

Hydraulic pilot control device with 2 pedals and damping system

RE 64554/01.11
Replaces: 05.09

1/6

Type 4 TH6NR, 5 TH6NR, 6 TH6NR

Series 2X



Table of contents

Content	Page
Features	1
About this datasheet.....	2
Further pilot control devices	2
Functional description, cross-section	3
Symbols, hydraulic	4
Technical data	5
Characteristic curves	5
Ordering details	6
Application guidelines.....	6
Installation guidelines	6
Unit dimensions	7

Features

Damping

- This damping system provides softer control of the travel function on compact tracked vehicles
- Abrupt manoeuvres are damped and return to neutral is oscillation-free

Compactness

- The monoblock design of the TH6NR integrates a large number of functions and reduces pipe work
- Available with 4, 5 or 6 actuation ports without alteration of the unit dimensions
- The use of a single fixing plate makes fitting on the machine easier
- More compact than 2 independent pedals side by side

Adaptability

- Various types of pedal can be easily fitted by screwing them on the supports (cams)
- Easier fitting/exchange of the bellows protecting the mechanical parts

Application

- Control of compact tracked vehicle translation actuated by foot or hand

About this datasheet

This manual describes functioning, technical data and ordering details of hydraulic pilot control device with pedal TH6NR. This manual is illustrated with hydraulic symbols, sections and unit dimensions drawings.

Related documents

Hydraulic pilot control device with pedal TH56NR is a system component.

- Also follow the instructions for the other system components.
- Also follow the instructions in the following manuals:
 - System documentation from the system manufacturer
 - Spare parts manual RDEF64554-E

Further pilot control devices

Hydraulic pilot control device

- Pilot control device type 2 TH6R, in pedal design (see RE 64551)
- Pilot control device type 2 TH6 (see RE 64552), in sandwich plate design
- Pilot control device types 4 TH6, 4 TH5 and 4 TH6N for arm rest installation (see RE 64555)
- Pilot control device type TH 7, for instrument panel installation or in pedal design (see RE 64558)

- Pilot control device with end position locking type 4/5 THF6 (see RE 64553) or type 4/6 THF5 (see RE 64557)

Electronic pilot control device

- Electronic remote control device type THE6 for direct controlling of electrical or electrohydraulic pilot operated actuators (see RE 29771)
- Electronic pilot control device type THE5 (see RE 29881)
- Electronic pilot control device type EJ (see RE 29896)

Functional description, cross-section

Hydraulic remote controls of type TH6NR operate on the basis of direct operated pressure reducing valves. Pilot control devices in double foot pedal design type TH6NR basically consist of an actuation stage composed of a foot holding piece in double design (1), 4 pressure reducing valves (11), 4 damping systems (12), 2 rubber boot (13) and a body (6).

Each pressure reducing valve comprises control spool (2), control spring (3), return spring (4) and plunger (5).

The damping system consists of a plunger (8), a jet (9) and a return spring (10).

At rest, the pedal is held in the neutral position by return springs (10).

When actuated, the foot pedal pushes the regulation plunger and the damping system plunger in.

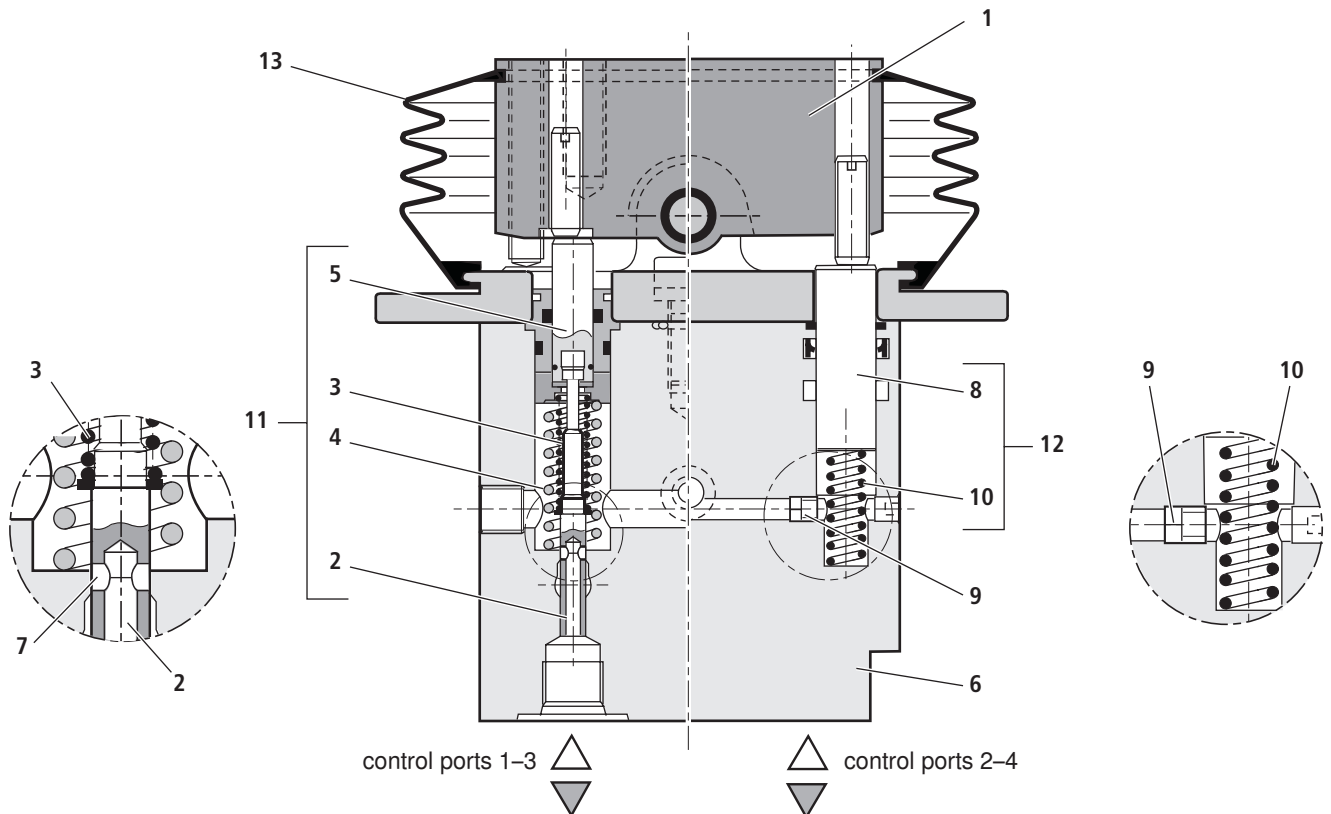
Fluid squeezed inside the damping room gets throttled in the jet, at a pressure depending on the actuation speed. (In the same way, when back to neutral the foot pedal pushed by the return spring will have to drive out the fluid caught in the

chamber. Return speed will be limited by the flow of this fluid through the jet).

Simultaneously, the plunger (5) is pressed against the return spring (4) and control spring (3). Control spring (3) initially moves control spool (2) downwards and closes the connection between the relevant port and the return line to tank port T.

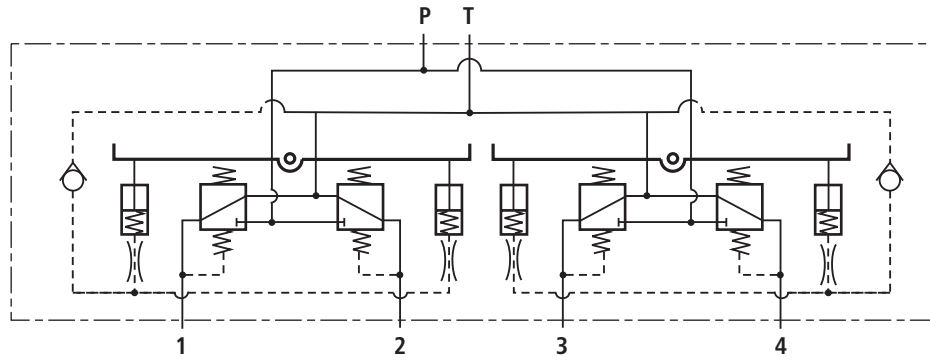
At the same time, the relevant port is connected to port P via bore (7). The control phase starts as soon as control spool (2) finds its balance between the force of control spring (3) and the force that results from the hydraulic pressure in the relevant port (port 1 or 2).

Due to the interaction of control spool (2) and control spring (3), the pressure in the relevant ports is proportional to the stroke of plunger (5) and hence to the position of pedal (1). This closed-loop pressure control in relation to the position of foot pedal (1) and the properties of control spring (3) allows a proportional hydraulic control of directional valves and high-response control valves for hydraulic pumps and motors.

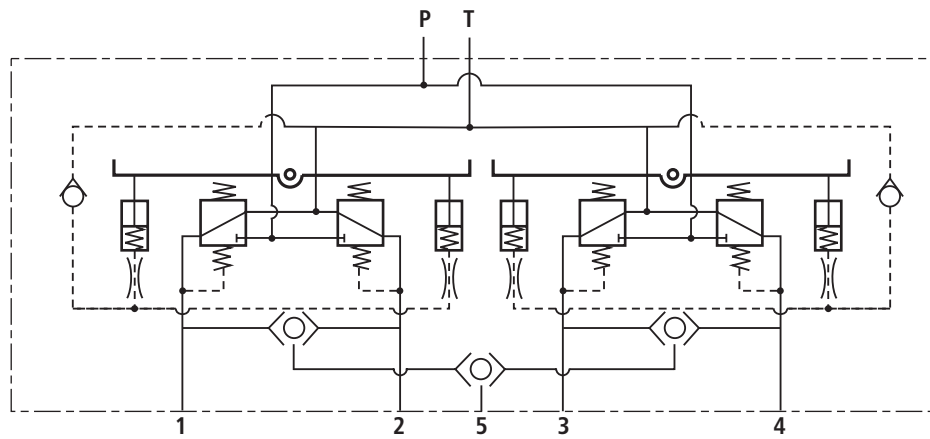


Symbols, hydraulic

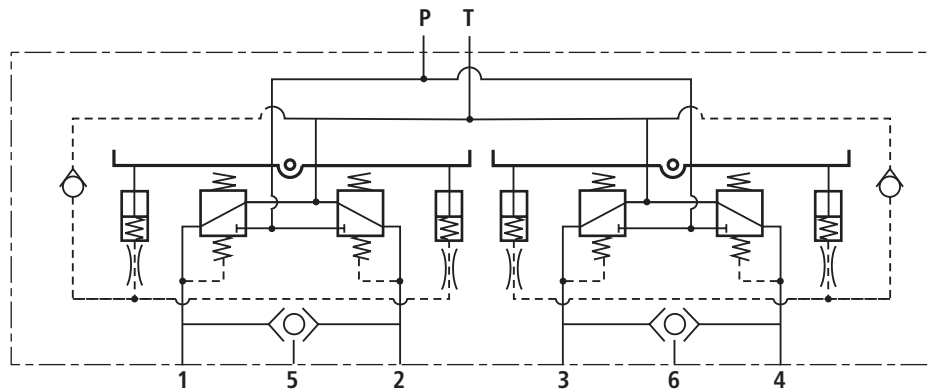
4 TH6NR



5 TH6NR



6 TH6NR



Technical data (for applications outside these parameters, please consult us)

Max. inlet pressure	bar	max. 50
Counter-pressure in port T	bar	min. 2
Pilot flow	l/min	max. 16
Hysteresis	bar	max. 1
Hydraulic fluid		Mineral oil (HL, HLP) according to DIN 51524 (suitable for NBR seals) Phosphate ester (HFD-R) on inquiry
Hydraulic fluid temperature range	°C	-20 to +80
Viscosity range	mm ² /s	10 to 380
Maximum permitted degree of contamination of the hydraulic fluid cleanliness class according to NAS 1638		Class 9, for this we recommend a filter with a minimum retention rate of $\beta_{10} \geq 75$
Max. permissible operating torque at foot pedal	Nm	200
Weight 4TH6NRZ	kg	approx. 7.8
Storage temperature range, ambient	°C	-40 to +60

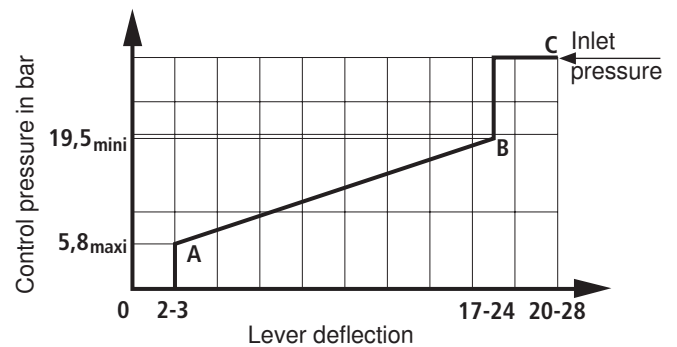
Characteristic curves: control ranges, actuation moments

Control curve identification no. 06

This curve is used for the pilot control of the type SM12, M1 control blocks.

No. of actuated actuators		1
Operating torque in Nm	A	6.7
	B	10.5
	C	12.2 ¹⁾

¹⁾ p = 35 bar

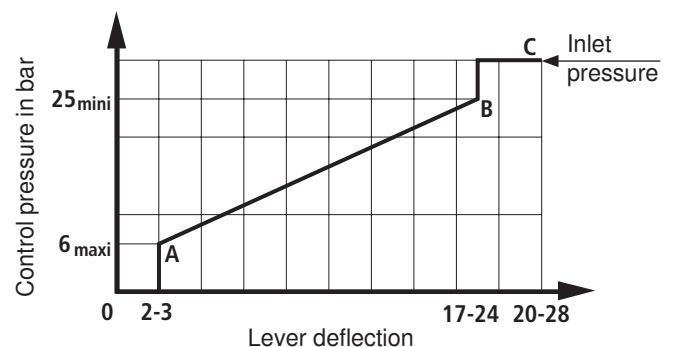


Control curve identification no. 70

This curve is used for the pilot control of the type SX14 control blocks.

No. of actuated actuators		1
Operating torque in Nm	A	7.1
	B	11.0
	C	12.2 ¹⁾

¹⁾ p = 35 bar



The actuation moments stated are theoretical values which do not take into account the rubber boot resistance.

Ordering details

		TH6NR	-2X/		*	
4 control ports	= 4					Further details in clear text
5 control ports	= 5					
6 control ports	= 6					
Hydraulic pilot control with 2 pedals and damping system						
Pedal version						Connection thread
Bent pedal	= C					01 = G 1/4; Pipe thread to ISO 228/1
Flat pedal	= P					05 = 9/16 UNF-2B to ISO 11926
Without pedal	= Z					Seals
Control curve 06	= 06					M= NBR seals for mineral oil (HL, HLP) to DIN 51524
Control curve 70	= 70					2X = Series 20 to 29

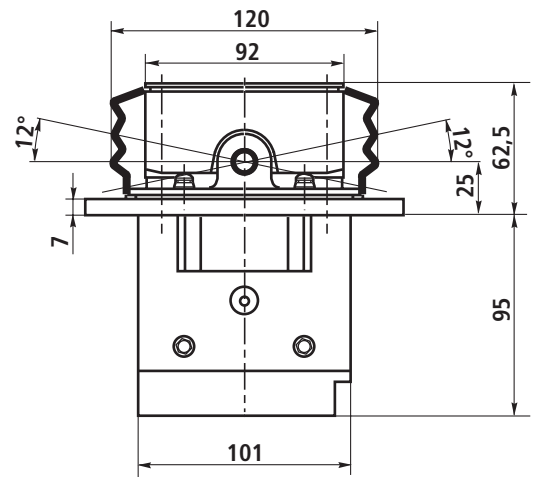
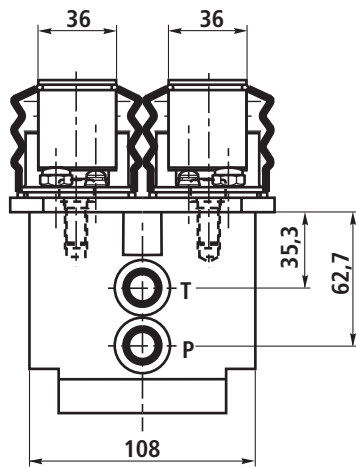
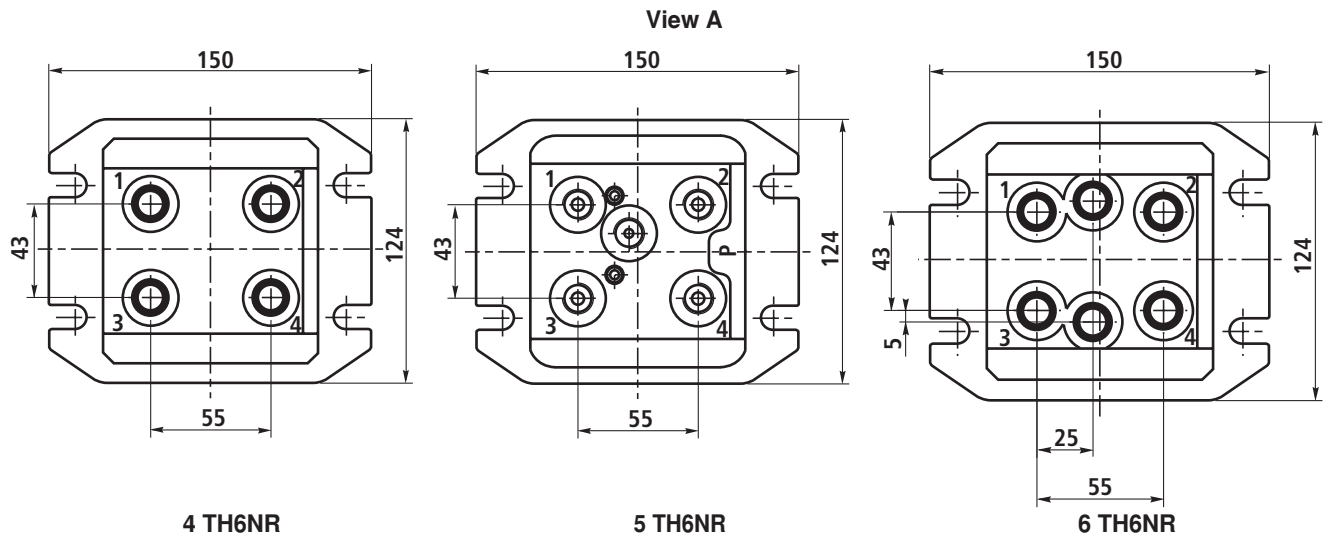
Application guidelines (these guidelines are not intended to be considered as complete)

- Do not use a high-pressure cleaner for cleaning.
- Some back pressure must be maintained at port T (minimum 2 bar) to make sure that damping chambers get filled.
- Back pressure in T helps damping system feeding and contributes to the quick bleeding that takes place once the component has been fitted on the vehicle.
After bleeding completion, the damping system will become fully efficient while being used.
- Do not operate the foot pedal of the component prior to its connection to the hydraulic circuit; otherwise an air intake will make it necessary to bleed the damping circuit.

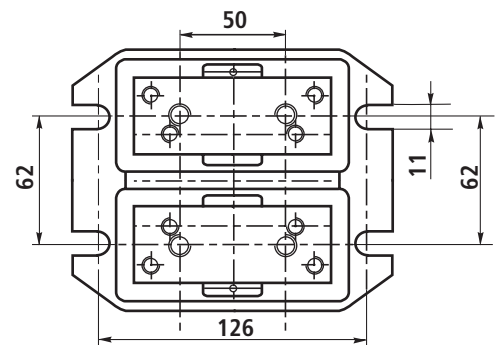
Installation guidelines

- Mounting flange area: Flatness = 0.5 mm
- Screw head dimensions = Ø16 mm
- Tightening torque for the flange fixing screws = max. 40 Nm
- Tightening torque for the pipe connections = max. 30 Nm
- Pedals fixation: screw M10 and penetration of screw in the switchplate thread: max. 15 mm
- Tightening torque for the pedal fixing screws = 30 Nm ±10%
- Installation hole: see page 6

Unit dimensions (dimensions in mm)



↑
View from side A



Ordering detail	Ports P, T, control ports 1, 2, 3 and 4
01	G 1/4 to ISO 228/1
05	9/16 UNF-2B to ISO 11926

Bosch Rexroth AG
Hydraulics
Zum Eisengießer 1
97816 Lohr am Main, Germany
Phone +49 (0) 93 52 / 18-0
Fax +49 (0) 93 52 / 18-23 58
info.brm-mc@boschrexroth.de
www.boschrexroth.com

Bosch Rexroth DSI S.A.S.
BP 101
91, bd Irène Joliot-Curie
69634 Vénissieux Cedex, France
Phone +33 (0) 4 78 78 52 52
Fax +33 (0) 4 78 78 52 26
www.boschrexroth.fr

© This document, as well as the data, specifications and other information set forth in it, are the exclusive property of Bosch Rexroth AG. It may not be reproduced or given to third parties without its consent. The data specified above only serve to describe the product. No statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not release the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and ageing.