

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 together with single-acting electropneumatic positioners of the Series 3730 and Series 3731. It is also suitable for use with Types 3766, 3767 and 3780 Positioners as well as Type 3768 Limit Switch in model versions 37xx-x..x.05 and higher.

It is attached to the positioner either

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

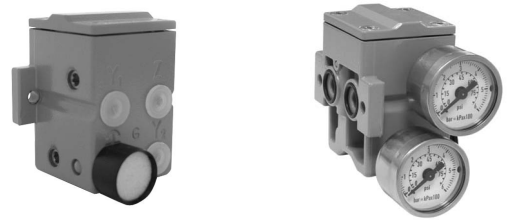
Versions

Normal version without pressure gauge with pressure gauge threaded connections · Suitable for a maximum supply pressure of 6 bar at a permissible ambient temperature range from -25 to 80 °C, degree of protection IP 65 with polyamide filter check valve

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

Other versions

- Type 3710 with two pressure gauges supplied as accessories for Y_1 and Y_2 (Fig. 2)
- With one pressure gauge for Y_2 when used with a Type 4708-54 Supply Pressure Regulator (Fig. 3)
- Degree of protection IP 65 with stainless steel filter check valve
- Low-temperature version for ambient temperatures from -50 to 80 °C
- Stainless steel version



Figs. 1 and 2 · Type 3710 Reversing Amplifier without pressure gauge and with two pressure gauges



Fig. 3 · Type 3710 Reversing Amplifier and Type 4708-54 Supply Pressure Regulator mounted on Type 3730 Positioner for a pneumatic piston actuator



Fig. 4 · Type 3710 Reversing Amplifier, Type 3730 Positioner and Type 3275 Piston Actuator

Principle of operation

The reversing amplifier allows double-acting pneumatic actuators to be operated using single-acting pneumatic/electropneumatic 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

Note: A special connection plate (see Accessories) must be used for older versions of Types 3766, 3767 and 3780 Positioners and Type 3768 Limit Switch (model versions lower than 37xx-x...x.05).

Note: Before attaching the pressure gauge, the grub screws must be removed from the reversing amplifier and the seals included in the scope of delivery inserted in place of these screws.

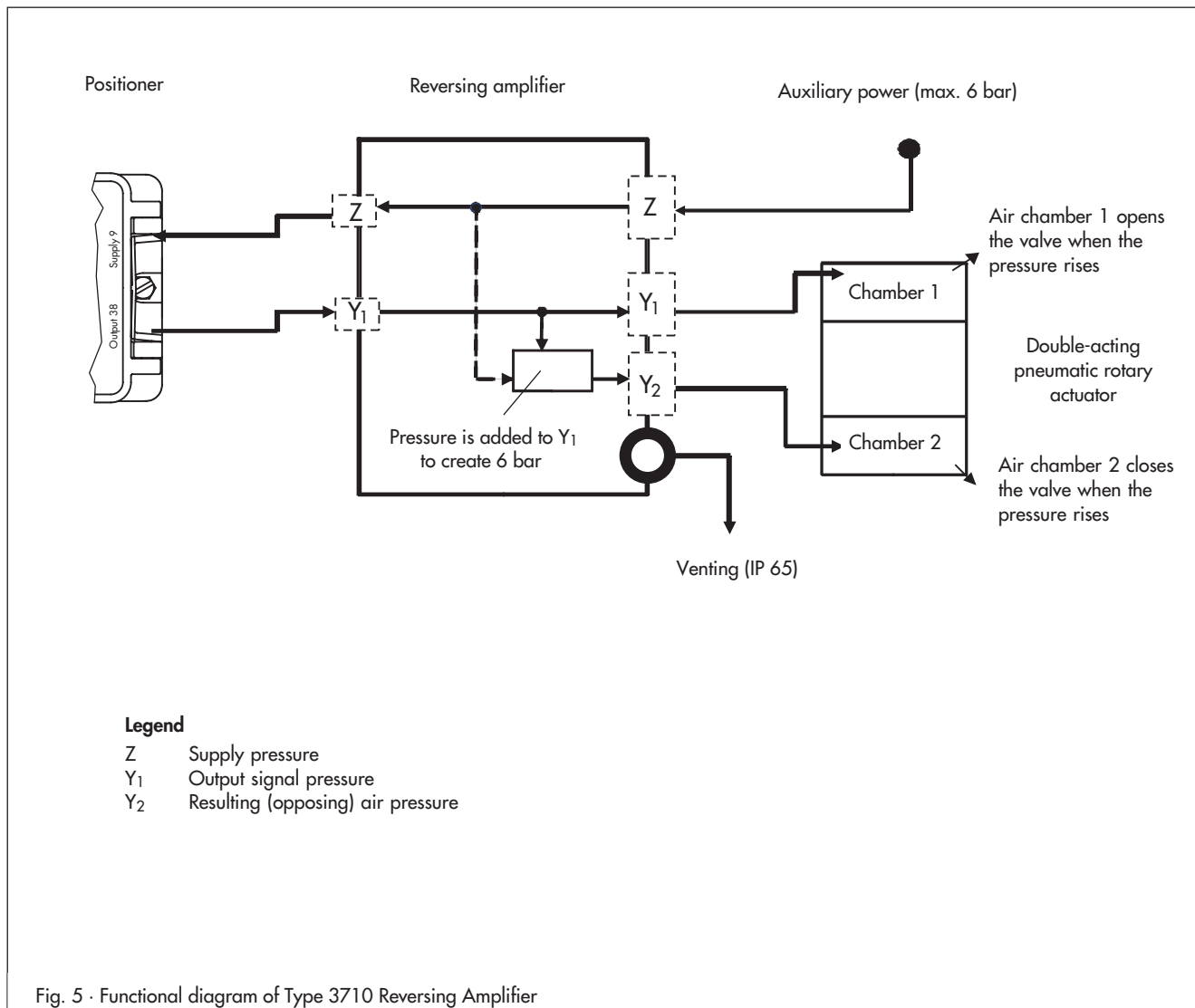


Table 1 · Technical data

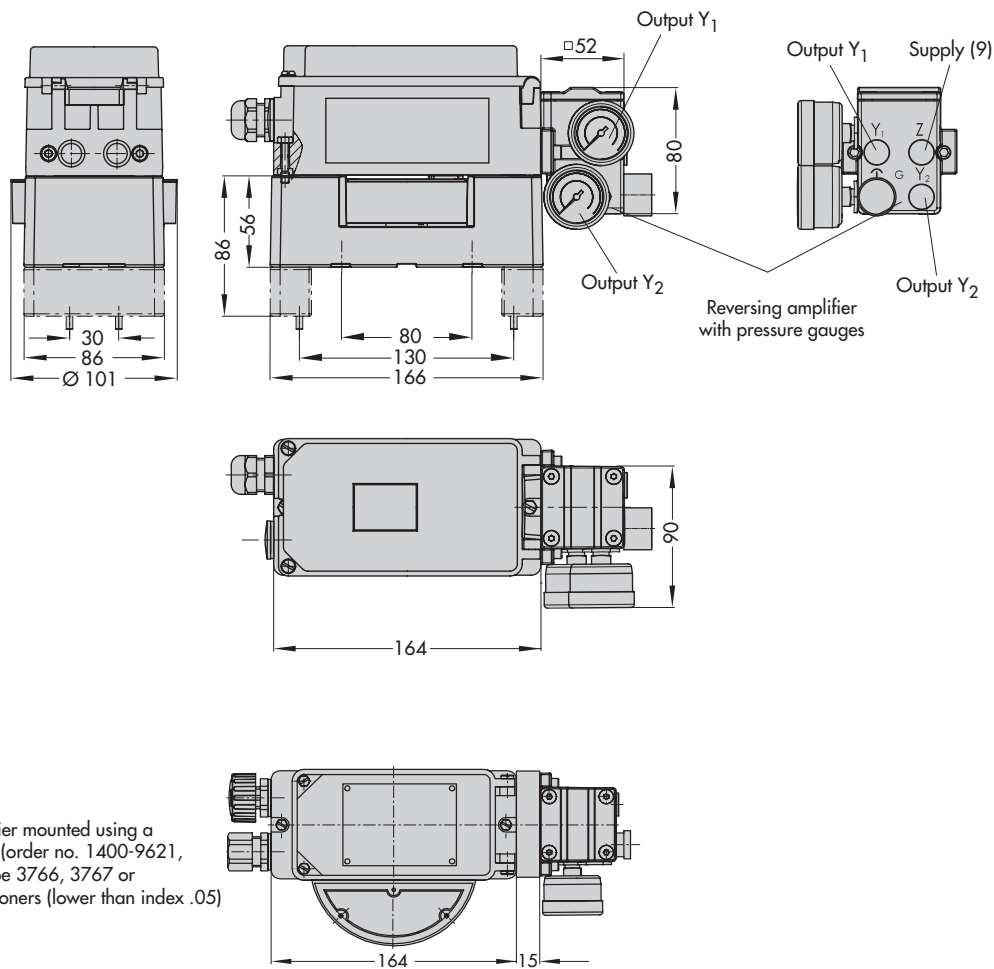
Type 3710 Reversing Amplifier		
Permissible supply pressure	6 bar	
K _v coefficient	Supply	0.11
	Vent	0.12
Leakage	Z to Y ₂	≤ 20 l/h when Y ₂ = 0 bar and Z = 6 bar
	Y ₂ to Vent	≤ 40 l/h when Y ₁ = 0 bar and Y ₂ = 6 bar
Connections	¼-18 NPT · ISO 228/1-G ¼	
Degree of protection	IP 65	
Permissible ambient temperature	-25 ... 80 °C · -13 ... 176 °F	
Low-temperature version	-50 ... 80 °C · -58 ... 176 °F	
Weight	0.5 kg · 1.2 kg for stainless steel version	
Option		
Pressure gauge Ø 40 mm		
Range of reading	0 to 6 bar · 0 to 90 psi	
Connection	G ⅛	

Table 2 · Materials

Type 3710 Reversing Amplifier	
Housing and cover	Aluminum, powder paint coated · Special version in stainless steel 1.4404
Diaphragm plate	Aluminum, yellow chromated
Seat and plug	Brass
Diaphragms	Silicone rubber FVMQ · PTFE for low-temperature version
Pressure gauge, optional	
Housing	Stainless steel, device free of copper
Measuring unit and connection	Stainless steel, free of copper · Nickel-plated brass connection

Table 3 · 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 ¼				1					
¼-18 NPT				2					
Ambient temperature range									
-25 ... 80 °C						0			
-50 ... 80 °C						1		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



Reversing amplifier mounted using a connection plate (order no. 1400-9621, 15 mm) onto Type 3766, 3767 or Type 3780 Positioners (lower than index .05)

Fig. 6 · Dimensional drawing of Type 3710 Reversing Amplifier, mounted on Type 3730 Positioner

Accessories	Order no.
Pressure gauge 0 to 6 bar/psi/kPa (one piece)	
Completely made of stainless steel	1400-9945
St. steel/nickel-plated brass connection	1400-9946
Seal with spacer	1099-4305
Filter check valve, stainless steel 1.4305	1790-7253
Connection plate for older versions of Types 3766, 3767 and 3780 Positioners as well as Type 3768 Limit Switch (lower than index .05)	1400-9621

Ordering text

Reversing amplifier with
Pressure gauge threaded connections Type 3710

Used for Types 3730-x, 3731-x Positioners
or model versions 37xx-x...x.05 or higher of
Type 3766 Pneumatic Positioner,
Type 3767 Electropneumatic Positioner,
Type 3780 Positioner with HART® communication
Type 3768 Limit Switch

With 2 pressure gauges for Y₁ and Y₂
With 1 pressure gauge for Y₂
for mounting on
Type 4708-54 Supply Pressure Regulator