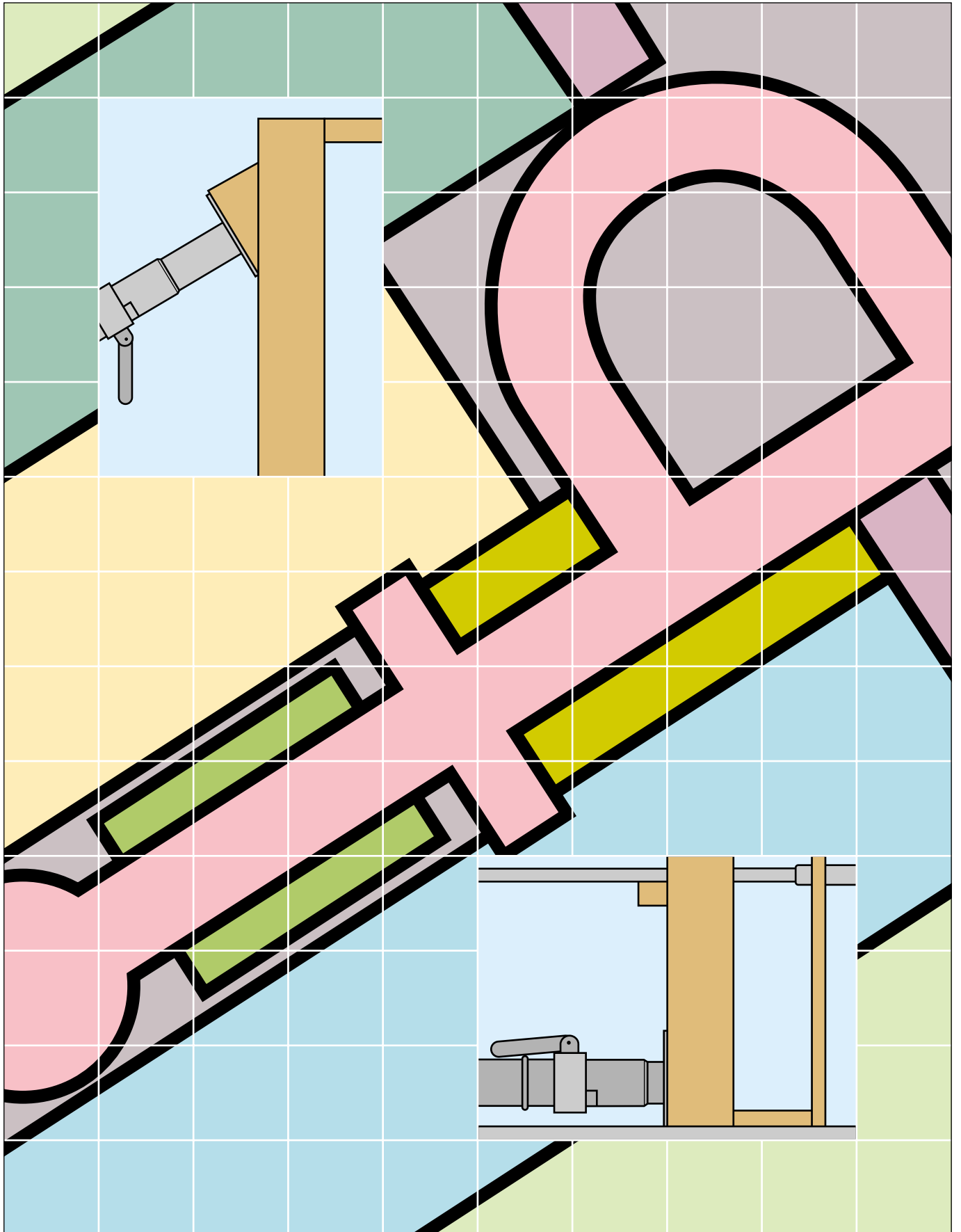




# Santac Rubber Waterstop



HAYAKAWA RUBBER CO., LTD.

# Introduction

Japan's civil engineering and construction technology is internationally regarded as world leading technology through its remarkable development in which difficult and economical construction works under adverse ground conditions, such as overpopulated areas, a rarity in the world have been overcome. Accordingly, high performance in each construction material has been required. Waterstop measures for joint parts in components for construction works of which scales have tended to be diversified is a significant issue and development of high performance and reliable joint part waterstop materials more suitable for each purpose have been demanded. Hayakawa Rubber Co., Ltd. developed Santac rubber waterstops by tackling the above challenges and focusing attention on distinguishable features. High performance of Santac rubber waterstops has been achieved as waterstops in expansion joint parts of concrete structures.

## Features

- The vulcanized natural rubber waterstop has high tensile strength and elongation.
- The tear web bulb allows variations in its shape in order to work with both lateral and transverse movement of the concrete structure and keeps the waterstop from strain.
- Since the Span Seal firmly sticks to the concrete, there is no water leakage.
- The rib prevents the waterstop from getting thin and stops the water flow.

## Applications

### ■Civil Engineering constructions

Railroads and Roads	Underground passages, subways, box culverts, bridges
Electric Power Plants	Power generator stations, ducts
Waterworks and Sewage	Reservoirs, sedimentation tanks, treatment tanks, pump stations
Agricultural irrigation	Culverts, reservoirs, irrigation channels, siphons
Rivers and Harbors	Estuary dams, levee bulkheads, utility tunnels, pools, underground parkings

### ■Architectural constructions

Underground Structure	Multistoried buildings
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## Physical Properties

### ■Standard test

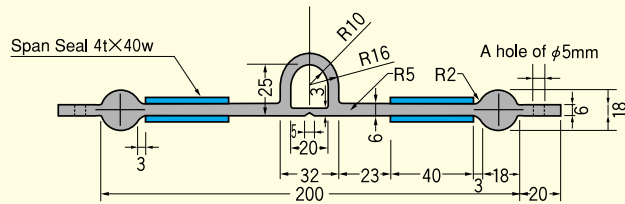
Item	Value	Test Method
Density	1.14	JIS K6268
Hardness	62	JIS K6253·5·2 JIS A
Tensile Strength	21.1MPa (215kgf/cm <sup>2</sup> )	JIS K6251
Elongation at Break	470%	JIS K6251

### ■Aging test

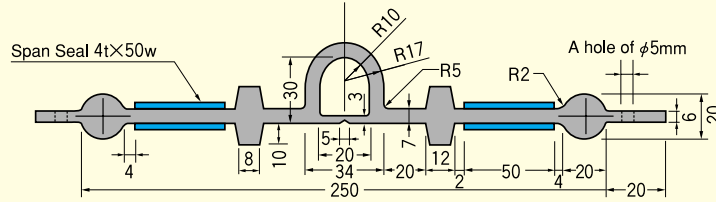
Item	Value	Test Method
Hardness	+2	JIS K6257
Tensile Strength Holding	96%	
Elongation Holding at Break	93%	

## Shape and Dimensions Tear Web Bulb Models

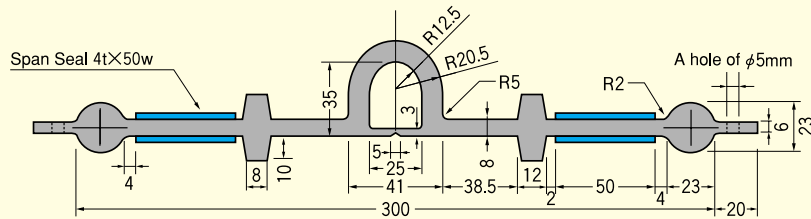
**E-620-N**  
(6×200mm)  
3.8kg/m



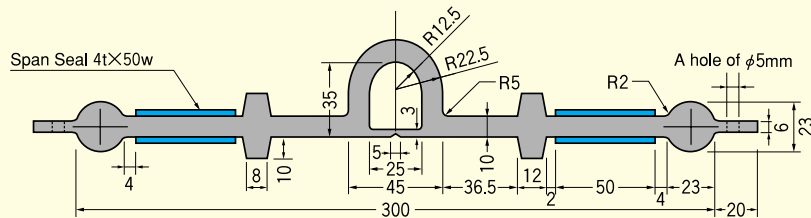
**E-725-N**  
(7×250mm)  
4.7kg/m



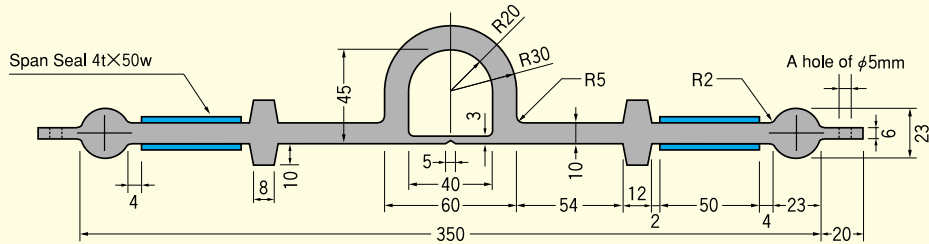
**E-830-N**  
(8×300mm)  
5.9kg/m



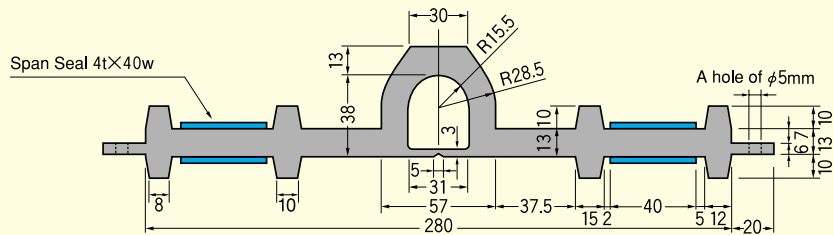
**E-1030-N**  
(10×300mm)  
6.6kg/m



**E-1035-N**  
(10×350mm)  
7.1kg/m

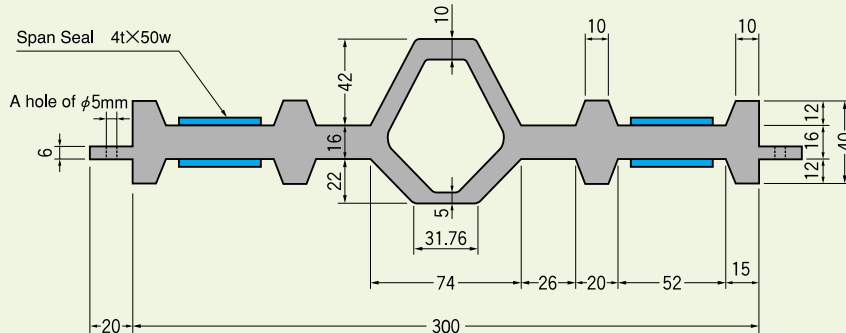


**E-1328-N**  
(13×280mm)  
7.4kg/m



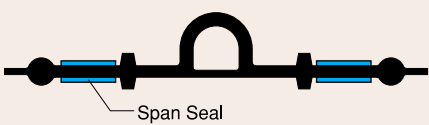

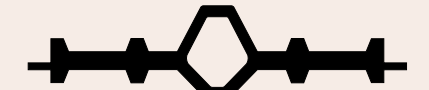
## Shape and Dimensions Earthquake-Resistant Model

**E-1630-N**  
(16×300mm)  
9.25kg/m

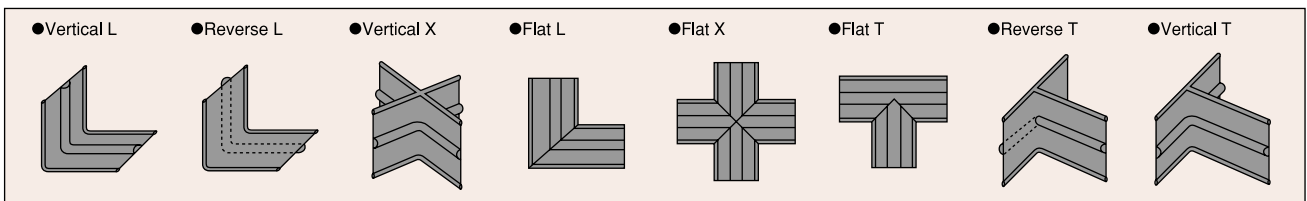


\* J type (without Span Seal) :8.25kg/m

## Supply

Configuration	Product name	Size(m/m) t×w	Application
Rubber Waterstop (with Span Seal) 	E-620-N	6×200	1. Due to our built-to-order manufacturing process, straight part lengths and special corner differ according to need, and are produced separately according to an overall expansion structural drawing.  2. Orientation of the bulb is not specified, it is produced according to our own specifications.  3. Waterstop lengths are defined as a dimension measured from the center of the flat part (thickness).
	E-725-N	7×250	
	E-830-N	8×300	
	E-1030-N	10×300	
	E-1035-N	10×350	
	E-1328-N	13×280	
Rubber Waterstop 	J-620-N	6×200	
	J-725-N	7×250	
	J-830-N	8×300	
	J-1030-N	10×300	
	J-1035-N	10×350	
	J-1328-N	13×280	
Rubber Waterstop 	J-1630-N	16×300	

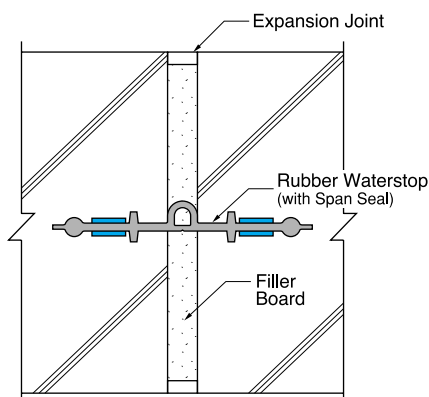
## Prefabricated Modules



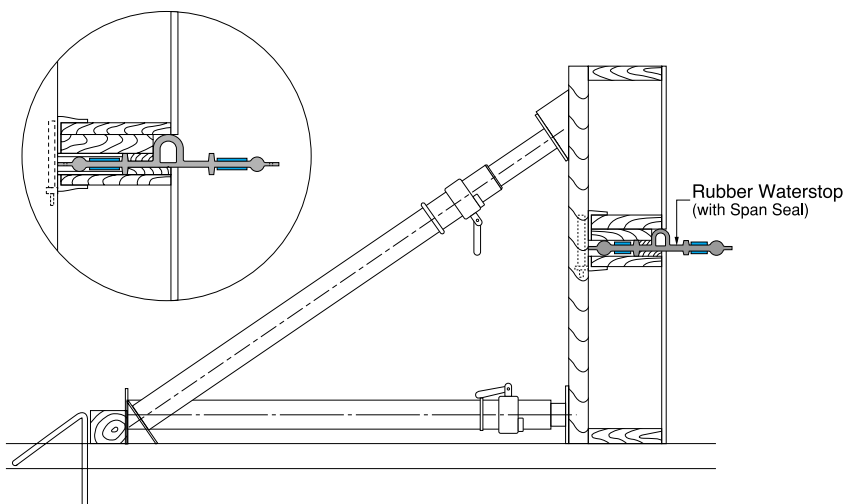
## Installation

### Standard method

#### Basic waterstop placement



#### Setting drawing





## Jobsite Installation guide



**Waterstop firmly interposed waterstop between the forms.**



**Edges of the waterstop covered with a protective sheet.**



**Condition of the waterstop after the primary concrete is poured.**

# Standard Jointing Guide

Material

Material	Part number; Type	Quantity; Size	Application
Adhesive	GS-101	1kg/can	For bonding waterstop together
Unvulcanized rubber	G-18	1kg/can	For bonding waterstop to SPAN SEAL
Joint mold	Unvulcanized rubber for joints	—	To be used when waterstop is applied to joints
Joint mold	SPAN SEAL TM	4 × 50(4 × 40) × 17m	To be applied to the surface of the waterstop
Joint mold	Designated joint mold	—	On-site joint mold (with temperature control box)
Material	SANTAC jointer (or gum adhesive tape)	1.5 × 100 × 10m	To be applied to void on the reverse side of the waterstop joint

## Jointing Method

On site, rubber waterstop is jointed by heat-molding using a designated jointing mold.

The jointing should be performed at a right angle, and buff the surface with sandpaper.

Apply adhesive (GS-101) on the jointing surface and dry.

Apply adhesive (GS-101) to the unvulcanized rubber surface and, press it firmly against the jointing surface of the waterstop to ensure good adhesion.

Place the jointing portion of the waterstop at the center of the joint mold and place the top of the joint in place. Fasten the joint using the jointing mold following the procedure below.

Place the end of the waterstop at the center of the bottom jointing mold. Next, set a pressure jig in place, and press it down.

Bring the other waterstop end face to face with the first end, set another pressure jig and press it lightly by hand.

Place the jointing mold on a heating plate, pressing it lightly by hand. Press the pressure jigs firmly using an even force. Press the top mold firmly using an even force.

Heat at 140°C for 20-30 minutes until the materials are fused.

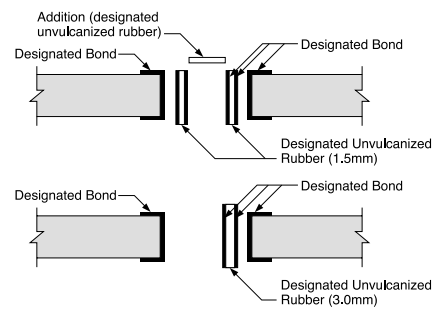
Remove the pressure jigs (on both sides), remove the top

jointing mold carefully, and make sure that the jointing is complete (inspect visually).

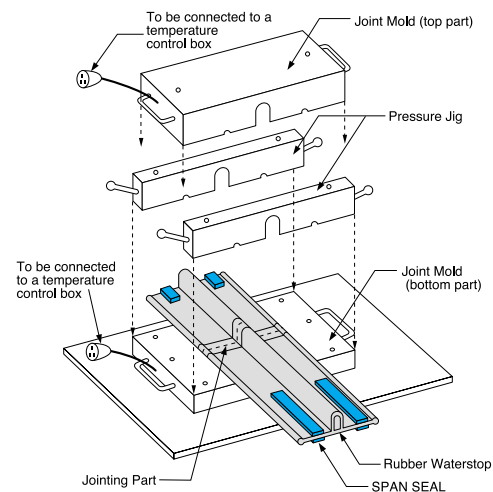
Apply adhesive (GS-101) to the void on the reverse side of the waterstop joint. After allowing the bond to dry, adhere SANTAC jointer (or gum adhesive tape) to the surface.

Apply adhesive (GS-101) to the surface of the waterstop to be jointed. After allowing the bond to dry, lay (or attach) SPAN SEAL to the surface.

## Jointing Waterstop Together



## Mold Unit for On-Site Jointing



On-site jointing of waterstop using an Joint Mold ▶