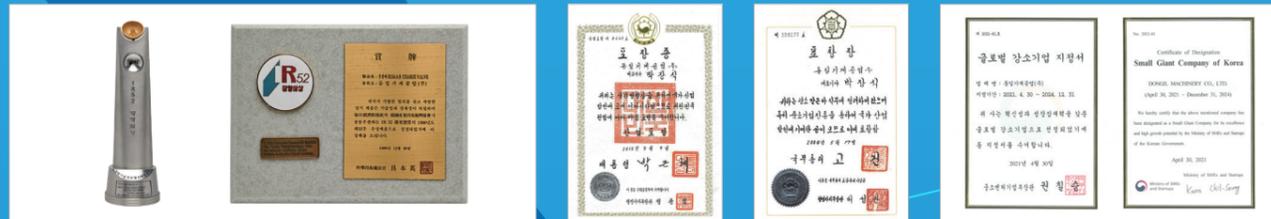


## Certificates



ISO 14001 (1)    ISO 14001 (2)    IATF 16949 (1)    IATF 16949 (2)    SQ certificate (Painting)    SQ certificate (Processing)    SQ certificate (Welding)

## Awards



Two-time IR52 Jang, Young-Shil awards (1996, 2018)    Industrial medal for productivity Improvement    Businessman of merit award in SMEs    Small Giant Company of Korea



Minister prize of MOTIE in the automobile parts industry award    Single PPM award    Gold Prize of Gyeonggi Province's Industrial Peace award

## DONGIL MACHINERY CO., LTD.

Head office & 1st Plant Address    431, Deokbongseowon-ro, Yangseong-myeon, Anseong-si, Gyeonggi-do (PC 17503)  
 TEL    +82-31-673-0379  
 FAX    +82-31-673-2567

2nd Plant Address    1041, Gyeonggidong-ro, Idong-eup, Cheoin-gu, Yongin-si, Gyeonggi-do (PC 17139)  
 TEL    +82-31-337-0065  
 FAX    +82-31-321-8326

Email [Steering Parts]    sales@dongilm.com  
 Email [Climate Control Parts]    sdongilm@dongilm.com

Company Website    www.dongilm.com  
 Company Video URL   youtu.be/AGpVikQzvBs



Beyond Now,  
 Creating a better future



Dong-Il Machinery and Dong-Il Techwin are technologically innovative companies that have various localization experiences in the steering and climate control fields of passenger cars and commercial vehicles. It is a specialized automotive parts manufacturing company with integrated solutions from design to evaluation and mass production.

## Head Office and 1st Plant | Anseong



**Address** 431, Deokbongseowon-ro, Yangseong-myeon, Anseong-si, Gyeonggi-do, Korea

**Fields** Steering System (Gearbox, C-EPS, R-EPS)

## 2nd Plant | Yongin



**Address** 1041, Gyeonggidong-ro, Idong-eup, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea

**Fields** Climate Control Valve, HVAC System Parts

# Customers Introduction

## Head Office and 1st plant | Anseong



## 2nd Plant | Yongin



<p><b>2021 - 2020</b></p> <ul style="list-style-type: none"> <li>2021.05 Appointed Small Giant Company of Korea</li> </ul>	<ul style="list-style-type: none"> <li>2020.06 Signed MOU with KAIST for technology cooperation</li> </ul>
<p><b>2019 - 2010</b></p> <ul style="list-style-type: none"> <li>2019.03 Acquired Excellence award for the innovative process (Hanon Systems)</li> <li>2018.11 Acquired IR52 Jang, Young-Shil award: External Control Valve</li> <li>2018.10 Acquired Minister prize of Ministry of Trade, Industry, and Energy in the automobile parts industry award (Group sector)</li> <li>2017.11 Acquired IATF 16949 Quality system certificate</li> <li>2016.12 Acquired Export Tower for 5 million dollars</li> </ul>	<ul style="list-style-type: none"> <li>2015.11 Produced Hyundai Wia's power steering gearbox</li> <li>2015.10 Began manufacturing ECV localization domestically</li> <li>2015.09 Acquired Industrial medal for productivity improvement (from President)</li> <li>2014.07 Appointed The best quality company (Hanon Systems)</li> <li>2013.05 Acquired Businessman of merit award in SMEs (from Prime Minister)</li> <li>2013.03 Appointed Zero Defects Company in quality management (Hanon Systems)</li> <li>2012.12 Produced large types of P/S Gear Box</li> <li>2012.11 Acquired Minister prize of Ministry of Knowledge Economy in the international material parts industry</li> <li>2011.01 Began manufacturing DCV and SDD localization domestically</li> </ul>
<p><b>2009 - 2000</b></p> <ul style="list-style-type: none"> <li>2009.09 Registered Patent of an Air-conditioning compressor valve's triplication Appointed INNO-BIZ</li> <li>2007.11 Produced medium types of P/S Gear Box</li> <li>2005.12 Acquired ISO 14001 certificate</li> <li>2005.11 Established "Dong-Il Techwin" Company</li> <li>2005.01 Appointed The best quality company (Hanon Systems)</li> </ul>	<ul style="list-style-type: none"> <li>2004.05 Acquired Businessman of merit award in SMEs (from Prime Minister)</li> <li>2004.01 Acquired ISO/TS 16949 Quality system certificate</li> <li>2003.04 Acquired Single PPM award (from President)</li> <li>2002.01 Acquired Excellent quality award (Hanon Systems)</li> <li>2000.10 Acquired Gold prize of Gyeonggi Province's Industrial Peace award (Company sector)</li> </ul>
<p><b>1999 - 1990</b></p> <ul style="list-style-type: none"> <li>1999.07 Acquired Contribution medal for localization domestically</li> <li>1998.07 Acquired ISO 9001 Quality system certificate</li> <li>1996.11 Acquired IR52 Jang, Young-Shil award: Charge Valve</li> <li>1996.10 Acquired "KT MARK" of domestic new technology</li> <li>1996.09 Registered Patent of R-134a Charge Valve</li> </ul>	
<p><b>1986</b></p> <ul style="list-style-type: none"> <li>1986.04 Established "Dong-Il Machinery" Company</li> </ul>	

**Power Steering Gearbox**

When the driver turns the steering wheel, the passage of the control valve is opened and closed by the torsional displacement, and the hydraulic pressure transferred from the pump is pressurized to Cylinder. It transfers steering effort to Linkage through the output shaft and performs steering of the front wheel.



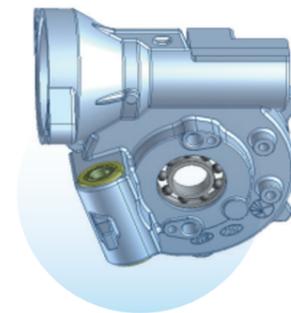
**Product Specification**

Classification	Dim 70D	Dim 74D	Dim 78D	Dim 85D	Dim 90D	Dim 100D	Dim 110D	
Product								
GVW (ton)	0.5	1	2.5	3	5	8	11	25
Cylinder Dia (mm)	70	74	78	85	90	100	110	
Max. Operating Pressure (Mpa)	9.0	9.0	12.5	12.5	13.5	13.0	13.5	18.0
Flow Rate (lpm)	6	6	7	7	9-12	16-17	16-17	16-25
Hydraulic Output Torque (N.m)	922	1030	2155	2560	3244	5108	6419	9497
Gear Ratio	16.4	16.4	18.6	18.6	18.6	20.2	17.0	19.0
		18.0	22.6	22.6	21.6	22.4	22.4	22.4
Output Travel (deg)	90	90	95	95	100	100	100	100
Temperature (°C)	-40 ~ 120	-40 ~ 120	-40 ~ 120	-40 ~ 120	-40 ~ 120	-40 ~ 120	-40 ~ 120	-40 ~ 120

**C-EPS/R-EPS Parts**

**Gearbox Housing Sub Ass'y**

A part protects Worm Wheel + Worm Shaft from external shocks.



**Input Shaft Sub Ass'y**

When the steering wheel turns, a part generates relative displacement of torque sensor & output shaft by twisting the torsion bar.



**R-EPS BALL NUT**

A part transfers the driving force of the motor to the rack bar and converts the rotational force into a linear reciprocating motion.



**Output Shaft**

A part transmits the input/output generated from the Input Shaft Sub Ass'y to the decelerator.



ECV 1

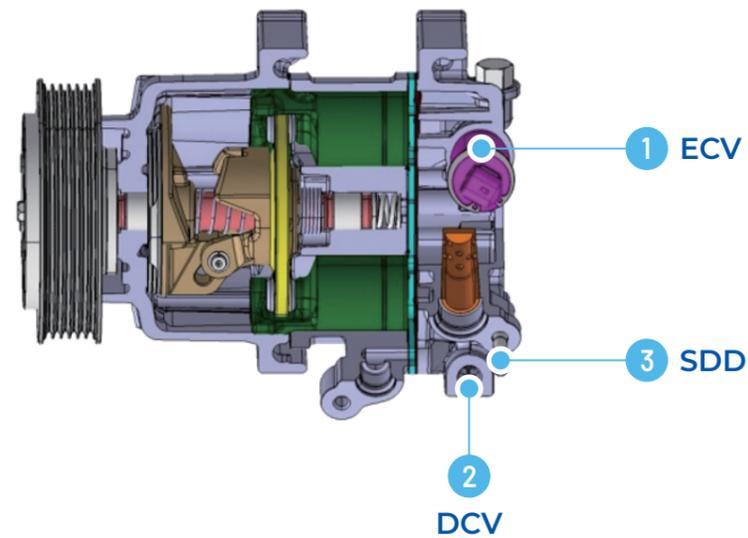


External Control Valve

Placed in the rear head of a variable capacity compressor, a valve controls the discharged pressure depending on the room temperature and cooling load.

Features	<ul style="list-style-type: none"> <li>Control flow precisely as Bellows senses the pressure</li> <li>Realize excellent cooling performance with 3 or 4-Way flow passage</li> <li>Acquired IR52 Jang, Young-Shil Award for successful domestically localized technology development</li> <li>Secure excellent durability by applying high-strength materials</li> </ul>
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Classification	Working Environment	Type	
Voltage	DC 12.0 or 13.2 [V]	Large	Small
Operating Frequency	PWM 400 ~ 1000Hz		
Working Pressure	Low compression Max. 2.0 MPa		
Applied Model	Domestic/Overseas climate control companies of auto manufacturers		



DCV 2



Discharge Check Valve

When the air conditioner is off, a check valve prevents refrigerant & oil migration.

Features	<ul style="list-style-type: none"> <li>Applied the structure that reduces noise from the discharge pressure [Patent Registration]</li> <li>Secure excellent durability by applying materials for high-temperature and low-friction</li> </ul>
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Specifications	 <ul style="list-style-type: none"> <li>Provide various sizes based on customer specifications</li> <li>Supplied to Domestic/Overseas climate control companies of auto manufacturers</li> </ul>
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SDD 3



Suction Damping Device

Placed in the suction pressure side of the compressor, a valve reduces refrigerant flow noise.

Features	<ul style="list-style-type: none"> <li>Applied the structure that reduces pulsation noise of suction refrigerant [Patent Registration]</li> <li>Secure excellent durability by applying materials for high-temperature and low-friction</li> <li>Used the structure that reduces flow resistance</li> </ul>
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Specifications	 <ul style="list-style-type: none"> <li>Manufacture various products depending on compressor capacities</li> <li>Supplied to Domestic/Overseas climate control companies of auto manufacturers</li> </ul>
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CHARGE VALVE 4

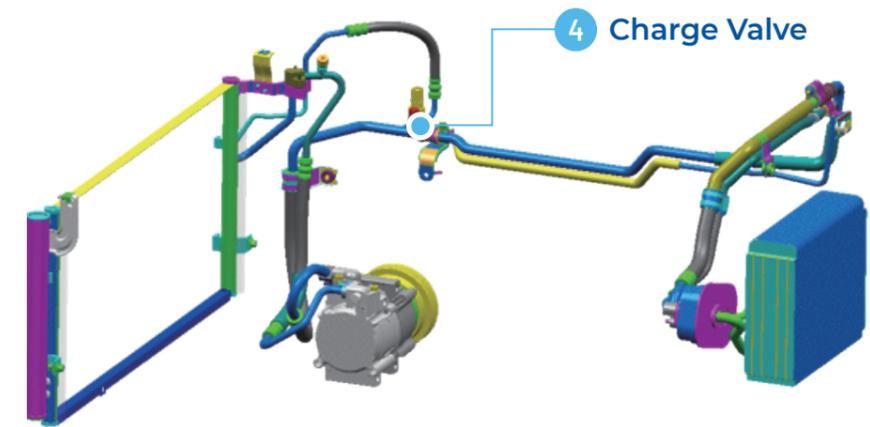


Charge Valve

Placed in a hose pipe of an air conditioning system, a valve charges and collects refrigerant.

Features	<ul style="list-style-type: none"> <li>Meet the SAE J639 standard</li> <li>Exceptional sealing structure [Acquired IR52 Jang, Young-Shil Award]</li> <li>R-134a and R-1234yf are applicable</li> </ul>
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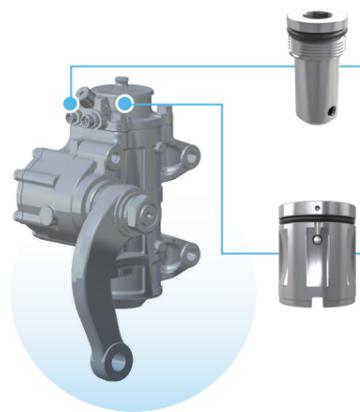
Specifications	<table border="1"> <thead> <tr> <th>Core</th> <th>Body</th> <th>Cap</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>Provide various sizes based on customer specifications</li> <li>Supplied to Domestic/Overseas climate control companies of auto manufacturers</li> </ul>	Core	Body	Cap			
Core	Body	Cap					
							





### Gearbox for Hydrogen / Electric Vehicle

Pressure Relief Valve, Replenishment Valve



#### Pressure Relief Valve

- ✓ When maximum pressure works in the gearbox, a valve protects the steering system by transferring oil to a return line and by sustaining setting pressure internally.

#### Replenishment Valve

- ✓ When the steering wheel works in a pump breakdown status, a valve reduces the oil resistance by providing flow passage internally.
- ✓ Satisfied vehicle safety standards

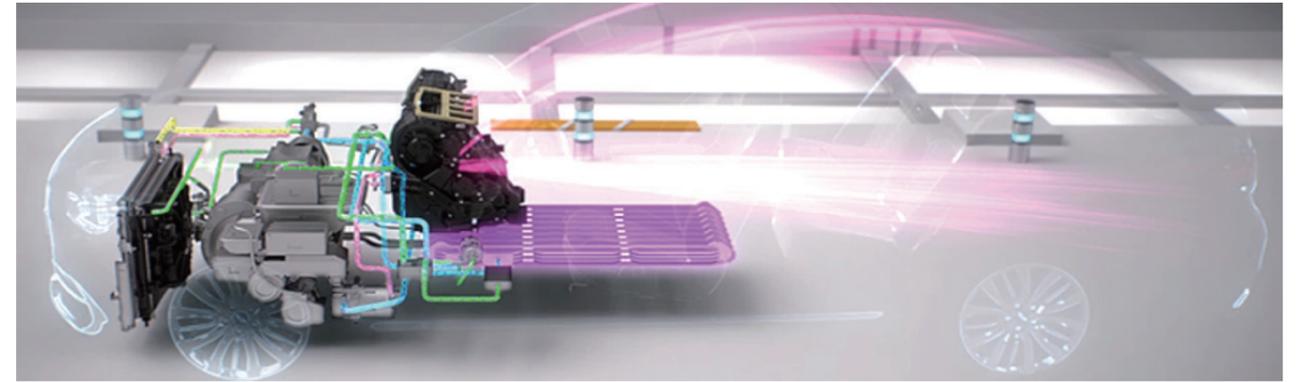
### RCB (BN-EPS)

#### RCB

- ✓ It amplifies the output torque of the EPS-Unit and steers the front tires in the desired direction as a core part of the steering system for eco-friendly future commercial vehicles.



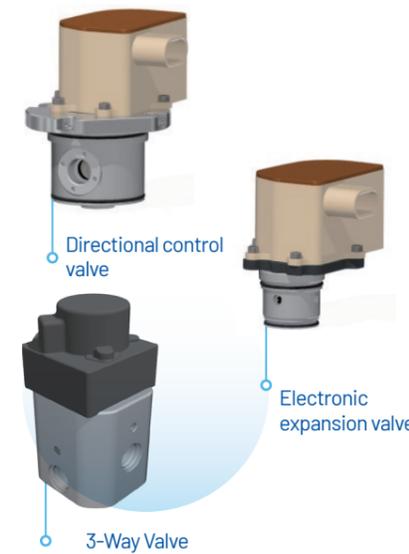
RCB-Unit



### REV

#### Refrigerant Valve

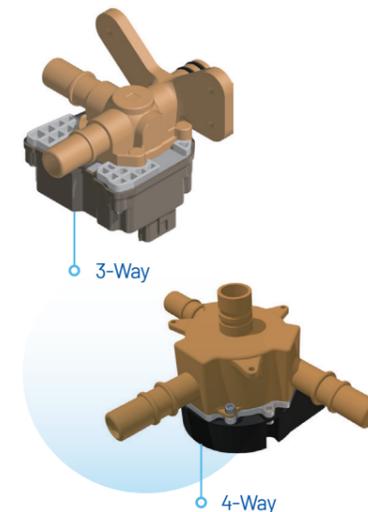
- ✓ Refrigerant Valves (2/3/4-Way) with directions control and expansion in the thermal management system
- ✓ Control flow precisely by position and feedback sensor
- ✓ Realize Multi\_Performance such as Full Open, Select Open, Closed, Expansion, etc.
- ✓ Low noise and excellent confidential performance



### CWV

#### Coolant Water Valve & Actuator

- ✓ A flow passage change of coolant water in the thermal management system
- ✓ Multi-channel and Multi-way valves (3/4/6-Way and others) change a direction and control
- ✓ Applied small package and actuator
- ✓ Excellent precision and confidential performance with position control function

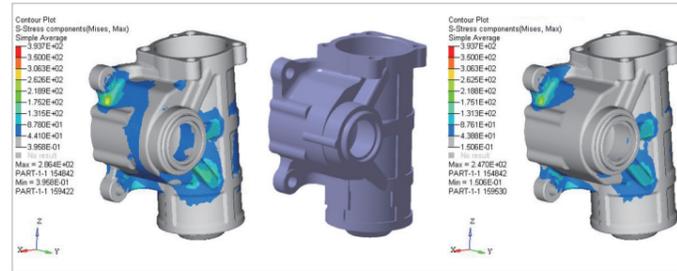


**The R&D center established in 2006**

has concentrated on its capability and development of valves in the climate control system and gearbox in the steering system based on international technology competitiveness.

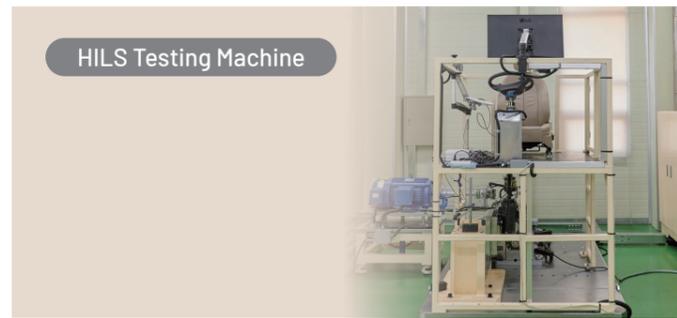
**Independent design technology**

- Optimized design using CATIA



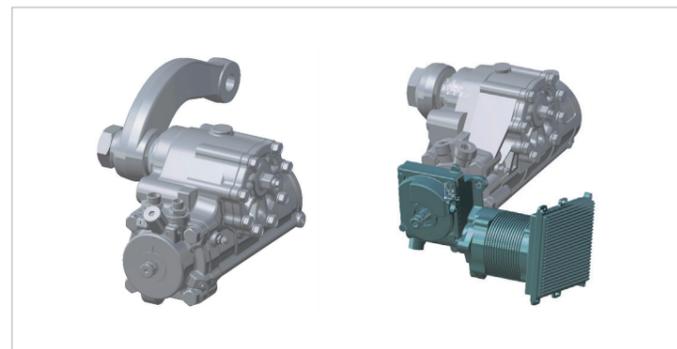
**Reliability verification for developing high quality products**

- Develop advanced and high-quality products through performance measurement
- Possess measuring instruments of NVH (noise, vibration, displeasure) like actual vehicle evaluation and those of steering effort, performance, durability, impacts, and maximum pressure.



**Eco-friendly future technology**

- Integrated-type of the electric steering gearbox
- Embedded Pressure Relief Valve in the steering gearbox
- Integrated-type of the emergency steering gearbox
- Noise reduced valves



**Patents**



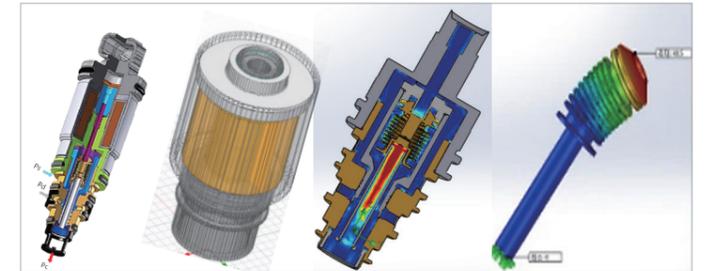
**Automotive parts**



**Technology to design a pleasant environment with innovative values**

**Develop the best control parts**

- Develop Global Top technology using CAE analysis and tests



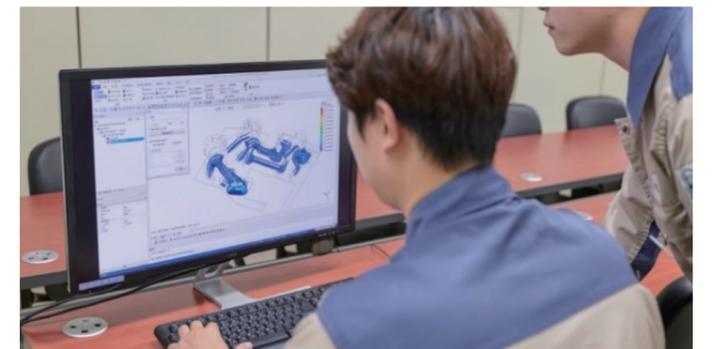
**Develop products with high quality and high reliability**

- Satisfy quality through reliability evaluation for an individual part, systems, and actual vehicles



**Eco-friendly & New technology development**

- Secure new technology with communicative culture and new ideas



**Industry-University-Research Cooperation**

- Continuous R&D investment and new technology development
- Realize the value of quality and customer satisfaction

