



Gear Box Shifting Robot GSR

Gear Box Shifting Robot GSR for Shifting and Testing of Automotive Gear Boxes

Applications

- Use in test benches for EOL, endurance test, and quality measuring
- Engaging and disengaging of gears in driveline and noise test benches
- Measurement / appraisal of shifting , synchronisation and detent forces for quality control
- Complex testing tasks like force controlled scanning of the boundary contour
- Testing of neutral sensors (start-stop-automatic)

Customer's Benefit

- Automatic test procedure and objective appraisal
- Manual or automatic adaption of shifting shafts without backlash
- effective quality assurance by high accuracy of testing
- „Sensitive“ force / position control (automatic teaching of gear positions)
- Availability for a wide range of gear shifting shafts and gear box types
- Easy to integrate into existing test bench environments

Special Features

The Gear Box Shifting Robot GSR is based on the **flexible test bench control FPS** which has been developed by IBS for many years. The FPS provides following features for an efficient development of test steps:

- Use of internal programmer or connection to external programmer
- Parts lists and parametrization of test steps, test conditions and limit values of quality features
- Acquisition of measured data, trajectory generation for set points, closed loop control of test item quantities within 1ms cycle time
- Connection to data server, management system and SAP for filing of test results and measured raw data
- Integration of identification systems (1D/2D-Scanner, MobyU)

Description of System

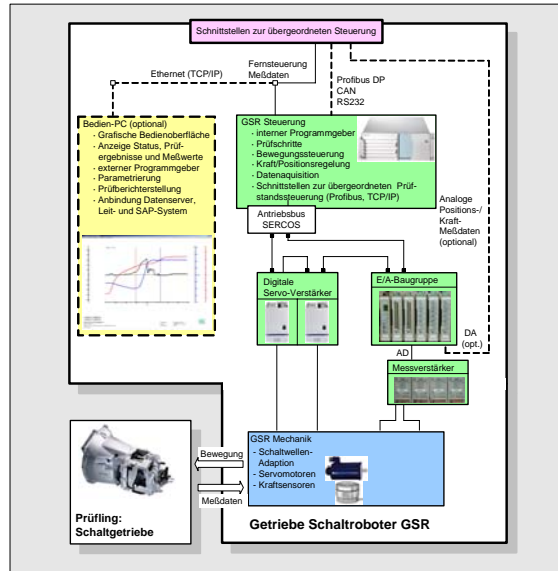
The basis system gear box shifting robot consists of following components:

- Mechanics (manual adaption, four joint kinematics for misalignment compensation, servo drives with high resolution angle transmitter)
- Software (system control and basis test steps)
- Control cabinet (Power Electronics, measurement instrumentation, industrial PC with real-time operating system)

Following options are available:

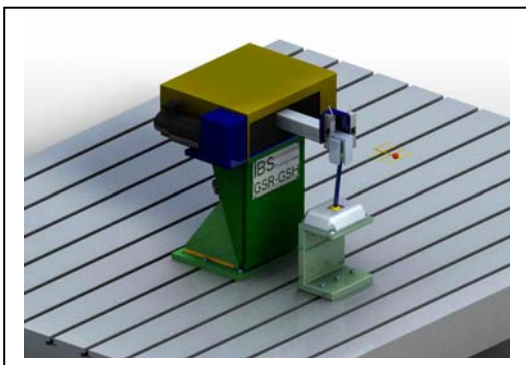
- Fully automatic adaption of gear shifting shafts
- Force measurement instrumentation
- Clutch and throttle actuators

- Programmer-PC with graphical user interface, information of status and online indicated values, programmer functionality and connection to data server, management system and SAP



Mechanics

Easy to integrate into test bench environment by compact design with small constructed space (width 390mm x length 290mm x depth 500mm)



GSR-GSH: Adaption to Gaershift Knob

Options of Gear Shift Shafts

Due to the modular design following options of coupling to different gearshifts / gear shift lever are available:

GSR-GSH	Adaption to shift knob by X-Y-(Z) compound slide rest
GSR-ZSW	Direct adaption to the central gear shifting shaft
GSR-GWS	Direct adaption to separated gearing and shifting shafts
GSR-GWSB	Direct adaption to separated gearing and shifting shafts with force transmission by bowden cable (Flexball)

Extension Stages Test Scope

- SW-GS gear shifting (no force measurement instrumentation required)
- SW-BP basis test steps (shift and gearing forces, synchronisation forces and times)
- SW-FP advanced test steps (axial and transverse play, testing of avoidance of gear alley, boundary contour, gear jumping, shifting blocker, servo effect)

Control Cabinet

- Rittal TS8 600x600x2000 or according to customer demands, optional air conditioning
- Servo drives with set point communication 1ms cycle time by SERCOS Interface (BoschRexroth) or Profibus DP (Siemens)
- HBM force measurement instrumentation

Control computer Siemens RackPC, Core 2 Dual

Technical Specifications

	GSR-ZSW		GSR-GSH
	Reference Central Shifting shaft	Reference Gear Shift Lever Length 225mm, 1:4,5	Actuation of Shift Lever- by GSR GSH Kinematics
Shifting Direct.			
Transl. range	±75mm	±68mm	±150mm
Max. speed	±1,0m/s	±4,5m/s	±1,6m/s
Transl. resolution	0,005mm	0,005mm	0,005mm
Max. power	±1500N	±330N	±500N
Force resolution	0,022N	0,005N	0,02N
Gearing Direct.			
Angular range	±20Deg	±20Deg	±150mm
Max. speed	±1000Deg/s	±1000Deg/s	±1,6m/s
Angular resolution	0,01Grad	0,01Grad	0,005mm
Max. torque	±60Nm	±60Nm	±500N
Torque resolution	0,0073Nm	0,0073Nm	0,02N
Power supply	3 x 400V / 50Hz Power Input 16A		
Temperature range	0°C to 45°C		

Services

- Integration in test bench environments and setting-up operation
- Customized adjustments of mechanics, software and test scope
- Long-term maintenance and delivery of spare parts

Contact

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