0$ bar and $Z = 6$ bar
	$Y_2$ to vent	$\leq 40$ l/h when $Y_1 = 0$ bar and $Y_2 = 6$ bar
Connections	$\frac{1}{4}$ -18 NPT · ISO 228/1-G $\frac{1}{4}$	
Degree of protection	IP 65	
Compliance	<b>ERC</b>	
Permissible ambient temperature		-25 to +80 °C (-13 to +176 °F)
	Low-temperature versions:	-50 to +80 °C (-58 to +176 °F)
		-60 to +80 °C (-76 to +176 °F)
Weight	0.5 kg · 1.2 kg for stainless steel version	

**Table 2: Materials**

<b>Type 3710 Reversing Amplifier</b>	
Housing and cover	Aluminum, powder coated, special version stainless steel 1.4404
Diaphragm plate	Aluminum, yellow chromated
Seat and plug	Brass
Diaphragms	Silicone rubber FVMQ · PTFE for low-temperature version

**Table 3: Pressure gauge (optional accessories)**

<b>Pressure gauge Ø 40 mm</b>	
Indicating range	0 to 6 bar · 0 to 90 psi
Connection	G 1/8
<b>Materials</b>	
Housing	Stainless steel, device free of copper
Measuring unit and connection	Stainless steel, free of copper · Nickel-plated brass connection

**Table 4: Accessories**

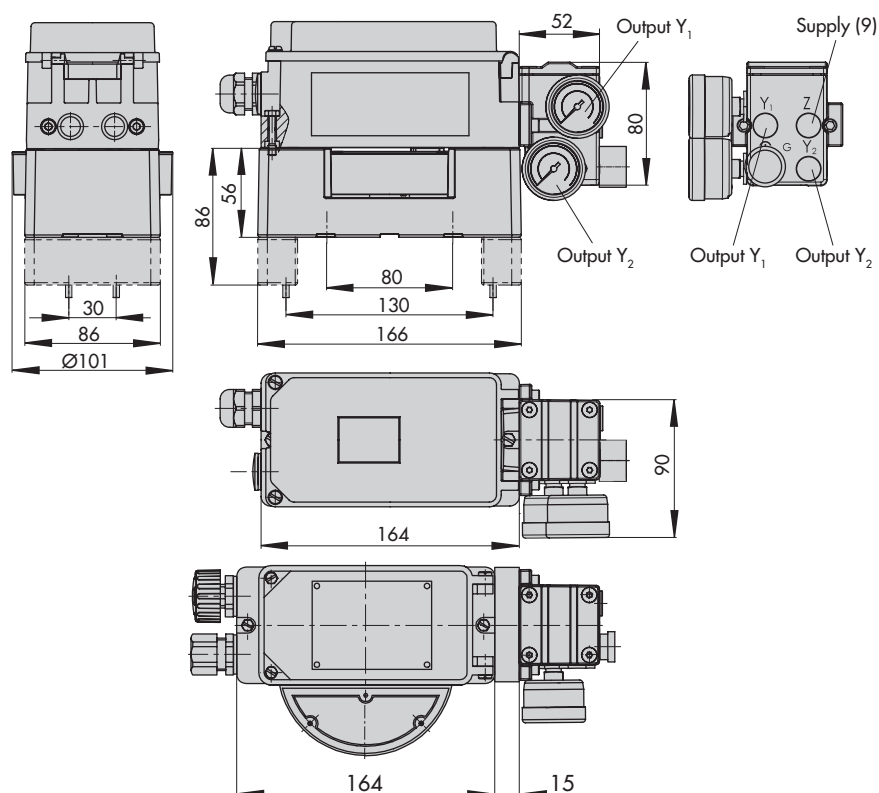
<b>Type 3710 Reversing Amplifier · Accessories</b>	<b>Ordering no.:</b>
<b>Accessories for attachment to Type 3725 Positioner</b>	
Connecting plate (including two self-tapping screws M5 x 50)	1402-0512
<b>Pressure gauge (order number applies to one piece)</b>	
Pressure gauge 0 to 6 bar/psi/kPa; completely made of stainless steel, including pressure compensation element	1402-1337
Pressure gauge 0 to 6 bar/psi/kPa; stainless steel/nickel-plated brass connection, including pressure compensation element	1402-1338
Seal with spacer <sup>1)</sup>	1099-4305
<b>Mounting kit for Type 4708-54 Supply Pressure Regulator with Type 3710 Reversing Amplifier</b>	
Bolts with special nuts	1400-7806
<b>Filter check valves</b>	
IP 66, 1.4404	1790-7253
NEMA 4, polyamide	1790-9645
NEMA 4, 1.4404	1790-9646
IP 65, polyamide	1790-7408
<b>Connecting plate for older models of Types 3766, 3767 and 3780 Positioner as well as Type 3768 Limit Switch (device index .05 or lower)</b>	
Connecting plate	1400-9621

<sup>1)</sup> Two pieces included in the delivered state

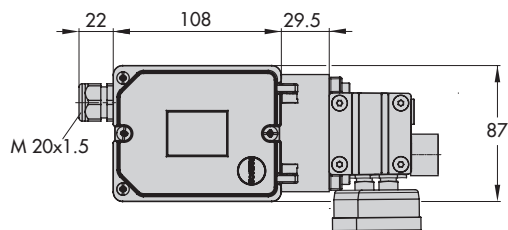
**Table 5: Article code**

<b>Reversing amplifier</b>	<b>Type 3710-</b>	<b>1</b>	<b>x</b>	<b>x</b>	<b>1</b>	<b>0</b>	<b>x</b>	<b>x</b>	<b>0</b>
Housing material									
Aluminum			0						
Stainless steel			1					3	
Connecting thread									
ISO 228/1-G 1/4					1				
1/4-18 NPT					2				
Ambient temperature range									
-25 to +80 °C							0		
-50 to +80 °C							1	3	
-60 to +80 °C							2	3	
Degree of protection									
IP 65, filter check valve made of polyamide									2
IP 65, filter check valve made of stainless steel 1.4305									3

**Type 3710 Reversing Amplifier with pressure gauges, mounted on Type 3730 Positioner**



**Type 3710 Reversing Amplifier with pressure gauges, mounted on Type 3725 Positioner**



**Fig. 4:** Dimensions in mm

**Ordering text**

Type 3710 Reversing Amplifier with threaded connections for pressure gauges

Can be used for Types 3725, 3730-x, and 3731-x Electropneumatic Positioners

or Type 3766 Pneumatic Positioner, Type 3767 Electropneumatic Positioner, Type 3780 Electropneumatic Positioner with HART® communication

or Type 3768 Limit Switch

All devices in version 37xx-x...x.05 or higher

**With** two pressure gauges for Y<sub>1</sub> and Y<sub>2</sub>

one pressure gauge for Y<sub>2</sub>

For attachment to Type 4708-54 Supply Pressure Regulator