

CONNECTIONS LEGEND



Technical Data

Consult User Manual "Explanation of Symbols Technical Data" (90819) for details

TSO 600/96/4/EL TH0302

SPIRALOVEN

TSO 600/96/4 EL

TH0302

DESCRIPTION	UNITY	TEMPERATURE	CONNECTION	CONSUMPTION
TSO TO PANEL BOTTOM				
SEE ELECTRICAL BLOCK DIAGRAM				
Supply Conveyor belt	M 1...*			
Encoder Conveyor belt	ST1			
Supply Drum 1	M 2...*			
Encoder Drum 1	ST2			
Supply Drum 2	M 3...*			
Encoder Drum 2	ST3			
Supply Infeed belt	M 4...*			
Supply Outfeed belt	M 5...*			
Supply Lifting device	M 9...*			
Thermocouple section 1	TT1			CABLE DELIVERED BY STORK
Thermocouple section 2	TT2			CABLE DELIVERED BY STORK
Thermocouple safety section 1	TT3			CABLE DELIVERED BY STORK
Thermocouple safety section 2	TT4			CABLE DELIVERED BY STORK
HUMAN MACHINE INTERFACE				
Remote supply + NOD				
Touchscreen-PLC. Comm.Cable				CABLE DELIVERED BY STORK
Light beacon	H1-H2-H3...			
TERMINAL BOX 1				
Thermistors	KK.1.*			
Panel sensor connection box 1	R1+R2....			
Panel sensor connection box 2	XKK1			
Panel sensor connection box 2	XKK2			
Emergency stops TSO	ES			
Lubrication pump empty or blocked	L			
Waterlock drum 1/2 and pre wash sect.	B1.2.3			
EXTERNAL COMMUNICATION				
Modem telephone	-			
PNEUMATICS 1				
Valve terminal pneumatics	PNEU1			
Supply Blower Belt Washer	M 12...*			
Supply Pump Belt Washer	M 13...*			
Supply Brushes Belt Washer	M 14...*			
Supply Dirt remover Beltwasher	M 15...*			
Supply Pump CIP	M 16...*			

DESCRIPTION	UNITY	TEMPERATURE	CONNECTION	CONSUMPTION
TSO TO PANEL TOP				
SEE ELECTRICAL BLOCK DIAGRAM				
Supply Circulation fan 1	M 6...*			
Supply Circulation fan 2	M 7...*			
Supply Exhaust fan roof	M 10...*			
Supply Exhaust fan infeed	M 11...*			
Supply Exhaust fan outfeed	M 17...*			
Heating group 1.1.1	E1			
Heating group 1.1.2	E2			
Heating group 1.1.3	E3			
Heating group 1.1.4	E4			
Heating group 1.2.1	E5			
Heating group 1.2.2	E6			
Heating group 1.2.3	E7			
Heating group 1.2.4	E8			
Heating group 2.1.1	E9			
Heating group 2.1.2	E10			
Heating group 2.1.3	E11			
Heating group 2.1.4	E12			
Heating group 2.2.1	E13			
Heating group 2.2.2	E14			
Heating group 2.2.3	E15			
Heating group 2.2.4	E16			
Steam control valve	YS1			
Dew point measurement	X1			
TERMINAL BOX 2				
Thermistor	KK2			
Waterlock	R6+R7			
Exhaust valve control	LS1			
Exhaust valve control	RL1			
PNEUMATICS 2				
Valve terminal	PNEU2			
Cable field length reference point				

* See lay-out TSO



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 Date: 03.05.2011 Version:

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Power supply		W1...*			According to local regulations	445 kVA
Earth Leakage Current		...*	When using a Residual Current Device (RCD) the following rules apply: - Use TYPE-B RCD (Detects AC, DC and pulsating DC currents)! - Use one RCD per machine.			
Sound pressure level		...*	LpA < 82 dB(A)			
Air conditioned Room		...*	30-35°C MAX.			30 kW
Compressed air		...*	600-800 kPa		6	0.1 Nm ³ /h
Exhaustion roof		1...*		MAX. 200 °C	INSIDE.Ø252	1000 M ³ /h by 60 Pa
Hot water / CIP tank		1 ...*	250-350 kPa	20-60 °C	G 1"	3 M ³ /h only during cleaning
Hot water(only when no option) brush washer		2 ...*	250-350 kPa	20-60 °C	G 1/2"	4 M ³ /h process dependant
Exhaustion infeed		2...*		MAX. 200 °C	INSIDE.Ø252	1000 M ³ /h by 60 Pa
Exhaustion outfeed		3...*		MAX. 200 °C	INSIDE.Ø252	1000 M ³ /h by 60 Pa
Saturated steam - Food grade quality - no de-mineralized water		...*	200-400 kPa	Gauge pressure	DN 65	Max 1500 KG/h
Drain bin+CIP tank		1 ...*		MAX. 100 °C	G 3"	
Drain soaking section		2 ...*		MAX. 100 °C	G 2"	
Drain bin+overflow belt washer		3 ...*		MAX. 100 °C	G 3"	OPTIONAL
Drain water lock		4 ...*		MAX. 100 °C	G 3/4"	
Drain overflow		5 ...*		MAX. 100 °C	G 1 1/2"	
Drain spill beltwasher		6 ...*		MAX. 100 °C	G 2"	OPTIONAL
Drain exhaust outfeed		7 ...*		MAX. 100 °C	G 1/2"	
Condensate		...*		50 °C		0.25 M ³ /h
Cold water 1		1...*	250-350 kPa	1-20 °C	G 1/4"	0.5 M ³ /h
Cold water 2		2...*	250-350 kPa	20 °C	G 1/2"	3 M ³ /h during start up 0.5 M ³ /h production
Reference point		...*				
Fresh air Room		...*				1800 M ³ /h MIN.

* See lay-out TSO



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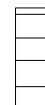
SPIRALOVEN

TSO 600/96/4 EL

TH0302

HUMAN MACHINE INTERFACE	TSO-REMOTE (5x 0,75mm ² CC)
	TSO-COMM CABLE (TSX-CSA) DELIVERED BY STORK Touchscreen PLC

LIGHT BEACON

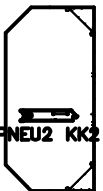


TSO-H1-H2-H3 (5x 0,75mm² CC)
INDICATORS

TH0302

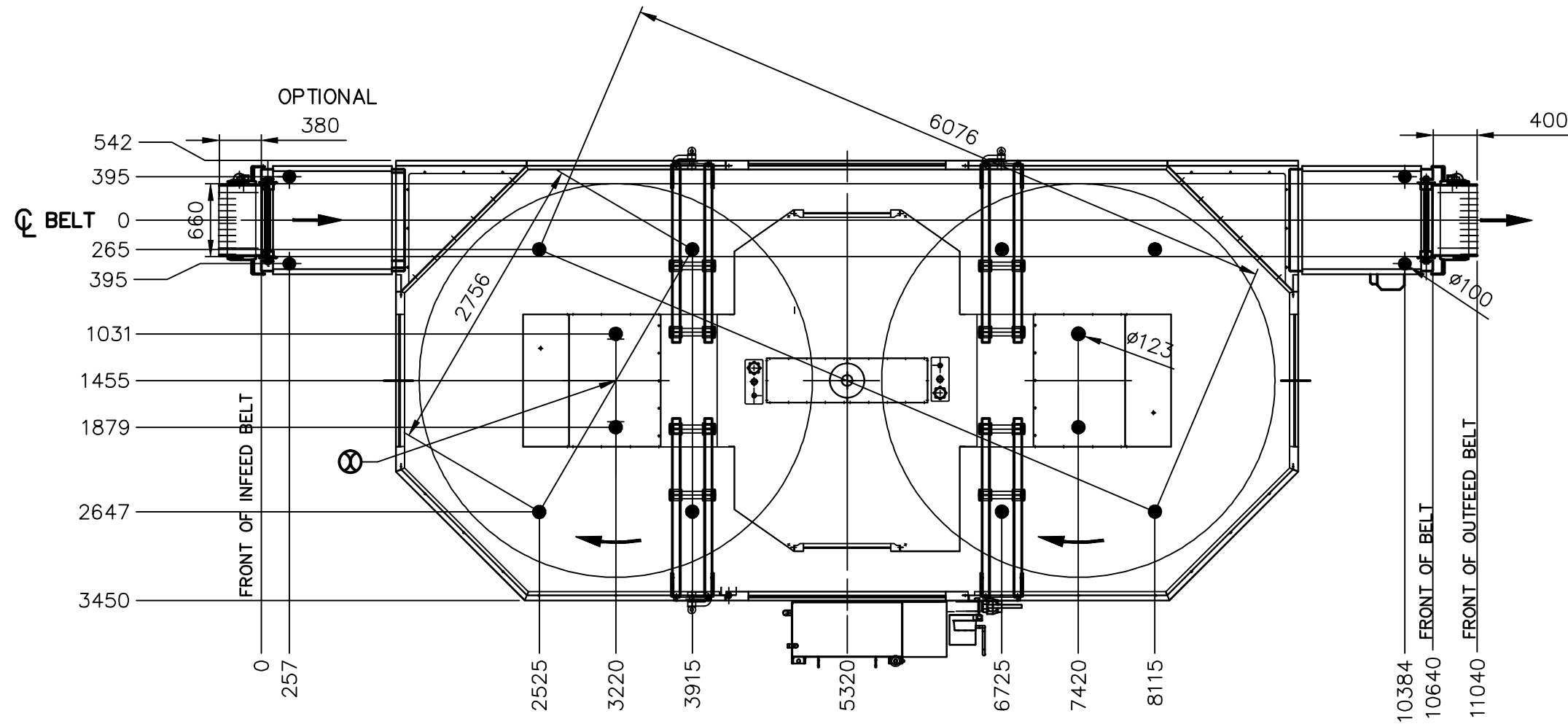
CONTROL PANEL
SPIRAL OVEN TSO-E
NR : 4716930
SIZE: 2400x2000x600
SUPPLY: 400VAC 3PH
50/60HZ
BREAKING
CAPACITY: 25kA
POWER CONSUMPTION:
464 kW.

TSO-M1 SUPPLY COVEYOR BELT	3 PH 0,37/0,55 kW	(4x 1,5mm ² CC)	cable length = field length + 28 meter	connect to motor
TSO-ST1 ENCODER COVEYOR BELT		(5x 0,75mm ² CY SHLD)	cable length = field length + 28 meter	connect to motor
TSO-M2 SUPPLY DRUM 1	3 PH 0,75/1,1 kW	(4x 2,5mm ² CC)	cable length = field length + 21 meter	connect to motor
TSO-ST2 ENCODER DRUM 1		(5x 0,75mm ² CY SHLD)	cable length = field length + 21 meter	connect to motor
TSO-M3 SUPPLY DRUM 2	3 PH 0,75/1,1 kW	(4x 2,5mm ² CC)	cable length = field length + 26 meter	connect to motor
TSO-ST3 ENCODER DRUM 2		(5x 0,75mm ² CY SHLD)	cable length = field length + 26 meter	connect to motor
TSO-M4 SUPPLY INFEEDBELT	3 PH 0,18 kW	(4x 1,5mm ² CC) OPTIONAL	cable length = field length + 28 meter	connect to motor
TSO-M5 SUPPLY OUTFEEDBELT	3 PH 0,18 kW	(4x 1,5mm ² CC)	cable length = field length + 28 meter	connect to motor
TSO-M6 CIRCULATION FAN SECTION 1	3 PH 15 kW	(4x 4,0mm ² CC)	cable length = field length + 15 meter	connect to motor
TSO-M7 CIRCULATION FAN SECTION 2	3 PH 15 kW	(4x 4,0mm ² CC)	cable length = field length + 15 meter	connect to motor
TSO-M9 SUPPLY LIFTING DEVICE	3 PH 5,5 kW	(4x 2,5mm ² CC)	cable length = field length + 23 meter	connect to motor
TSO-M10 SUPPLY EXHAUST FAN ROOF	3 PH 0,18 kW	(4x 1,5mm ² CC)	cable length = field length + 5 meter	connect to motor
TSO-M11 SUPPLY EXHAUST FAN INFEED	3 PH 0,18 kW	(4x 1,5mm ² CC)	cable length = field length + 5 meter	connect to motor
TSO-M12 BLOWER BELT WASHER	3 PH 1,5 kW	(4x 2,5mm ² CC) OPTIONAL	cable length = field length + 28 meter	connect to motor
TSO-M13 PUMP BELT WASHER	3 PH 2,2 kW	(4x 2,5mm ² CC) OPTIONAL	cable length = field length + 28 meter	connect to motor
TSO-M14 BRUSHES BELT WASHER	3 PH 3 kW	(4x 2,5mm ² CC) OPTIONAL	cable length = field length + 28 meter	connect to motor
TSO-M15 DIRT REMOVER BELT WASHER	3 PH 0,18 kW	(4x 1,5mm ² CC) OPTIONAL	cable length = field length + 28 meter	connect to motor
TSO-M16 PUMP CIP	3 PH 11 kW	(4x 4,0mm ² CC)	cable length = field length + 28 meter	connect to motor
TSO-M17 SUPPLY EXHAUST FAN OUTFEED	3 PH 0,18 kW	(4x 1,5mm ² CC)	cable length = field length + 5 meter	connect to motor
TSO-E1 SUPPLY HEATING GROUP 1.1.1	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E2 SUPPLY HEATING GROUP 1.1.2	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E3 SUPPLY HEATING GROUP 1.1.3	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E4 SUPPLY HEATING GROUP 1.1.4	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E5 SUPPLY HEATING GROUP 1.2.1	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E6 SUPPLY HEATING GROUP 1.2.2	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E7 SUPPLY HEATING GROUP 1.2.3	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E8 SUPPLY HEATING GROUP 1.2.4	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E9 SUPPLY HEATING GROUP 2.1.1	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E10 SUPPLY HEATING GROUP 2.1.2	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E11 SUPPLY HEATING GROUP 2.1.3	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E12 SUPPLY HEATING GROUP 2.1.4	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E13 SUPPLY HEATING GROUP 2.2.1	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E14 SUPPLY HEATING GROUP 2.2.2	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E15 SUPPLY HEATING GROUP 2.2.3	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-E16 SUPPLY HEATING GROUP 2.2.4	3 PH 25 kW/****	(4x 10,0mm ² SIMX)	cable length = field length + 10 meter	connect to element
TSO-X1 DEW POINT MEASUREMENT		(16x0,5mm ² CY) DELIVERED BY STORK	cable length = field length + 10 meter	connect to probe
TSO-YS1 STEAM CONTROL VALVE		(3 x 0,75mm ² CY SHLD)	cable length = field length + 10 meter	connect to valve
TSO-TT1 THERMOCOUPLE SECTION 1		(Fe-Cu-Ni 2x 0,35mm ²) DELIVERED BY STORK	cable length = field length + 13 meter	connect to thermocouple
TSO-TT2 THERMOCOUPLE SECTION 2		(Fe-Cu-Ni 2x 0,35mm ²) DELIVERED BY STORK	cable length = field length + 13 meter	connect to thermocouple
TSO-TT3 TEMP. SAFETY HEATING ELEMENTS SECTION 1		(Fe-Cu-Ni 2x 0,35mm ²) DELIVERED BY STORK	cable length = field length + 13 meter	connect to thermocouple
TSO-TT4 TEMP. SAFETY HEATING ELEMENTS SECTION 2		(Fe-Cu-Ni 2x 0,35mm ²) DELIVERED BY STORK	cable length = field length + 13 meter	connect to thermocouple
TSO-TH1 THERMISTORS		(12x 0,75mm ² CC)	cable length = field length + 21 meter	<div style="border: 1px solid black; padding: 5px;"> KK1 TERMINAL BOX SIZE: 200x300x80 </div>
XK15 TO PANEL		(12x 0,75mm ² CC)	cable length = field length + 21 meter	
XK16 TO PANEL		(12x 0,75mm ² CC)	cable length = field length + 21 meter	
XK30 TO PANEL		(7x 0,75mm ² CC)	cable length = field length + 21 meter	
XK40 TO PANEL		(7x 0,75mm ² CC)	cable length = field length + 21 meter	
TSO-ES - EMERGENCY STOPS TSO		(12x 0,75mm ² CC)	cable length = field length + 21 meter	
TSO-L - LUBRICATION PUMP EMPTY OR BLOCKED		(4x 0,75mm ² CC)	cable length = field length + 21 meter	
TSO-PNEU1 VALVE TERMINAL PNEUMATICS 1		(16x0,75mm ² CC)	cable length = field length + 21 meter	<div style="border: 1px solid black; padding: 5px;"> PNEU1 </div>
TSO-TH2 THERMISTORS + SAFETY HEATING ELEMENTS		(12 x0,75mm ² CC)	cable length = field length + 7 meter	<div style="border: 1px solid black; padding: 5px;"> KK2 TERMINAL BOX SIZE: 200x200x80 </div>
TSO-LS1 WATERLOCK		(3x 0,75mm ² CY)	cable length = field length + 7 meter	
TSO-RL1 EXHAUST VALVE CONTROL		(5x 0,75mm ² CY)	cable length = field length + 7 meter	
TSO-PNEU2 VALVE TERMINAL PNEUMATICS 2		(16x0,75mm ² CC)	cable length = field length + 7 meter	<div style="border: 1px solid black; padding: 5px;"> PNEU2 </div>



Remark Standard fieldlength 25 m

**** at 400 V at heater element



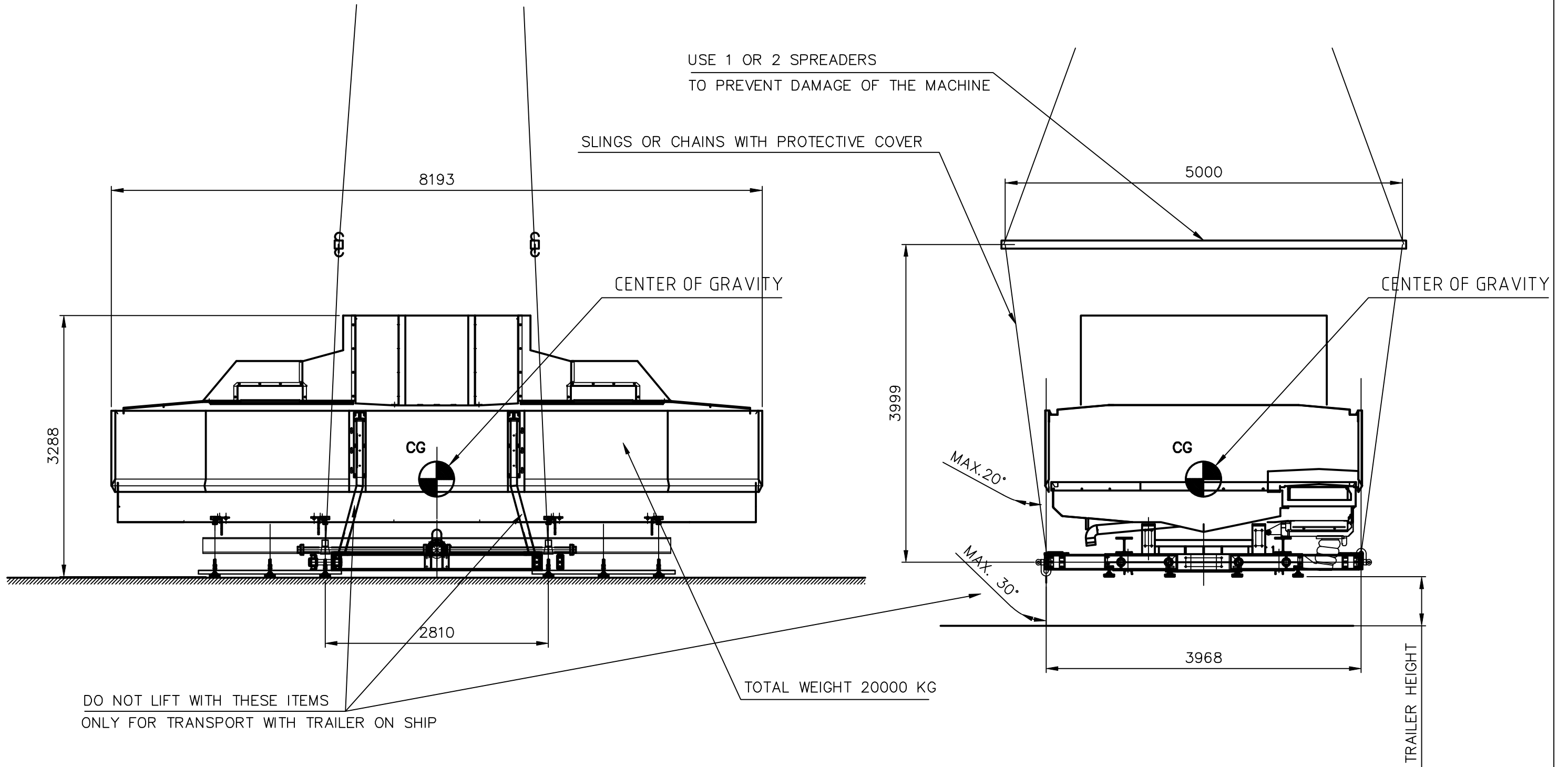
POSITION OF
SUPPORT/FEET
RIGHT HAND.
LEFT HAND
MIRROR IMAGE.

MASS	20000 kg
FLOOR PRESSURE	1.4 N/mm ²

SPIRALOVEN

TSO 600/96/4 EL

TH0302



SLINGS , CHAINS, LIFTING GEAR AND SPREADERS : BY CUSTOMER