






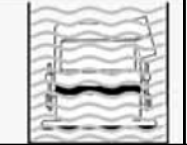

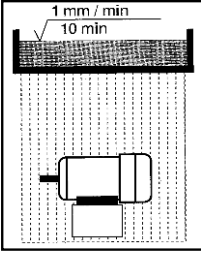
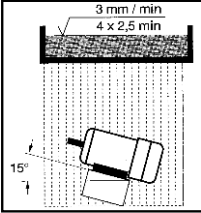
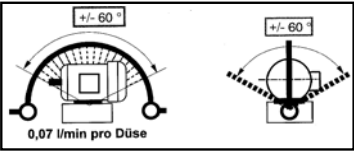
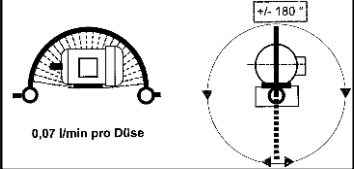
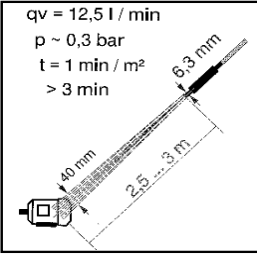
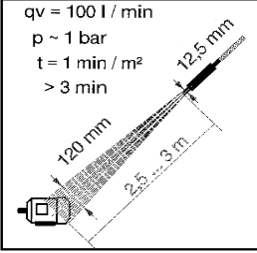


No	Degree of Protection	
0		No protection against water
1		Protection against vertical water drips
2		Protection against water drips (up to 15° angle)
3		Protection against diagonal water drips (up to a 60° angle)
4		Protection against splashed water from all directions

No	Degree of Protection	
5		Protection against water (out of a nozzle) from all directions
6		Protection against temporary flooding
7		Protection against temporary immersion
8		Protection against water pressure
9K		Protection against water from high-pressure steam jet cleaners

Water Protection - General

Prot. grade, 2nd figure	Test accessories	Graphics	Protection against ...	Water volume flow	Test duration
IP X0	No test required	---	---	---	---
IP X1	dripping unit, unit on a rotation table		Condensation	1 mm/min	10 min
IP X2	dripping unit, housing in 4 stable, 15° inclined positions		Dripping	3 mm/min	2,5 min for every incline
IP X3	swivelling tube, spraying +/- 60° from the vertical, max. distance 200 mm or jet nozzle,		Rain	0,07 l/min +/- 5% per opening, multiplied with No. of openings; sprinkler 10 l/min +/- 5%	10 min, sprinkler 1 min/m², mini 5 min
IP X4	as figure 3 spraying +/- 180° from the vertical		Spray dust	as figure 3	as figure 3

IP X5	jet nozzle nozzle 6,3 mm Ø distance 2,5 to 3 m	 <p> $q_v = 12,5 \text{ l / min}$ $p \sim 0,3 \text{ bar}$ $t = 1 \text{ min / m}^2$ $> 3 \text{ min}$ </p>	Water purging	12,5 l/min +/- 5%	1 min/m ² , mini. 3 min
IP X6	jet nozzle, nozzle 12,5 mm Ø distance 2,5 to 3 m	 <p> $q_v = 100 \text{ l / min}$ $p \sim 1 \text{ bar}$ $t = 1 \text{ min / m}^2$ $> 3 \text{ min}$ </p>	Extended water purging	100 l/min +/- 5%	1 min/m ² , mind. 3 min
IP X7	immersion basin water level above the housing: 0,15 m from upper border, 1 m from lower border		Water ingress		30 min
IP X8	immersion basin water level: as agreed		Water ingress		as agreed
IP X9	rotation table (5 (+/-1) /min), for housings in road vehicles, flat steel nozzle with high-pressure/steam jet cleaning distance 100 to 150 mm, pressure 8.000 to 10.000 Kpa angle 0, 30, 60, 90°		Water ingress	14 to 16 l/min 80°C water temperature	30 sec for every position

Technical Data		VSPT 200/ VSPT 400	VSPT 600/ VSPT 800	VSPT 1000 IPX9K
Test duration		adjustable from 3 sec to 30 h		
Specimen support		adjustable in height		
Velocity of swivelling tubes	[degree/sec]	60		high-pressure/flat jet nozzles
Swivelling angle adjustable	[degree]	0 to 180°		spray angle 0°, 30°, 60°, 90°
Interior dimensions	height [mm]	1015	1810	1015
	width [mm]	1000	1800	1000
	depth [mm]	1000	1800	1000
Exterior dimensions	height [mm]	1900	2400	2000
	width [mm]	1500	2200	1500
	depth [mm]	1100	1900	1050
Door opening	height [mm]	750	950	750
	width [mm]	650	950	650
Weight (without water storage)	[kg]	350	690	500
Water pressure		min. 3 bar		
Supply connections		400 V; 3 Ph + N + PE; 50 Hz		
Connected load		max. 0,7 kVA		approx. 24 kVA
Specimen support	[mm Ø]	300	500	300
Height adjustment to the bottom	[mm]	125	200	125

VSPT 200/ 400

- for IP X3 and IP X4
- DIN VDE 0470
- EN 60529



VSPT 600 with drip test unit

for tests according to DIN VDE 0470, part 1 and EN 60529 protection grade IP X1 and IP X2

Drip tray with drip pipes in the bottom, pattern 20x20mm, Flow meter with tune valve, Quick connectors for water connection.

The drip tray will be installed in the basic unit and is made of PMMA.

Drip area 400x400mm

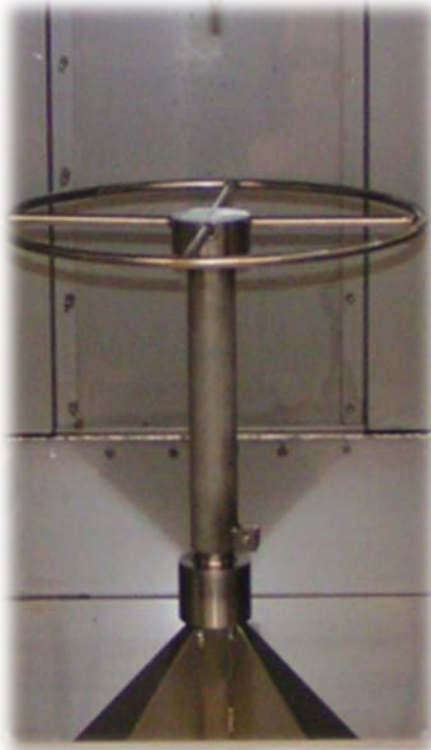
Drip tray dimensions (approx.):
Height 100mm, width 450mm, length 450mm

Number of drip nozzles : 400

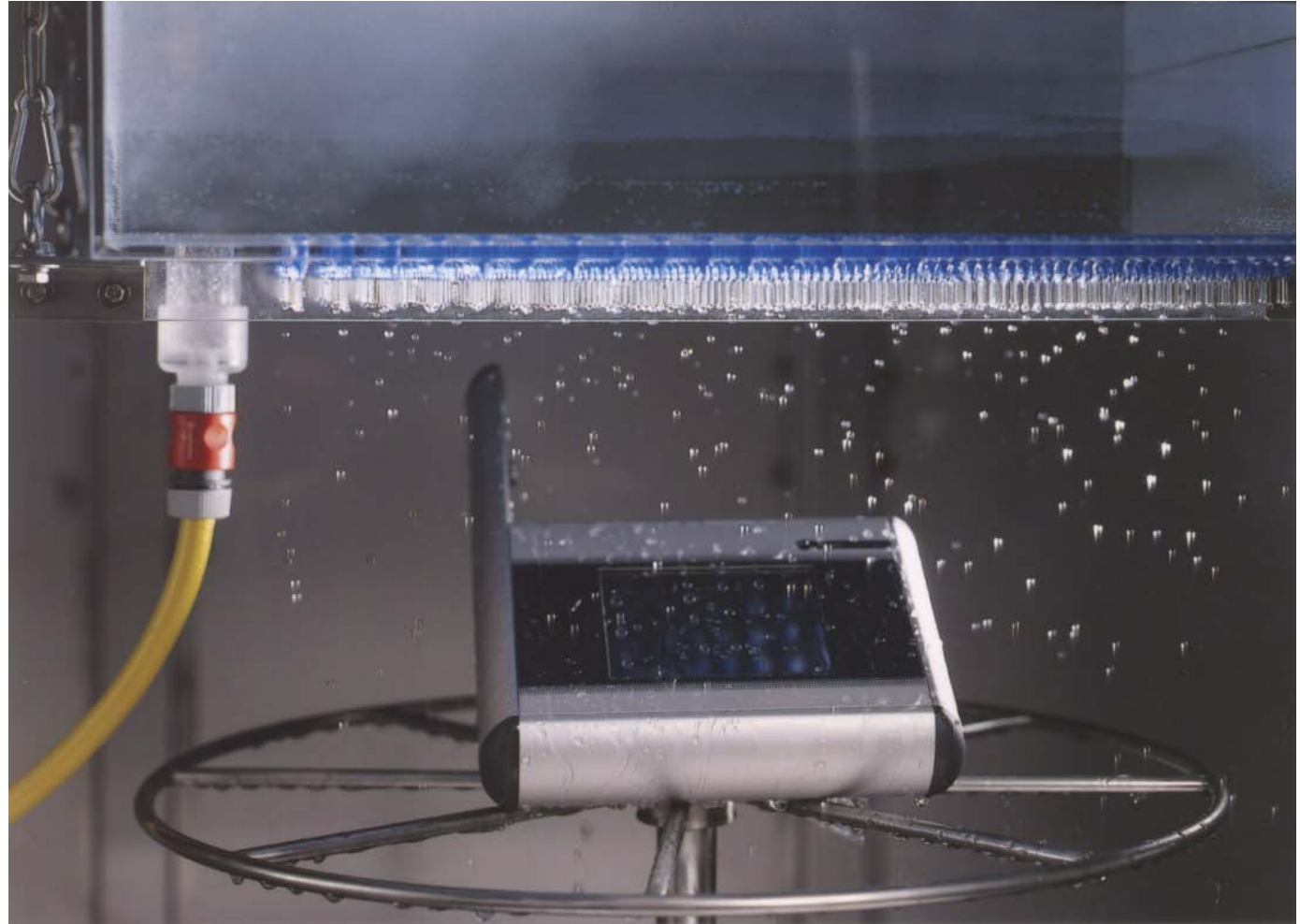


Dripping Unit / Rain Test IP X1/ X2

Rotary table



Dripping Unit /
Rain Test IP X1/ X2



Swivel Tube

nozzle to replace

VSPT 200 (200 mm / 400 mm)

VSPT 600 (600 mm / 800 mm)



No. of nozzles 12-50 pcs.
Distance between the
nozzles approx. 50 mm

Rotation Table

for IP X1 abd IP X2 tests

left and right rotation option



Alternative, when test
specimen is too big for
the chamber

Water Protection IP X5 and IP X6

jet nozzle (60887068 IPX5; 60887069 IPX6)



Water Protection IP X9K



High Pressure Test IP X9



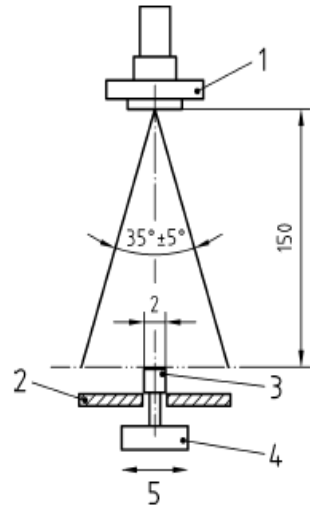
Water Protection combined IP X3, X4. X9K





Distance to nozzle: 150 mm

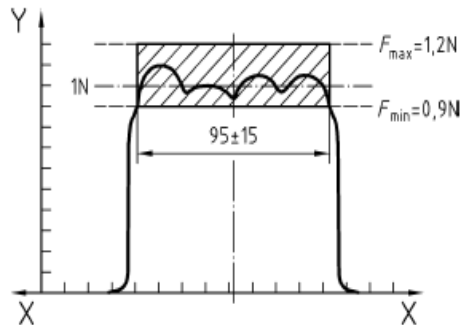
Water pressure 80 bar at 80°C



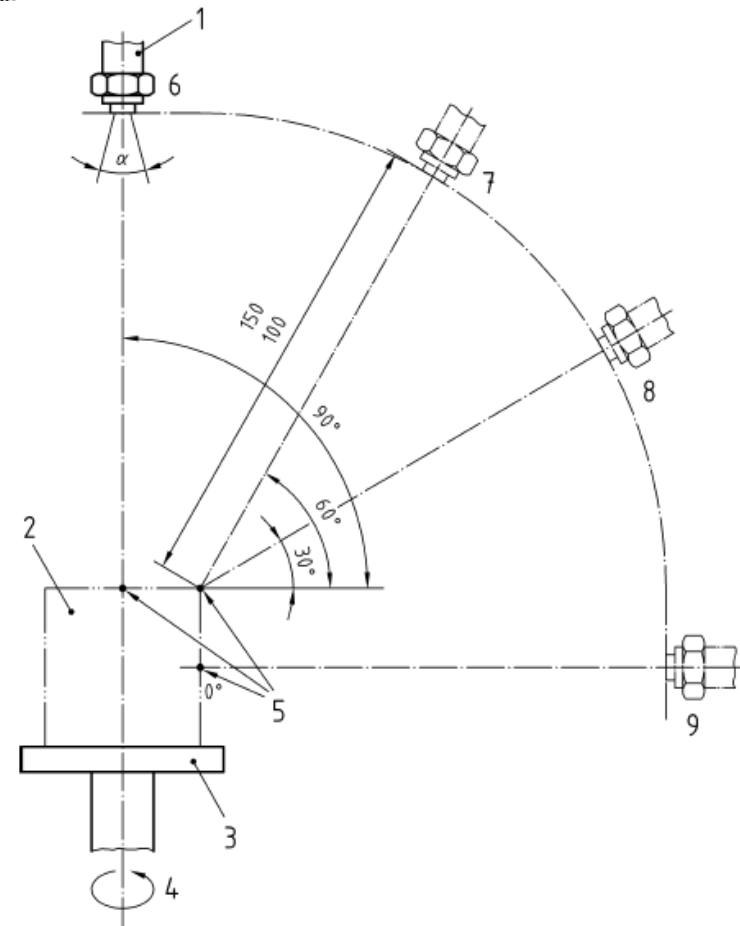
a) Set-up for measuring the impact force of the water jet

Key:

- 1 fan jet; pressure (100 ± 5) bar; volume (15
- 2 cover plate
- 3 impact plate 2 x 30 mm (2mm in direction of movement)
- 4 force absorber
- 5 working width



b) Distribution of impact force





Test Specification	Protection	Test duration (min)	Oscillates trough angle	Water flow rate per nozzle in Ltr/min	Turntable Rotary per minute
DIN/VDE 470 Part 1 EN 60529	IP X3	10	± 60°	0,07	-
	IP X4	10	± 180°	0,07	-
DIN 40050 part 9	IP X3	10	± 60°	0,01	1-3
	IP X4	10	± 180°	0,01	1-3
DIN IEC 68-2-18	Rb 2.1	3-60	± 60°	0,01	-

IP X3 and X4	60887067	Spray water nozzle acc. to DIN VDE 0470 part 1, EN 60529 for testing the protection codes IP X3 and IP X4
IP X5	60887068	Jet nozzle acc. to DIN VDE 0470 part 1, EN 60529 for testing the protection code IP X5 (including nozzle, shut-off valve, flow meter and connecting hose 10m)
IP 6	60887069	Jet nozzle acc. to DIN VDE 0470 part 1, EN 60529 for testing the protection code IP X6 (including nozzle, shut-off valve, flow meter and connecting hose 10m)
IP X1 and X2	60887082	Dropping unit for performance of tests acc. To DIN VDE 0470 part 1, EN 60529 protection code IPX1 and IPX2
Turntable	64546045	Rotary table drive for VSPT 600 and 800 for testing acc. to IP X1 and IP X2 in connection with droplet collecting vessel (with 1 rpm - for electr. connected specimens!)
Option for left/right rotation	64546046	Right/left rotation Table

Technical Data		VSPT 200/ VSPT 400	VSPT 600/ VSPT 800	VSPT 1000
Test duration		adjustable from 3 sec and 30 h		
Specimen support		adjustable in height		
Velocity of swivelling tubes	[degree/sec]	60	60	high-pressure/flat jet nozzles
Swivelling angle adjustable	[degree]	0 to 180°		spray angle 0°, 30°, 60°, 90°
Interior dimensions	height [mm]	1015	1810	1015
	width [mm]	1000	1800	1000
	depth [mm]	1000	1800	1000
Exterior dimensions	height [mm]	1900	2400	2000
	width [mm]	1500	2200	1500
	depth [mm]	1100	1900	1050
Door opening	height [mm]	750	950	750
	width [mm]	650	950	650
Weight (without water storage)	[kg]	350	690	500
Water pressure		min. 3 bar		
Supply connections		400 V; 3 Ph + N + PE; 50 Hz		
Connected load		max. 0,7 kVA		approx. 24 kVA
Specimen support	[mm Ø]	300	500	300
Height adjustment to the bottom	[mm]	125	200	125

Symbol of test	Water pressure at rain or spray nozzle (gauge pressure) MPa	Dimension of rain or spray nozzle mm	Number of rain or spray nozzles	Water flow rate l/min (min.)	Water temperature °C	Moisture condition	Temperature difference ⁽¹⁾ between the sample and water °C	Test time	Test procedures
M1	—	—	—	—	Approx. 32	Atmosphere of air, droplet and water vapor mixture	—	8 h	Rotate a sample around the horizontal axis at rate of 1.5 min ⁻¹ .
M2	—	—	—	—	Approx. 60		—	1 h	
R1	0.01	See Fig. 1	2	1.9	Ordinary temperature	—	—	10 min	See Remarks 1.
R2	0.03	See Fig. 1	2	3.2	Ordinary temperature	—	—	10 min	See Remarks 1.
S1	0.10	φ1.2	40	24.5	Ordinary temperature	—	—	30 min	See Remarks 1.
S2	0.30	φ1.2	40	39.2	Ordinary temperature	—	—	1 h	See Remarks 1.
D1	—	—	—	—	See Remarks 2.	—	—	5 min	Submerge a sample into water as far as its upper surface.
D2	—	—	—	—	—	—	Approx. 30	10 min	Submerge a sample into water to a depth of 100 mm from its upper surface.
D3	—	—	—	—	—	—	Approx. 50	10 min	Submerge a sample into water to a depth of 100 mm from its upper surface.

Note ⁽¹⁾ Temperature difference means that water temperature is higher than that of the sample.

Remarks 1. With regard to the rain test and spray test, the samples shall be mounted at a distance of approximately 400 mm from the flow pipe having rain nozzle or spray nozzle as shown in the following Fig. 1. And then, the flow pipe shall be rotated around the axis X-X at the rate of approximately 23 min⁻¹.

Besides, the samples shall be rotated around the vertical axis at the rate of approximately 17 min⁻¹. However, this procedure of rotating the samples may be omitted by agreement between the purchaser and supplier.

Equipment for test according to JIS D 0203-1976

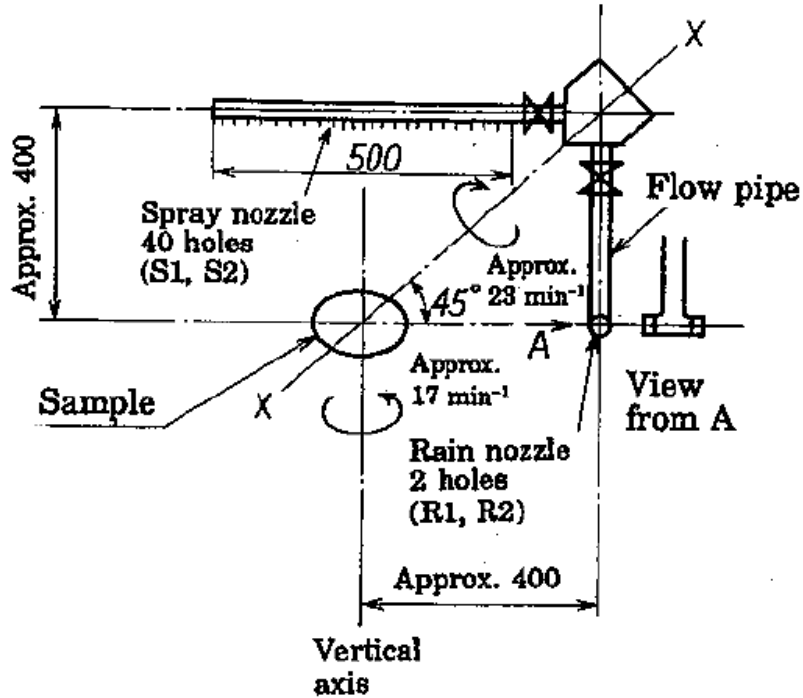
Symbols of the tests: R1, R2, S1, S2

consisting of:

- 1 circulation pump, approx. 39.2 ltr/min. at 3 bar
- 2 rotary ports for sprinkling arms acc. to S1 and S2 as well as acc. to R1 and R2.
- 1 gear motor for the sprinkling arms (24 rpm)
- 1 sprinkling arm for test acc. to S1 and S2
- 1 sprinkling arm for test acc. to R1 and R2
- 1 flow meter for tests acc. to S1 and S2
- 1 flow meter for tests acc. to R1 and R2
- 1 manometer for S1 and S2
- 1 manometer for R1 and R2
- 1 gear motor for rotation table (17 rpm)

Ordering code: 60887076

Swivel Design



Nozzle Design

Unit: mm

Designation	Shape and dimension of rain or spray nozzle
R1	<p>Cross section A-A</p>
R2	<p>Cross section A-A</p>
S1	<p>To be flat</p>
S2	

Dust Test acc. ISO 20653

Possible with modified VDT100A, no add cost

Water Test 4k

**Possible with modified VSP 200/600, no add cost
(swivel arm with larger nozzles)**