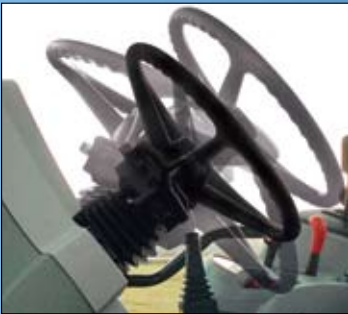


Setting a New Direction

Steering Systems - TT600 Upper Tilt and Telescope Steering Columns



AT A GLANCE

- Variable length, tilt position and angle
- Easily packaged into any driver compartment
- Single lever or pedal activation of tilt and telescope control for maximum driver comfort
- Fully developed, tooled up and tested components and assemblies that meet all legislative and durability requirements
- High component commonality for optimized tooling and manufacturing efficiency and reduced lead times to production
- Endorsed by major OEMs around the world

Kongsberg Automotive is one of the world's leading suppliers of modular and custom engineered steering systems for off-highway vehicles. Our products are in use today in a wide range of agricultural, material handling and construction vehicles manufactured by market leading OEMs across Europe and America.

The Kongsberg Automotive TT600 Series Upper Tilt and Telescope Column is an innovative, modular, high specification system offering best in class performance and functionality.

The TT600 Series offers a variety of standard designs, as well as modular options to meet specific customer requirements.

TT600 SERIES UPPER TILT AND TELESCOPE STEERING COLUMNS

STANDARD PRODUCT SPECIFICATIONS

MECHANICAL AND STRENGTH DATA

- The steering column is a self supporting design, connected to the front wall or the floor by a flange. It can also be connected directly to the steering pump. The column is designed to withstand the following conditions:
 - The complete steering column, including tilt locking device, can resist a tilt locking force of 350 Nm measured in the tilt point without causing permanent deformation
 - The telescope locking device can resist an axial force of 700 N without movement.
 - Maximum torque to start angular motion is 0.5 Nm.
 - Angular play between inner and outer splines of steering shaft is maximum 0.4° for a torque of ±1 Nm.
 - The steering shaft will take a torque of 150 Nm without permanent deformation. The rupture torque is minimum 300 Nm.

TILT

- Upper tilt point with range of +24° to -24° in steps of 4° with variable start point. Spring loaded tilt return.

TELESCOPE

- The telescope travel is located below the tilt center and requires a lifting force of 40 N to start the travel when the lock is released.

LOCKING

- The tilt and telescope functions are constantly locked, and released by lever or cable.

LEVER RELEASE

- Release force on lever is approximately 80 N downwards (for tilt) and 30 N upwards (for telescope).
- Release travel for lever is approximately 70 mm.

MATERIAL

- The steering column tubes and shafts are fabricated from steel.
- Housings are made of die cast aluminum
- Covers are molded in ABS plastic
- All materials used are in accordance with the appropriate EN standards

STANDARD ISO 5010

- The specification of the steering column is according to ISO 5010.

TEST AND VALIDATION

- All steering columns are tested and validated according to the Kongsberg Automotive global product specifications.

MODULR OPTIONS:

For quantities in excess of 300 units, Kongsberg Automotive offers a full range of modular features for the TT600 as specified by the customer, including:

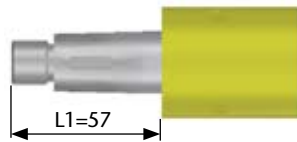
- Shaft length
- Tilt position
- Remote cable release option
- Connection to floor and pump
- Connection to steering wheel
- Integration of travel controls, indicator switches, etc.

STANDARD OPTIONS

STEERING COLUMN TYPE	STEERING WHEEL CONNECTION	PART NO.	STANDARD COLUMN LENGTHS (L2)				OPTIONAL COVER/BELLOWS	
			424MM	500MM	600MM	700MM	WITH COVERS & BELLOWS	WITHOUT COVERS & BELLOWS
TT600 Series Upper Tilt & Telescope	A01	21503	-424	-500	-600	-700	-1	-0
	A04	21504	-424	-500	-600	-700	-1	-0
	A05	21505	-424	-500	-600	-700	-1	-0

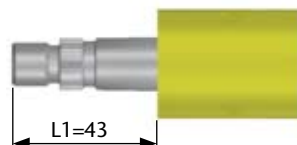
A01

Shaft diameter: 25mm
Cone: 1:20
Woodruff Key (+ washer & nut)
Thread: M18x1,5 - 6g



A04

Shaft diameter: 25mm
Cone: 1:19,26
Serration: 7/8" -36
Thread: M18x1,5 - 6g



A05

Shaft diameter: 20mm
Cone: 1:3,43
Serration: 5/8" -36
Thread: M14x1,5 - 6g

