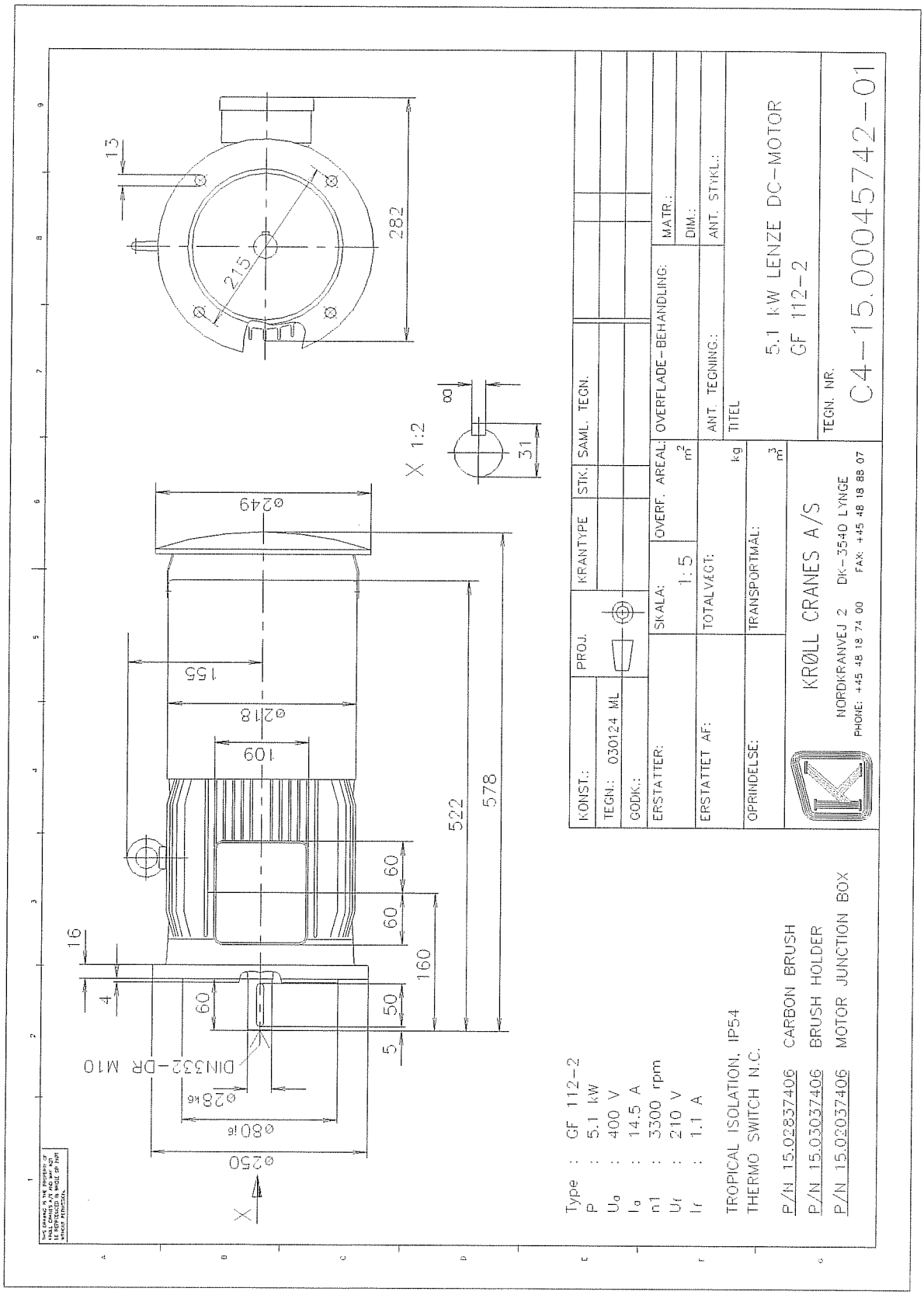
SLEWING DRIVE 5 x 5.1 kW, DC

KRØLL CRANES A/S

5 kW DC-MOTOR SPECIFICATION - P/N 15.00045742



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THYRISTOR CONVERTER SPECIFICATION P/N 13.20481220

Manufacturer	:	SIEMENS
Type	:	6RA7031-6DV62
Supply	:	3 x 400 V/ 50-60 Hz
Armature output	:	400 V dc, 75 A
Field output	:	210 V dc / 5.5 A dc

ADJUSTMENT OF DC CONVERTER FOR SLEWING DRIVE

PRINCIPLE OF OPERATION

The slewing drive is powered by 5 parallel dc motors. The motors are supplied with a fixed field voltage and a variable armature voltage from thyristor converter U2. The armature current is equally divided (±20%) and supplied to the motors via 5 resistors R21 to R25.

From the controller the speed setpoint is taken directly to the thyristor converter and compared with the speed calculated from the armature voltage. If there are any variations, increase or reduce the armature voltage to the motors until the speed-torque is the same as the desired.

ADJUSTMENTS

Parameter changes

P51	=	40	All parameters can be changed
P52	=	3	All parameters are visible

Rated converter current

P76.01	=	100	Rated converter armature dc current, 100% x 60 A
P76.02	=	60	Rated converter field dc current, 60% x 10 A

Supply voltage for power section

P78.01	=	400	Supply for armature circuit, V
P78.02	=	230	Supply for field circuit, V

Motor data

P100	=	75	Rated motor armature current, 5 x 14.9 A = 75 A
P101	=	400	Rated motor armature voltage, V
P102	=	7.0	Rated motor field current, A
P114	=	10.0	Thermal time constant of motor, min.

Operation with armature voltage control

P83	=	3	Actual speed supplied by armature voltage
P115	=	100	Armature voltage at maximum speed, 100% of supply voltage

Field mode

P81	=	0	Field weakening not activated
P82	=	2	Automatic connection of stand-still field
P257	=	15	Stand-still field, 15% of rated field current
P258	=	10	Time delay of stand-still field after stand-still, 10 sec.

Max. armature current

P171	=	100	System current limit in torque dir. I, 100% of rated motor armature current
P172	=	-100	System current limit in torque dir. II, 100% of rated motor armature current

Ramp function generator

P303	=	4	Acceleration time - 4 sec.
P304	=	2	Deceleration time - 2 sec.
P305	=	0.1	Final rounding off - 0.1 sec.
P306	=	2	Final rounding off - 2 sec.

Brake control

P772	=	9580	Output terminal 48 set to brake control
P80	=	2	Operating brake mode
P87	=	0.5	Brake release time, 0.5 sec.
P88	=	4.0	Pulse closing time, 4.0 sec. (Time from Nmin to pulses Off)
U440	=	255	Brake control signal for timer input
U441	=	2.0	Timer setting, 2.0 sec. (Time from Nmin to brake Off)
U442	=	1	Timer mode, Off delay
P370	=	5.0	Nmin for brake engage, 5.0%

Fault output

P771	=	107	Output terminal 46 set to fault output

Reset input

P665	=	10	Input terminal 36 set to reset input

Droop

U150.01	=	162	Icomp Ncontr
U150.02	=	401	Fixed value
P401.01	=	20	Fixed value = 30%
P624	=	9150	Droop setpoint
P388	=	30	Nact/Nret supervision, 30%

Pre control & current controller optimization

(Values from optimization run P51 = 25)

P110 =
P111 =
P112 =
P155 =
P156 =
P255 =
P256 =

Speed controller optimization

(Values from optimization run P51 = 26)

P225 =
P226 =
P228 =