Seohan Innobility

COMPANY PRODUCTS
INTRODUCTION

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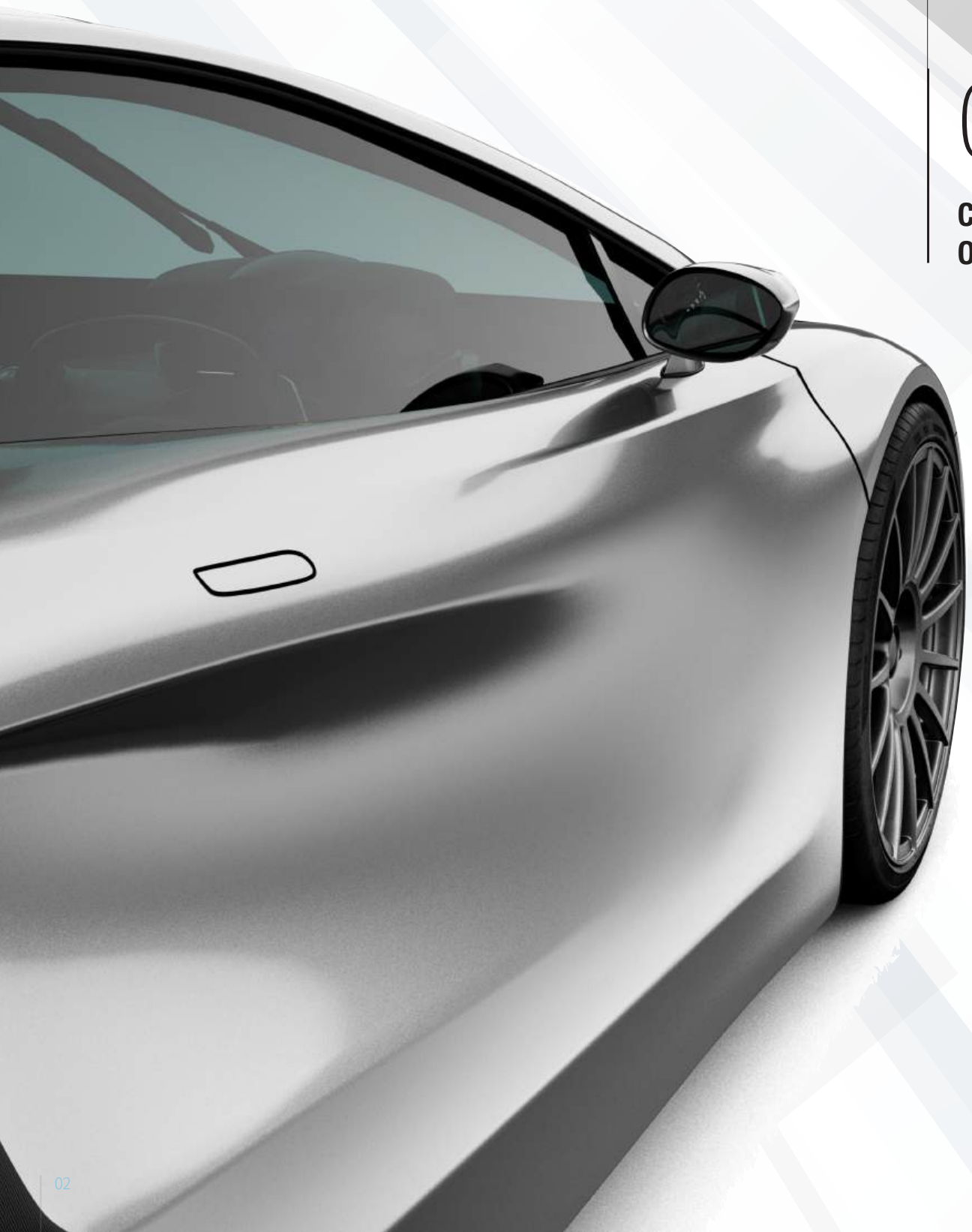

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Company Overview

Forget Customer Satisfaction, Think Customer Surprise.

Founded in 1996, Seohan Innobility has been manufacturing core automotive components, such as Halfshafts and Suspension Axles, based on world-class technology and exceptional quality, and has grown into a global automotive components manufacturer. In addition, Seohan Innobility strives to be the No. 1 partner by continuously creating value, with customer trust as its highest priority.

Research and Development

Seohan Innobility

Technology-Based New Product Development Partnerships

Seohan R&D Center

Seohan R&D Center researches Driveline and Chassis components, which are essential for vehicle movement, and continuously explores modularity and EV components that will shape the future of mobility.

R&D Sector

Automotive Driveline & Chassis parts, EV parts, New materials & Methods

Driveline

- Halfshaft
  - Outboard Joint
  - Inboard Joint
  - Shaft
  - Inner Shaft
- Joint for Propeller Shaft

Chassis

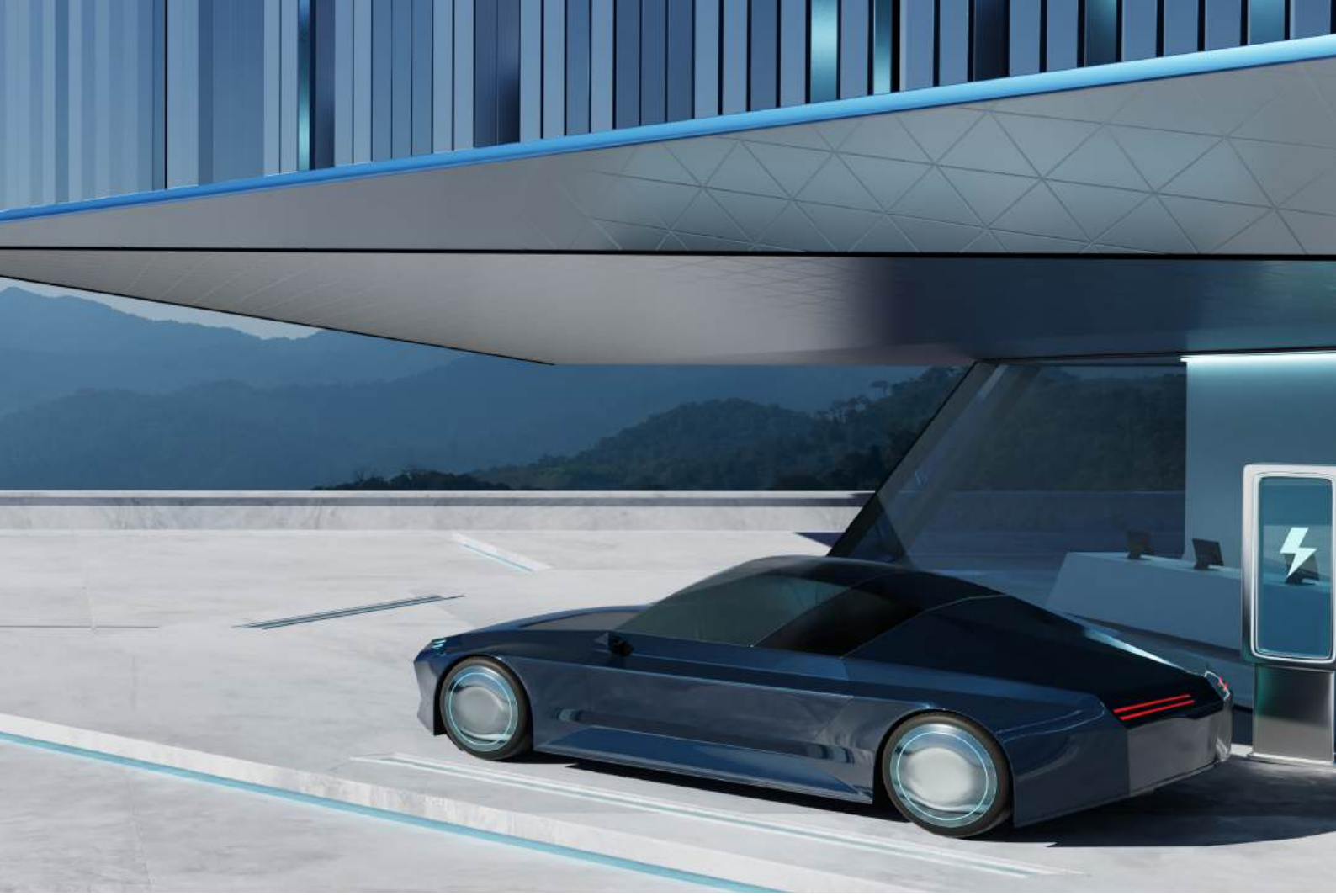
- Suspension Axle
  - Knuckle & Carrier
- Damper Fork
- Brake Disc

EV

- Electric Axle
- Lightweight & Modular Parts

Material & Method

- New alloy materials
- Casting
- Forging
- Coating
- Heat treatment



Optimal Design using CAD/CAE

Seohan R&D Center is developing innovative products based on 30 years of robust design, CAE know-how and professional manpower.

Research Facilities

Seohan R&D Center has a wide range of testing equipment, enabling high-quality reliability testing and evaluation.







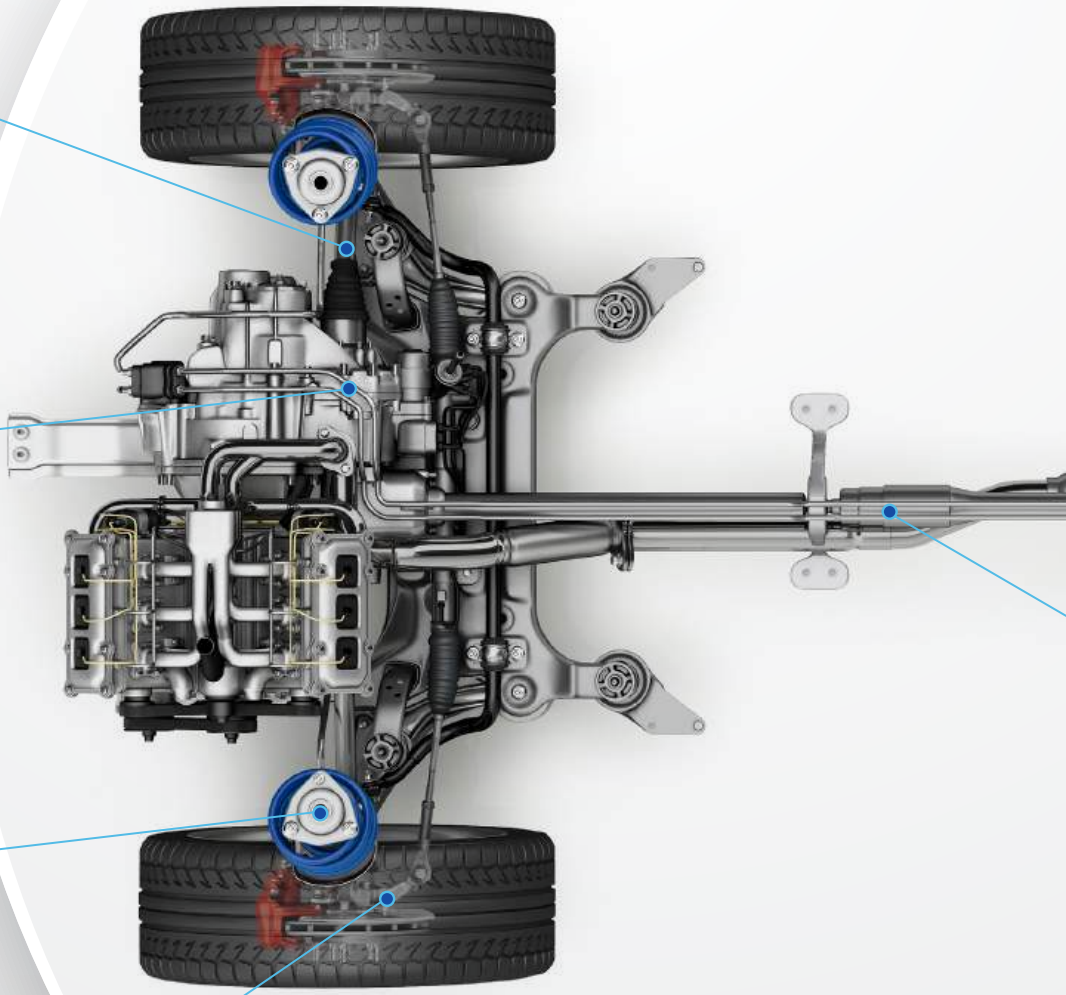
Product Overview

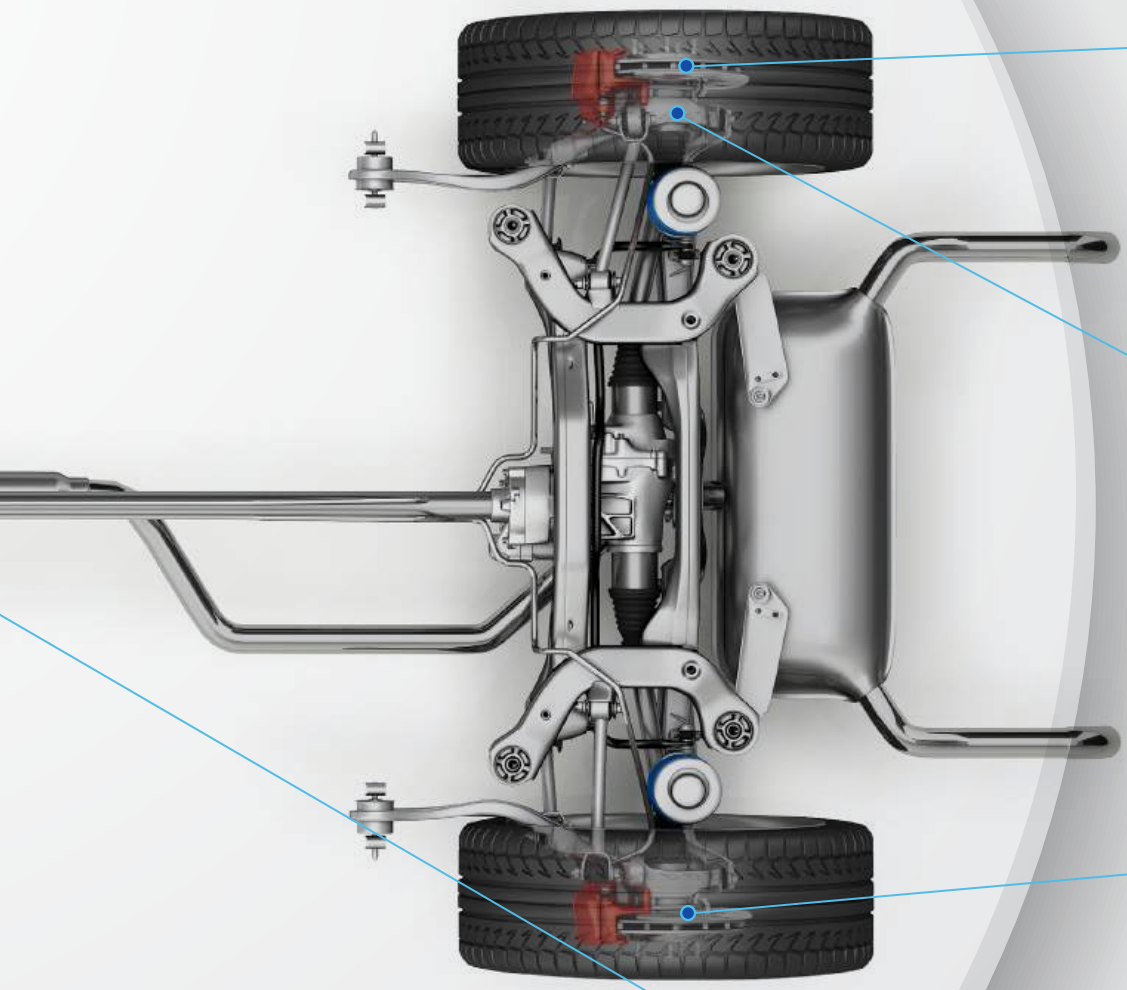
Halfshaft

Inner Shaft

Damper Fork

Knuckle





Brake Disc

Carrier

Suspension Axle

Joint for Propeller Shaft

Halfshaft

Product Description

Halfshaft constantly delivers the power from an engine to wheels although the operating angle changes.
Seohan Innobility has been expanding its product line-up to accommodate large SUVs with high ground clearance and high-torque EVs.
So, Large Sized joint and Ball Spline Joint are developing.

Features

- High durability and low NVH
- More lightweight and compact
- Longer life and eco-friendly

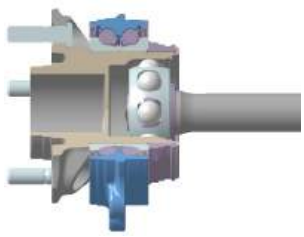
Line-up

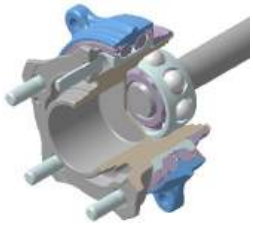
● : Production , ○ : Develop

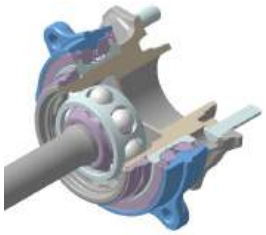
Size			#71	#75	#79	#82	#87	#92	#95	#100	#104	#109	#113	#121	#135	#153
JAEL (Nm)			1100	1300	1500	1700	2100	2300	2600	2900	3300	3700	4100	5100	7000	9800
Fixed Joint	6Ball	BJ	○	●	●	●	●	●	●	●	●					
		BJc				○	●		●	●	●					
		UBJ								●	●	●				
		SUJ									○	○				
	8Ball (˝10Ball)	EBJ													˝○	○
		EUJ									○	○	●			
		SUJ										○	○			
		HBJ							○	○	○			○		
		SJ				○			○		˝○			○		
		FCJ								○	○	○	○	○		
Plunging Joint	Tripod	TJ	○	●	●	●	●	●	●	●						
		TJc				○	●		○	○	○					
	Tripod Shudderless	LSJ							●	●	●					
		HLSJ					●		●	●	●	●	○			
	6Ball	DOJ				●	●	●	●	●						
		CJ			●	○	○	○	●	○	○	○	○	○		
	8Ball (˝10Ball)	ECJ									●	●	●			
		EDOJ									●	○	○	○	˝○	
	-	BSJ									○		○	○		

IDA (Integrated Drive Axle)

· Integrated hub & Halfshaft with new gen hub bearing
· Lightweight and High axial stiffness
· IDA parts : ECJ+ECJ, FCJ+EDOJ

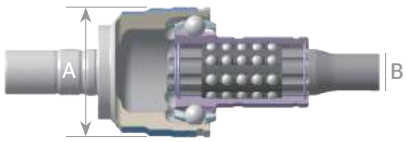






BSJ (Ball Spline Joint)

· Ball spline shape inside inner race of SJ/FCJ
(8 balls-compact design)
· New line-up joints over Size 125 (Lower vibration joint)
· Max. angle 32˚ and 60mm plunging



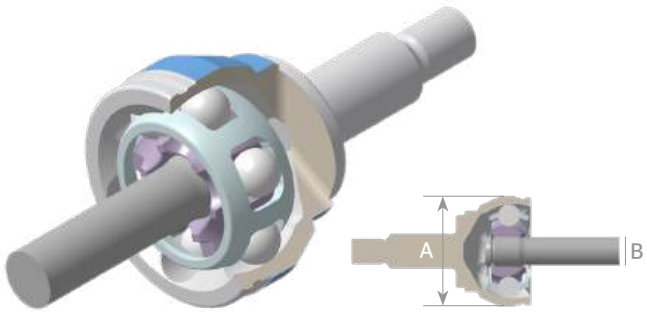
BSJ (Ball Spline Joint)

Size	JAEL	Dimension		Max angle
		A	B	
104	3300	Ø92.5	Ø26.5	32.0 Deg
113	4100	Ø100.5	Ø28.5	
121	5100	Ø115	Ø30.8	

Fixed Joint

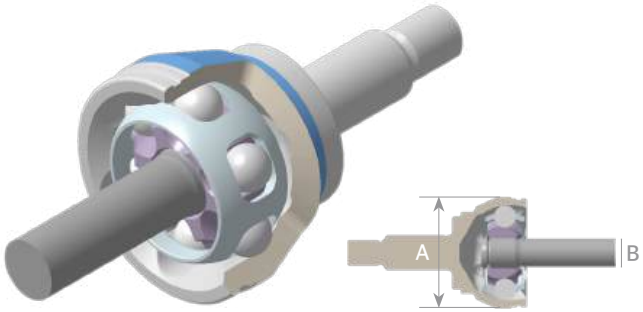
BJ (Birfield Joint)

Size	JAEL	Dimension A	Dimension B	Max angle
#71	1100	Ø66.3	Ø19.0	46.5 Deg
#75	1300	Ø68.9	Ø20.0	
#79	1500	Ø73.1	Ø20.5	
#82	1700	Ø77.8	Ø22.0	
#87	2100	Ø81.2	Ø23.2	
#92	2300	Ø85.0	Ø24.0	
#95	2600	Ø88.0	Ø24.5	
#100	2900	Ø95.0	Ø25.4	
#104	3300	Ø99.2	Ø26.5	



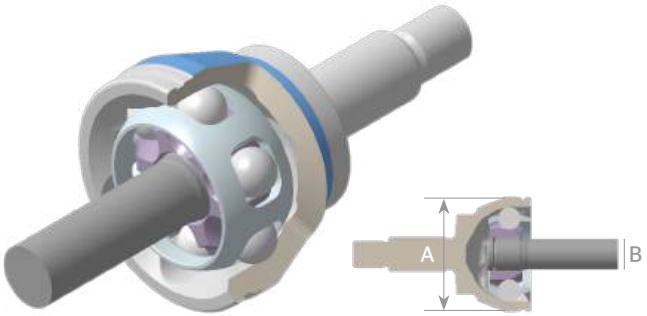
BJc (Compact Birfield Joint)

Size	JAEL	Dimension A	Dimension B	Max angle
#82	1700	Ø75.0	Ø22.0	46.5 Deg
#87	2100	Ø79.0	Ø23.2	
#95	2600	Ø85.0	Ø24.5	
#100	2900	Ø88.9	Ø25.4	
#104	3300	Ø93.5	Ø26.5	



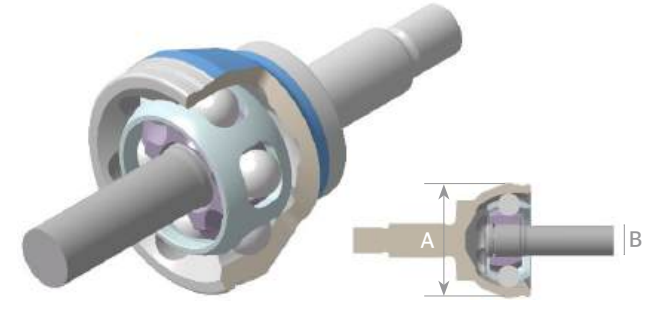
UBJ (Undercut free Birfield Joint)

Size	JAEL	Dimension A	Dimension B	Max angle
#100	2900	Ø97.0	Ø25.4	50.0 Deg
#104	3300	Ø101.2	Ø26.5	
#109	3700	Ø105.3	Ø27.5	



SUJ (Symmetric double offset Undercut free Joint) (*) : 8Ball

Size	JAEL	Dimension A	Dimension B	Max angle
#104	3300	Ø101.2	Ø26.5	50.0 Deg
#109	3700	Ø105.3	Ø27.5	
#109 (*)	3700	Ø102.5	Ø27.5	
#113 (*)	4100	Ø109.6	Ø28.5	

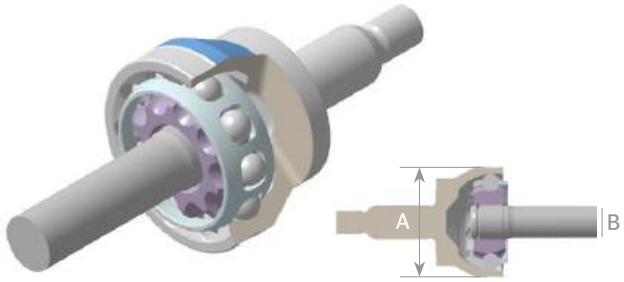


Fixed Joint

EBJ (Efficiency Birfield Joint)

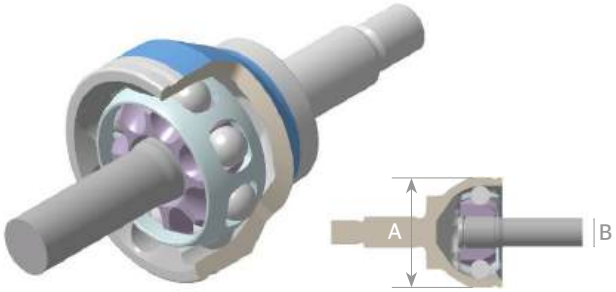
(*) : 10Ball

Size	JAEL	Dimension A	Dimension B	Max angle
#135 (*)	7000	Ø115.5	Ø33.1	30.0 Deg
#153	9800	Ø133	Ø38.9	46.0 Deg



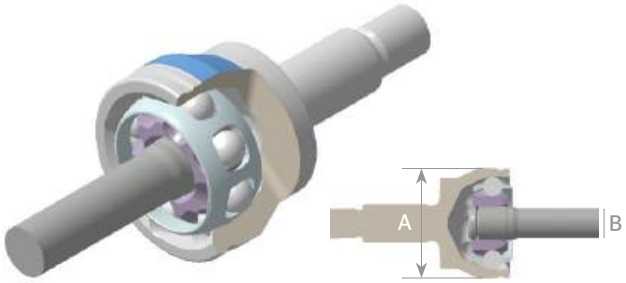
EUJ (Efficiency Undercut free Birfield Joint)

Size	JAEL	Dimension A	Dimension B	Max angle
#104	3300	Ø102.0	Ø26.5	52.0 Deg
#109	3700	Ø105.8	Ø27.5	
#113	4100	Ø109.6	Ø28.5	50.0 Deg



HBJ (High angle Birfield Joint)

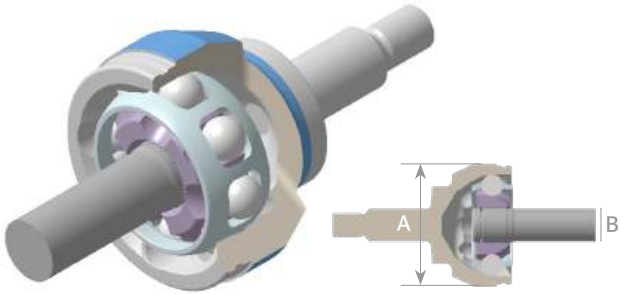
Size	JAEL	Dimension A	Dimension B	Max angle
#95	2600	Ø88.0	Ø24.5	52.0 Deg
#100	2900	Ø95.0	Ø25.4	
#104	3300	Ø102.0	Ø26.5	
#121	5100	Ø118.9	Ø30.8	



SJ (Symmetric offset Joint)

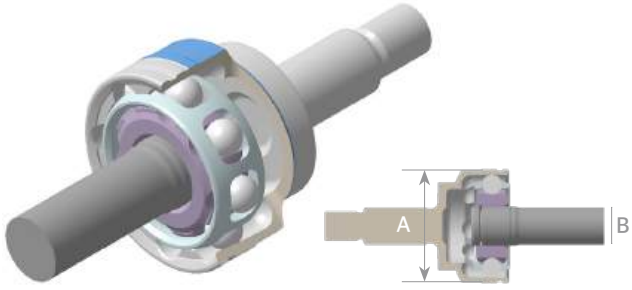
(*) : 10Ball

Size	JAEL	Dimension A	Dimension B	Max angle
#82	1700	Ø73.6	Ø22.0	
#95	2600	Ø79.2	Ø24.5	24.0 Deg
#104 (*)	3300	Ø89.0	Ø26.5	
#121	5100	Ø116.5	Ø30.8	35.0 Deg



FCJ (Fixed Cross groove Joint)

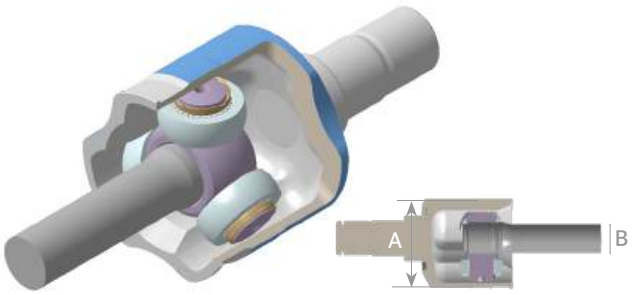
Size	JAEL	Dimension A	Dimension B	Max angle
#100	2900	Ø84.6	Ø25.4	
#104	3300	Ø87.4	Ø26.5	25.0 Deg
#109	3700	Ø90.0	Ø27.5	
#113	4100	Ø94.5	Ø28.5	
#121	5100	Ø115	Ø30.8	30.0 Deg



Plunging Joint

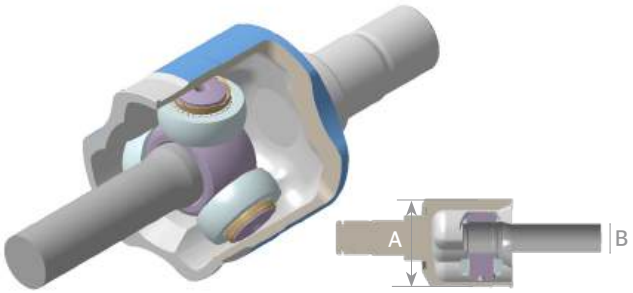
TJ (Tripod Joint)

Size	JAEL	Dimension A	Dimension B	Max angle
#71	1100	Ø66.0	Ø19.0	24.0 Deg
#75	1300	Ø69.0	Ø20.0	
#79	1500	Ø71.6	Ø20.5	
#82	1700	Ø74.6	Ø22.0	
#87	2100	Ø78.7	Ø23.2	
#92	2300	Ø81.6	Ø24.0	
#95	2600	Ø84.8	Ø24.5	
#100	2900	Ø90.1	Ø25.4	



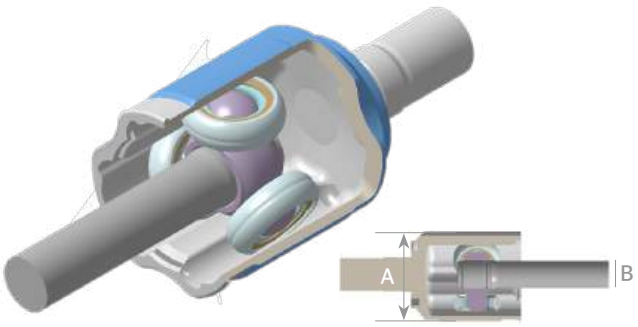
TJc (Compact Tripod Joint)

Size	JAEL	Dimension A	Dimension B	Max angle
#82	1700	Ø71.0	Ø22.0	24.0 Deg
#87	2100	Ø74.6	Ø23.2	
#95	2600	Ø82.0	Ø24.5	
#100	2900	Ø84.8	Ø25.4	
#104	3300	Ø93.5	Ø26.5	



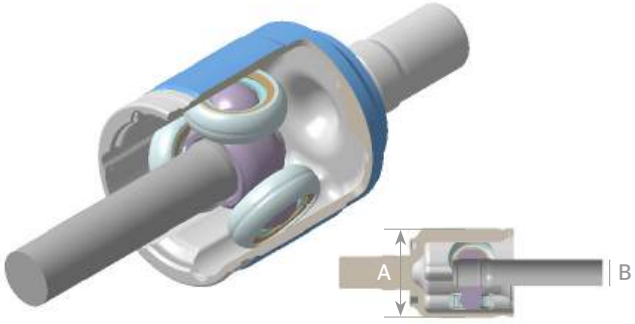
LSJ (Least Shudder Joint)

Size	JAEL	Dimension A	Dimension B	Max angle
#95	2600	Ø84.0	Ø24.5	24.0 Deg
#100	2900	Ø87.0	Ø25.4	
#104	3300	Ø90.0	Ø26.5	



HLSJ (High angle Least Shudder Joint)

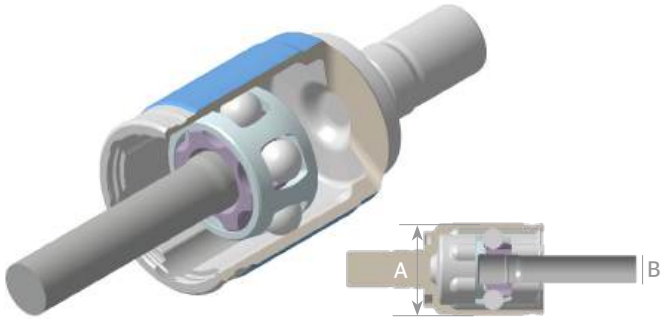
Size	JAEL	Dimension A	Dimension B	Max angle
#87	2100	Ø75.1	Ø23.2	28.0 Deg
#95	2600	Ø82.0	Ø24.5	
#100	2900	Ø84.1	Ø25.4	
#104	3300	Ø88.0	Ø26.5	
#109	3700	Ø93.0	Ø27.5	
#113	4100	Ø96.8	Ø28.5	



Plunging Joint

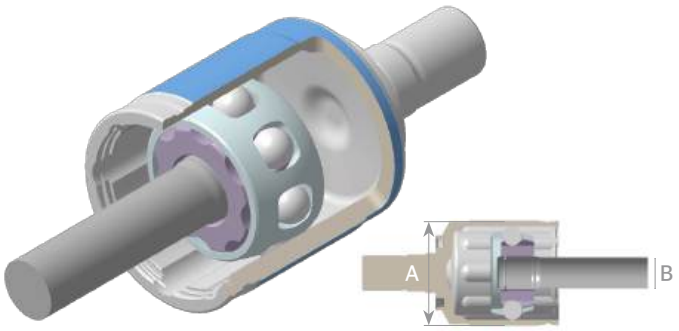
DOJ (Double Offset Joint)

Size	JAEL	Dimension A	Dimension B	Max angle
#82	1700	Ø75.7	Ø22.0	22.0 Deg
#87	2100	Ø79.0	Ø23.2	
#92	2300	Ø82.0	Ø24.0	
#95	2600	Ø85.5	Ø24.5	
#100	2900	Ø89.0	Ø25.4	



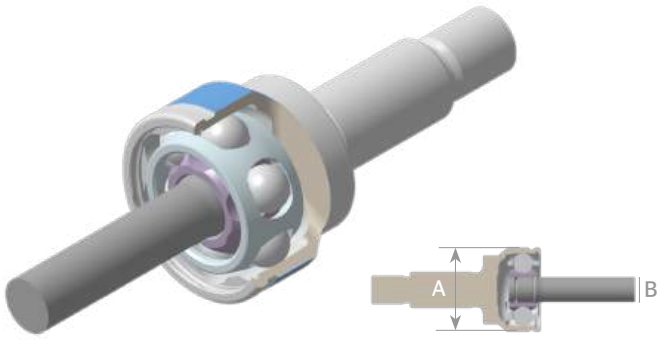
EDOJ (High Efficiency Double Offset Joint) (*) : 10Ball

Size	JAEL	Dimension A	Dimension B	Max angle
#104	3300	Ø86.0	Ø26.5	30.0 Deg
#109	3700	Ø94.0	Ø27.5	
#113	4100	Ø97.4	Ø28.5	
#121	5100	Ø108.8	Ø30.8	
#135 (*)	7000	Ø109.8	Ø34.4	



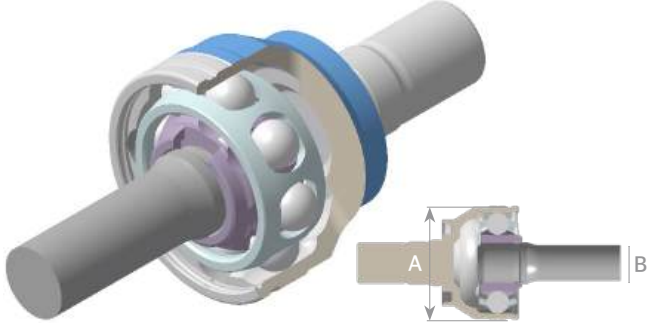
CJ (Cross groove Joint)

Size	JAEL	Dimension A	Dimension B	Max angle
#79	1500	Ø70.6	Ø20.5	24.0 Deg
#82	1700	Ø76.8	Ø22.0	
#87	2100	Ø79.8	Ø23.2	
#92	2300	Ø81.8	Ø24.0	
#95	2600	Ø85.8	Ø24.5	
#100	2900	Ø88.0	Ø25.4	
#104	3300	Ø93.0	Ø26.5	
#109	3700	Ø96.4	Ø27.5	
#113	4100	Ø101.0	Ø28.5	
#121	5100	Ø103.3	Ø30.8	



ECJ (High Efficiency Cross groove Joint)

Size	JAEL	Dimension A	Dimension B	Max angle
#104	3300	Ø85.2	Ø26.5	24.0 Deg
#109	3700	Ø88.5	Ø27.5	
#113	4100	Ø95.0	Ø28.5	



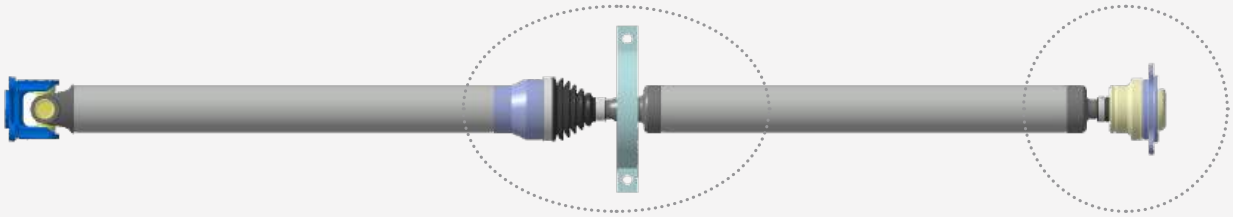
Joint for Propeller Shaft

Product Description

Joint for Propeller Shaft is transmits torque from engine to rear wheel in RWD vehicles and also transmits torque from a transfer case to the front and rear axle in AWD vehicles.
Seohan Innobility has been developing Cross Groove Joint and expanding its product line-up to improve weight and efficiency.
Also, compact Size and lightweight joint are developing.

Features

- High speed performance
- Low rotational lash & NVH
- Low sliding effort and High durability

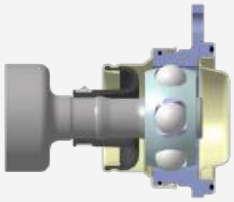


Propeller Shaft

⬇

Joint for Propeller Shaft

Monoblock CJ
(Cross groove Joint)



Flange CJ
(Cross groove Joint)

Line-up

● : Production , ○ : Develop

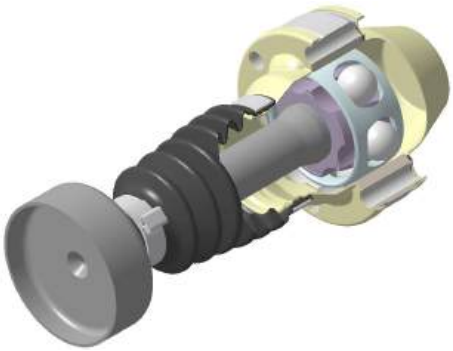
Size			1300	1500	1700	2100	2300	2600	2900	3300	3700	4100	4600
JAEL (Nm)			1300	1500	1700	2100	2300	2600	2900	3300	3700	4100	4600
Plunging Joint	6Ball	CJ	○	●	●	●	○	●		●		●	
		DOJ			○	○		○					
	8Ball	CJ			○					○	○		
	Tripod	TJ	○										
Fixed Joint	6Ball	BJ		○	○	●		○		○			
	8Ball	BJ								●			○
		PSJ			●			○				●	

Joint	Yield strength (Nm)	Static plunge (mm)	Assembly angle (˚)	Operating angle (˚)	Max. speed (rpm)
CJ	1300 ~ 4100	±23	13	4	6,000
DOJ	1700 ~ 3300	±23	13	3	4,500
TJ	1300	±23	13	3	4,500
BJ, PSJ	1500 ~ 4600	-	13	7	6,000

Plunging Joint

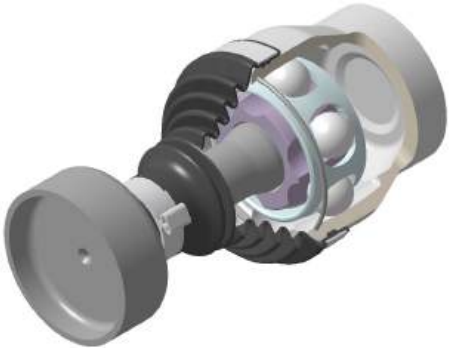
Disc CJ (Cross groove Joint)

- Max. angle : 4˚
- NVH performance
- Lightweight & Compact



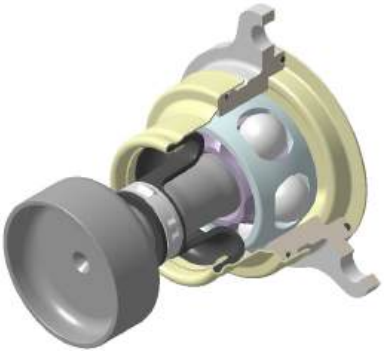
Monoblock CJ (Cross groove Joint)

- Max. angle : 4˚
- NVH performance
- Lightweight & Compact
- Cost & Weight reduction



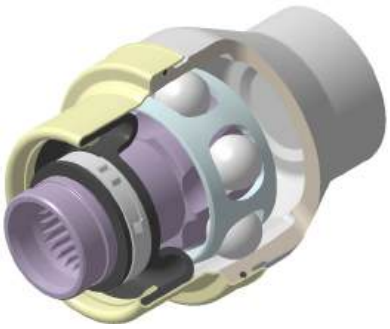
Flange CJ (Cross groove Joint)

- 3-Holes flange type
- Vehicle assembly cycle time
- Lower weight than disc type
- Lightweight & Compact



DCJ (Direct Connecting Joint)

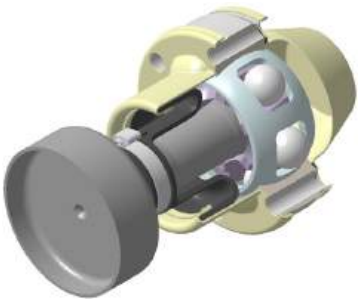
- 8-Balls monoblock design
- Low rotational lash
- Direct connection to vehicle
- Easy assembly



Fixed Joint

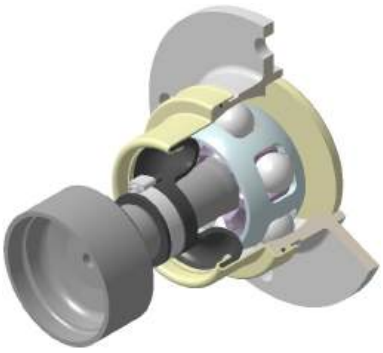
Disc BJ (Birfield Joint)

- Max. angle : 7°
- High speed performance
- Adopt J-type boot
- High angle application



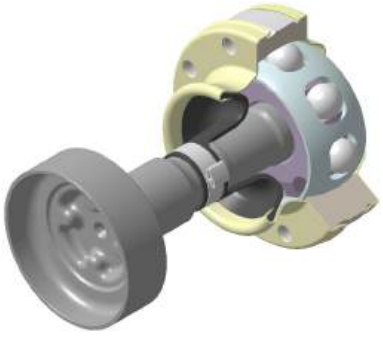
Flange BJ (Birfield Joint)

- 4-Holes flange type
- High speed & Angle application
- Lightweight & Compact
- Customizing



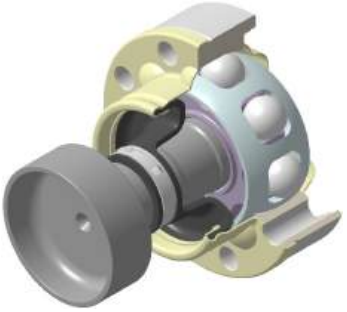
Disc HBJ (High efficiency Birfield Joint)

- 8-Balls compact design
- High torque & Efficiency
- Diameter reduction
- Low heat generation



Disc PSJ (P/Shaft Symmetric offset Joint)

- 8-Balls compact design
- Low heat generation
- Symmetric offset track
- Lightweight



Suspension Axle

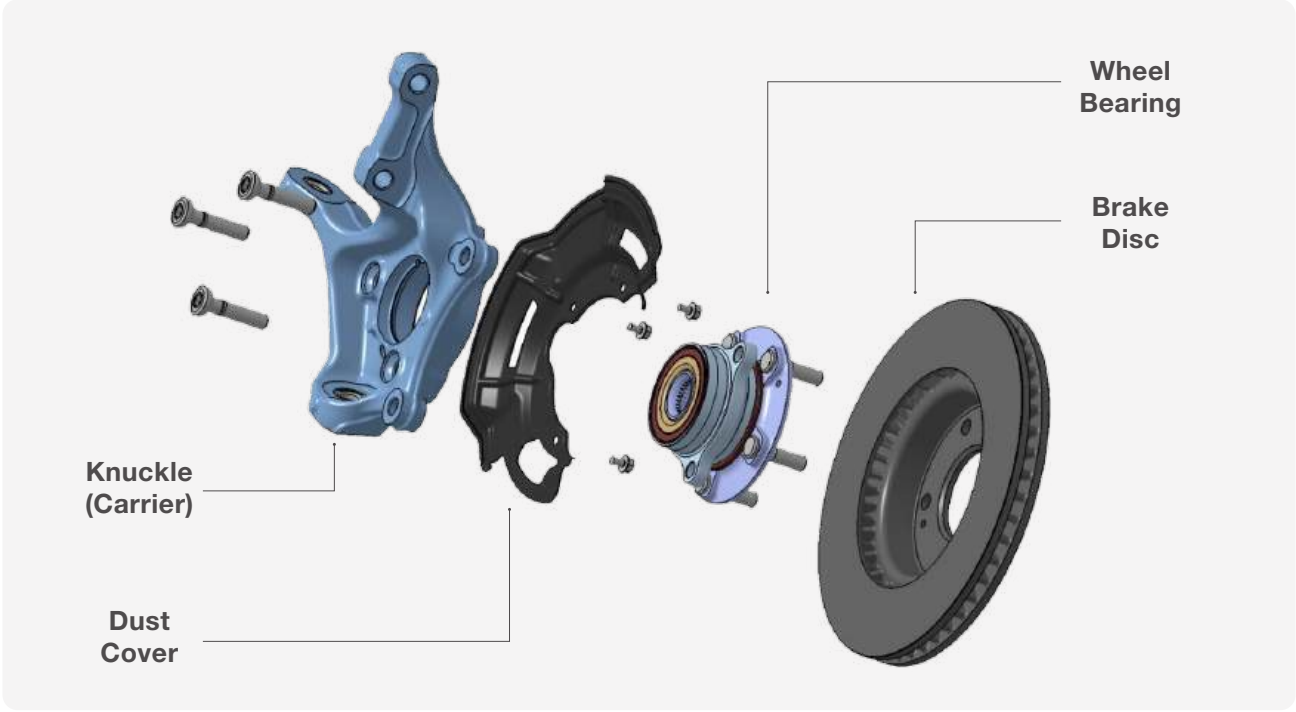
Product Description

Axle serve to transmit driving torque to the wheel, as well as to maintain the position of the wheels relative to the vehicle body. Also it supports the weight of the vehicle.
Seohan Innobility has been expanding aluminum products to reduce vehicle weight and increase fuel economy. Also, we have developed a Electric Axle concept for future mobility.

Features

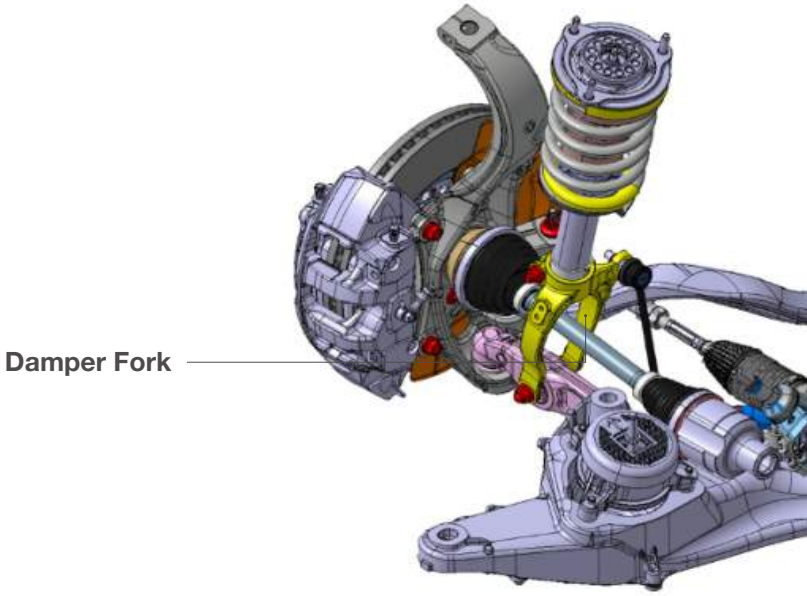
- Minimized axle run-out
- High stiffness structure
- Lightweight & Compact design

Axle Parts



Damper Fork

· Part of front suspension system
  connect shock absorber to lower control Arm
· Application
  - Genesis

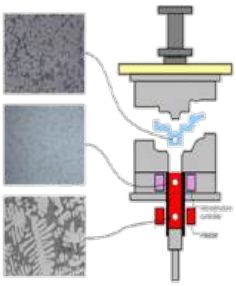


Knuckle, Carrier

· Part of front & rear suspension system
  - Main link of control arm, steering arm, brake, wheel bearing
· Application
  - IONIQ 9, EV3, EV4, K5, K8, Telluride, Tasman, etc.
· Casting Method
  - Aluminum (High/Counter/Low pressure & Gravity Die casting)
  - Ductile Iron (Sand casting)

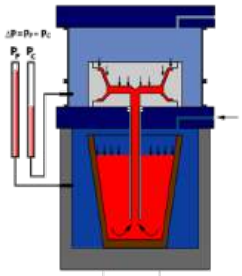
HPC (High Pressure Casting)

Feature
Squeeze with Electro-Stirring / 1 Cavity
Advantage
Enhanced Mechanical Property / Micro Structure Refinement



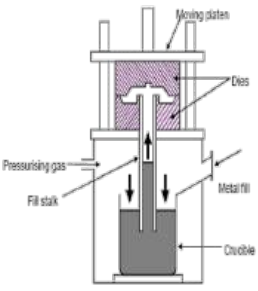
CPC (Counter Pressure Casting)

Feature
Different Pressure Control / 4~6 Cavities
Advantage
Quality Stability / Minimize Defects (Shrinkage, Porosity, etc.)



LPC (Low Pressure Casting)

Feature
Pressure Control Holding Furnace / 6~8 Cavities
Advantage
High Productivity / Lower Investment Cost

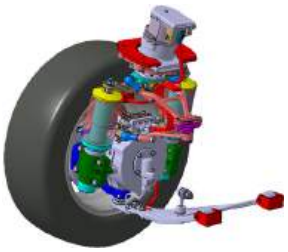


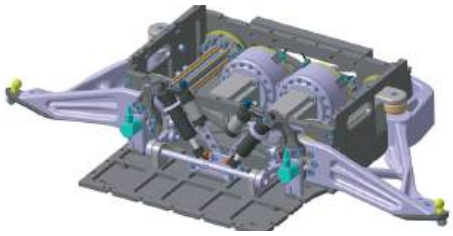
Brake Disc

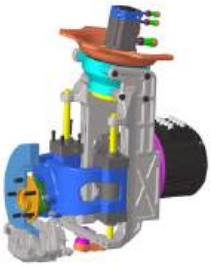
· Part of braking system
· Application
  - IONIQ 9, Telluride, Tasman, G80, G90, GV60, GV70, GV80, etc.
· New products
  - Dual-material disc, Aluminum disc, Nitriding disc

Electrification System for Future Mobility

· Electrification System Research for Future Mobility
· New System Design (Chassis, Suspension, Steering, Brake, Driveline…) & Concept Development







Seohan Network

Seohan Group strives to become a global leader in the automotive, wind power, forging, and flange industries.

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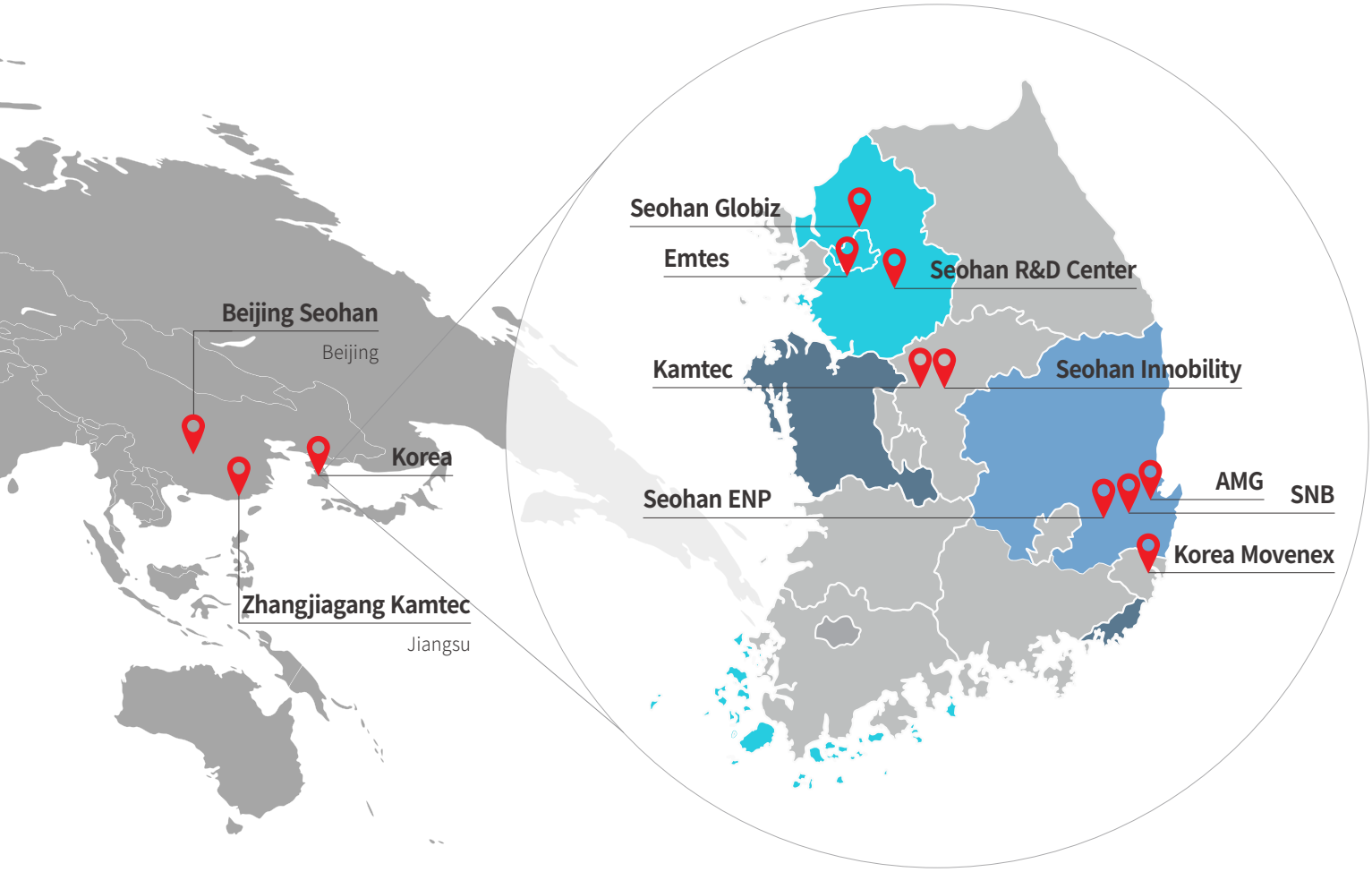

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