

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

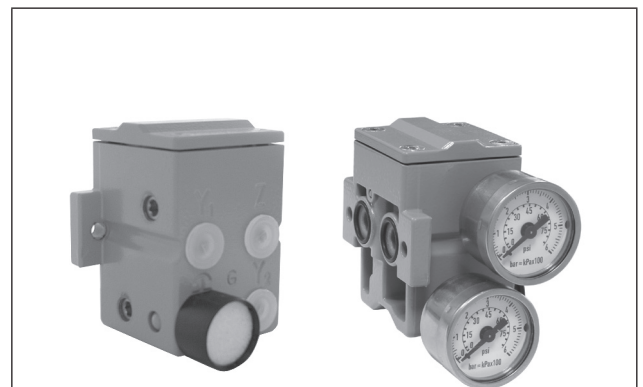


Fig. 1: Type 3710 Reversing Amplifier without and with two pressure gauges

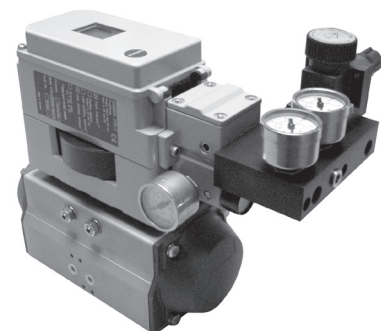


Fig. 2: Type 3710 Reversing Amplifier, Type 4708-54 Supply Pressure Regulator with Type 3730 Positioner mounted on a rotary actuator

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).

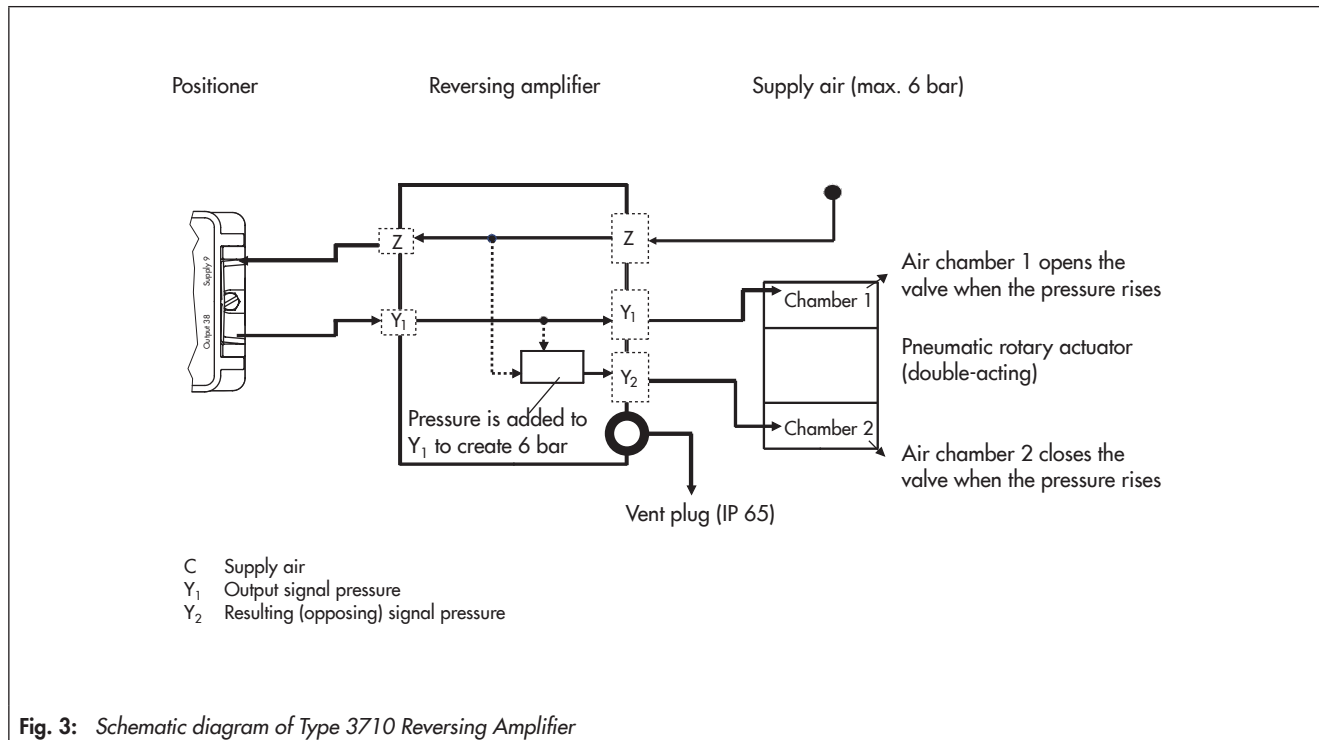


Table 1: Technical data

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	≤ 20 l/h when $Y_2 = 0$ bar and $Z = 6$ bar
	Y_2 to vent	≤ 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		CE
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

Type 3710 Reversing Amplifier	
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)

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

Table 4: Accessories

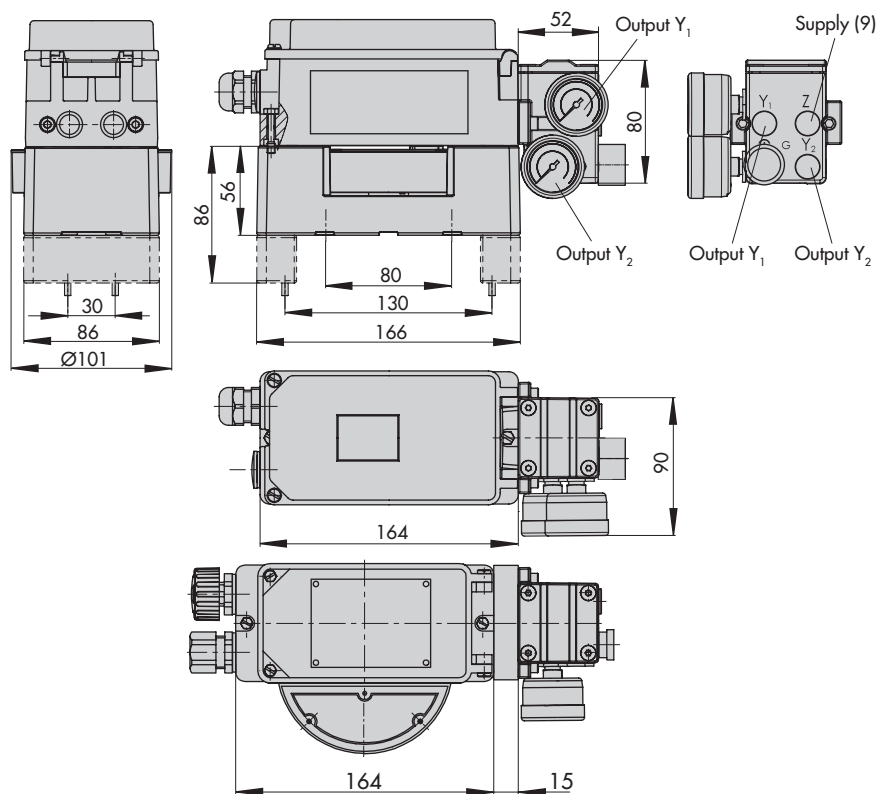
Type 3710 Reversing Amplifier · Accessories	Ordering no.:
Accessories for attachment to Type 3725 Positioner	
Connecting plate (including two self-tapping screws M5 x 50)	1402-0512
Pressure gauge (order number applies to one piece)	
Pressure gauge 0 to 6 bar/psi/kPa; completely made of stainless steel,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

¹⁾ Two pieces included in the delivered state

Table 5: Article code

Reversing amplifier	Type 3710-	1	x	x	1	0	x	x	0
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

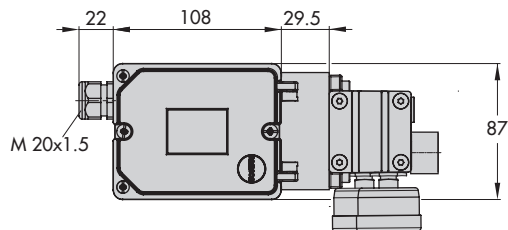


Fig. 4: Dimensions in mm

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 Y₁ and Y₂
one pressure gauge for Y₂

For attachment to Type 4708-54 Supply Pressure Regulator