www.sejongeng.co.kr

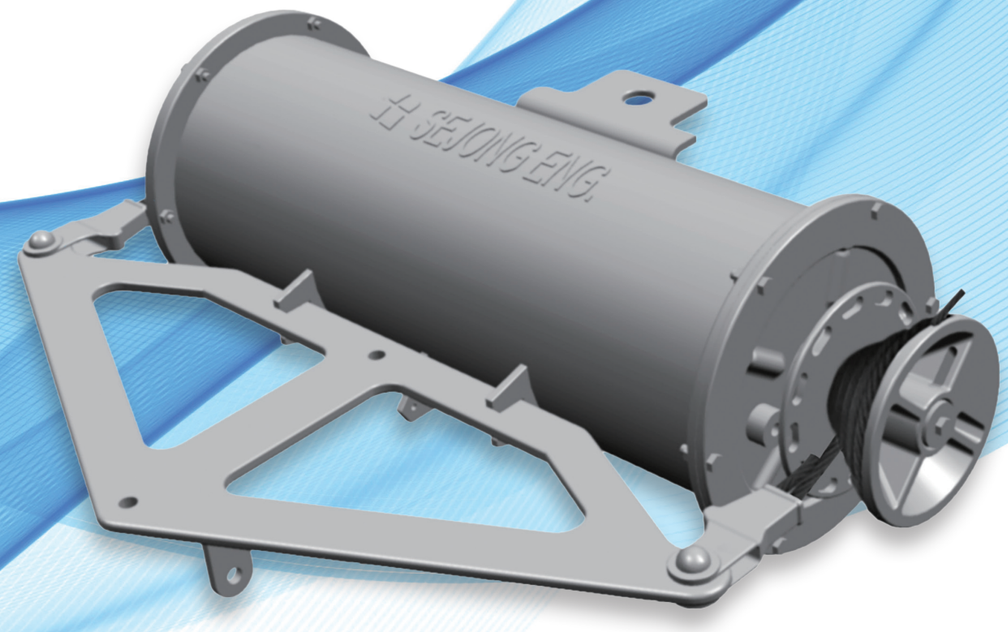
11F, Hanhwa Bizmetro 1(il)-cha, 242, Digital-ro, Guro-gu, Seoul, Korea

Tel +82.2.262.12345 **Fax** +82.2.262.12340

New Technology / High Performance

MAINTENANCE FREE, TOTALLY ENCLOSED TYPE

Roll Spring Type Automatic Tensioning Device for Catenary System of the Electric Railway



SINCE 1985

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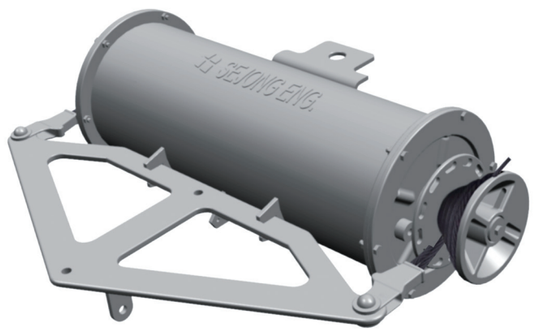
Characteristic & Structure



Economic & Stability

· Maintenance Free During 20 years, Totally Enclosed Type

· Min. Quantity Installation by Longer Half Section Length(955m, 80˚C)

High Performance

· Tension device specifications (5 types): 14, 20, 24, 26, 28 [kN]

· Stopper Function:stop in 0.5sec(70mm)

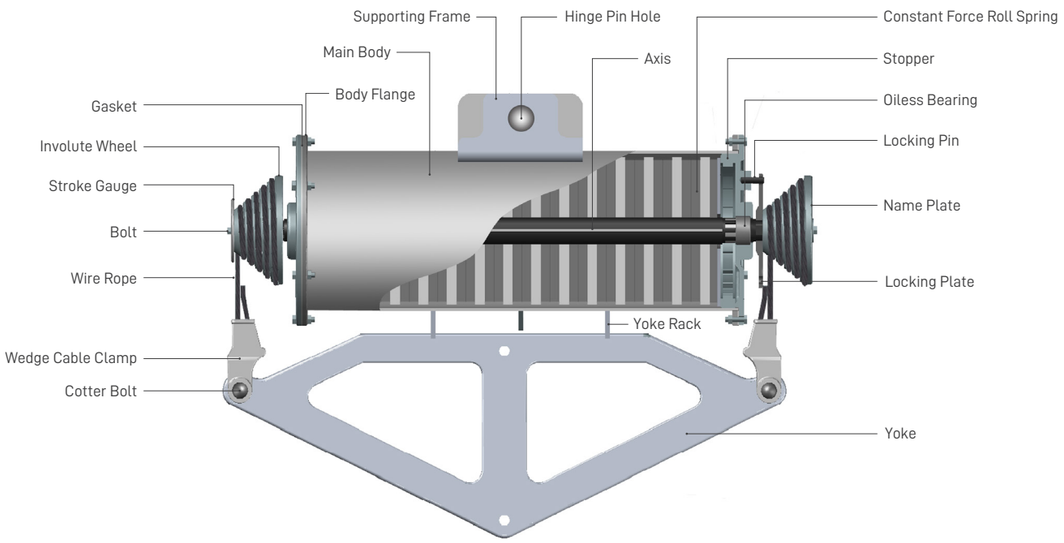
· Tension Variation Rate : ±5 [%] below

Compact & Light weight

· Easy Installation

· Minimized Visual Appearance

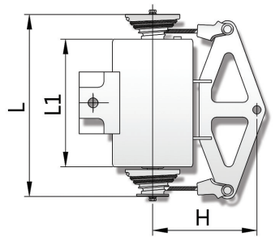
· Easy Installation in the Tunnel and Bridge



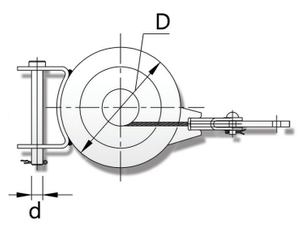
Technical Parameters and Key Dimensions

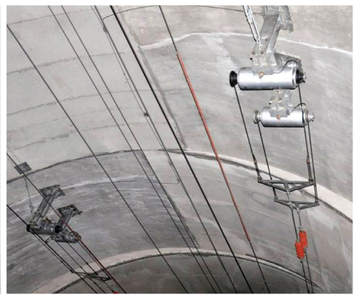
Model	Rated Tension [kN]	Working Stroke [mm]	Dimensions [mm]					Gross Weight [kg]
			L	L1	d	H	D	
RSTD14	14	0~1300	779	518	Ø36	450	Ø325	200
RSTD20	20	0~1300	1,000	738	Ø36	503	Ø325	261
RSTD24	24	0~1300	1,109	846	Ø36	550	Ø325	294
RSTD26	26	0~1300	1,109	846	Ø36	550	Ø325	294
RSTD28	28	0~1300	1,164	903	Ø36	550	Ø325	312

Plan View

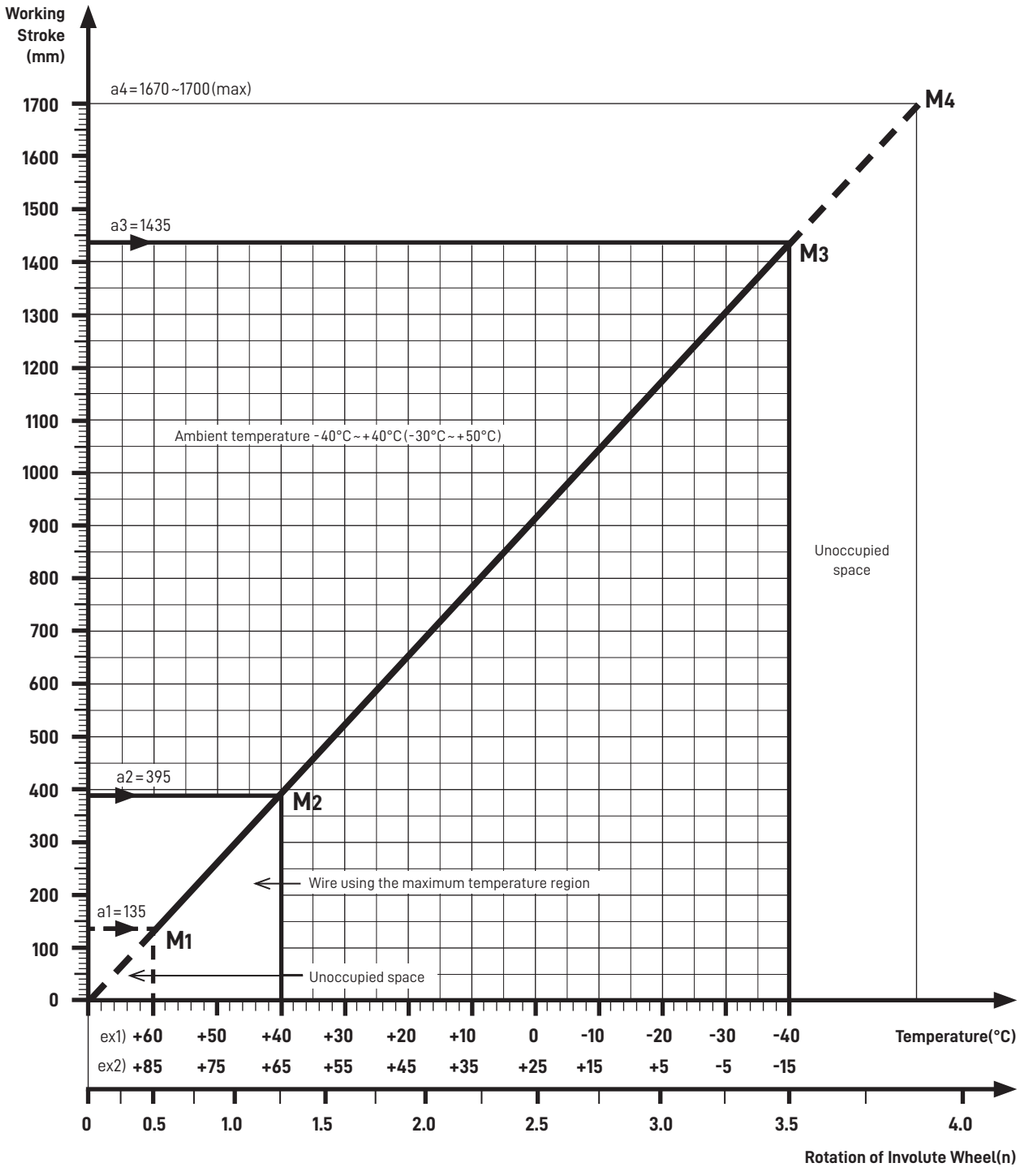


Side View





Characteristic Curve with Temperature Variation



Test Report

Control No. : KR-2016-02

Performance Certificate of Railway Facility

Name of Railway facility	Traction System (Roll Spring Type Automatic Tensioning Device, Plate Type, 20KN)		Field	Electrical Traction Power Supply
Developer	Company Name	Sejong Engineering Co., Ltd.	Corporation No. (Business License No.)	110111-0735633
	Name (Representative)	Song, Jinho	Birthday	520505-*******
	Address	242 Digital-ro, Guro-gu, Seoul (11F, Hanhwa bizmetro, 1cha, Guro-dong)		
Coverage	Applicable Section : Required section of 20KN tension.			

For the railway facility above, this performance Certificate is issued in accordance with Article 12, section 6 of 「Performance Verification Guideline for Railway Facility」 by Korean Rail Network Authority.

March 18, 2016

Director of KR Research Center, Korean Rail Network Authority (seal)

TEST REPORT

Sheet NO. : 1 / 6

Certificate No.	R12-1715
Client	(Company name) Sejong Engineering. (CEO) Song Jin Ho (Address) 11F, 1st Hanhwa Bizmetro Bldg, 851 Guro3-dong, Guro-gu, Seoul, Korea
Manufacturer	(Company name) Sejong Engineering. (CEO) Song Jin Ho (Address) 11F, 1st Hanhwa Bizmetro Bldg, 851 Guro3-dong, Guro-gu, Seoul, Korea
Receipt No.	T12-0444
Test Date	October 05, 2012 ~ November 15, 2012
Commodity	Electric Fittings for Catenary system Type : Roll Spring Tension Balancer Device
Test Standard	Item and criteria of assembly test for Roll Spring Tension Balancer
Test Record	..... 6 Sheets Amount 6 Sheets
Test Result	The above result of detailed testing is same per item as stated in the annexed test record.
Uses:	Verification of Product quality.

Note : This results of testing has been made for the commodities provided by the applicant.
Except for the defined uses, this report should not be used.

Tester : Koh Sang jin Charge of technology : Kown Sung Tae

Date : 2012. 11. 19.

Certificated by 한국철도기술연구원장
President of Korea Railroad Research Institute

KRRI

R:T:2-0444|R:2-1715|03|KLN|10221|12023|12092|12119
S-QP20-02(7)

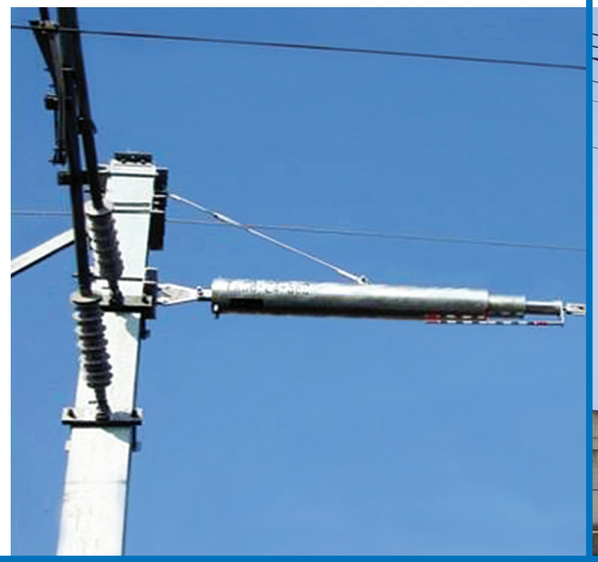
Comparison of Automatic Tensioning Device

	Roll Spring Type	Coil Spring Type	Wheel Type
Performance	**· High Performance** **· Light Weight** **· Compact Size** **· Easy Installation** **· Maintenance Free** **· Totally Enclosed Type** **· Reduction of recovery time in case of catenary disconnection**	· High Tension Variation · Short Working Stroke · Difficult Installation by Long Length and Heavy Weight · Longer recovery time in case of catenary disconnection	· Space Limitation for Installation · Difficult Installation by Heavy Weight and Many Accessories · Reduction of recovery time in case of catenary disconnection
Tension Variation	**±5(%) below**	±15(%) below	±5(%) below
Temperature Range	**80°C (-40°C ~ +40°C)**	60°C (-20°C ~ +40°C)	60°C (-20°C ~ +40°C)
Working Stroke	**1,300 (mm)**	750 (mm)	1,200 (mm)
Max. Half Section Length(for 80°C)	**955(m)**	735(m)	1,176(m)
Safety – Stopper Function	**Yes**(stop in 0.5sec(70mm))	No	Yes
Safety – Lock Function	**Yes**	No	No
Maintenance	**Adjustment & Detail Inspection Free**	Adjustment twice a year	Detail Inspection twice a year
Unit Weight (for 20kN)	**261[kg]**	330 [kg]	598 [kg]
Size (for 20kN)	**1000 x 325 (mm)**	2,257 x 241(mm)	5,500 x 1,050 (mm)
Endurance (Wind & Vibration)	**Strong**	Weak	Weak
Economic Feasibility (Life Cycle)	**100%**	140%	164%

Installation View of Automatic Tensioning Device

Roll Spring Type

Coil Spring Type



Wheel Type