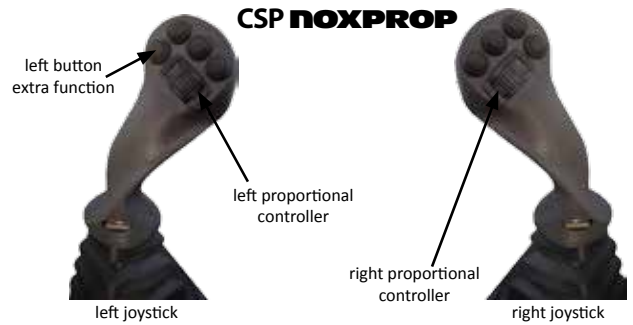


Proportional Control Systems

Operators can now control the actions of their **NOX-Tiltrotator** with two joysticks. Quick Coupler and attached tools are also operated comfortably and effectively by means of the smart **NOXPROP Control System**: tilt and rotation are controlled by proportional solenoid valves and can be run simultaneously. The extra function is controlled proportionally, too. A separate display module is included.



Control Systems for NOX Tiltrotators

Type	Description
CSP NOXPROP	Tilt, rotation, extra function proportional; choice of tool or profile via display; configuration via laptop
DF10	All functions are controlled by the excavator directly; max. 5 double acting circuits can be connected; 2 extra functions + quick coupler (6-port swivel)
DF8	All functions are controlled by the excavator directly; max. 4 double acting circuits can be connected; 1 extra function + quick coupler (4-port swivel)
DF4	2 double acting circuits required. Circuit 1 controls rotation, circuit 2 manages tilt, extra function plus quick coupler. The change between the functions is controlled by integrated solenoid valves. A free ON/OFF button at the joystick is required. The quick coupler is controlled by a security switch on the included display module.
CSP SVAB	Tilt, rotation proportional; extra function ON/OFF; limited choice of profiles via display; configuration only by controller

Control System CSP consists of: controlbox, 2 joystick grips, wiring from joysticks to Tiltrotator, proportional pressure control valve, display

Functions	CSP NOXPROP	DF10	DF8	DF4	CSP SVAB
Hydraulic circuit needed ¹⁾	1s	2d - 4d	2d - 3d	2d	1s
Quick coupler hydraulics ²⁾	integrated	required	required	integrated	integrated
Control valves in excavator	NO	YES	YES	YES	NO
Functions tiltrotator	T+R+E+C	T+R+E(x2)+C	T+R+E+C	R / T+E+C	T+R+E+C
Control valves in tiltrotator ³⁾	YES	NO	NO	YES	YES
Number of extra functions	1 / 2	2	1	1	1
Adapted to TR06NOX	✓ ⁴⁾	✓	✗	✓	✓ ⁵⁾
Adapted to TR10NOX	✓ ⁵⁾	✓	✓	✓	✓ ⁵⁾
Adapted to TR14NOX	✓ ⁵⁾	✓	✗	✓	✓ ⁵⁾
Adapted to TR19NOX	✓ ⁵⁾	✓	✗	✓	✓ ⁵⁾
Adapted to TR25NOX	✓ ⁴⁾	✓	✗	✓	✓ ⁵⁾

Description:

- 1s** One single acting hydraulic circuit (hammer line)
- 2d** Two double acting hydraulic circuits are available in the machine (high pressure as well as high flow) and functions can be controlled proportional or ON/OFF depending on the machine
- 3d** Three (or two) double acting hydraulic circuits are available in the machine (high pressure as well as high flow) and functions can be controlled proportional or ON/OFF depending on the machine
- T+R+E+C** Tilt, rotation, extra function, hydraulic quick coupler
- T+R+E(x2)+C** Tilt, rotation, 2 x extra function, hydraulic quick coupler
- R / T+E+C** Circle 1 controls the rotation, circle 2 manages tilt, extra function, hydraulic quick coupler
- ¹⁾ Free return line must be available or must be installed for tiltrotator
- ²⁾ Most quick couplers need a double acting hydraulic circuit. Please always specify LQC model and hydraulics before choosing controlling system
- ³⁾ Only with CSP control system all functions will be controlled by directional valves in the tiltrotator. All other DF control systems must have 6/2 directional valves in order to split circuits. 6/2 directional valves are not included in the prices. Also 2/2 directional valve to operate a hydraulic LQC must be installed on the machine and is not included in the price.
- ⁴⁾ 2 extra functions possible
- ⁵⁾ 1 extra function possible
- Note:**
 - mechanical LQC can be used with all control systems
 - hydraulic upper quick coupler must be controlled separately and not by the standard control system

Pictures

