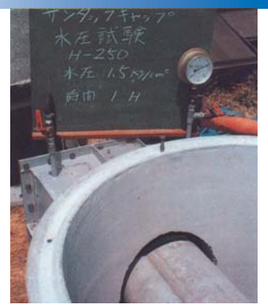
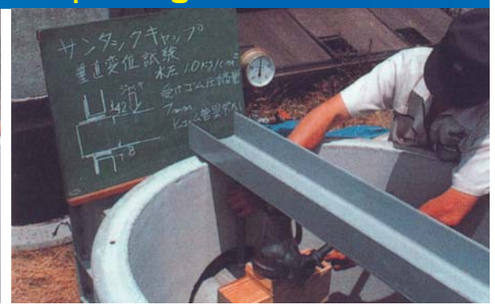
Waterproofing test





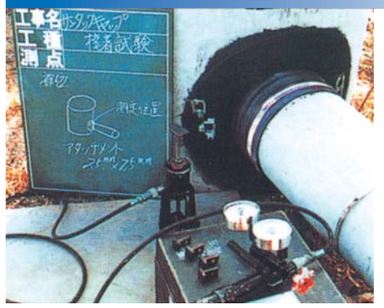
Hydraulic test

Hume pipe ϕ250 without displacement
Water pressure1.5kgf/㎠ : 1 hour no abnormal

Vertical displacement test

Hume Pipe Diameter 250
Displacement in the direction perpendicular to the tube axis 17 mm
Water pressure : 1 hour no abnormal

Adhesion test



Adhesion test

After attaching the SANTAC CAP to the maintenance hatch and hume pipe (ϕ250), the adhesion was measured.

Test conditions

The maintenance hatch and hume pipe (ϕ250) were exposed outdoors after application of SANTAC CAP.
Outdoor exposure period: 15 months

Test Results ※( )Within kgf/㎠

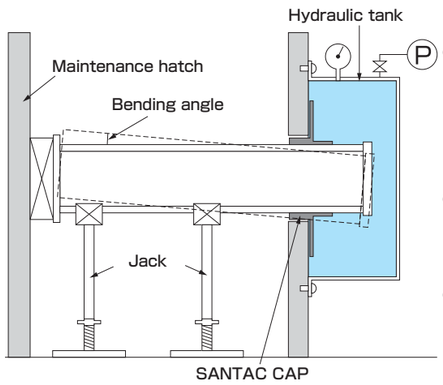
n	1	2	3	4	Average value
Adhesion kgf/25㎜×25㎜	20.1	20.3	20.9	19.1	20.3(3.3)

The disruption state was a cohesive disruption.

Outline of external water pressure test

Testing method

Since there is no officially specified method such as JIS, the water-tightness test was carried out in the following manner in accordance with the test method of each Maintenance hatch Industry Association.



① As shown in the figure on the left, SANTAC CAP was attached to the maintenance hatch so that external water pressure could act, and a tube with a watertight lid was attached to SANTAC CAP, and the hydraulic water tank was fixed to the maintenance hatch outer wall to load water pressure.

② In order to confirm the waterproofing property under the condition of flexibility,a change angle was given by a jack and a hydropressure of 0.098Mpa was maintained for 1 hour.

③ The presence or absence of water leakage was carried out visually, and thebending angle was read by a level meter.

SANTAC BOND

Material/Butyl rubber

The number of SANTAC CAPs to which 1kg of SANTAC BOND adheres is as follows.

V- 75 ～ V-125 8pieces
V-150 ～ V-300 6pieces
V-350 ～ V-400 5pieces

Test Results

SANTAC CAP size	Types of pipes and pipe diameters	External water pressure	Bending angle	Loading time	Results
250	Hume pipe ϕ250	0.147MPa	0°	1 hour	No abnormal
200	PVC pipe ϕ200	0.098MPa	10°	1 hour	No abnormal
250	Hume pipe ϕ250	0.098MPa	10°	1 hour	No abnormal

The specifications and appearance are subject to change without notice for product improvement.

HAYAKAWA RUBBER CO. ,LTD

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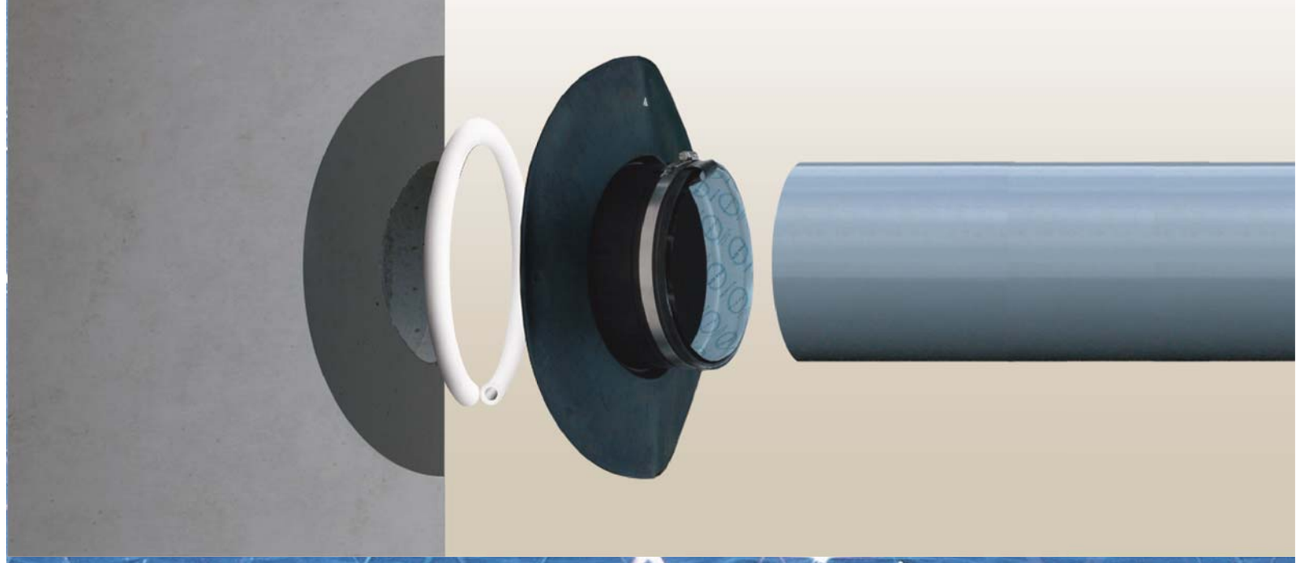
2020.11.17.SKD

Water stop flexible joint for maintenance hatch

SANTAC CAP



HAYAKAWA RUBBER CO. ,LTD

Innovative waterproof joints leading the 21st century

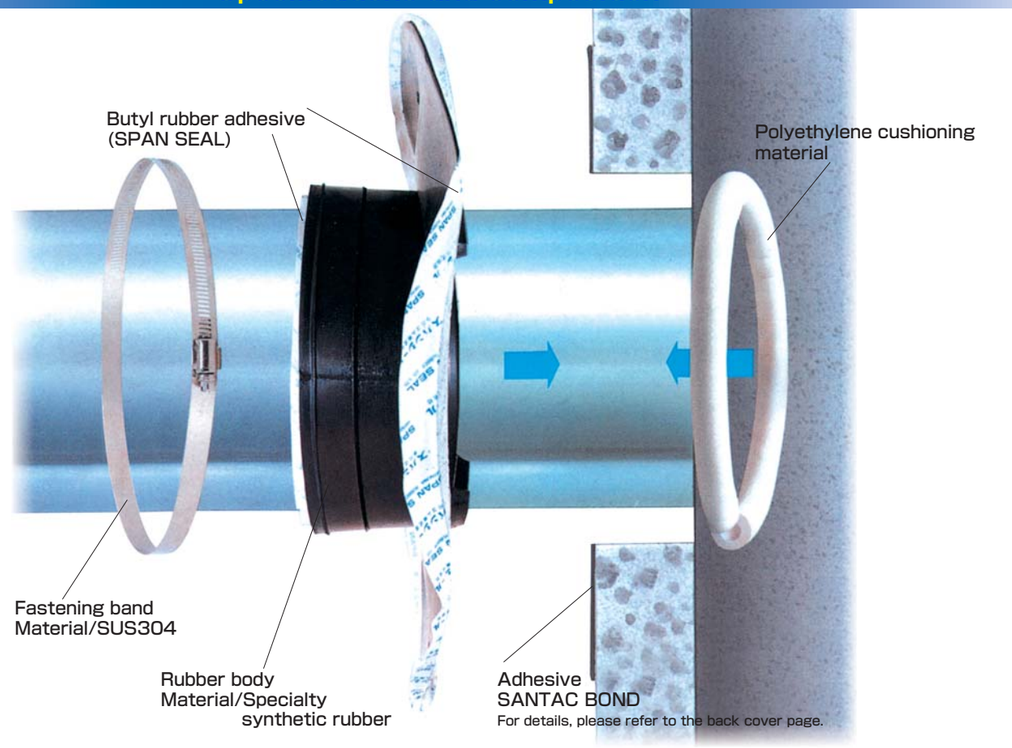
Water stop flexible joint for maintenance hatch

SANTAC CAP

This product has been certified and certified by the Sewerage New Technology Promotion Organization based on the Principal Terms for Implementation of Construction Technology Certification Project (Sewerage Technology) in the Construction Technology Certification Project established by the Construction Technology Certification Council with the aim of contributing to the promotion of the utilization of new construction technology developed voluntarily by the private sector.

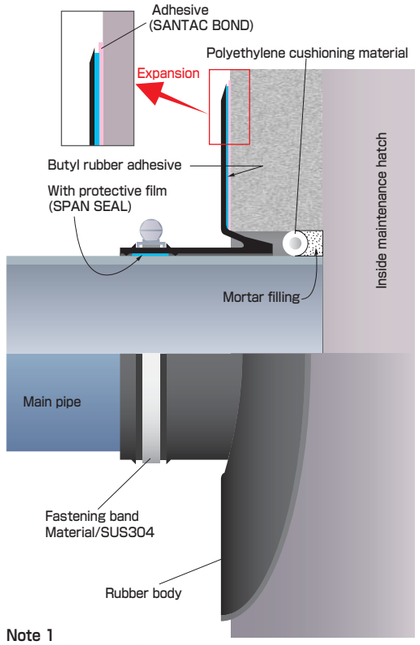
Certification No. 1640

Specifications and composition

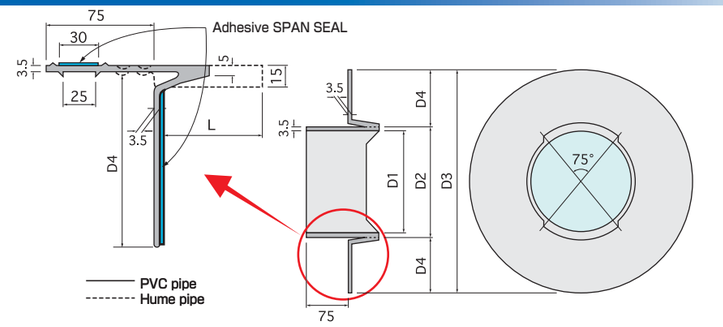


For details, please refer to the back cover page.

Tectonic profile



Dimensions



Dimension table

Application	Part No.	D1	D2	D3	D4	L	Standard drilling diameter
PVC pipe	V–75	92	99	332	111.5	30	164
	V–100	117	124	347	111.5	30	164
	V–125	143	150	373	111.5	30	206
	V–150	168	175	398	111.5	30	206
	V–200	219	226	453	113.5	30	252
	V–250	270	277	517	120	30	304
	V–300	321	328	568	120	30	356
	V–350	373	380	620	120	30	410
	V–400	425	432	692	130	30	464
Hume pipe	H–150	219	226	468	121	75	252
	H–200	257	264	504	120	75	304
	HT–250	309	316	556	120	75	356
	HT–300	363	370	610	120	75	410
	HT–350	425	432	692	130	30	464
Ceramics pipe	HT–250	309	316	556	120	75	356
	HT–300	363	370	610	120	75	410
	HT–350	425	432	692	130	30	464

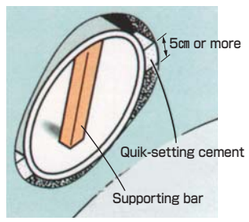
※ Please ask us because we have a detailed plan for each part number.

Note 1

Since PVC pipes are flexible pipes, pipe openings may be deformed by earth pressure. This is because there is a gap in the horizontal direction between the maintenance hatch drilling diameter and the PVC pipe, and before returning fill, take action in one of the following ways.

① Lateral gaps of 5cm or more are filled with rapid-concluding cement.

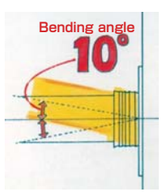
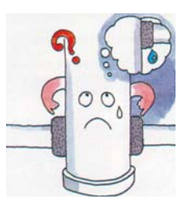
② Insert the support bar in the vertical direction of the PVC pipe until finishing work.



Note 2

In order to ensure water-tightness, the minimum bond length between the maintenance hatch and the collar of the SANTAC CAP must be 5cm or more according to the Sewerage Technology and Technology Examination Certificate.

Comparison of Features and Method

	Watertightness	Flexibility	Durability	Workability	Economic Efficiency
SANTAC CAP	● The maintenance hatch and fitting are cut off by surface adhesion of adhesive (SPAN SEAL). ● Complete watertightness is achieved by crimping and fastening with pipes and fastening bands. 	● SBR-based synthetic rubber and its ingenuity enable us to track uneven settlement and other changes. 	● Durability is excellent due to the use of SBR-based synthetic rubber, Butyl rubber-based adhesive, fastening bands, and foreclosure covers. ● It can be used under any conditions because it uses special synthetic rubber with ozone resistance, weather resistance, and chemical resistance. **Powerful**	● It can be installed in about 20 minutes without skill. ● Anyone can easily apply the SANTAC BOND on the maintenance hatch side. ● It does not require curing and can be filled back soon after installation. **20 minutes** **Simple**	● The construction period can be shortened because backfilling is possible immediately after mounting. ● Due to the watertightness and availability of water, long-term maintenance and management costs can be reduced. **Quickiy**
Conventional method	● In some cases, water may leak from the surface over time. ● There is a risk that irrigation may be damaged or modified due to uneven settlement of backfilled soil and knitting loads associated with the drawing of arrowboards. 	● It has little flexibility and may receive displacement due to unequal settlement, etc., and intruding water may enter from the connection part. ● Bonds are concrete or mortar. 	● Durability is unknown. 	● It takes time for concrete, adhesives, and joints to cure, and it is not possible to backfill. ● It is difficult to adjust the deviation angle, and it is necessary to devise a bending tube or universal fitting. ● Form assembly, concrete placement and its curing are required. **Long time**	● It does not require special products and the cost of installation is inexpensive. However, because it is low in watertightness and is unavailable, it incurs repair costs and increases long-term maintenance and management costs. In addition, skilled construction is required for construction, and personnel procurement and personnel costs are a problem.

Procedure

① After cleaning the opening, paint the first bond to avoid putting water on this part.

② Installed in a predetermined position.

③ Bond coating again.

④ SANTAC CAP installed.

⑤ Positioning
The bond should be touched with your fingers and allowed to dry (5 to 10 minutes) to a point where the bond is sticky but does not stick to your fingers.

⑥ From the inside of the maintenance hatch, fill the gap between the drilled cross section and the main pipe with cushioning material.

⑦ Pull protective film off (Maintenance hatch side)

⑧ Sufficiently crimped

⑨ Pull protective film off (Pipe side)

⑩ Tightening band

⑪ Fill mortar from inside to complete after backfill.

Precautions : Use protective equipment (gloves, etc.) to ensure safety.