

TA-SHUNT

Prefabricated control loop



TA

Pressurisation & Water Quality › Balancing & Control › Thermostatic Control

ENGINEERING ADVANTAGE

TA-SHUNT is a range of prefabricated control loops which meet most requirements. TA-SHUNT is suitable in heating and cooling systems such as radiator systems, floor heating systems, ventilation heat exchangers and heat re-cycling systems.

> **Δp valve option**

Delivers desired differential pressure ensuring accurate balancing and control.

> **Easy balancing and good compatibility**

Primary and secondary circuits return pipes are provided with TA's balancing valves.

> **Flexibility**

Control loop type can be made to customer specification.



> Technical description

Applications:

TA-SHUNT is made for the following types of control circuits:

1. Constant flow in primary and secondary circuit.
2. Variable flow in primary circuit and constant flow in secondary circuit.
4. Constant flow in primary and secondary circuit and where the control valve loads the secondary circuit, so-called Norwegian coupling.
5. Water-borne heat recycling with variable flow in the air inlet circuit and constant flow in the outlet air circuit.
7. Variable flow in primary circuit and constant flow in secondary circuit. Stabilization of the differential pressure over a control valve.

TA-SHUNT can be used in systems with up to 50% glycol content.

Pressure class:

PN 6

All components in the prefabricated control loop are classified to at least PN 6. If PN 10 is needed, please specify this when ordering.

Temperature:

Max media temperature: 95°C

Min media temperature: -10°C

Certain pumps require special versions.

Union dimension:

DN 20 - 100

Gate and ball valves:

DN 20-50: Globo H Ball valve

DN 65-100: TA 60 Gate valve

Balancing valves:

DN 10-50: STAD

DN 65-100: STAF

DN 15-100: STAP

Control valves:

2-way: V222, V241.

3-way: V321, V341.

Kvs control valves:

0,25 - 160 in the Renard series.

Pipe packages:

DN 20-50 according to ISO 65 (Carbon steel tubes suitable for screwing in accordance with ISO 7 / 1).

DN 65-100 pressure vessel pipes, seamless Stainless steel or copper pipe packages can be tendered on request.

Thermometers:

Graduated 0-120°C for heating. -40°C - +40°C for cooling / recycling.

Insulation:

Heating: Non-combustible mineral wool

Cooling: Armaflex condensate insulation

Protective box:

DN 20-100: Plastic-coated sheet metal box.

Circulation pump:

TA-SHUNT can be equipped with Grundfos, WILO, Flygt etc. pumps as standard.

Non-return valve:

Non-return valves are not included as standard, but must be ordered separately. The placement of the non-return valve is however shown in the schematic drawings over each principle coupling.

Mechanical construction

General

TA-SHUNT is made in all sizes from DN 20 to DN 100. TA SHUNT is available in five different alternatives of coupling. Each alternative can be delivered with different types of connection procedures.

Standard: Pipe connections on of TA Shunt.

Special: Other connection procedures.

Control loops up to DN 50 are connected by means of pipe threads. DN 65 and larger are connected by means of flanged joints.

NOTE! Mating flanges are supplied for flanged joints.

Control valves

The control loop is designed for use with Schneider Electric's (t.a.c.) control valves, but can also be ordered with other makes.

The specifications are found in the documentation provided by each make.

Control equipment and actuators for control valves are not included.

Balancing

Primary and secondary circuits return pipes are provided with TA Hydronics balancing valves, STAD up to DN 50 and STAF as from DN 65. The valves have measurement points, draining (STAD) and also function as shut-off valves. When used for balancing and controlling media flow, please refer to the separate catalogue for STAD, STAF.

To stabilize the differential pressure over a control valve, STAP/STAD(STAF) are used. See Principle coupling 7.

Shut-offs

Primary and secondary circuits inlet connections are provided with shut-off valves. For DN 20-50, TA-Shunt for heat are provided with ball valves. TA-Shunt for cooling are provided with geared ball valves.

DN 65-100 are provided with ball-type gate valves.

Measurement connections:

The prefabricated control loop is provided with measurement connections on the primary and secondary circuits inlet pipes, to permit measurement of available pressure, pressure drop and temperature in connected circuits.

Pump

TA-SHUNT is normally delivered with a circulation pump for the secondary circuit. The pump is installed in the supply pipe outside the box, but inside the shut-off valve. The location outside the box makes the pump easily accessible for service or repair, and the pump motor gets good cooling, which also ensures longer endurance.

Threaded pumps are supplied ready installed in the valve groups. Flanged pumps are not mounted when supplied, in order to avoid making the valve groups unnecessarily bulky

and heavy. Installation has been prepared by TA Hydronics, however, and is easy to do on site with the installation components provided.

TA-Shunt can also be supplied, prepared for pump installation, which means that the installation components accompany the pump. Finally, the control loops can be supplied without either pumps or preparation for pumps.

Insulation - box

TA-Shunt from DN 20 to DN 100 are insulated as standard with non-flammable mineral wool for heating systems and with Armaflex condensation insulation on TA-Shunt intended for refrigerant transmission systems.

External valves with couplings or flanges are not insulated.

The control loop is provided with a plastic-coated sheet metal box, which is easy to dismantle for inspection.

Mounting

A bracket for wall mounting is included as standard for all control loops. DN 65 and larger also have muffs underneath for support feet, if used. A floor mounting stand is available as an option, but the muffs for support legs are then omitted.

Type plate

A self-adhesive type plate is fixed to the front of the box. The type plate includes the following:

- Pos specifies the section of the installation which the shunt valve group serves
- Type gives the characteristic data of the TA-Shunt
- Year of manufacture
- Max pressure and temperature
- Pump type and data are specified for pumps delivered with the TA-Shunt
- Principle coupling is given, with a connection diagram

Document pocket

There is an A5-format document pocket on the rear of the TA-Shunt.

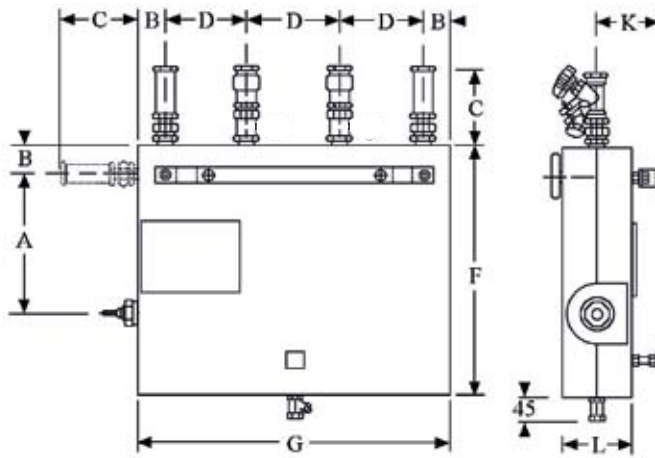
Thermometers

4 thermometers are installed in each prefabricated control loop. The thermometers for heating are graduated 0-120°C and for cold/heat recycling they are graduated -40°C - +40°C.

Draining

The control loops is equipped with a separate drain device, SAV with R1/2 for hose connection. If the control loop is installed so that the SAV is uppermost, it can be used for venting.

Dimension sketch



Prefabricated control loop, DN	A	B	C	D	F	G	K	L	Weight*** kg
20	150	35	145	120	310	430	90	100	9
25	170	45	170	170	415	600	100	110	17
32	170	45	190	170	415	600	100	110	20
40	220	55	200	220	530	770	120	140	30
50	220	55	230	220	530	770	120	140	37
65	230	75	350	230	640	840	165	200	90-130
80	280	80	380	280	780	1000	180	230	180-230
100	310*	110	420	310	900	1150	200	260	210-280
	400**								

Dimensions can vary, depending on version. If the relevant dimensions have to be verified, please contact closest sales office.

- *) 2-way control valve
- **) 3-way control valve
- ***) Excl pump

Valve table - control valves

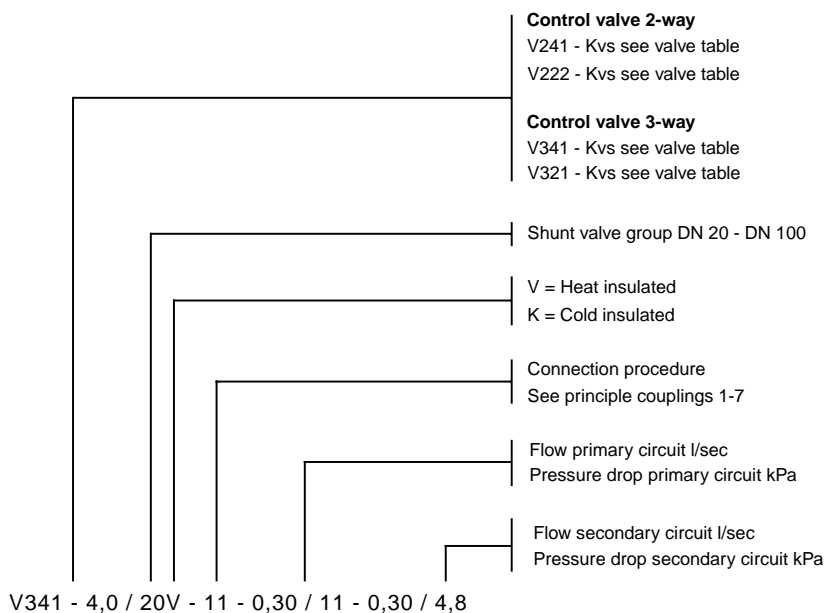
2-way valves

Designation	Characteristic	Kvs	DN	Article No	EAN
V241	EQM	0,25	15	54 241-115	7318793185105
"	"	0,40	15	54 241-215	7318793185303
"	"	0,63	15	54 241-315	7318793185402
"	"	1,0	15	54 241-415	7318793185501
"	"	1,6	15	54 241-515	7318793185600
"	"	2,5	15	54 241-615	7318793186102
"	"	4,0	15	54 241-715	7318793186201
"	"	6,3	20	54 241-820	7318793186409
"	"	10	25	54 241-725	7318793186300
"	"	16	32	54 241-532	7318793185808
"	"	25	40	54 241-540	7318793185907
"	"	38	50	54 241-550	7318793186003
V222	EQ%	63	65	54 222-665	7318793884602
"	"	100	80	54 222-780	7318793884701
"	"	160	100	54 222-990	7318793884800

3-way valves

Designation	Characteristic	Kvs	DN	Article No	EAN
V341	EQM-Komp	1,6	15	54 341-515	7318793190406
"	"	2,5	15	54 341-615	7318793190901
"	"	4,0	15	54 341-715	7318793191007
"	"	6,3	20	54 341-820	7318793191205
"	"	10	25	54 341-725	7318793191106
"	"	16	32	54 341-532	7318793190604
"	"	25	40	54 341-540	7318793190703
"	"	38	50	54 341-550	7318793190802
V321	EQ%-Komp	63	65	54 321-665	7318793884909
"	"	100	80	54 321-680	7318793885005
"	"	160	100	54 321-690	7318793885104

Coding template



Calculation example – Principle coupling 1-5

DN 20

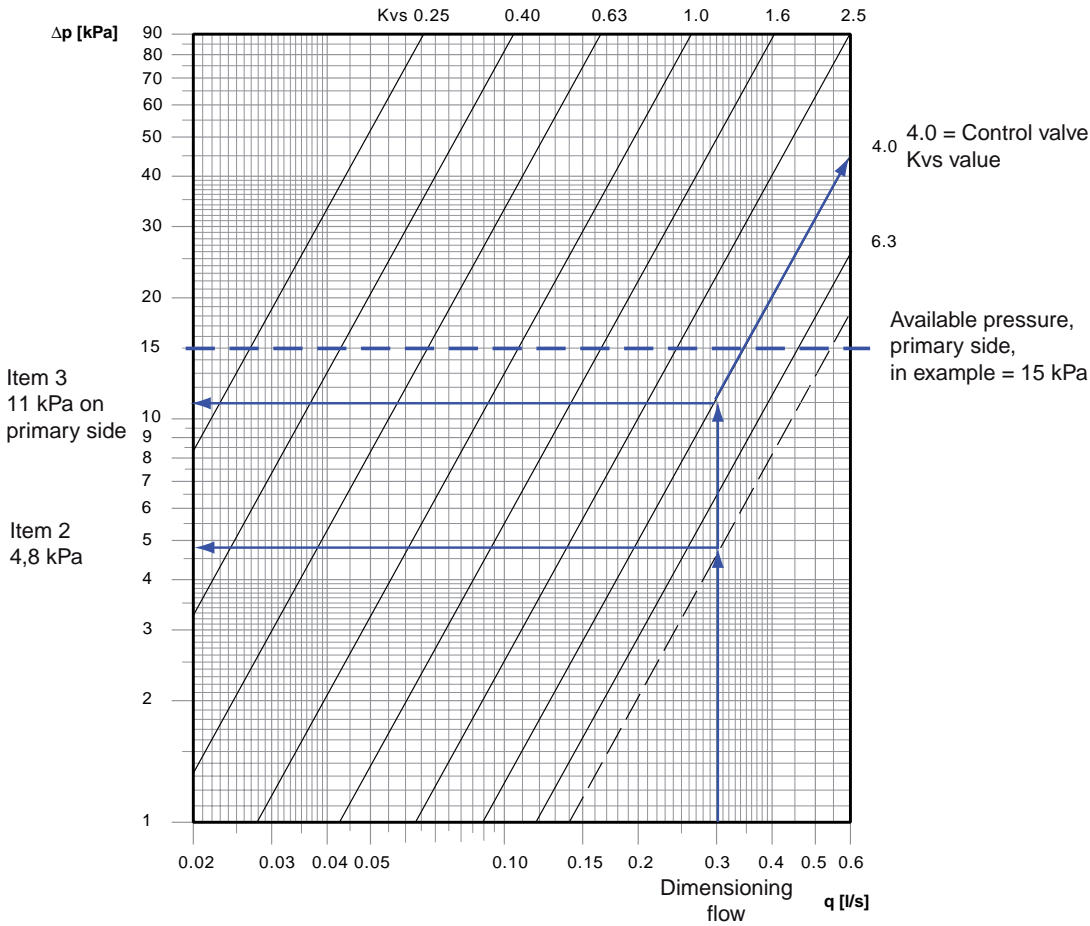
----- = Pressure drop with fully open balancing valve across

Secondary circuit

Principle coupling 1, 2 and 5.

Primary circuit

Principle coupling 4.



Background:

- A prefabricated control loop is to be connected to a heat exchanger with constant flow in primary and secondary circuits.
- The connection should be on the top of the TA-Shunt for both primary and secondary circuits, with the primary circuit on the left.
- The control loop shall be equipped with a circulation pump, 1x230V, in the secondary circuit.
- The control loop shall be mounted on a floor stand.

- Primary coupling:

- Available pressure 15 kPa
- Required flow 0.3 l/s

- Secondary coupling:

- Pressure drop across secondary side outside the control loop with required flow = 20 kPa
- Required flow 0.3 l/s

- Control valve: Schneider Electric 3-way

A proposed solution is given below, which moves forward one step at a time to derive coding which complies with the appearance of the coding templates. In the calculation example below, the unknown values are replaced by x, and are successively replaced by the derived values.

Coding: Vxxx-x.x/xxV-xx-0.30/xx-0.30/xx

Solution:

1. Start by choosing the principle coupling and version. Principle coupling 1, prefabricated control loop 11, complies with the background conditions.

Coding: Vxxx-x.x/xxV-11-0.30/xx-0.30/xx

2. Choose prefabricated control loop size. Flow 0.3 l/s gives size DN 20, please refer to the diagram. First read off the secondary pressure drop across the prefabricated control loop, with the balancing valve fully open, to 4.8 kPa.

Coding: Vxxx-x.x/20V-11-0.30/xx-0.30/4.8

3. Now select the control valve. The pressure drop shown by the slanting lines in the diagrams applies to the entire control loop primary side i.e. both the control and balancing valves. Both valves are fully open.

The Kv values beside the slanting lines specify the Kvs values you should select for the control valve. They do not refer to the Kv value for the line they are on.

Go up in the diagram to the relevant flow, 0.3 l/s. Select the Kvs value for the control valve which gives the next lower pressure drop in the prefabricated control loop compared with available pressure. A Kvs value of 4.0 for the control valve gives a total pressure drop of 11 kPa on the primary side. This pressure drop is deducted from available pressure, 15 kPa. In the valve table, you see that the valve is referred to as V341. This has a threaded spindle end and can be motorised by most makes of control.

The entire coding can now be written:

Coding: V341-4.0/20V-11-0.30/11-0.30/4.8

This coding will be marked on the type plate and contains the following information:

- Type of control valve
- Kvs value
- Union dimension
- Type of insulation
- Connection procedure
- Projected primary flow
- Min necessary available primary pressure
- Projected secondary flow
- Secondary pressure drop across the valve group

4. Select pump for secondary circuit. Pump data is available from each manufacturer's catalogue.

The lift height which the pump must provide is determined by pipe losses and equipment outside the TA-Shunt, plus the pressure drop across the secondary side of the TA-Shunt with the balancing valve fully open. In the example, this gives 20 kPa plus 4.8 kPa i.e. 24.8 kPa. The flow should be 0.3 l/s. For example, select Grundfos pump UPS 25-40 130 1x 230V. At 0.3 l/s, this gives 28 kPa.

Or select Wilo Star - RS 25/4 1x230V. At 0.3 l/s, this gives 30 kPa. The surplus pressure is controlled by the balancing valve on the secondary side.

5. Select any accessories, in this example one floor stand for DN 20.

6. Summarise the information:

1 prefabricated control loop, V341-4.0/20V-11-0.30/11-0.30/4.8

1 Grundfos pump, UPS25-40 130 1 x 230V, or Wilo Star - RS 25/4 1 x 230V

1 floor stand DN 20

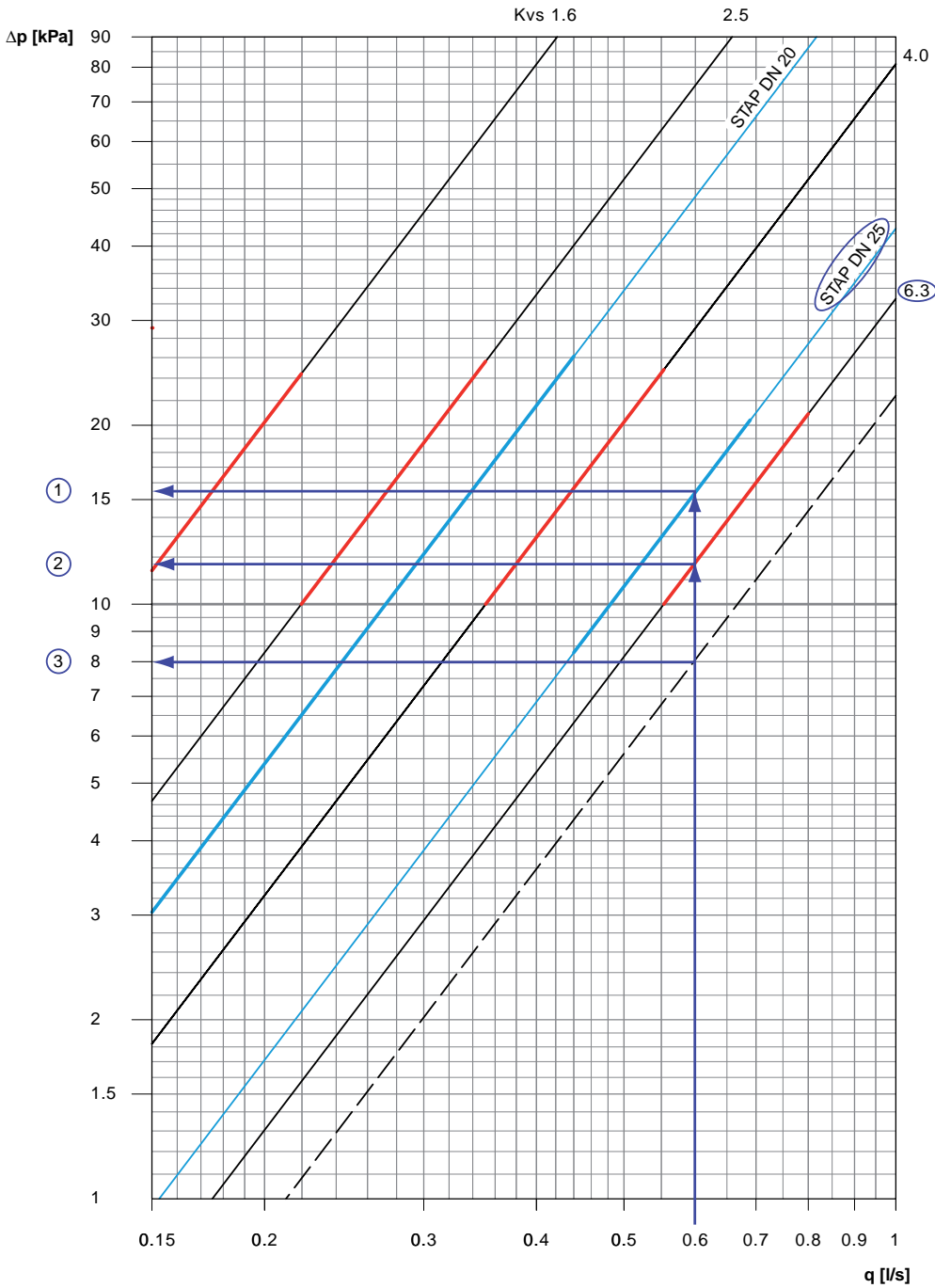
Calculation example – Principle coupling 7

DN 25

Principle coupling 7 with STAP+STAD on the primary side and STAD on the secondary side.

----- = Pressure drop with fully open balancing valve across secondary circuit.

The thicker part of the lines correspond to recommended working range.



Background:

- A prefabricated control loop is to be connected to a cooler with variable flow in primary circuit.
- The connection should be on the top of the prefabricated control loop for both primary and secondary circuits, with the primary circuit on the left.
- The TA-Shunt shall be delivered without a circulation pump.

- Secondary circuit:

Pressure drop across secondary side outside the TA-Shunt with required flow = 30 kPa

Temperature: Supply (t_{sc}) 6°C, return (t_r) 12°C.

Required flow 0.6 l/s

- Primary circuit:

Available pressure expects to vary between 35 and 110 kPa. The differential pressure over the control valve to be established with STAP differential pressure controller.

Temperature: Supply (t_p) 6°C, return (t_r) 12°C.

Calculated primary flow: 0.6 l/s

Control valve: Schneider Electric 2-way.

A proposed solution is given below, which moves forward one step at a time to derive coding which complies with the appearance of the coding templates. In the calculation example below, the unknown values are replaced by x, and are successively replaced by the derived values.

Coding: Vxxx-x.x/xxK-xx-0.60/xx-0.60/xx

Solution with optimal Kvs value of the control valve:

1. Start by choosing the principle coupling and version. Principle coupling 7, prefabricated control loop 71, complies with the background conditions.

Coding: Vxxx-x.x/xxK-71-0.60/xx-0.60/xx

2. Find a control valve with Δp bigger than 10 kPa for STAP DN 15-40 and bigger than 20 kPa for STAP DN 50-100, in the diagrams representing "Principle coupling 7". Control valve with Kvs 6.3 can be found in both shunt DN 25 and 32, select DN 25. Pressure drop in the control Δp_v are 11.7 kPa (see point 2 in the diagram). In the chart for control valves a Schneider Electric control valve V241 is to be found. The pressure drop (Δp_{STAP}) in a STAP DN 25 is 15.4 kPa at 0.6 l/s (see point 1 in the diagram).

3. Read the shunt pressure drop by the dotted line, which is fully open balancing valve. The pressure drop is 7.7 kPa by a secondary flow 0.6 l/s (see point 3 in the diagram). This pressure drop is valid for both primary and secondary STAD.

Coding: V241-6.3/25K-71-0.6/xx-0.6/7.7

$$\Delta p_L = \Delta p_v$$

$$\Delta H_{\min} = \Delta p_{STAP} + \Delta p_v + \Delta p_{STAD}$$

ΔH_{\min} become $15.4 + 11.7 + 7.7 = 34.8$ kPa and $\Delta p_L = 11.7$ kPa (see STAP instruction for adjustment of Δp_L).

The difference between ΔH 34.8 kPa and actual available differential pressure would be taken automatically in the differential controller STAP, which also stabilize the pressure across the control valve and improve the authority.

The entire coding can now be written: V241-6.3/25K-71-0.6/34.8-0.6/7.7

Support material

Calculation program

TA-Shunt: Simplifies the choice of pump, control valve and balancing valve for prefabricated control loops.

Manual

Manual no 1: Balancing of control circuits.

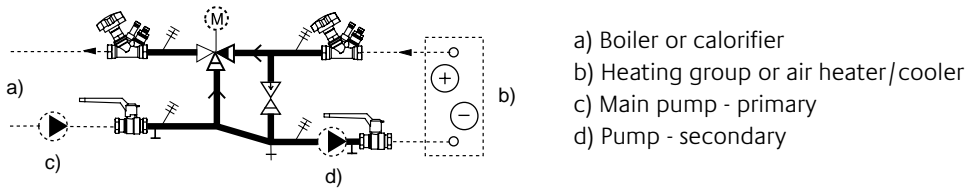
Principle coupling 1

Constant flow in primary and secondary circuit

TA-SHUNT connection procedure 11, 12, 13, 14, 15 and 16.

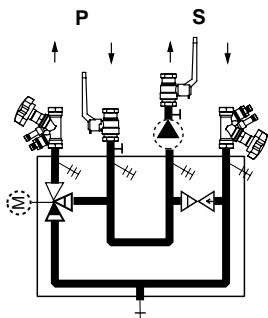
For **conventional heating and ventilation systems** with main pump and where you want high return temperature to the boiler. This circuit is also used in **cooling installations and floor heating installations**. The flow in the secondary circuit can be greater than, or equal to the flow in primary circuit. The control valve functions as a mixing valve on the primary circuit return.

For other connection procedures than those below - please contact closest sales office.



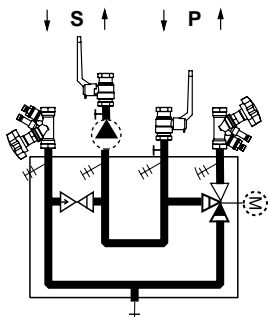
Standard products

Prefabricated control loop 11



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793116604	54 111-120	7318793150400	54 161-120
25	7318793116703	54 111-125	7318793150509	54 161-125
32	7318793116802	54 111-132	7318793150608	54 161-132
40	7318793116901	54 111-140	7318793150707	54 161-140
50	7318793117007	54 111-150	7318793150806	54 161-150
65	7318793117106	54 111-165	7318793150905	54 161-165
80	7318793117205	54 111-180	7318793151001	54 161-180
100	7318793117304	54 111-190	7318793151100	54 161-190

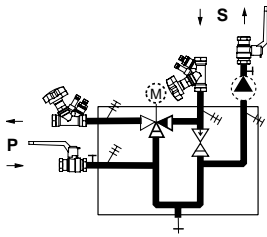
Prefabricated control loop 12



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793117403	54 111-220	7318793151209	54 161-220
25	7318793117502	54 111-225	7318793151308	54 161-225
32	7318793117601	54 111-232	7318793151407	54 161-232
40	7318793117700	54 111-240	7318793151506	54 161-240
50	7318793117809	54 111-250	7318793151605	54 161-250
65	7318793117908	54 111-265	7318793151704	54 161-265
80	7318793118004	54 111-280	7318793151803	54 161-280
100	7318793118103	54 111-290	7318793151902	54 161-290

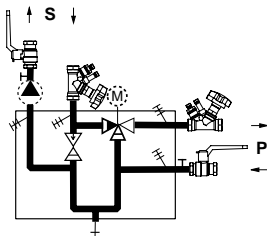
P = Primary side
 S = Secondary side

Special products



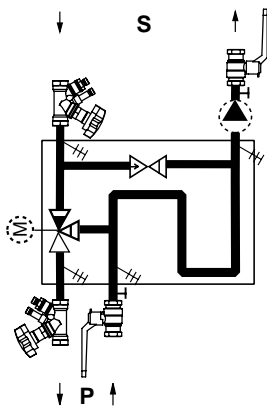
Prefabricated control loop 13

DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793118202	54 111-320	7318793152008	54 161-320
25	7318793118301	54 111-325	7318793152107	54 161-325
32	7318793118400	54 111-332	7318793152206	54 161-332
40	7318793118509	54 111-340	7318793152305	54 161-340
50	7318793118608	54 111-350	7318793152404	54 161-350
65	7318793118707	54 111-365	7318793152503	54 161-365
80	7318793118806	54 111-380	7318793152602	54 161-380
100	7318793118905	54 111-390	7318793152701	54 161-390



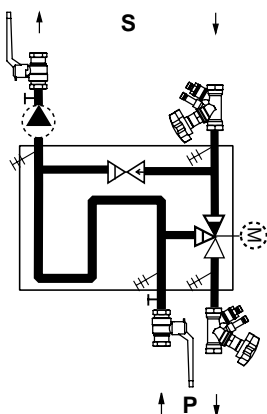
Prefabricated control loop 14

DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793119001	54 111-420	7318793152800	54 161-420
25	7318793119100	54 111-425	7318793152909	54 161-425
32	7318793119209	54 111-432	7318793153005	54 161-432
40	7318793119308	54 111-440	7318793153104	54 161-440
50	7318793119407	54 111-450	7318793153203	54 161-450
65	7318793119506	54 111-465	7318793153302	54 161-465
80	7318793119605	54 111-480	7318793153401	54 161-480
100	7318793119704	54 111-490	7318793153500	54 161-490



Prefabricated control loop 15

DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793119803	54 111-520	7318793153609	54 161-520
25	7318793119902	54 111-525	7318793153708	54 161-525
32	7318793120007	54 111-532	7318793153807	54 161-532
40	7318793120106	54 111-540	7318793153906	54 161-540
50	7318793120205	54 111-550	7318793154002	54 161-550
65	7318793120304	54 111-565	7318793154101	54 161-565
80	7318793120403	54 111-580	7318793154200	54 161-580
100	7318793120502	54 111-590	7318793154309	54 161-590



Prefabricated control loop 16

DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793120601	54 111-620	7318793154408	54 161-620
25	7318793120700	54 111-625	7318793154507	54 161-625
32	7318793120809	54 111-632	7318793154606	54 161-632
40	7318793120908	54 111-640	7318793154705	54 161-640
50	7318793121004	54 111-650	7318793154804	54 161-650
65	7318793121103	54 111-665	7318793154903	54 161-665
80	7318793121202	54 111-680	7318793155009	54 161-680
100	7318793121301	54 111-690	7318793155108	54 161-690

P = Primary side
S = Secondary side

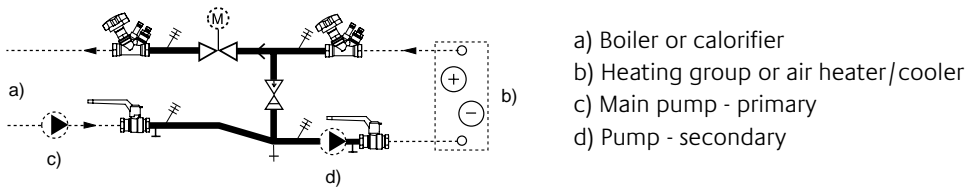
Principle coupling 2

Variable flow in primary circuit and constant flow in secondary circuit

TA-SHUNT connection procedure 21, 22, 23, 24, 25 and 26.

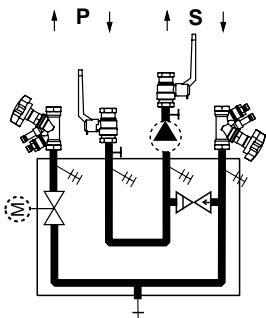
For installations connected to **district heating networks** or other installations where low return temperature is required. The flow in the secondary circuit can be greater than or equal to the flow in the primary circuit. A 2-way control valve is located in the primary side return pipe.

For other connection procedures than those below - please contact closest sales office.



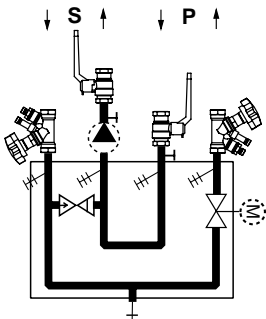
Standard products

Prefabricated control loop 21



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793121509	54 112-120	7318793155306	54 162-120
25	7318793121608	54 112-125	7318793155405	54 162-125
32	7318793121707	54 112-132	7318793155504	54 162-132
40	7318793121806	54 112-140	7318793155603	54 162-140
50	7318793121905	54 112-150	7318793155702	54 162-150
65	7318793122001	54 112-165	7318793155801	54 162-165
80	7318793122100	54 112-180	7318793155900	54 162-180
100	7318793122209	54 112-190	7318793156006	54 162-190

Prefabricated control loop 22

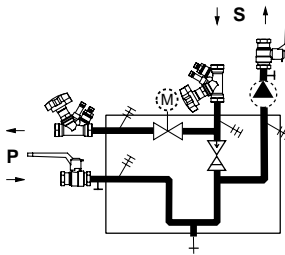


DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793122308	54 112-220	7318793156105	54 162-220
25	7318793122407	54 112-225	7318793156204	54 162-225
32	7318793122506	54 112-232	7318793156303	54 162-232
40	7318793122605	54 112-240	7318793156402	54 162-240
50	7318793122704	54 112-250	7318793156501	54 162-250
65	7318793122803	54 112-265	7318793156600	54 162-265
80	7318793122902	54 112-280	7318793156709	54 162-280
100	7318793123008	54 112-290	7318793156808	54 162-290

P = Primary side
S = Secondary side

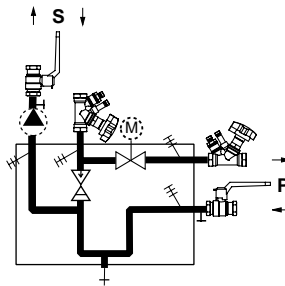
Special products

Prefabricated control loop 23



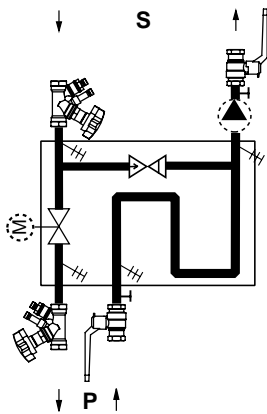
DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793123107	54 112-320	7318793156907	54 162-320
25	7318793123206	54 112-325	7318793157003	54 162-325
32	7318793123305	54 112-332	7318793157102	54 162-332
40	7318793123404	54 112-340	7318793157201	54 162-340
50	7318793123503	54 112-350	7318793157300	54 162-350
65	7318793123602	54 112-365	7318793157409	54 162-365
80	7318793123701	54 112-380	7318793157508	54 162-380
100	7318793123800	54 112-390	7318793157607	54 162-390

Prefabricated control loop 24



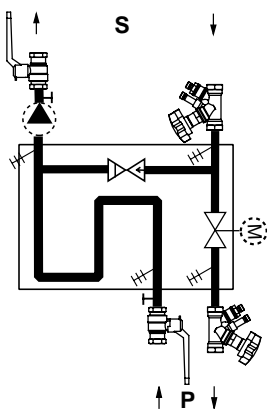
DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793123909	54 112-420	7318793157706	54 162-420
25	7318793124005	54 112-425	7318793157805	54 162-425
32	7318793124104	54 112-432	7318793157904	54 162-432
40	7318793124203	54 112-440	7318793158000	54 162-440
50	7318793124302	54 112-450	7318793158109	54 162-450
65	7318793124401	54 112-465	7318793158208	54 162-465
80	7318793124500	54 112-480	7318793158307	54 162-480
100	7318793124609	54 112-490	7318793158406	54 162-490

Prefabricated control loop 25



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793124708	54 112-520	7318793158505	54 162-520
25	7318793124807	54 112-525	7318793158604	54 162-525
32	7318793124906	54 112-532	7318793158703	54 162-532
40	7318793125002	54 112-540	7318793158802	54 162-540
50	7318793125101	54 112-550	7318793158901	54 162-550
65	7318793125200	54 112-565	7318793159007	54 162-565
80	7318793125309	54 112-580	7318793159106	54 162-580
100	7318793125408	54 112-590	7318793159205	54 162-590

Prefabricated control loop 26



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793125507	54 112-620	7318793159304	54 162-620
25	7318793125606	54 112-625	7318793159403	54 162-625
32	7318793125705	54 112-632	7318793159502	54 162-632
40	7318793125804	54 112-640	7318793159601	54 162-640
50	7318793125903	54 112-650	7318793159700	54 162-650
65	7318793126009	54 112-665	7318793159809	54 162-665
80	7318793126108	54 112-680	7318793159908	54 162-680
100	7318793126207	54 112-690	7318793160003	54 162-690

P = Primary side
S = Secondary side

Principle coupling 4

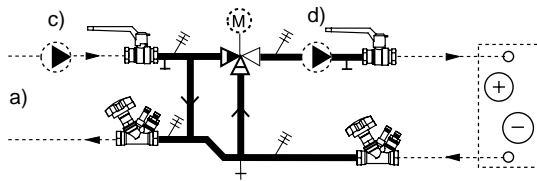
Constant flow in primary and secondary circuit (Norwegian coupling)

TA-SHUNT connection procedure 41, 42, 43, 44, 45 and 46.

Used for **shunting of heating or cooling water** in radiators, ventilation or cooling circuits etc. The connection is intended for systems with a main pump. The flow in the primary circuit can be greater than or equal to the flow in the secondary circuit. The control valve functions as a mixing valve in the secondary side inlet pipe.

NOTE! The following applies to dimensioning of the pressure drop diagrams: The primary side pressure drop applies to the secondary side. The secondary side pressure drop applies to the primary side.

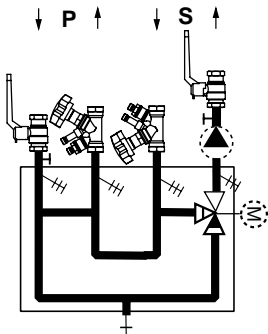
For other connection procedures than those below - please contact closest sales office.



- a) Boiler or calorifier
- b) Heating group or air heater / cooler
- c) Main pump - primary
- d) Pump - secondary

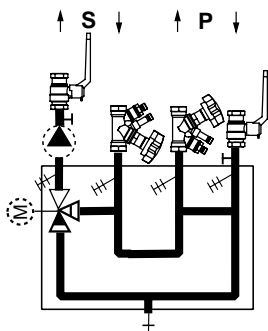
Standard products

Prefabricated control loop 41



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793131300	54 114-120	7318793165107	54 164-120
25	7318793131409	54 114-125	7318793165206	54 164-125
32	7318793131508	54 114-132	7318793165305	54 164-132
40	7318793131607	54 114-140	7318793165404	54 164-140
50	7318793131706	54 114-150	7318793165503	54 164-150
65	7318793131805	54 114-165	7318793165602	54 164-165
80	7318793131904	54 114-180	7318793165701	54 164-180
100	7318793132000	54 114-190	7318793165800	54 164-190

Prefabricated control loop 42

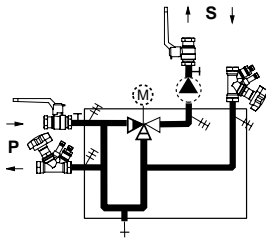


DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793132109	54 114-220	7318793165909	54 164-220
25	7318793132208	54 114-225	7318793166005	54 164-225
32	7318793132307	54 114-232	7318793166104	54 164-232
40	7318793132406	54 114-240	7318793166203	54 164-240
50	7318793132505	54 114-250	7318793166302	54 164-250
65	7318793132604	54 114-265	7318793166401	54 164-265
80	7318793132703	54 114-280	7318793166500	54 164-280
100	7318793132802	54 114-290	7318793166609	54 164-290

P = Primary side
S = Secondary side

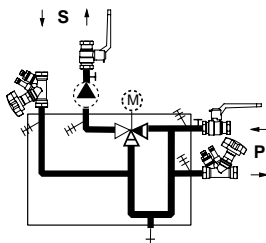
Special products

Prefabricated control loop 43



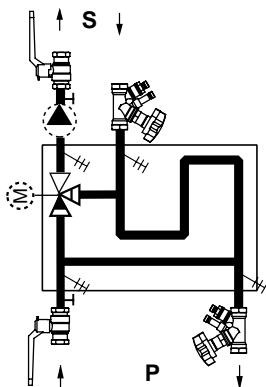
DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793132901	54 114-320	7318793166708	54 164-320
25	7318793133007	54 114-325	7318793166807	54 164-325
32	7318793133106	54 114-332	7318793166906	54 164-332
40	7318793133205	54 114-340	7318793167002	54 164-340
50	7318793133304	54 114-350	7318793167101	54 164-350
65	7318793133403	54 114-365	7318793167200	54 164-365
80	7318793133502	54 114-380	7318793167309	54 164-380
100	7318793133601	54 114-390	7318793167408	54 164-390

Prefabricated control loop 44



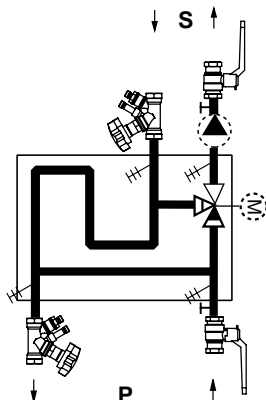
DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793133700	54 114-420	7318793167507	54 164-420
25	7318793133809	54 114-425	7318793167606	54 164-425
32	7318793133908	54 114-432	7318793167705	54 164-432
40	7318793134004	54 114-440	7318793167804	54 164-440
50	7318793134103	54 114-450	7318793167903	54 164-450
65	7318793134202	54 114-465	7318793168009	54 164-465
80	7318793134301	54 114-480	7318793168108	54 164-480
100	7318793134400	54 114-490	7318793168207	54 164-490

Prefabricated control loop 45



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793134509	54 114-520	7318793168306	54 164-520
25	7318793134608	54 114-525	7318793168405	54 164-525
32	7318793134707	54 114-532	7318793168504	54 164-532
40	7318793134806	54 114-540	7318793168603	54 164-540
50	7318793134905	54 114-550	7318793168702	54 164-550
65	7318793135001	54 114-565	7318793168801	54 164-565
80	7318793135100	54 114-580	7318793168900	54 164-580
100	7318793135209	54 114-590	7318793169006	54 164-590

Prefabricated control loop 46



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793135308	54 114-620	7318793169105	54 164-620
25	7318793135407	54 114-625	7318793169204	54 164-625
32	7318793135506	54 114-632	7318793169303	54 164-632
40	7318793135605	54 114-640	7318793169402	54 164-640
50	7318793135704	54 114-650	7318793169501	54 164-650
65	7318793135803	54 114-665	7318793169600	54 164-665
80	7318793135902	54 114-680	7318793169709	54 164-680
100	7318793136008	54 114-690	7318793169808	54 164-690

P = Primary side
S = Secondary side

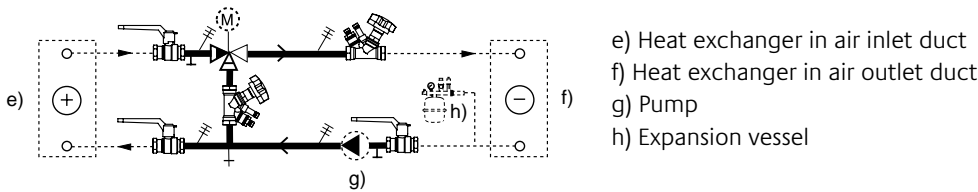
Principle coupling 5

Variable flow in air inlet circuit and constant flow in air outlet circuit

TA-SHUNT connection procedure 51, 52, 53, 54, 55 and 56.

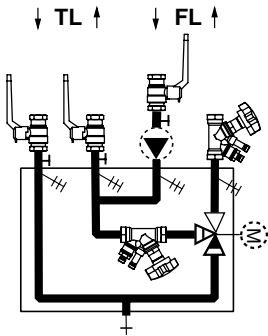
This prefabricated control loop is intended for **heat recycling systems**. The control valve functions as a mixing valve in the primary side inlet pipe. When you dimension the pump, the dimensioning flow should be used in both heat exchangers. The pump must be able to manage the pressure drop across both heat exchangers, the pipe system and the control valve.

For other connection procedures than those below - please contact closest sales office.



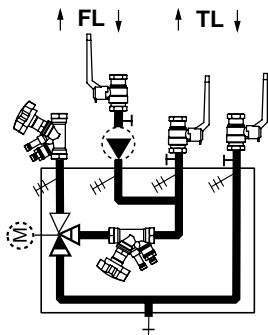
Standard products

Prefabricated control loop 51



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793136206	54 115-120	7318793170002	54 165-120
25	7318793136305	54 115-125	7318793170101	54 165-125
32	7318793136404	54 115-132	7318793170200	54 165-132
40	7318793136503	54 115-140	7318793170309	54 165-140
50	7318793136602	54 115-150	7318793170408	54 165-150
65	7318793136701	54 115-165	7318793170507	54 165-165
80	7318793136800	54 115-180	7318793170606	54 165-180
100	7318793136909	54 115-190	7318793170705	54 165-190

Prefabricated control loop 52

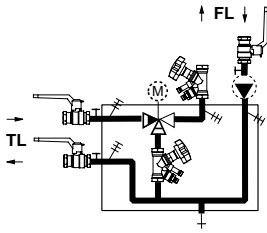


DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793137005	54 115-220	7318793170804	54 165-220
25	7318793137104	54 115-225	7318793170903	54 165-225
32	7318793137203	54 115-232	7318793171009	54 165-232
40	7318793137302	54 115-240	7318793171108	54 165-240
50	7318793137401	54 115-250	7318793171207	54 165-250
65	7318793137500	54 115-265	7318793171306	54 165-265
80	7318793137609	54 115-280	7318793171405	54 165-280
100	7318793137708	54 115-290	7318793171504	54 165-290

FL = Air outlet
 TL = Air inlet

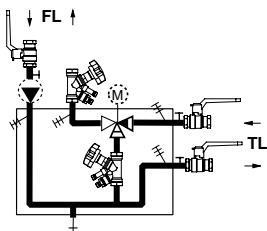
Special products

Prefabricated control loop 53



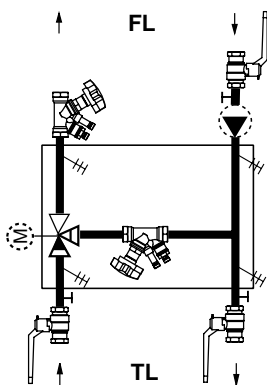
DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793137807	54 115-320	7318793171603	54 165-320
25	7318793137906	54 115-325	7318793171702	54 165-325
32	7318793138002	54 115-332	7318793171801	54 165-332
40	7318793138101	54 115-340	7318793171900	54 165-340
50	7318793138200	54 115-350	7318793172006	54 165-350
65	7318793138309	54 115-365	7318793172105	54 165-365
80	7318793138408	54 115-380	7318793172204	54 165-380
100	7318793138507	54 115-390	7318793172303	54 165-390

Prefabricated control loop 54



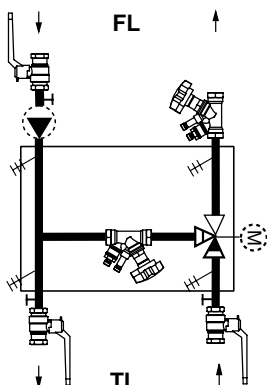
DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793138606	54 115-420	7318793172402	54 165-420
25	7318793138705	54 115-425	7318793172501	54 165-425
32	7318793138804	54 115-432	7318793172600	54 165-432
40	7318793138903	54 115-440	7318793172709	54 165-440
50	7318793139009	54 115-450	7318793172808	54 165-450
65	7318793139108	54 115-465	7318793172907	54 165-465
80	7318793139207	54 115-480	7318793173003	54 165-480
100	7318793139306	54 115-490	7318793173102	54 165-490

Prefabricated control loop 55



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793139405	54 115-520	7318793173201	54 165-520
25	7318793139504	54 115-525	7318793173300	54 165-525
32	7318793139603	54 115-532	7318793173409	54 165-532
40	7318793139702	54 115-540	7318793173508	54 165-540
50	7318793139801	54 115-550	7318793173607	54 165-550
65	7318793139900	54 115-565	7318793173706	54 165-565
80	7318793140005	54 115-580	7318793173805	54 165-580
100	7318793140104	54 115-590	7318793173904	54 165-590

Prefabricated control loop 56



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793140203	54 115-620	7318793174000	54 165-620
25	7318793140302	54 115-625	7318793174109	54 165-625
32	7318793140401	54 115-632	7318793174208	54 165-632
40	7318793140500	54 115-640	7318793174307	54 165-640
50	7318793140609	54 115-650	7318793174406	54 165-650
65	7318793140708	54 115-665	7318793174505	54 165-665
80	7318793140807	54 115-680	7318793174604	54 165-680
100	7318793140906	54 115-690	7318793174703	54 165-690

FL = Air outlet
TL = Air inlet

Principle coupling 7

Variable flow in primary circuit and constant flow in secondary circuit. Stabilization of the differential pressure over a control valve

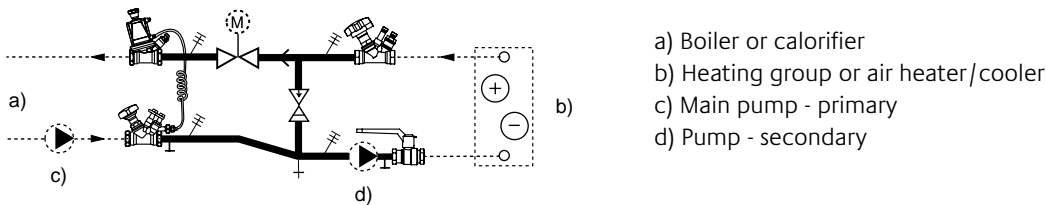
TA-SHUNT connection procedure 71, 72, 73, 74, 75 and 76.

For installations connected to **district heating networks** or other installations where low return temperature is required. The flow in the secondary circuit can be greater than or equal to the flow in the primary circuit. A 2-way control valve is located in the primary side return pipe.

Depending of the design of the plant, the available differential pressure across some circuits can vary significantly with the load. To keep the correct control valve characteristic in such a case, the differential pressure across the control valves can be kept almost constant by a STAP connected directly across each control valve. The control valve will not be over-sized and the authority is and will remain >0,7.

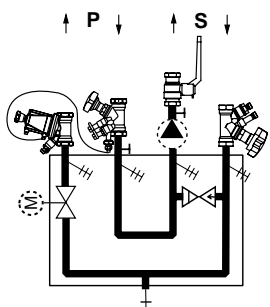
- STAP keeps Δp across the control valve stable, giving a valve authority >0,7.
- The Kvs of the control valve and the chosen Δp gives the design flow.
- STAD is used for flow measuring, shut-off and connection of the signal pipe.

For other connection procedures than those below - please contact closest sales office.



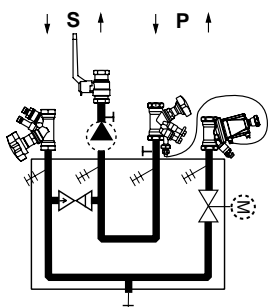
Standard products

Prefabricated control loop 71



DN	EAN	Article No Heating	EAN	Article No Cooling
20		54 117-120	7318793872104	54 167-120
25	7318793872807	54 117-125	7318793872005	54 167-125
32	7318793872708	54 117-132	7318793871909	54 167-132
40	7318793872609	54 117-140	7318793871800	54 167-140
50	7318793872500	54 117-150	7318793871701	54 167-150
65	7318793872401	54 117-165	7318793871602	54 167-165
80	7318793872302	54 117-180	7318793871503	54 167-180
100	7318793872203	54 117-190	7318793871404	54 167-190

Prefabricated control loop 72

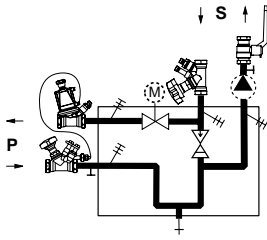


DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793874405	54 117-220	7318793873606	54 167-220
25	7318793874306	54 117-225	7318793873507	54 167-225
32	7318793874207	54 117-232	7318793873408	54 167-232
40	7318793874108	54 117-240	7318793873309	54 167-240
50	7318793874009	54 117-250	7318793873200	54 167-250
65	7318793873903	54 117-265	7318793873101	54 167-265
80	7318793873804	54 117-280	7318793873002	54 167-280
100	7318793873705	54 117-290	7318793872906	54 167-290

P = Primary side
 S = Secondary side

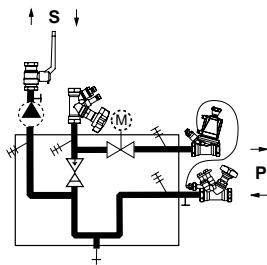
Special products

Prefabricated control loop 73



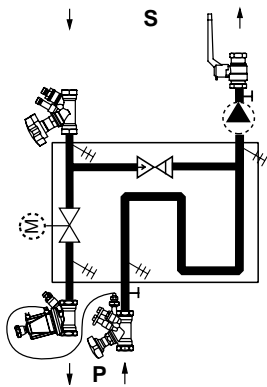
DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793876003	54 117-320	7318793875204	54 167-320
25	7318793875907	54 117-325	7318793875105	54 167-325
32	7318793875808	54 117-332	7318793875006	54 167-332
40	7318793875709	54 117-340	7318793874900	54 167-340
50	7318793875600	54 117-350	7318793874801	54 167-350
65	7318793875501	54 117-365	7318793874702	54 167-365
80	7318793875402	54 117-380	7318793874603	54 167-380
100	7318793875303	54 117-390	7318793874504	54 167-390

Prefabricated control loop 74



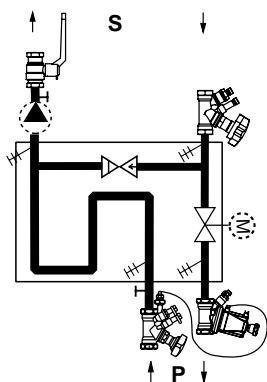
DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793877604	54 117-420	7318793876805	54 167-420
25	7318793877505	54 117-425	7318793876706	54 167-425
32	7318793877406	54 117-432	7318793876607	54 167-432
40	7318793877307	54 117-440	7318793876508	54 167-440
50	7318793877208	54 117-450	7318793876409	54 167-450
65	7318793877109	54 117-465	7318793876300	54 167-465
80	7318793877000	54 117-480	7318793876201	54 167-480
100	7318793876904	54 117-490	7318793876102	54 167-490

Prefabricated control loop 75



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793879202	54 117-520	7318793878403	54 167-520
25	7318793879103	54 117-525	7318793878304	54 167-525
32	7318793879004	54 117-532	7318793878205	54 167-532
40	7318793878908	54 117-540	7318793878106	54 167-540
50	7318793878809	54 117-550	7318793878007	54 167-550
65	7318793878700	54 117-565	7318793877901	54 167-565
80	7318793878601	54 117-580	7318793877802	54 167-580
100	7318793878502	54 117-590	7318793877703	54 167-590

Prefabricated control loop 76



DN	EAN	Article No Heating	EAN	Article No Cooling
20	7318793880802	54 117-620	7318793880000	54 167-620
25	7318793880703	54 117-625	7318793879905	54 167-625
32	7318793880604	54 117-632	7318793879806	54 167-632
40	7318793880505	54 117-640	7318793879707	54 167-640
50	7318793880406	54 117-650	7318793879608	54 167-650
65	7318793880307	54 117-665	7318793879509	54 167-665
80	7318793880208	54 117-680	7318793879400	54 167-680
100	7318793880109	54 117-690	7318793879301	54 167-690

P = Primary side
S = Secondary side

Diagram DN 20: Principle coupling 1-5

----- = Pressure drop with fully open balancing valve across

Secondary circuit

Principle coupling 1, 2 and 5.

Primary circuit

Principle coupling 3, 4 and 6.

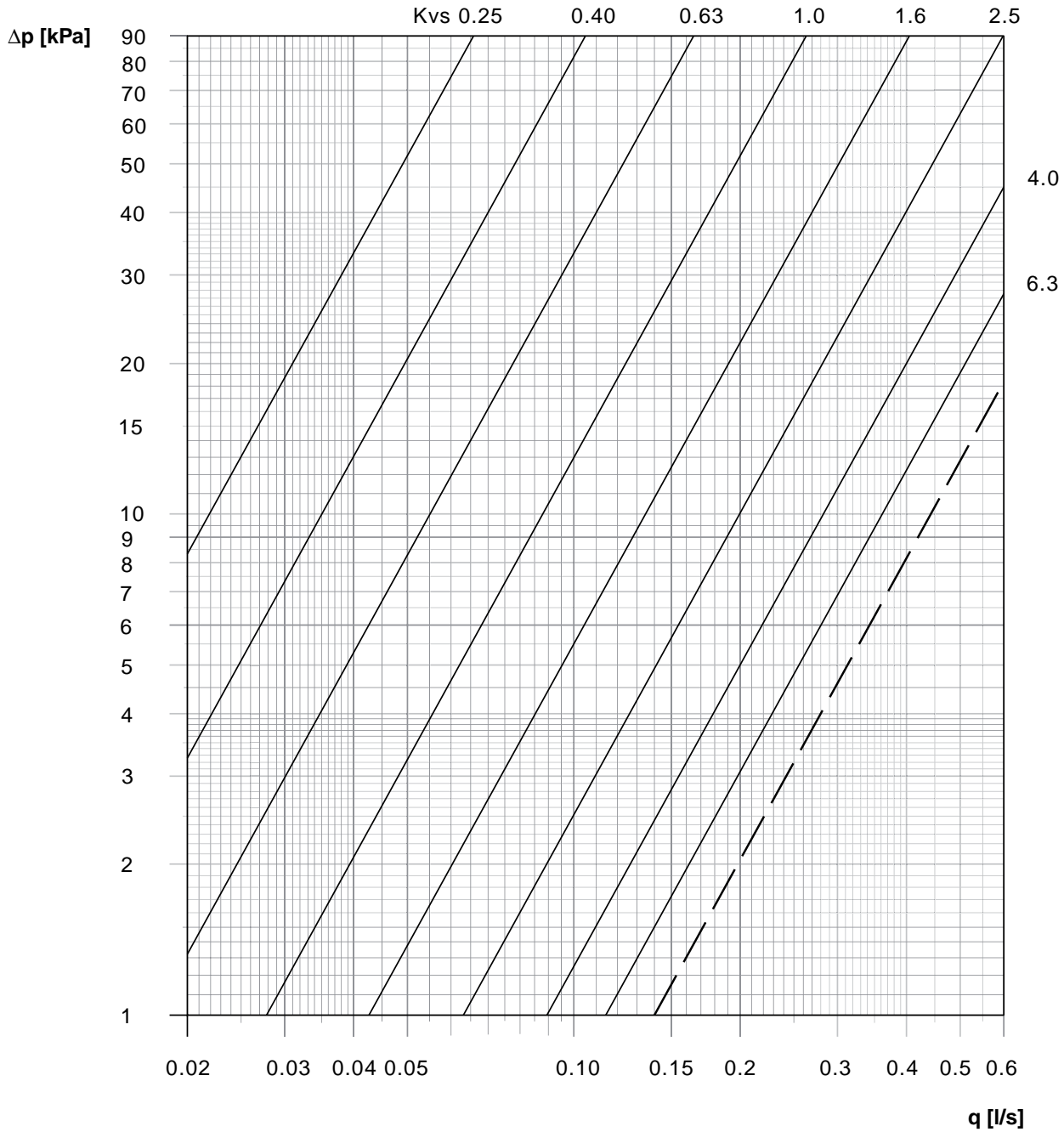


Diagram DN 20: Principle coupling 7

----- = Pressure drop with fully open balancing valve across secondary circuit.

The thicker part of the lines correspond to recommended working range.

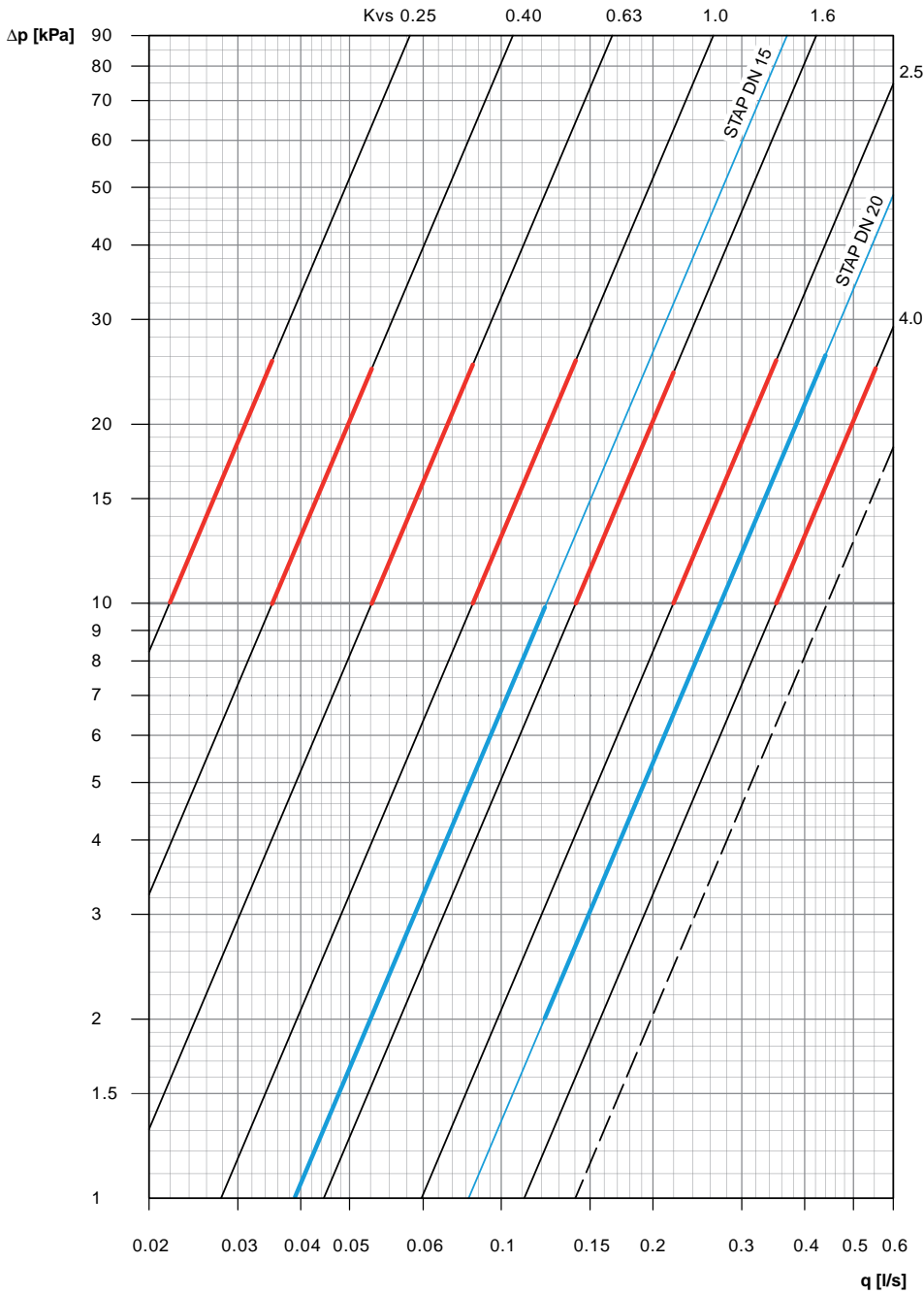


Diagram DN 25: Principle coupling 1-5

----- = Pressure drop with fully open balancing valve across

Secondary circuit

Principle coupling 1, 2 and 5.

Primary circuit

Principle coupling 3, 4 and 6.

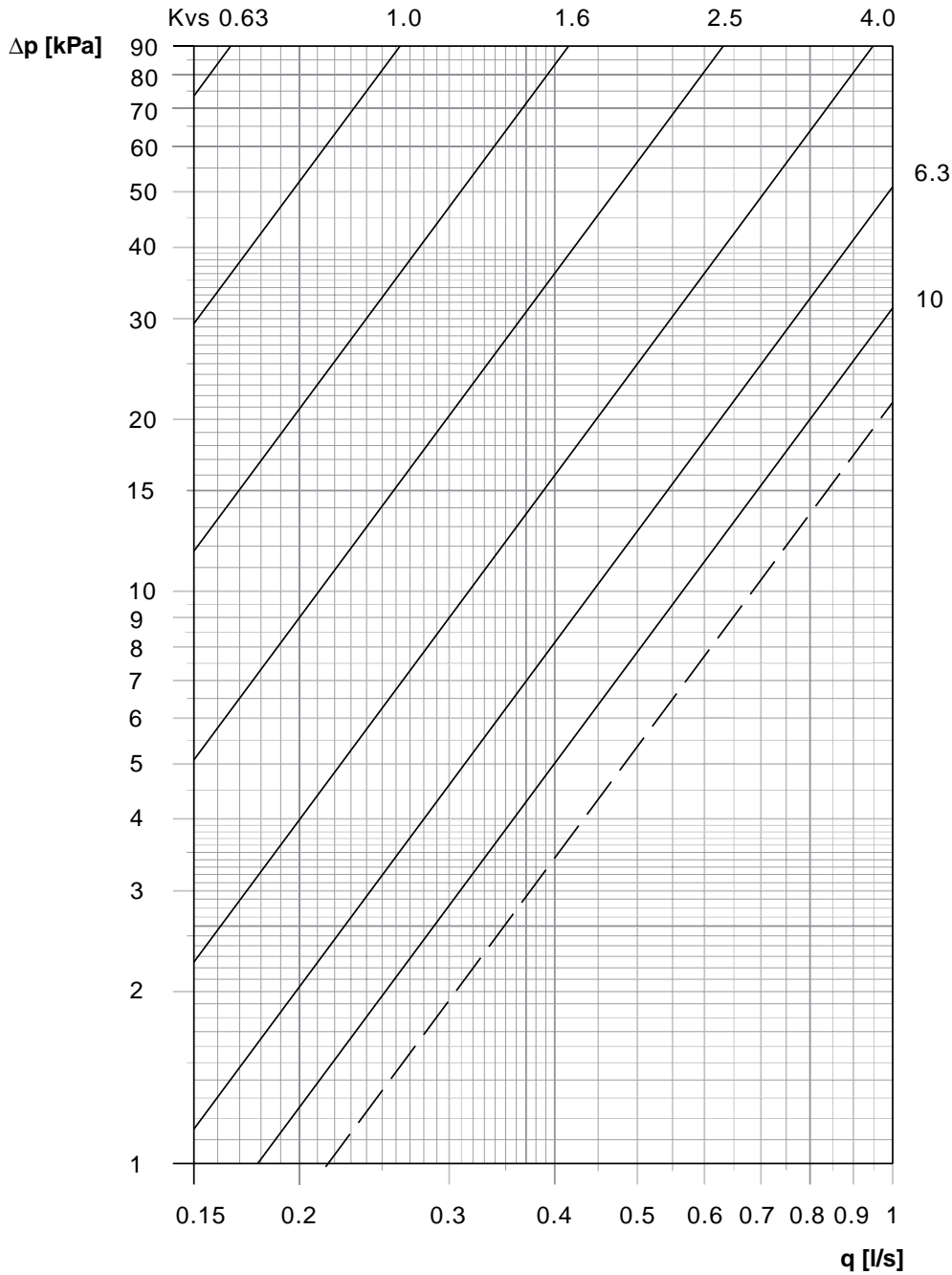


Diagram DN 25: Principle coupling 7

----- = Pressure drop with fully open balancing valve across secondary circuit.

The thicker part of the lines correspond to recommended working range.

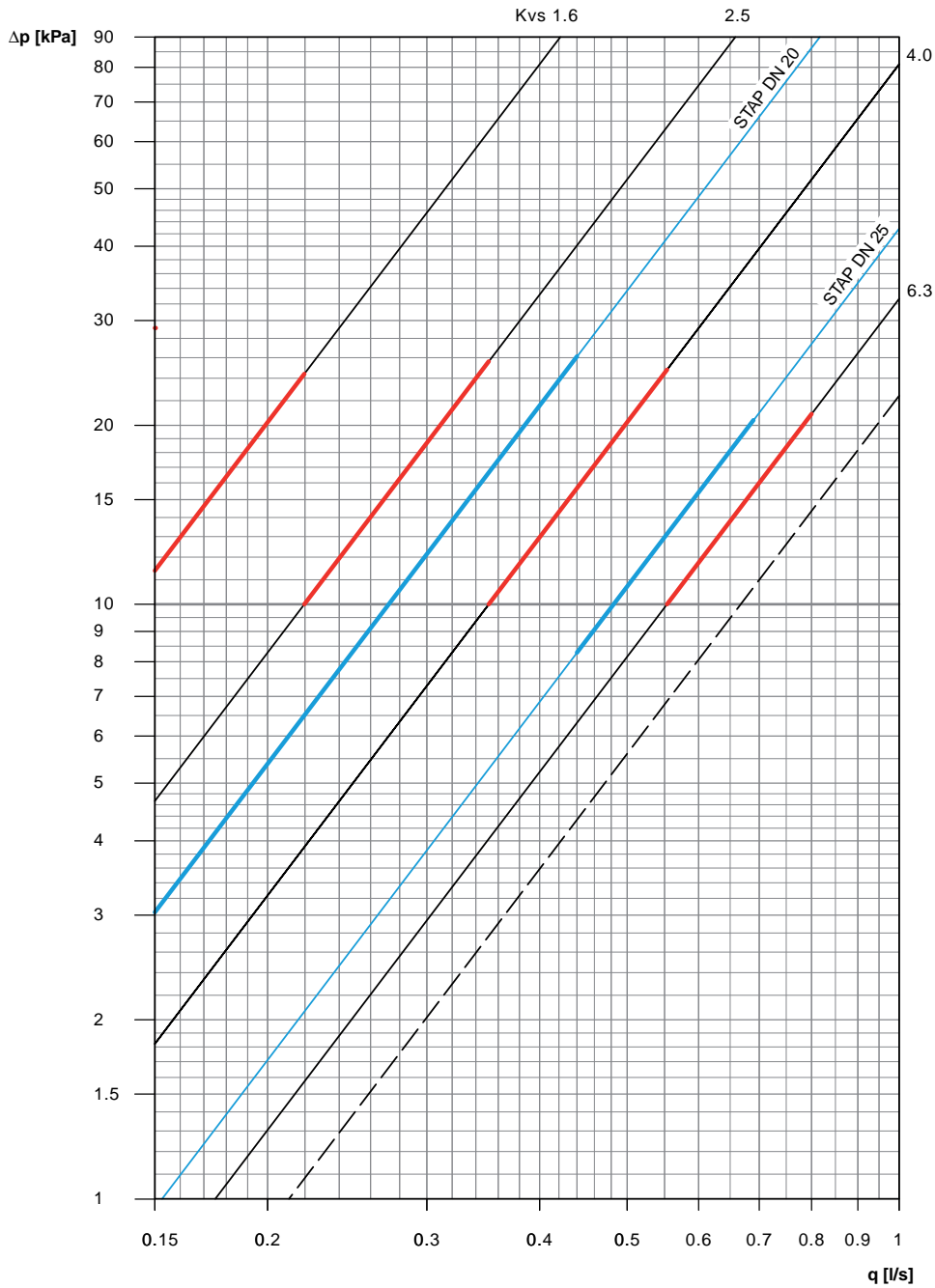


Diagram DN 32: Principle coupling 1-5

----- = Pressure drop with fully open balancing valve across

Secondary circuit

Principle coupling 1, 2 and 5.

Primary circuit

Principle coupling 3, 4 and 6.

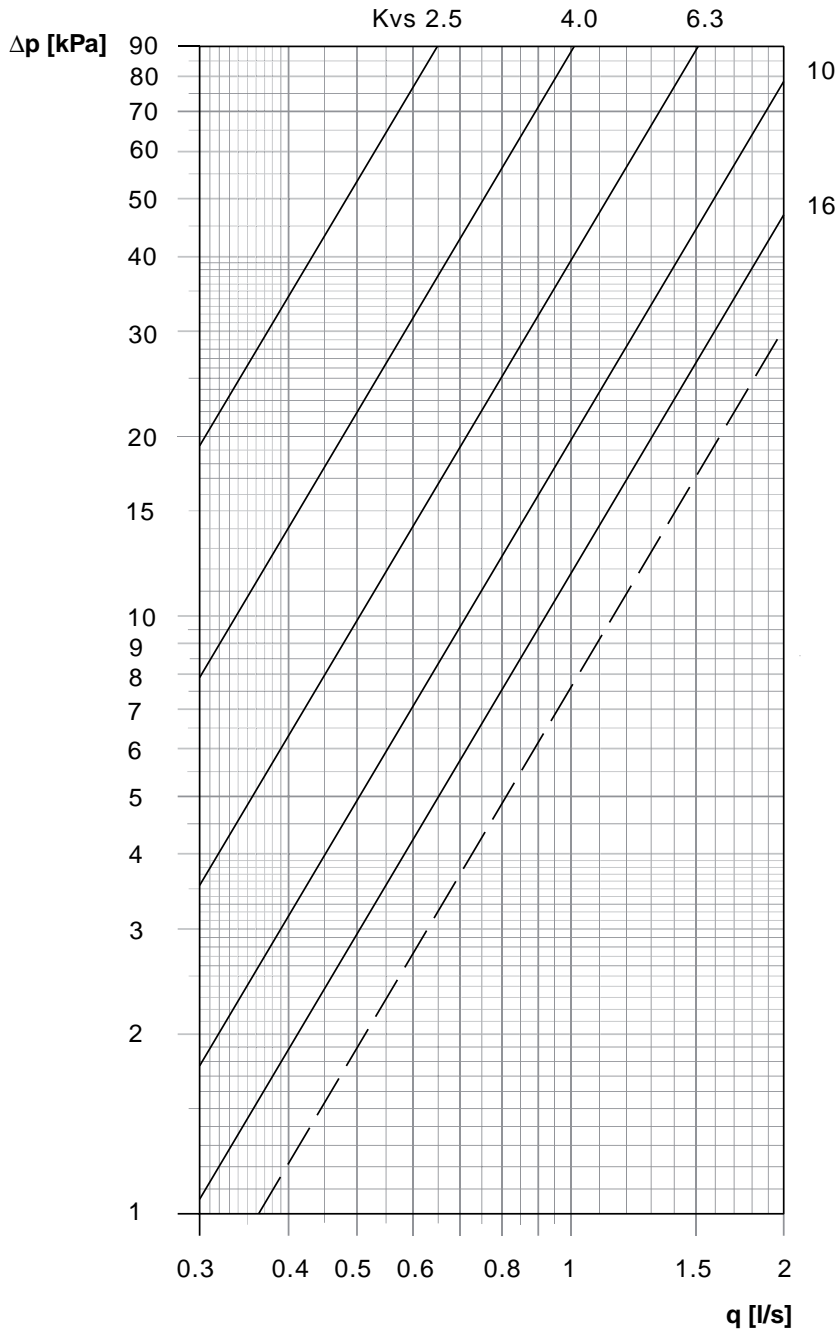


Diagram DN 32: Principle coupling 7

----- = Pressure drop with fully open balancing valve across secondary circuit.

The thicker part of the lines correspond to recommended working range.

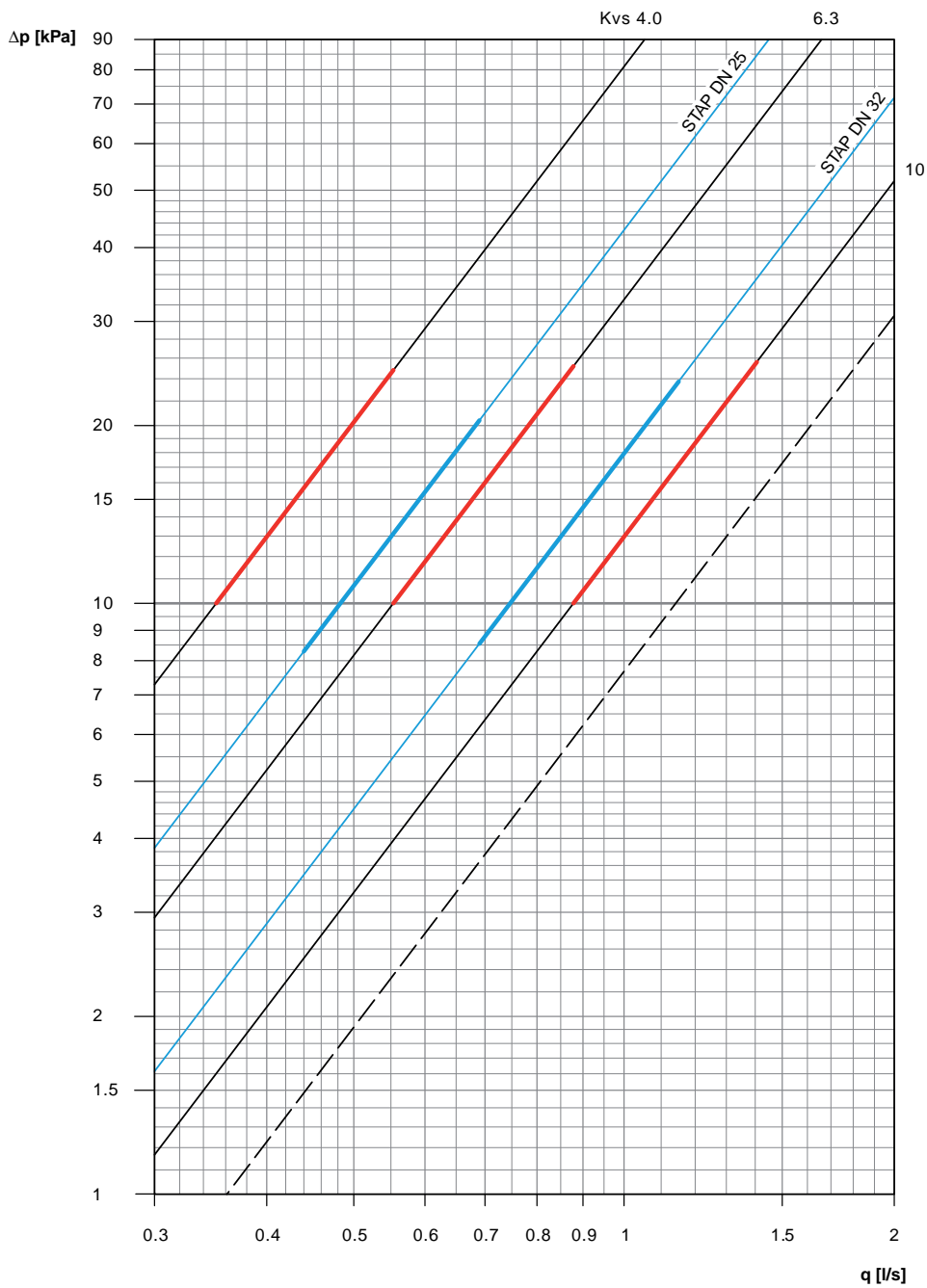


Diagram DN 40: Principle coupling 1-5

----- = Pressure drop with fully open balancing valve across

Secondary circuit

Principle coupling 1, 2 and 5.

Primary circuit

Principle coupling 3, 4 and 6.

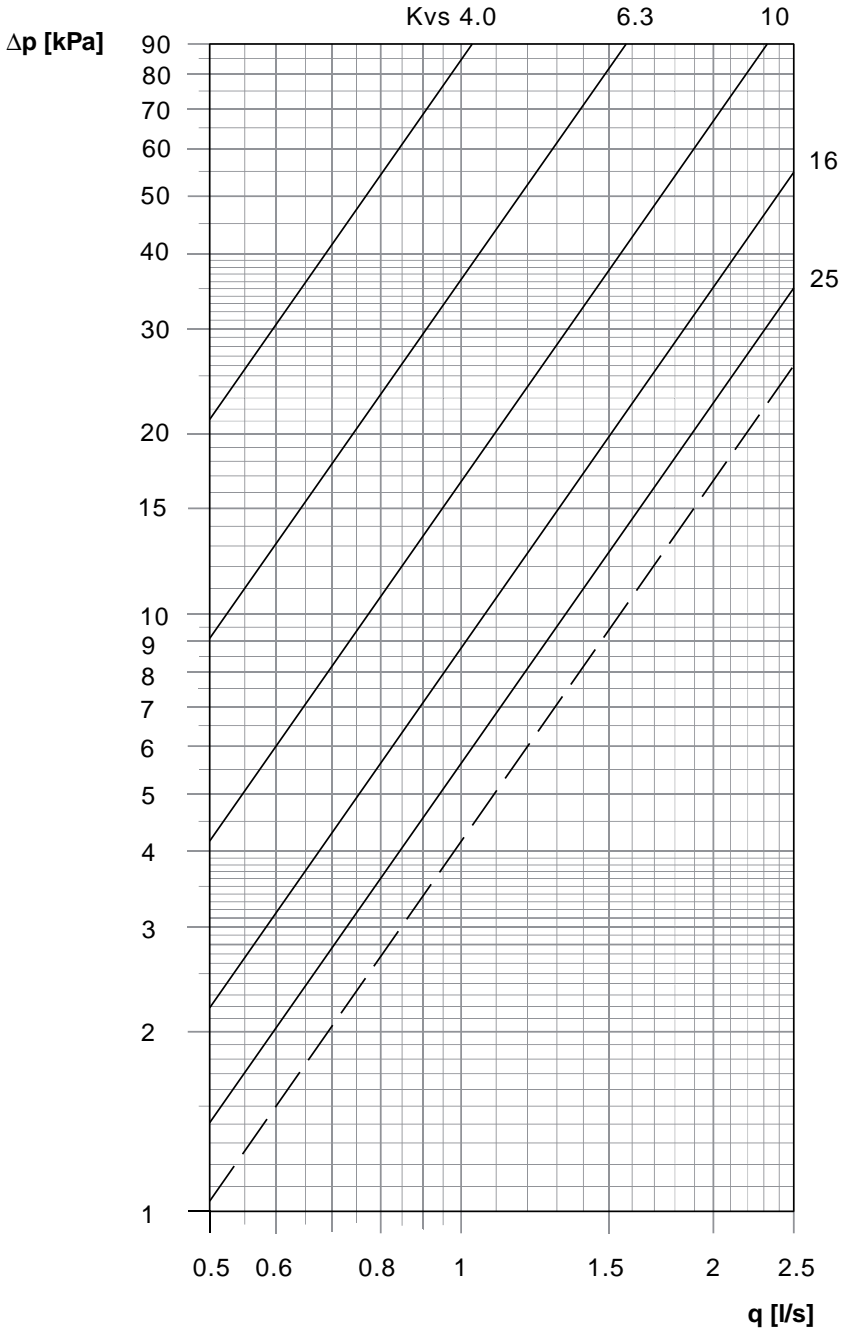


Diagram DN 40: Principle coupling 7

----- = Pressure drop with fully open balancing valve across secondary circuit.

The thicker part of the lines correspond to recommended working range.

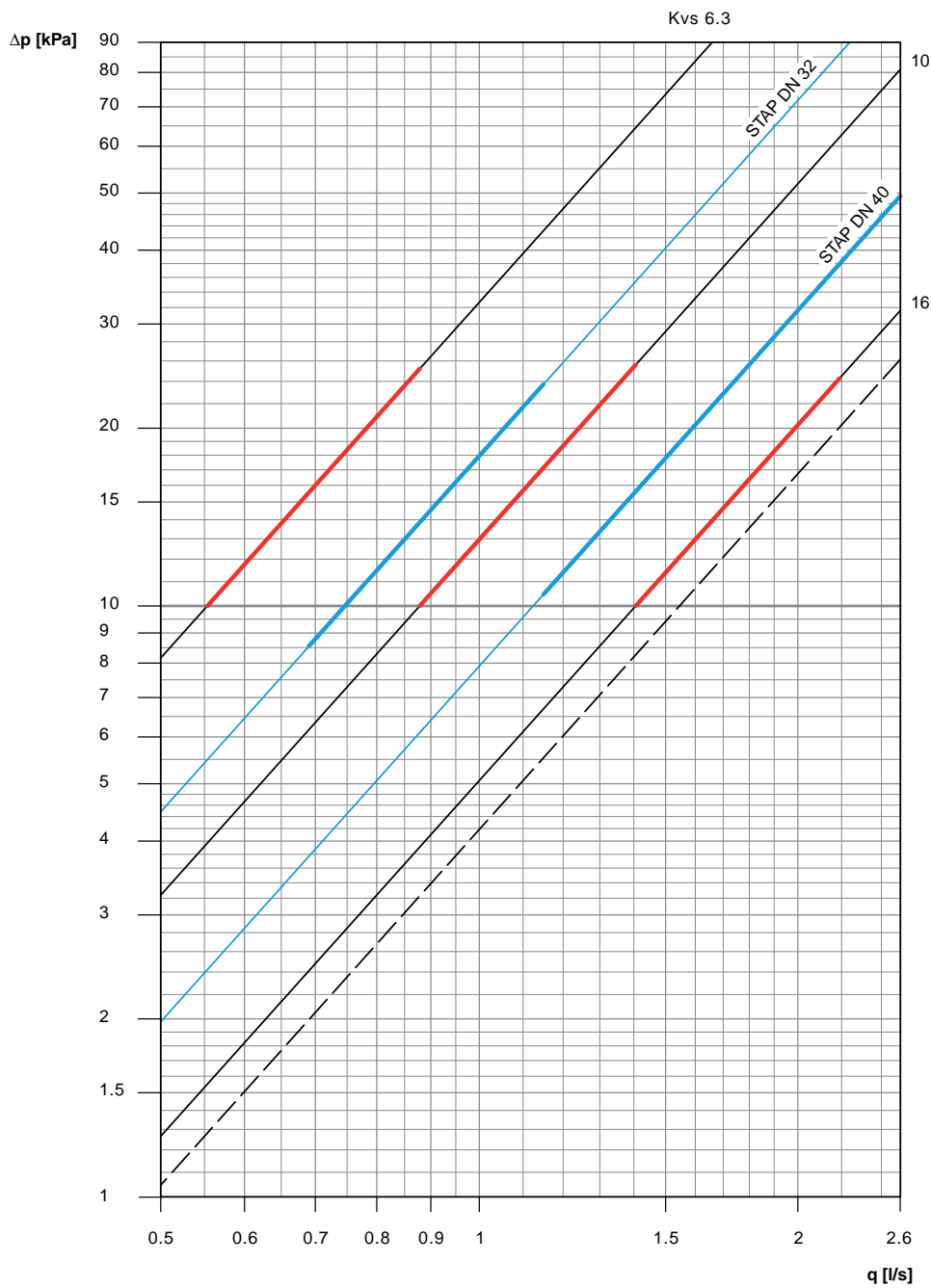


Diagram DN 50: Principle coupling 1-5

----- = Pressure drop with fully open balancing valve across

Secondary circuit

Principle coupling 1, 2 and 5.

Primary circuit

Principle coupling 3, 4 and 6.

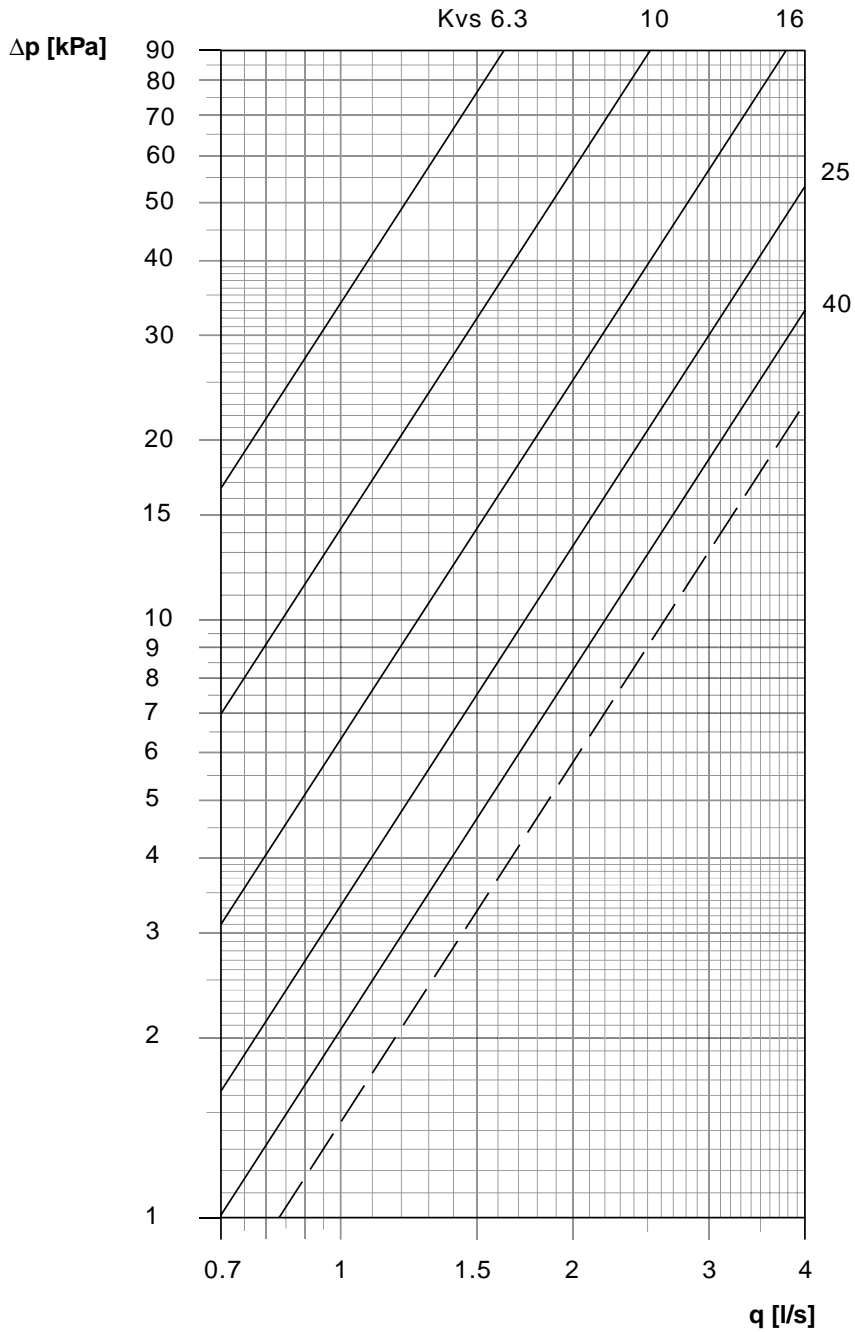


Diagram DN 50: Principle coupling 7

----- = Pressure drop with fully open balancing valve across secondary circuit.

The thicker part of the lines correspond to recommended working range.

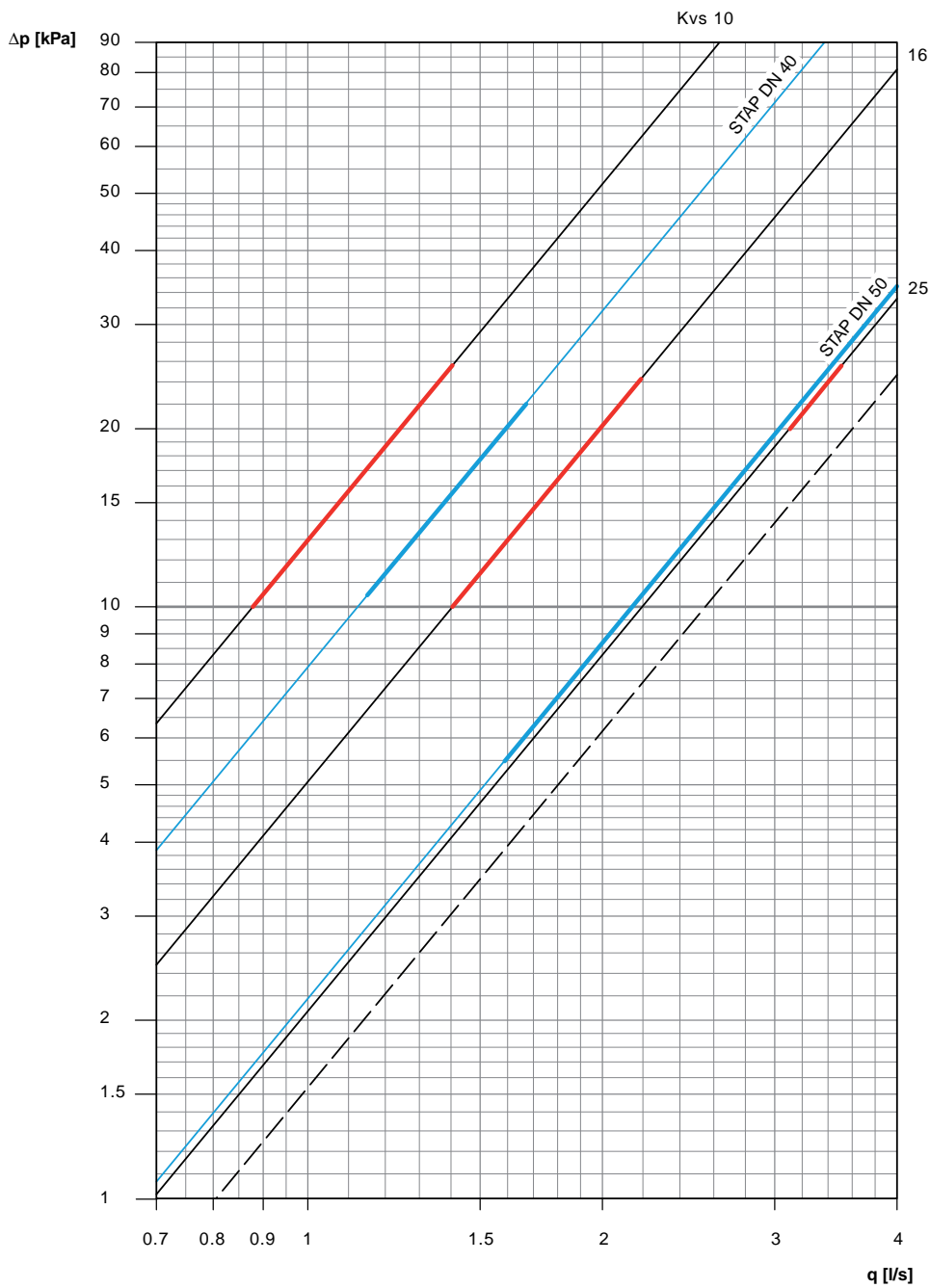


Diagram DN 65: Principle coupling 1-5

----- = Pressure drop with fully open balancing valve across

Secondary circuit

Principle coupling 1, 2 and 5.

Primary circuit

Principle coupling 3, 4 and 6.

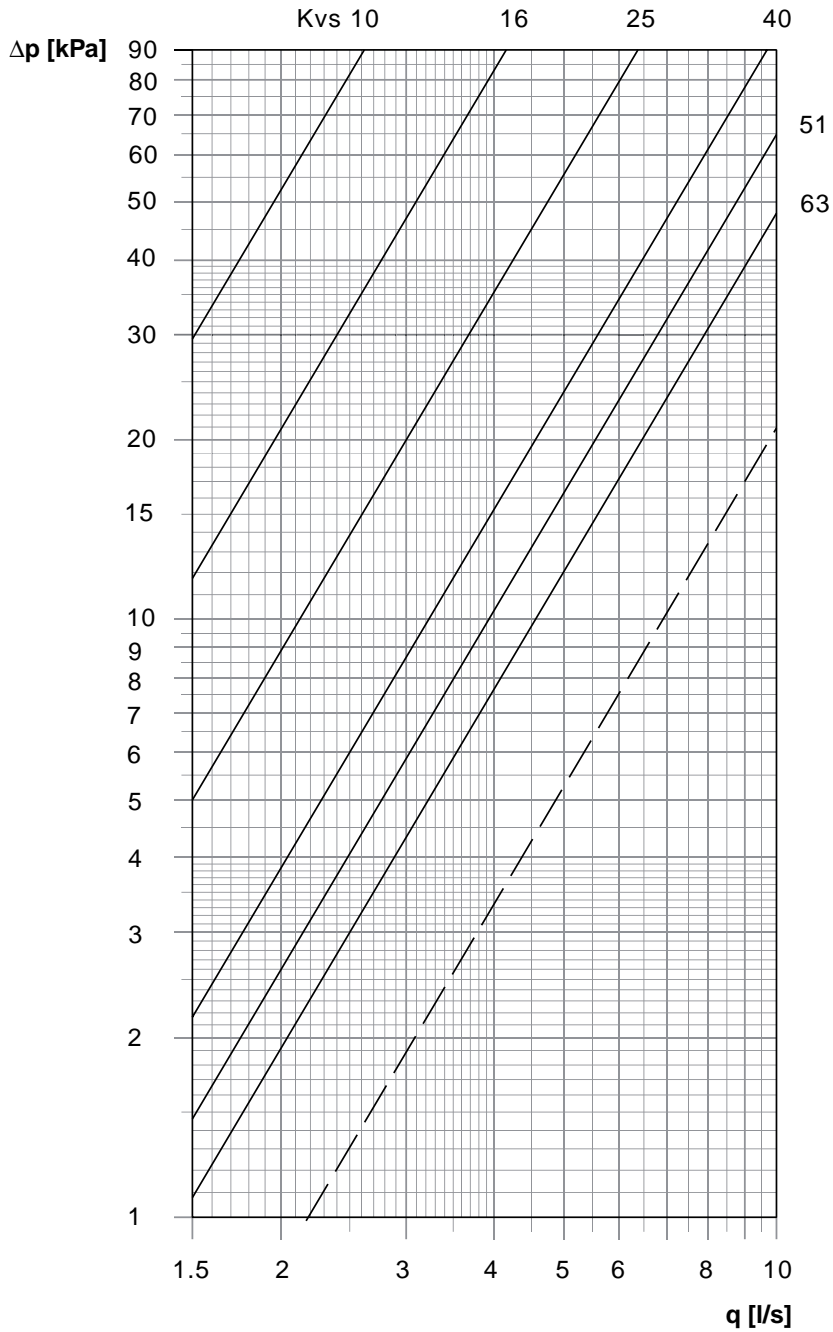


Diagram DN 65: Principle coupling 7

----- = Pressure drop with fully open balancing valve across secondary circuit.

The thicker part of the lines correspond to recommended working range.

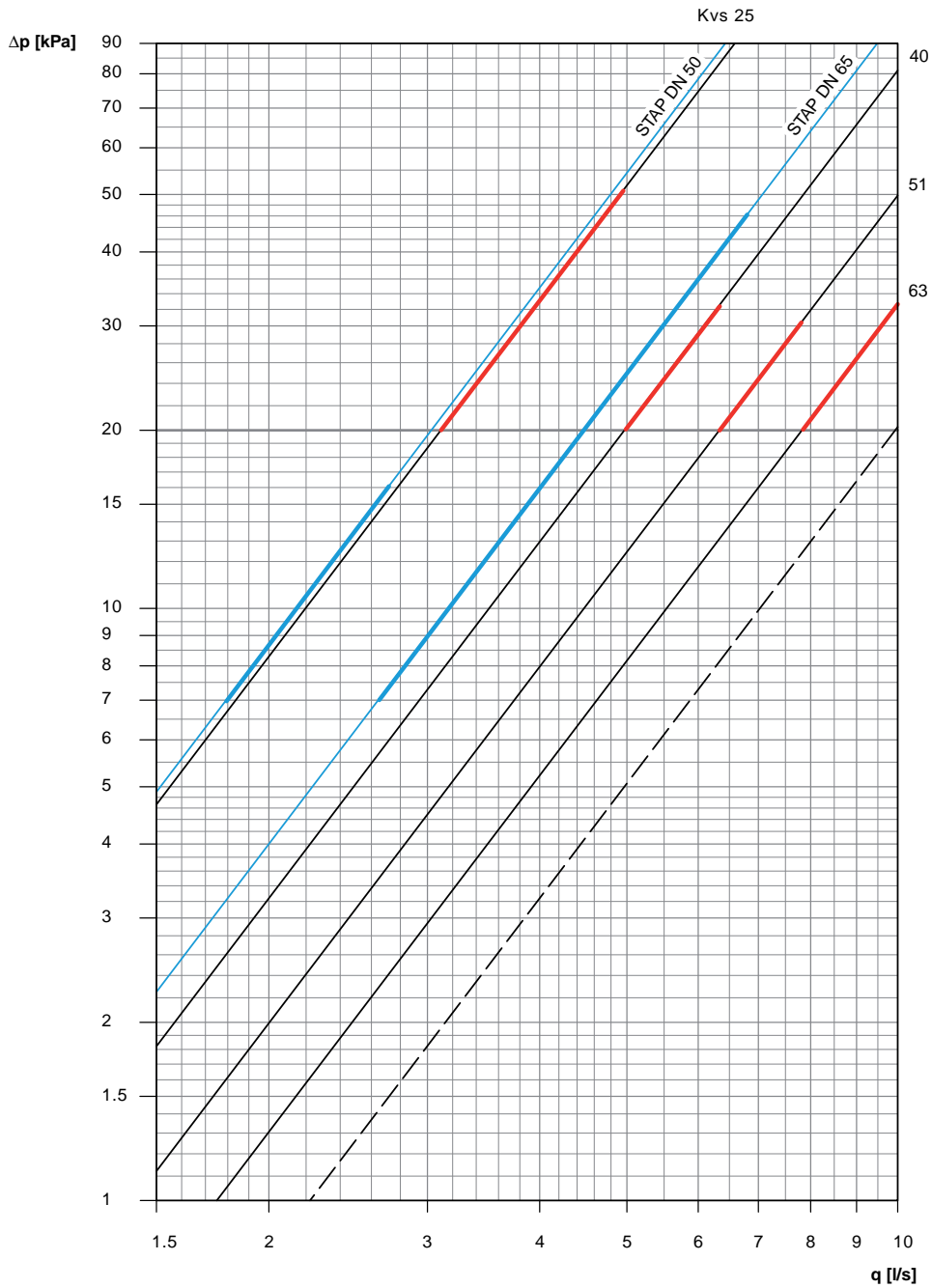


Diagram DN 80: Principle coupling 1-5

----- = Pressure drop with fully open balancing valve across

Secondary circuit

Principle coupling 1, 2 and 5.

Primary circuit

Principle coupling 3, 4 and 6.

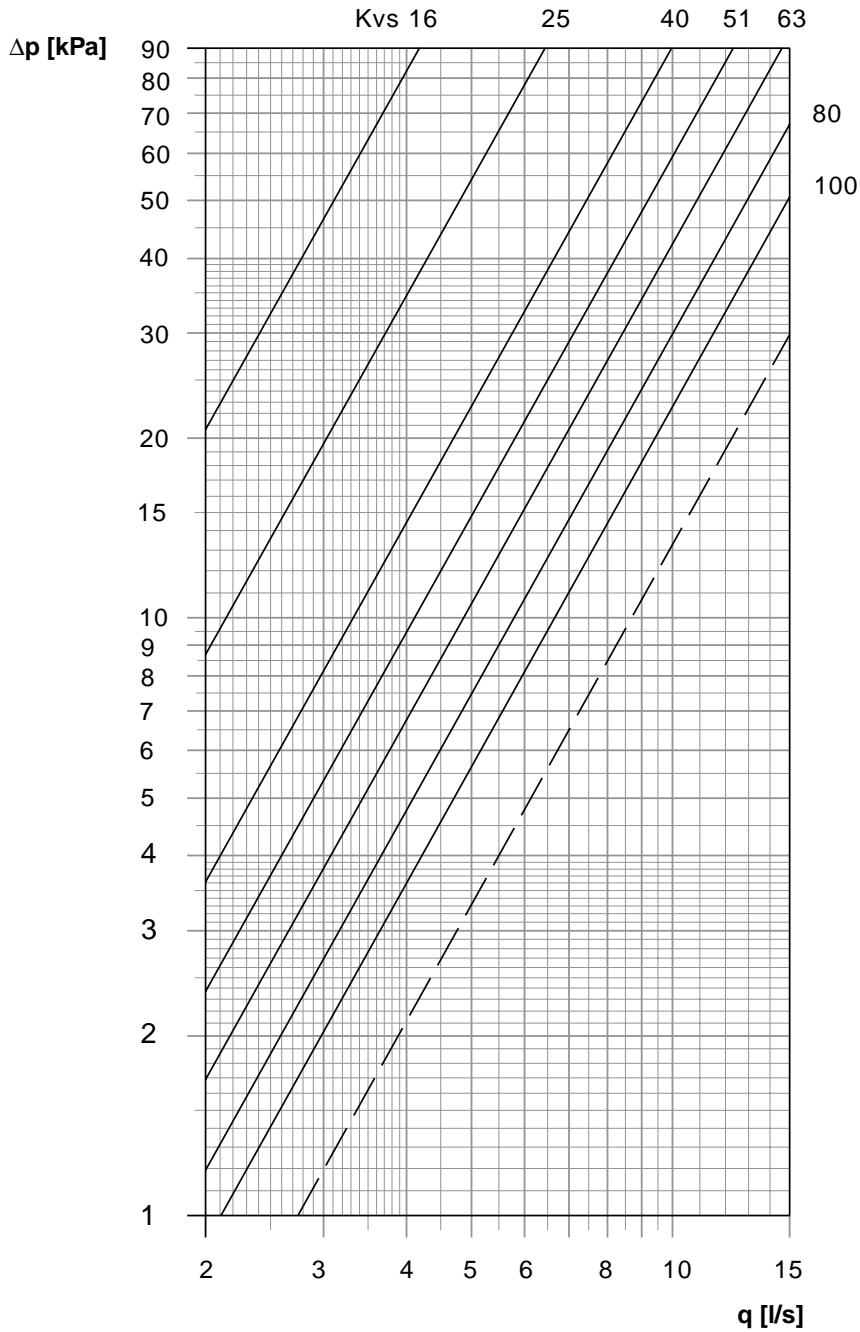


Diagram DN 80: Principle coupling 7

----- = Pressure drop with fully open balancing valve across secondary circuit.

The thicker part of the lines correspond to recommended working range.

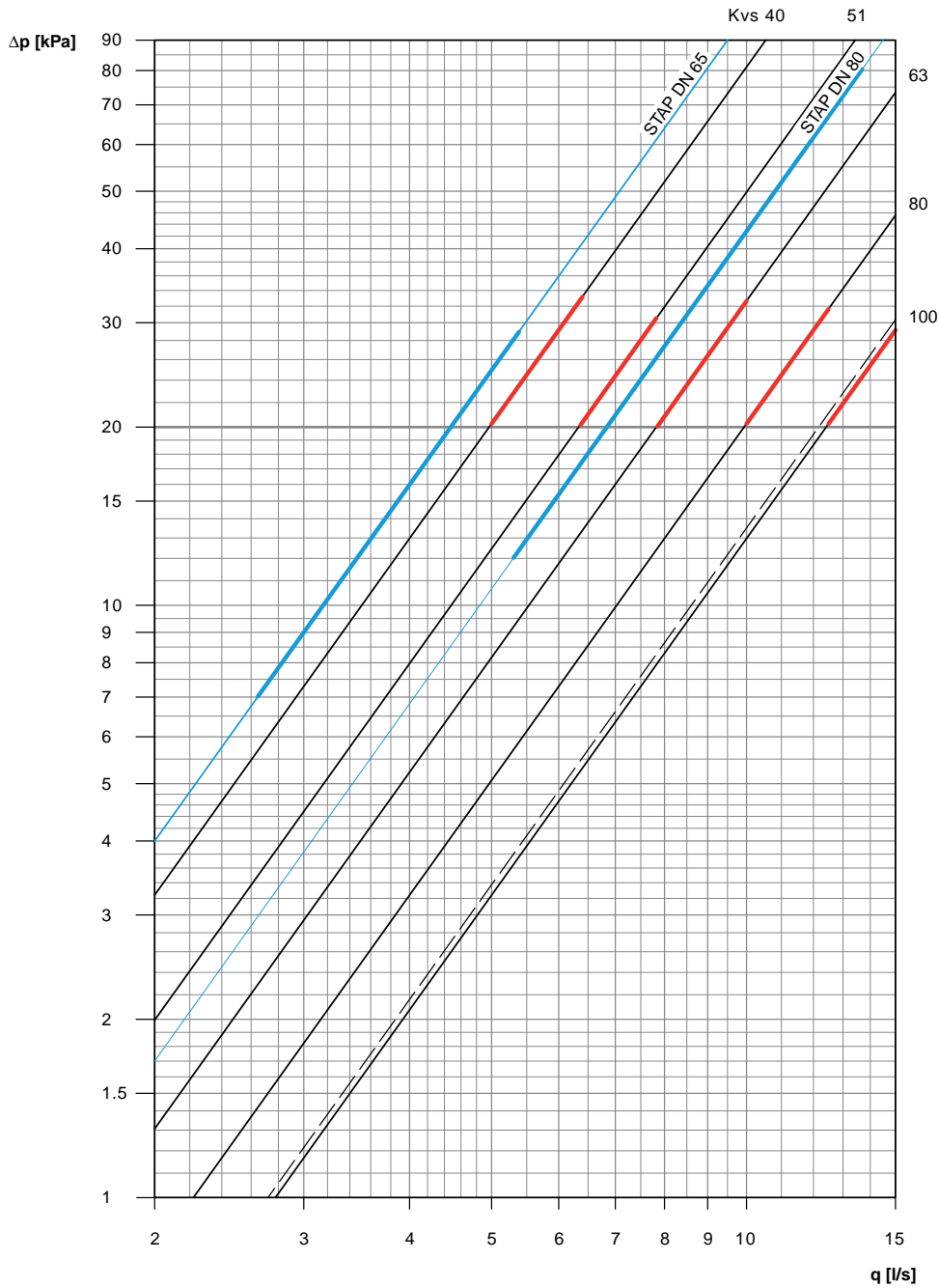


Diagram DN 100: Principle coupling 1-5

----- = Pressure drop with fully open balancing valve across

Secondary circuit

Principle coupling 1, 2 and 5.

Primary circuit

Principle coupling 3, 4 and 6.

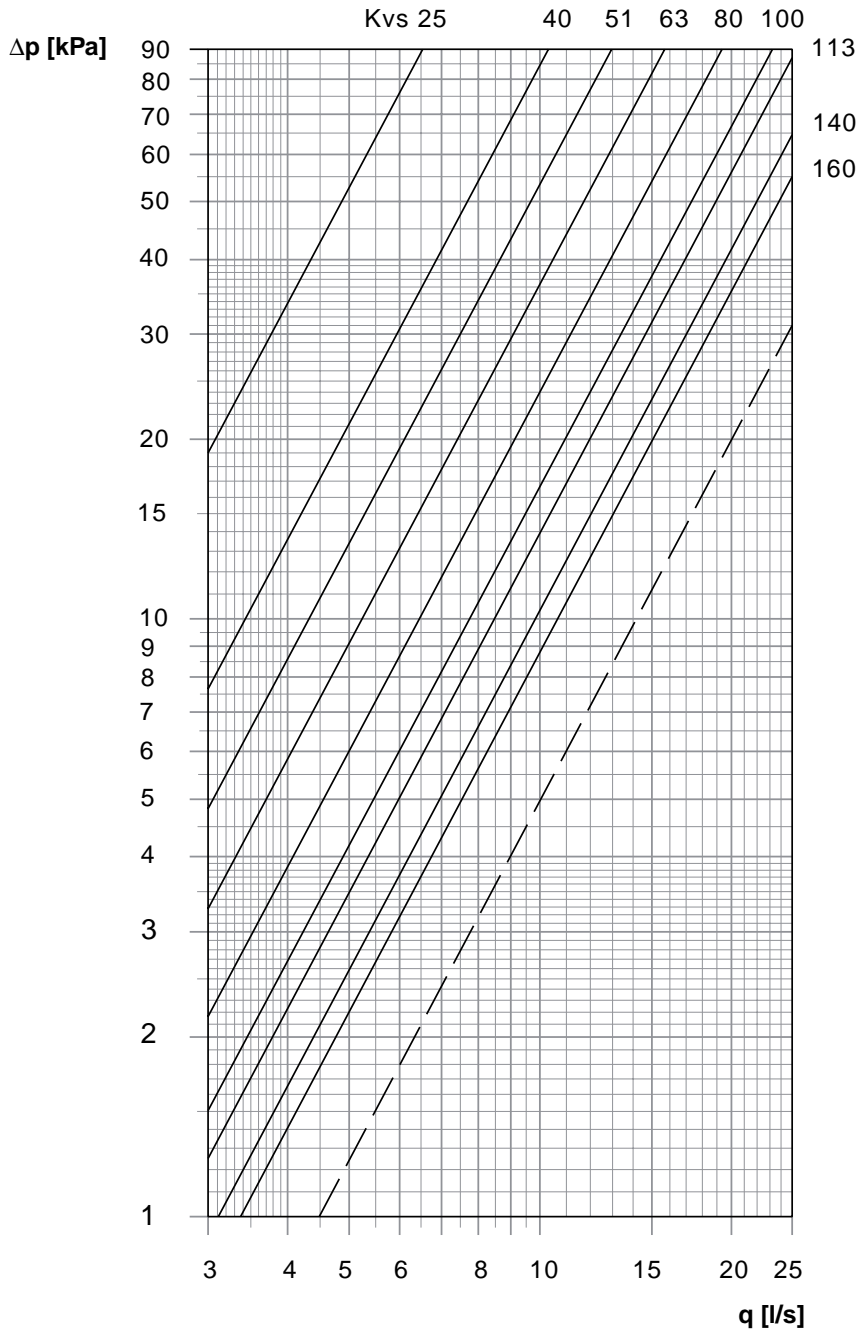
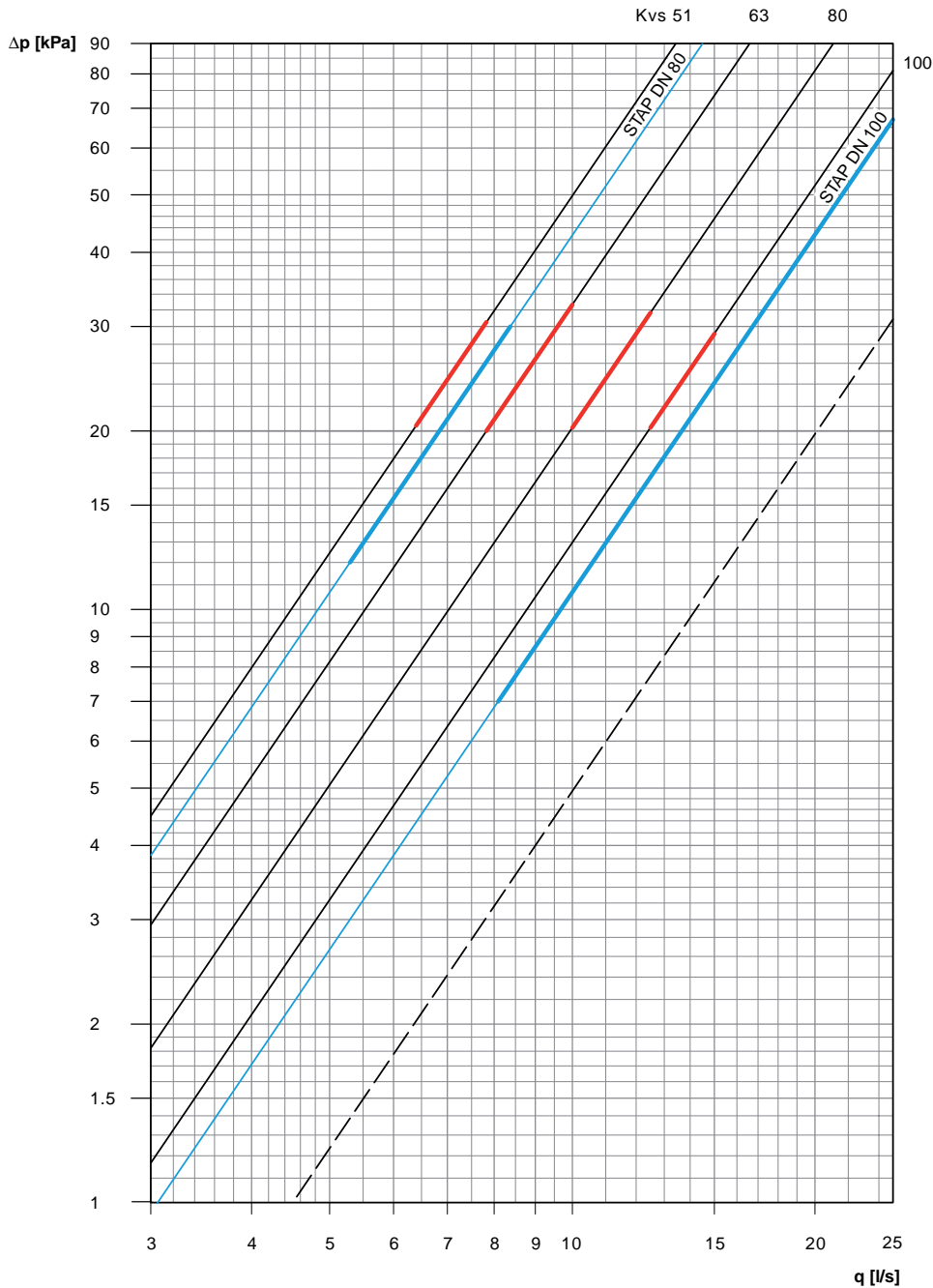


Diagram DN 100: Principle coupling 7

----- = Pressure drop with fully open balancing valve across secondary circuit.

The thicker part of the lines correspond to recommended working range.



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