CV-Joint Sealing Testing System

CV-joint Sealing Test System is simulating the real car axle under a certain environment such as spraying mud to a propeller shaft and test durability for U/Joint, Center Bearing Sealing. This system is composed of three parts; Driver section for a rotational movement, Jounce section for the jounce motion, and a chamber for a certain temperature and a mud situation. Each component work together to evaluate a load and deformation.

Also, this system has its own program for controlling and monitoring which provides real time measuring of a temperature and a torque and provides a reliable test result.

Fig. 1 Overall Schematic of CV-joint Sealing Test System
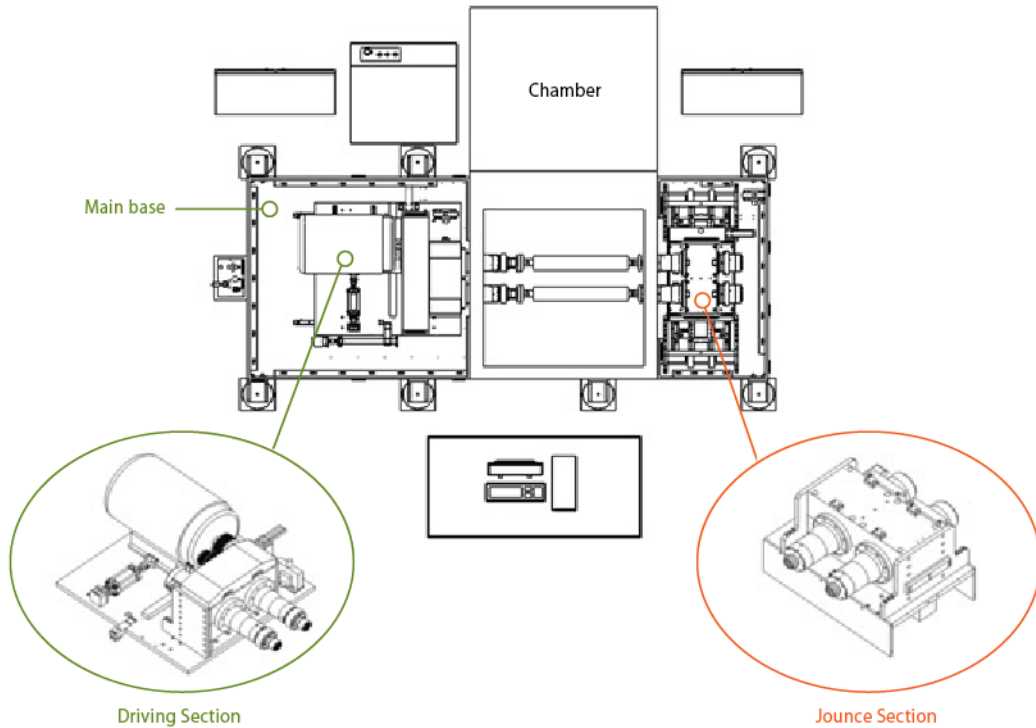
Driving Section

Jounce Section

Figure 1 shows the overall schematic of CV-joint Sealing test System. This system has a Driver section for a rotational movement of two propeller shaft, a Jounce section which provides a linear movement to a specimen, and a Chamber which gives an environment of a temperature and a mud situation. This system uses two specimens and can give an angle for instance,

15° for a 1200mm specimen and the whole size of the system is 2500 x 1800 x 1000 mm.

Torque generator is used for a torque to a specimen and for a rotational movement for a specimen, a combination of a motor, a pulley, and a belt is used.

A pneumatic actuator is used for controlling a tension of a belt and this system is designed to minimize a vibration and prevent a slip to a rotational body.

Table 1 shows a basic specification of the system and this system has an extra space of 300mm for various specimen length between 900 and 1200mm.

Table. 1 CV-joint Sealing Test System Specifications

Driving Section	
Rated output(50%ED)	45kW
Rated torque	123Nm
max. Speed	5000rpm
Base Speed	3600rpm

Jounce Section	
max. Speed	0.6 m/sec
Frequency	0.1~10Hz
Displacement	±170mm
Force	2000N

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This system has a space of +/- 170 mm for displacement and 10Hz of maximum frequency. Also, environmental chamber is used to give additional environmental evaluation. The chamber has a mud spray and engage a certain temperature to evaluate seal characteristics.

Figure 2 shows the control schematics of CV-Joint Sealing Test System and it shows control unit and equipment.

The control unit is a PC based and it has a drive motion and controls jounce motion using RS-232 communication with the chamber to control it.

Environmental Chamber

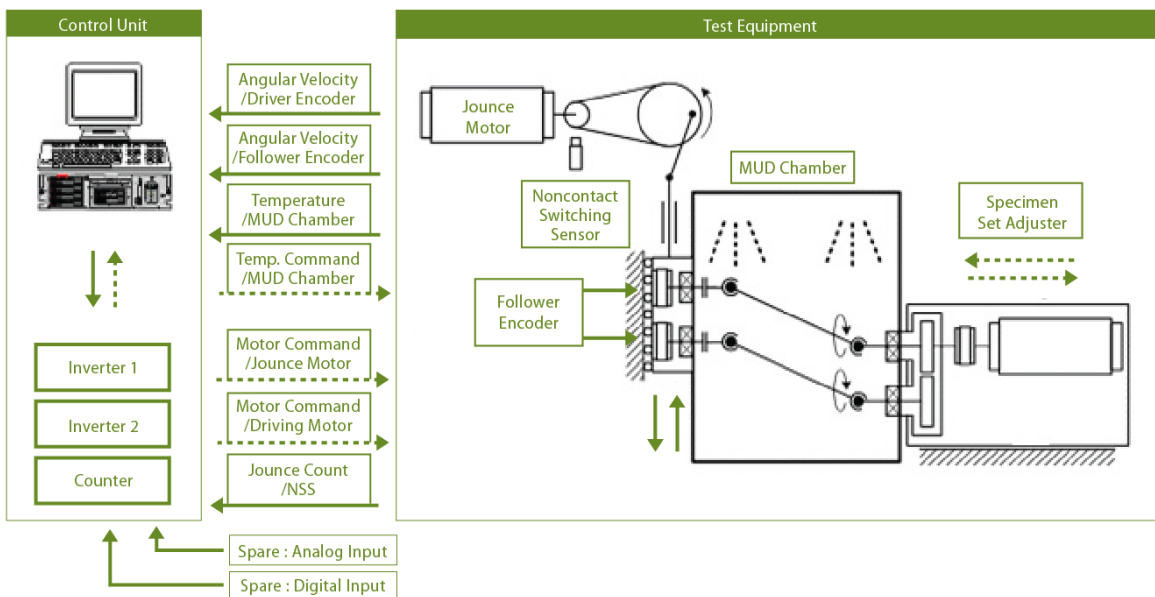|	
Temperature Range	-40 ~ 150℃
Rate of cooling	2.0 ℃/min
Rate of heating	2.0 ℃/min
MUD spray pressure	5 bar
Nozzle size	Φ1.7~2.0 mm
Fluid Tank	Spraying for two hours
Dimension (inside : W / H / D)	1300 X 600 X 1000

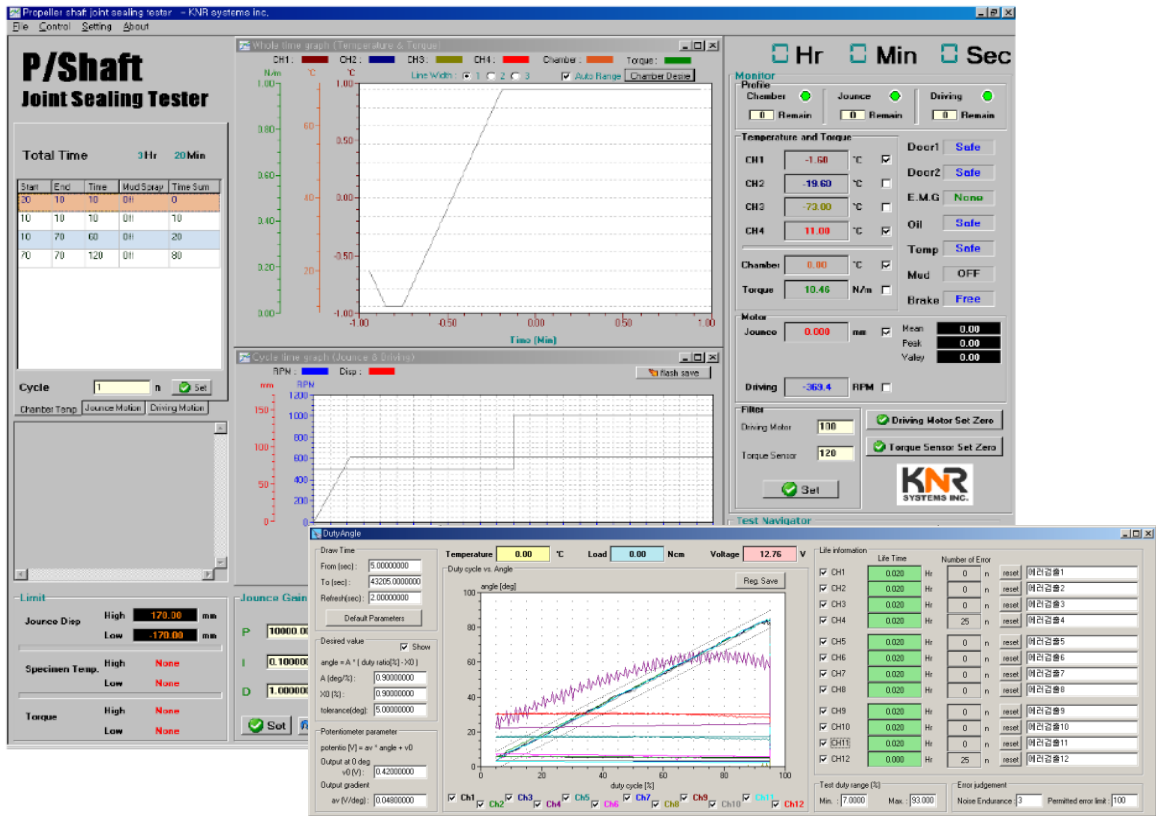Fig. 2 The control schematic of the CV-joint Sealing Test System

Fig. 3 CV-Joint Sealing Testing System Software

Basically a DAQ is installed in the control system and it monitors specimen's rotational speed, each specimen's relative speed, and motor's input rotational speed. User can set the test time for each test and the software can detect any damage from the specimen and stops the test for user.

Apart from this, it has an additional analog input channel and digital input channel so that user can use this as an emergency signal from outer device The control system is in the 19" Tower rack and Microsoft Windows is used for the OS.

Figure 3 shows the UI for CV-joint Sealing Test System's Software. This system works on both manually and automatically and a real time monitoring is also possible.

Also, this software has a feature of getting and saving the data and shows them on a graph with numbers so that user can monitor it. User can save the data in ASCII or Microsoft Excel type and it provides various analytical tools to the customer.