





SVENDBORG BRAKES RANGE

Svendborg Brakes is the global market leader in intelligent braking solutions. This is why.



Example for a DIRECT Drive Wind Turbine





Example for a DIRECT Drive Wind Turbine

Specification

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SYSTEM CIRCUIT	The electrical motor drives a hydraulic gearpump. The Pump feeds the system ac- cumulator, controlled by a pressure switch or a transmitter. The System pressure can be released manually by shut-off cock or manual override of the valves. A High pressure filter between the pump and the system ensures the cleanliness of the hy- draulic system. A Certified pressure con- trol valve ensures pressure relief in case of control failures. Optional transmitter on system accumulator for checking the nitro- gen pre-charge.	Combined hydraulic power unit for active rotor brakes and rotor lock control 1010-0124-8XX GENERAL FEATURES: -compact and cost efficient design mounted on 20 liter tank -2/2 seat valve technology, leak oil free -sub components from qualified suppliers -universal manifold -robust asynchronous 400V/50Hz el. motor -oil level + temperature control
ROTOR BRAKE CIRCUIT:	 -fail safe brake activation or idling function in case of power loss -24h / 7 days pressure holding capacity -delay time according to customer demands -pressure switch or transmitter for brake status control -flushing function with filter in return line 	OPTIONAL FEATURES: -UL-approved electrical components -drip pan - electrical cabinet -customer specific electrical plug connection -cold climate version -690 V electrical motor -60Hz -Handoump
ROTOR LOCK CIRCUIT:	-adjustable pressure for rotor lock -4/3 valve for rotor lock control is protected by additional 2/2 valves -24h / 7 days pressure holding capacity -'cylinder holding function' included	-Handpump -pressure guage for visual inspection

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Functions:

SYSTEM CIRCUIT

The electrical motor drives a hydraulic gearpump. The Pump feeds the system accumulator, controlled by a pressure switch or a transmitter. The System pressure can be released manually by cock or a manual override of the valves. A High pressure filter between the pump and the system ensures cleanliness of the hydraulic system. A Certified pressure control valve ensures pressure relief in case of control failures. Optional transmitter on system accumulator for checking the nitrogen pre-charge.

YAW BRAKE CIRCUIT:

-yaw brakes with 3 pressure levels, i.e.
)160 bar for holding function
)30 bar for slewing
)0 bar for cable loop unwinding operation
-flushing function with filter in return line
-24h / 7 days pressure holding capacity
-pressure switch or transmitter for brake

status control

Stand-alone hydraulic power unit for yaw brakes control

1010-0084-8XX

GENERAL FEATURES:

- -compact and cost efficient design mounted on 6 liter tank
- -2/2 seat valve technology, leak oil free

-sub components from qualified suppliers -universal manifold

- -robust asynchronous 400V/50Hz el. motor
- -oil level + temperature control

OPTIONAL FEATURES:

- -UL-approved electrical components
- -drip pan
- -electrical cabinet
- -customer specific electrical plug
- connection
- -cold climate version
- -690 V el. motor
- -60Hz
- -Handpump







Example for a DIRECT Drive Wind Turbine





Example for a DIRECT Drive Wind Turbine

Specification

SYSTEM CIRCUIT	The electrical motor drives a hydraulic gearpump. The Pump feeds the system ac- cumulator, controlled by a pressure switch	Combined hydraulic power unit for active rotor brakes of BSAB series and yaw brake control
	be released manually by shut-off cock or manual override of valves. The high pres-	1010-0099-8XX
	sure filter between the pump and the sys-	TYPICAL APPLICATION:
	tem ensures the cleanliness of the hydrau- lical system. The certified pressure control valve ensures pressure relief in case of	-hydraulic Power pack for gearless turbines.
	control failures. Optional transmitter on	GENERAL FEATURES:
	system accumulator for checking the nitro- gen pre-charge.	 -compact and cost efficient design mounted on 6 liter tank
		-2/2 seat valve technology, leak oil free -sub components from qualified suppliers
ROTOR BRAKE CIRCUIT:	-fail safe brake activation or idling	-universal manifold
	function in case of power loss -24h / 7 days pressure holding capacity	-robust asynchronous 400V/50Hz el. motor
	-pressure switch or transmitter for brake status control	-oil level + temperature control
		OPTIONAL FEATURES:
		-UL-approved electrical components
YAW BRAKE	-yaw brakes with 3 pressure levels, i.e.	-drip pan
)160 bar for holding function	-electrical cabinet
)30 bar for yaw operation)0 bar for cable loop unwinding operation	-customer specific electrical plug connection
	-flushing function with filter in return line	-cold climate version
	-24h / 7 days pressure holding capacity	-690 V el. motor
	-pressure switch or transmitter for brake	-60Hz
	status control	-Handpump
		-Pressure gauge for visual inspection
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Example for a CONVENTIONAL Wind Turbine





Example for a CONVENTIONAL Wind Turbine

Specification

SYSTEM CIRCUIT The electrical motor drives a hydraulic Combined hydraulic power unit for active gearpump. The pump feeds the system acrotor brakes and yaw brake control cumulator, controlled by a pressure switch or a transmitter. The system pressure can 1010-0139-8XX be released manually by a shut-off cock or manual override of valves. The high pres-**GENERAL FEATURES:** sure filter between the pump and the sys--compact and cost efficient design tem ensures the cleanliness of hydraulic mounted on 10 liter tank system. The certified pressure control valve -2/2 seat valve technology, leak oil free ensures pressure relief in case of control -sub components from qualified suppliers failures. Optional transmitter on system -universal manifold accumulator for checking the nitrogen pre--robust asynchronous 400V/50Hz el. charge. motor -oil level + temperature control ROTOR BRAKE -fail safe brake activation or idling **OPTIONAL FEATURES:** function in case of power loss -UL approved electrical components CIRCUIT: -24h / 7 days pressure holding capacity -drip pan -delay time according to customer -electrical cabinet demands -customer specific electrical plug -pressure switch or transmitter for brake connection status control -cold climate version -690 V el. motor -60Hz -yaw brakes with 3 pressure levels, i.e. -Handpump YAW BRAKE)160 bar for holding function -Pressure gauge for visual inspection CIRCUIT:)30 bar for yaw operation)O bar for cable loop unwinding operation -flushing function with filter in return line -24h / 7 days pressure holding capacity -pressure switch or transmitter for brake status control YAW BRAKES ROTOR BRAKE 中心 図 **₩** FIISM ₩ FII Å₽₩ 山 曲 逐



Example for a CONVENTIONAL Wind Turbine





Example for a CONVENTIONAL Wind Turbine

Specification

SYSTEM CIRCUIT The electrical motor drives a hydraulic Combined hydraulic power unit for yaw gearpump. The pump feeds the system acbrake and rotor lock control cumulator, controlled by a pressure switch or a transmitter. The system pressure can 1010-0124-802 be released manually by a shut-off cock or manual override of valves. The high pres-**GENERAL FEATURES:** sure filter between the pump and the sys--compact and cost efficient design mounted on 6 liter tank tem ensures cleanliness of hydraulic system. The certified pressure control valve -2/2 seat valve technology, leak oil free ensures pressure relief in case of control -sub components from qualified suppliers failures. Optional transmitter on system -universal manifold accumulator for checking the nitrogen pre--robust asynchronous 400V/50Hz el. charge. motor -oil level + temperature control ROTOR LOCK -adjustable pressure for rotor lock **OPTIONAL FEATURES:** -4/3 valve for rotor lock control is -UL-approved electrical components CIRCUIT: protected by additional 2/2 valves -drip pan -24h / 7 days pressure holding capacity -electrical cabinet -'cylinder holding function' included -customer specific electrical plug connection -cold climate version -yaw brakes with 3 pressure levels, i.e. -690 V el. motor YAW BRAKE)160 bar for holding function -60Hz CIRCUIT:)30 bar for yaw operation -handpump)O bar for cable loop unwinding operation -pressure gauge for visual inspection -flushing function with filter in return line -24h / 7 days pressure holding capacity -pressure switch or transmitter for brake status control Yaw brake Rotor Lock Š







Example for a CONVENTIONAL Wind Turbine

Specification

SYSTEM CIRCUIT The electrical motor drives a hydraulic Stand-alone hydraulic power unit for acgearpump. The pump feeds the system active rotor brakes (on hss) cumulator, controlled by a pressure switch or a transmitter. The system pressure can 1010-006X-8XX be released manually by shut-off cock or manual override of valves. The high pres-**GENERAL FEATURES:** sure filter between the pump and the sys--compact and cost efficient design mounted on 3 liter tank tem ensures the cleanliness of the hydraulic system. The certified pressure control -2/2 seat valve technology, leak oil free valve ensures pressure relief in case of -sub components from qualified suppliers control failures. Optional transmitter on -universal manifold system accumulator for checking the nitro--robust asynchronous 400V/50Hz el. qen pre-charge. motor -oil level + temperature control ROTOR BRAKE -fail safe brake activation or idling **OPTIONAL FEATURES:** function in case of power loss -UL-approved electrical components CIRCUIT -2 modes of brake activation, with and -drip pan without delay -electrical cabinet -2 step braking torque, i.e. reduced torque -customer specific electrical plug for braking, full torque for holding connection function -cold climate version -24h / 7 days pressure holding capacity -690 V el. motor -delay time according to customer -60Hz demands -Handpump -pressure switch or transmitter for brake -pressure gauge for visual status control inspection Rotor Brake FRIM 781 M FII FRIM TT. Ж Ж X W.S North



Example for a DIRECT Drive Wind Turbine





Example for a DIRECT Drive Wind Turbine

Specification

SYSTEM CIRCUIT

The electrical motor drives a hydraulic gearpump. The pump feeds the system accumulator, controlled by a pressure switch or a transmitter. The system pressure can be released manually by a shut-off cock or by manual override of valves. The high pressure filter between the pump and the system ensures the cleanliness of the hydraulic system. The certified pressure control valve ensures pressure relief in case of control failures. Optional transmitter on the system accumulator for checking the nitrogen pre-charge.

YAW BRAKE CIRCUIT

-yaw brakes with 3 pressure levels, i.e.
)160 bar for holding function
)30 bar for yaw operation
)0 bar for cable loop unwinding operation
-flushing function with filter in return line
-24h / 7 days pressure holding capacity
-pressure switch or transmitter for brake status control

Stand-alone hydraulic power unit for yaw brakes control

1010-0084-8XX

GENERAL FEATURES:

- -compact and cost efficient design mounted on 6 liter tank
- -2/2 seat valve technology, leak oil free
- -sub components from qualified suppliers -universal manifold
- -robust asynchronous 400V/50Hz el. motor
- -oil level + temperature control

OPTIONAL FEATURES:

- -UL-approved electrical components
- -drip pan
- -electrical cabinet
- -customer specific electrical plug connection
- -cold climate version
- -690 V el. motor
- -60Hz
- -Handpump
- -pressure gauge for visual inspection







Example for a COMPACT Drive Wind Turbine





Example for a COMPACT Drive Wind Turbine

Specification





Example for a COMPACT Drive Wind Turbine

Specification

SYSTEM CIRCUIT The electrical motor drives a hydraulic Combined hydraulic power unit for acgearpump. The Pump feeds the system active rotor brakes of BSAB series and yaw cumulator, controlled by a pressure switch brake control or a transmitter. The system pressure can be released manually by shut-off cock or 1010-0099-8XX manual override of valves. The high pressure filter between the pump and the sys-**GENERAL FEATURES:** tem ensures the cleanliness of the hydrau--compact and cost efficient design lical system. The certified pressure control mounted on 6 liter tank valve ensures pressure relief in case of -2/2 seat valve technology, leak oil free control failures. Optional transmitter on -sub components from qualified suppliers -universe manifold system accumulator for checking the nitro--robust asynchronous 400V/50Hz el. qen pre-charge. motor -oil level + temperature control ROTOR BRAKE -fail safe brake activation or idling function in case of power loss **OPTIONAL FEATURES:** CIRCUIT: -24h / 7 days pressure holding capacity -UL-approved electrical components -pressure switch or transmitter for brake -drip pan status control -electrical cabinet -customer specific electrical plug connection YAW BRAKE -yaw brakes with 3 pressure levels, i.e. -cold climate version)160 bar for holding function -690 V el. motor CIRCUIT:)30 bar for yaw operation -60Hz)O bar for cable loop unwinding operation -Handpump -flushing function with filter in return line -Pressure gauge for visual inspection -24h / 7 days pressure holding capacity -pressure switch or transmitter for brake status control







Example for a COMPACT Drive Wind Turbine





Example for a COMPACT Drive Wind Turbine

Specification

SYSTEM CIRCUIT	The electrical motor drives a hydraulic gearpump. The Pump feeds the system ac- cumulator, controlled by a pressure switch or a transmitter. The system pressure can be released manually by shut-off cock or manual override of valves. The high pres- sure filter between the pump and the sys- tem ensures the cleanliness of the hydrau- lical system. The certified pressure control valve ensures pressure relief in case of control failures. Optional transmitter on	Combined hydraulic power unit for ac- tive rotor brakes of BSAB series and yaw brake control 1010-0099-8XX GENERAL FEATURES: -compact and cost efficient design mounted on 6 liter tank -2/2 seat valve technology, leak oil free -sub components from qualified suppliers
	system accumulator for checking the nitro- gen pre-charge.	-universal manifold -robust asynchronous 400V/50Hz el. motor -oil level + temperature control
ROTOR BRAKE CIRCUIT:	 -fail safe brake activation or idling function in case of power loss -24h / 7 days pressure holding capacity -pressure switch or transmitter for brake status control 	OPTIONAL FEATURES: -UL-approved electrical components -drip pan -electrical cabinet -customer specific electrical plug connection
YAW BRAKE CIRCUIT:	 -yaw brakes with 3 pressure levels, i.e.)160 bar for holding function)30 bar for yaw operation)0 bar for cable loop unwinding operation -flushing function with filter in return line -24h / 7 days pressure holding capacity -pressure switch or transmitter for brake status control 	 -cold climate version -690 V el. motor -60Hz -Handpump -Pressure gauge for visual inspection connection -cold climate version -690 V el. motor -60Hz -Handpump
	A CASE AND	-pressure gauge for visual inspection



Example for a COMPACT Drive Wind Turbine

Specification

SYSTEM CIRCUIT

The electrical motor drives a hydraulic. gearpump. The pump feeds the system accumulator, controlled by a pressure switch or a transmitter. The system pressure can be released manually by a shut-off cock or by manual override of valves. The high pressure filter between the pump and the system ensures the cleanliness of the hydraulic system. The certified pressure control valve ensures pressure relief in case of control failures.

ROTOR LOCK CIRCUIT:

- -control valve is protected by additional 2/2 valve
- -24h / 7 days pressure holding capacity
- -'cylinder holding function' included -manual activation of the valve or via
- remote control



Stand-alone hydraulic power unit for rotor lock control

1110-0012-8XX

TYPICAL APPLICATION:

-Service hydraulic for multi-megawatt turbines

GENERAL FEATURES:

- -compact and cost efficient design
- mounted on 20 liter tank
- -sub components from qualified suppliers
- -universal manifold
- -robust asynchronous 400V/50Hz el. motor
- -oil level + temperature control

OPTIONAL FEATURES:

- -UL-approved electrical components
- -drip pan
- -electrical cabinet
- -remote control operating panel
- -customer specific electrical plug connection
- -cold climate version
- -690 V el. motor
- -60Hz
- -Handpump
- -pressure gauge for visual inspection





Example for a COMPACT Drive Wind Turbine





Example for a COMPACT Drive Wind Turbine

Specification

SYSTEM CIRCUIT

The electrical motor drives a hydraulic gearpump. The pump feeds the system accumulator, controlled by a pressure switch or a transmitter. The system pressure can be released manually by a shut-off cock or by manual override of valves. The high pressure filter between the pump and the system ensures the cleanliness of the hydraulic system. The certified pressure control valve ensures pressure relief in case of control failures. Optional transmitter on the system accumulator for checking the nitrogen pre-charge.

YAW BRAKE CIRCUIT:

-yaw brakes with 3 pressure levels, i.e.)160 bar for holding function)30 bar for yaw operation)O bar for cable loop unwinding operation -flushing function with filter in return line -24h / 7 days pressure holding capacity

-pressure switch or transmitter for brake status control

Stand-alone hydraulic power unit for yaw brakes control

1010-0084-8XX

GENERAL FEATURES:

- -compact and cost efficient design mounted on 6 liter tank
- -2/2 seat valve technology, leak oil free
- -sub components from qualified suppliers -universal manifold
- -robust asynchronous 400V/50Hz el. motor
- -oil level + temperature control

OPTIONAL FEATURES:

- -UL-approved electrical components
- -drip pan
- -electrical cabinet
- -customer specific electrical plug connection
- -cold climate version
- -690 V el. motor
- -60Hz
- -Handpump
- -pressure gauge for visual inspection





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Example for a COMPACT Drive Wind Turbine

Specification

SYSTEM CIRCUIT Combined hydraulic power unit for active The electrical motor drives a hydraulic rotor brakes and rotor lock control gearpump. Pump feeds the system accumulator, controlled by pressure switch or transmitter. System pressure can be re-1010-0124-804 leased manually by cock or manual override on valves. High pressure filter between **GENERAL FEATURES:** pump and system ensures cleanliness of -compact and cost efficient design mounted on 20 liter tank hyd. system. Certified pressure control valve ensures pressure relief in case of -2/2 seat valve technology, leak oil free control failures. Optional transmitter on -sub components from qualified suppliers system accumulator for checking the nitro--universe manifold -robust asynchronous 400V/50Hz el. gen pre-charge. motor -oil level + temperature control -fail safe brake activation or idling ROTOR BRAKE function in case of power loss **OPTIONAL FEATURES:** CIRCUIT: -24h / 7 days pressure holding capacity -UL el. components -delay time according to customer -drip pan demands -el. cabinet -pressure switch or transmitter for brake -customer specific el. pluq connection -cold climate version status control -flushing function with filter in return line -690 V el. motor -60Hz -Handpump -adjustable pressure for rotor lock -manometer for visual inspection **ROTOR LOCK** -4/3 valve for rotor lock control is CIRCUIT: protected by additional 2/2 valves -24h / 7 days pressure holding capacity -'cylinder holding function' included Rotor brake Rotor Lock



