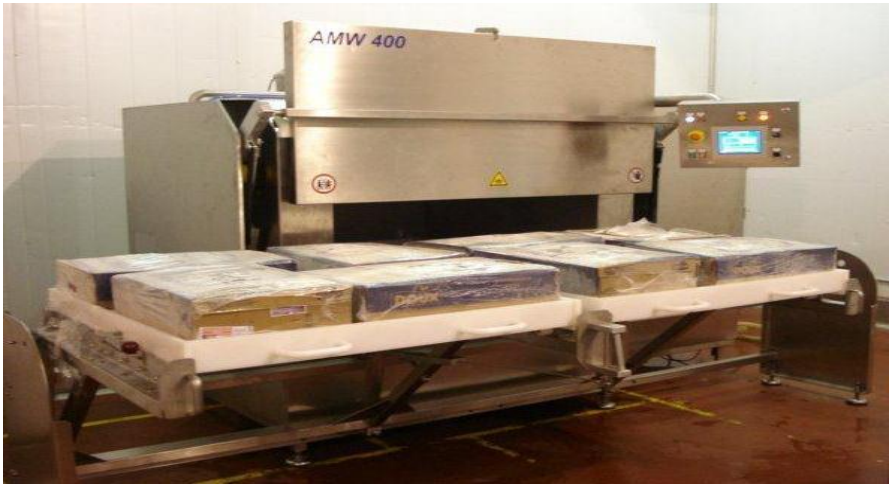
915 MHz MICROWAVE TEMPERING BATCH MACHINE

AMW 400



Turn table / MW inlet by topside & downside, above and below the product

TEMPERING OF FROZEN BLOCKS

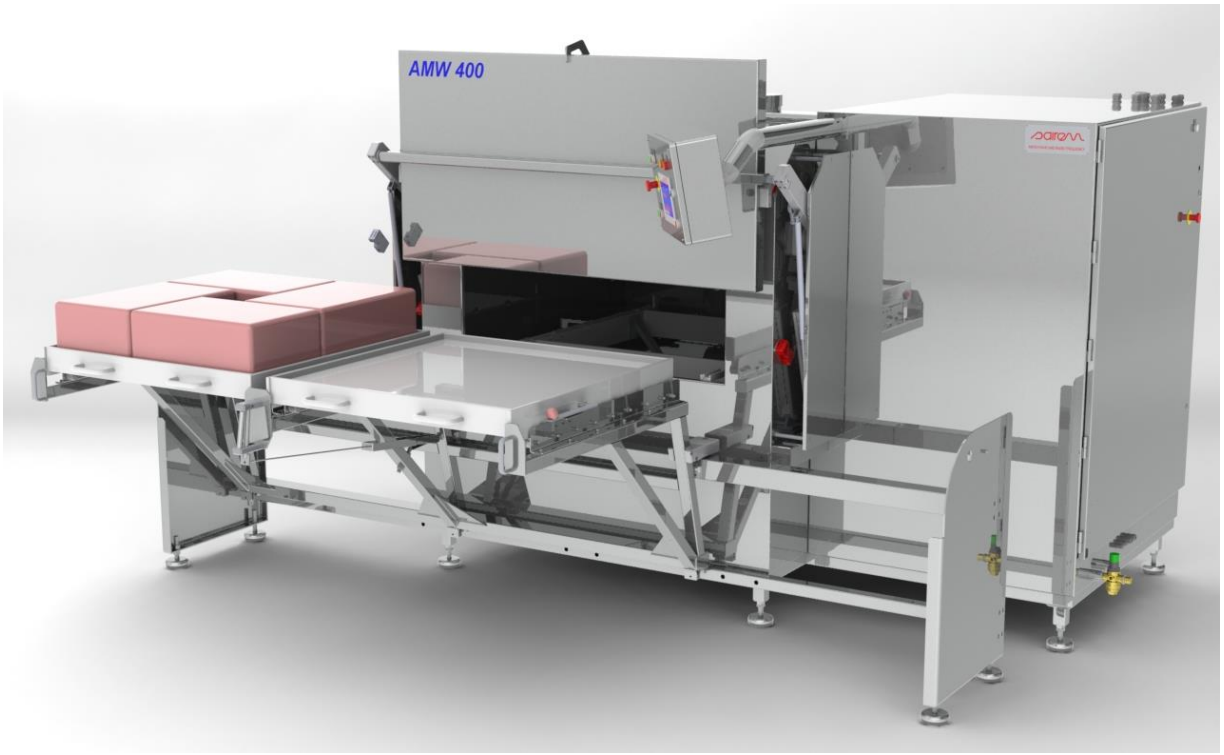
700 to 1200 kg/h from -20 °C to -4 °C / -2 °C
Maximum microwave power 60 kW

ADVANTAGES

- ✓ **FAST**: **very short** time of treatment, high production flexibility;
- ✓ **EASY TO USE**: rolling tray for loading / unloading, pneumatic door movement, PLC with colour touch screen;
- ✓ **ECONOMIC**: **product gain** from 5 to 10 %, continuous flow operation, **minimum floor space**, fast return of investment;
- ✓ **HOMOGENEOUS**: use of a **turn table,** microwave power inlets above and under the product, cross coupling of microwaves and built-in proprietary structures for the uniform repartition of microwaves;
- ✓ **RELIABLE**: very good control of **final temperature**;
- ✓ **HYGIENIC**: no **bacteriological** growth, complies with all hygiene regulations and standards, keep taste and texture **qualities**;
- ✓ **FLEXIBLE**: can be used for tempering of meat, fish, vegetables, **packed** (carton without metallic staple or plastic film) **or not packed.**

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AMW 400



The distinctive feature of the AMW 400 is the use of a double sliding tables making easier loading and unloading of 2 blocks simultaneously and equally its turn table & its microwave coupling system by two ways above and below the product.

The **AMW 400** with double sliding tables makes possible to gain about **15%** of hourly capacity: while the AMW 400 is tempering two blocks inside, the outside table can be unloaded and loaded**,** i.e. 2 blocks in stand-by and two blocks under treatment.

TEMPERING CAPACITIES

The AMW 400 has a tempering capacity between 700 kg/h and 1200 kg/h from initial -20°C to final temperature -4/-2°C. The final temperature - 4 °C / - 2 °C is an average temperature measured just after the microwave treatment.

This capacity is variable and depends on the final required temperature, on the product type (meat, fish, vegetables, fruits, butter etc.), its shape and its fat concentration. The charts in the following pages show the figures.

The data in the charts below are calculated operating the AMW 400 with a 35 kW microwave power (60 kW maximum) with $\mathbf{t_{on}/t_{off}}$ * optimum, for blocks with regular size and weight (25 kg, 600 mm x 400 mm x 150 mm) and for an initial temperature around -20 °C/-18 °C**.**

$\mathbf{t_{on}/t_{off}}$ is the microwave utilization within 1 hour including loading/unloading and door opening/closing; the optimum is 85 %.

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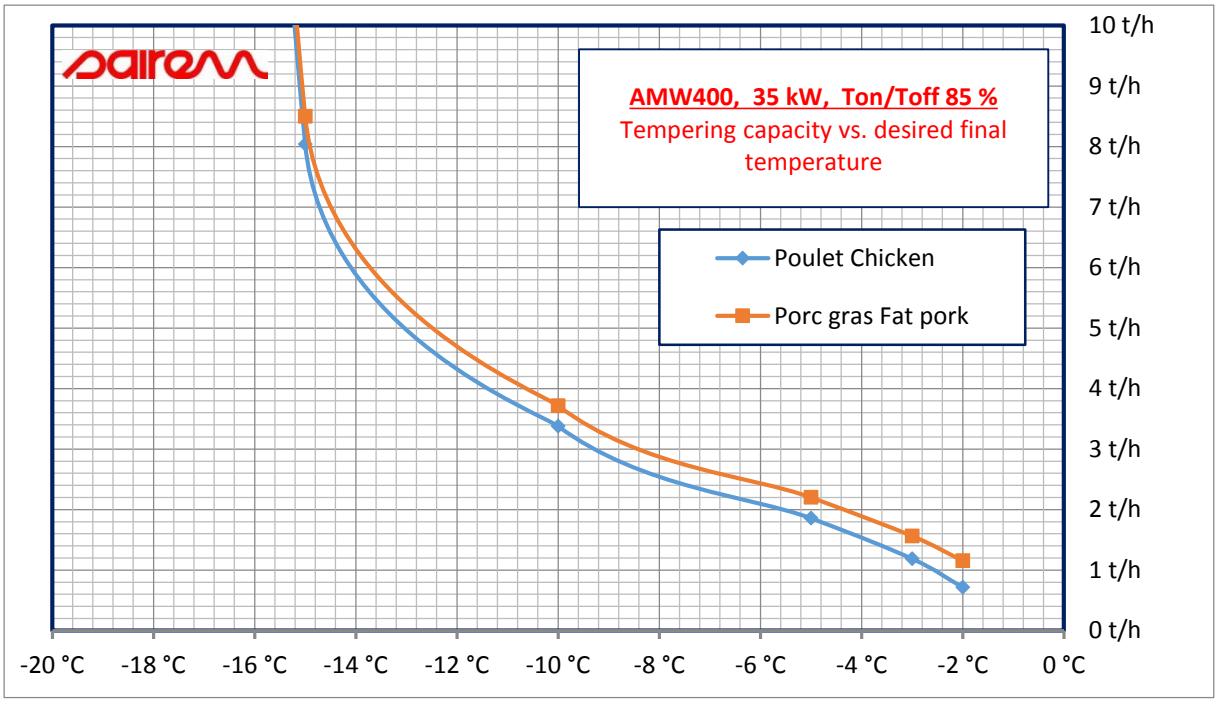
OBSERVATIONS

- If fatty products are to be processed, fat ought to be very homogeneously distributed in the block, otherwise the final temperature for good tempering homogeneity is limited at -4 °C;

- At -4/-2 °C the blocks are at the optimum temperature for processing: dicing, grinding, cutting, slicing…

- The maximum microwave power which can be used in tempering is limited by the products and not by the AMW. Recipes power vs. time must be chosen according to the compromise between capacity and homogeneity of heating.

Fig.1.Tempering capacity vs. desired final temperature



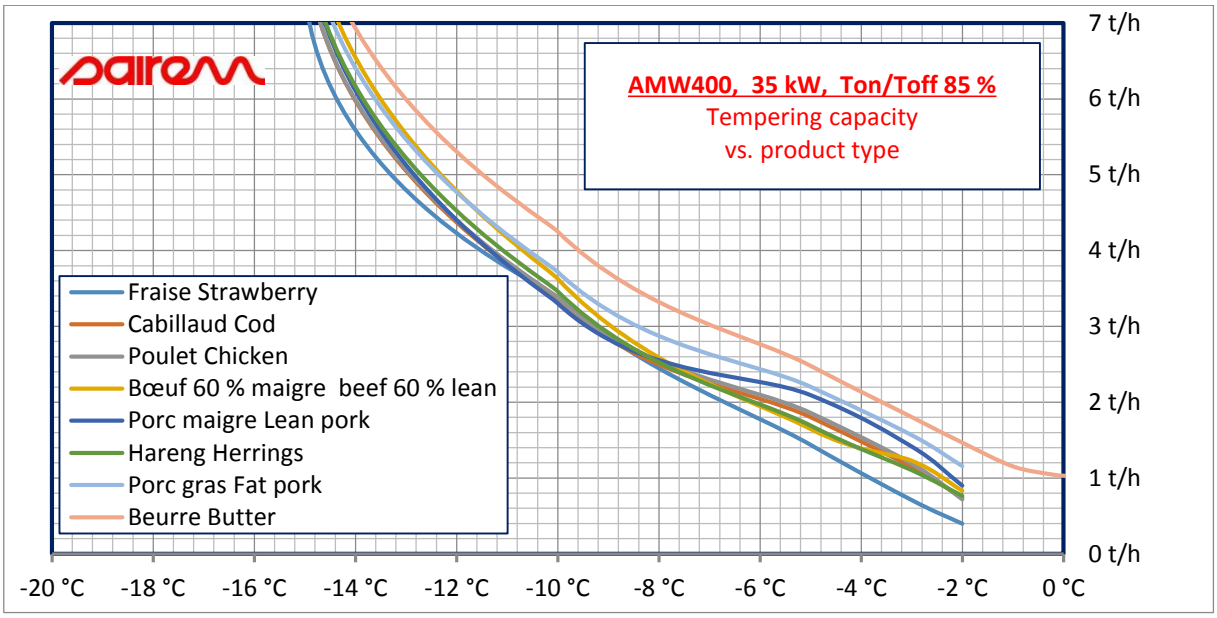
Example: Chicken: 1.9 t/h from -18 °C to -5 °C or ~ 1.2 t/h from -18 °C to -3 °C

Example : Fatty pork ~ 2,2 t/h from -18 °C to -5 °C or ~ 1,5 t/h from -18 °C to -3 °C

It has to be noted that starting at -20 °C or -18 °C has almost no effect on the AMW capacity if initial temperature is homogeneous in the whole product.

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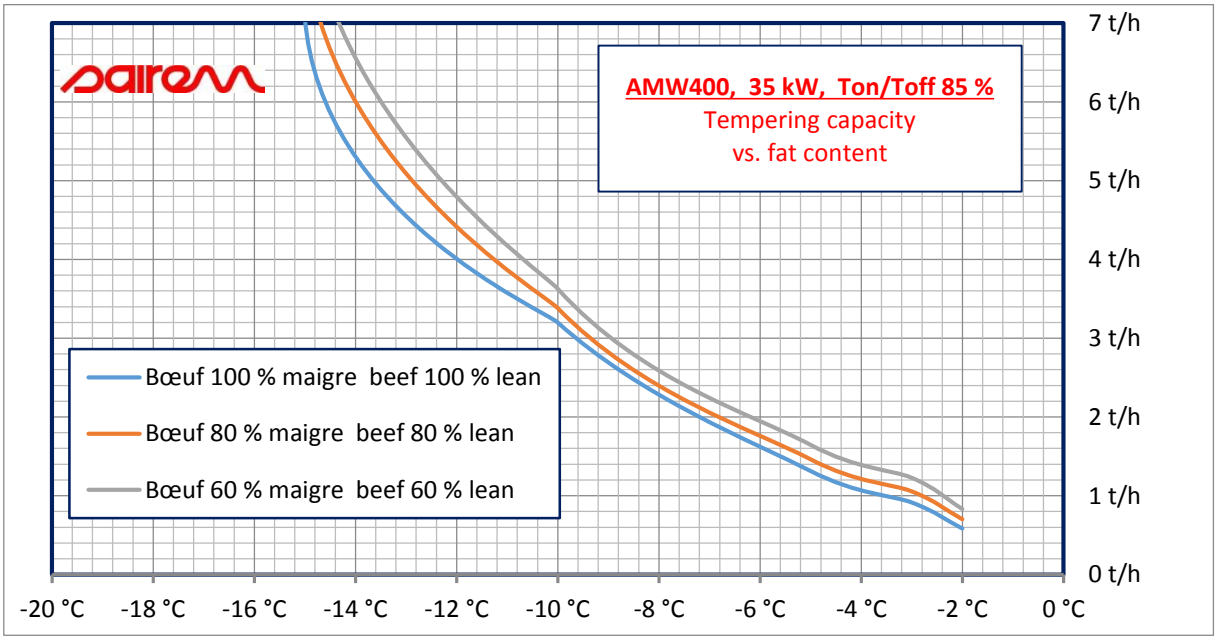
Fig.2. Tempering capacity vs. product type



Tempering capacity is highly variable according to the product.

Example: Fatty pork ~ 1.9t/h at -4°C or beef 60 % lean ~ 1,4t/h at -4°C

Fig.3. Tempering capacity vs. fat content



Example from -18 °C to -3 °C : capacity ~1.25 t/h for beef 60% lean or ~ 0.9 t/h for beef 100% lean

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Examples of blocks processed with the AMW 400:



Ham, 80 kg (4 x 20 kg)
Capacity : ~1100 kg/h from -18 °C to -3 °C / -2 °C



Beef 25 % fet, 100 kg (4 X 25 kg)
Capacity : ~ 1600 kg/h from -18 °C to -6 °C / -4 °C



Pork shoulder without bones, 10 à 15 % fat, 100kg (4x25 kg)
Capacity : ~1000 kg/h from -18 °C to -4 °C / -3 °C

MORE EXAMPLES :

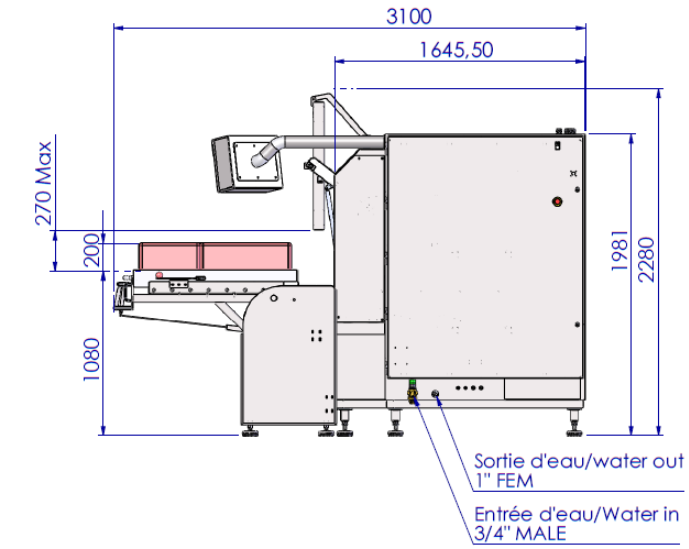
- **Poultry filets, 80 kg (4 x 20 kg),** capacity : ≈ 1400 kg/h from -18 °C to -6 °C / -4 °C or
- **Poultry filets, 80 kg (4 x 20 kg),** capacity : ≈ 900 kg/h from -18 °C to -4 °C / -2 °C.
- **Game (doe), 80 kg (4 x 20 kg),** capacity : ≈ 1000 kg/h from -18 °C to -4 °C / -2 °C or
- **Game (doe), 80 kg (4 x 20 kg),** capacity : ≈ 750 kg/h from -18 °C to -3 °C / -1,5 °C.

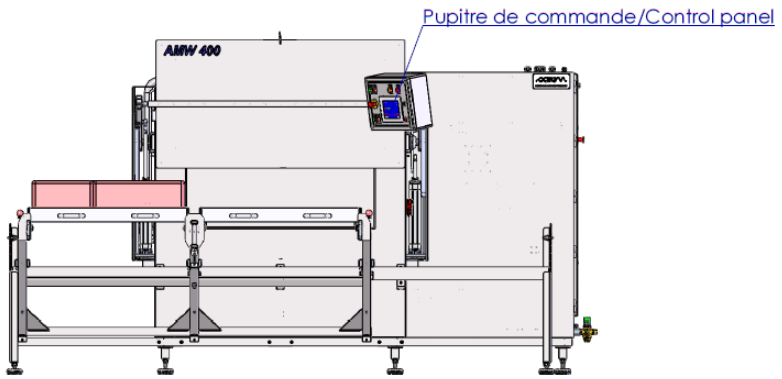
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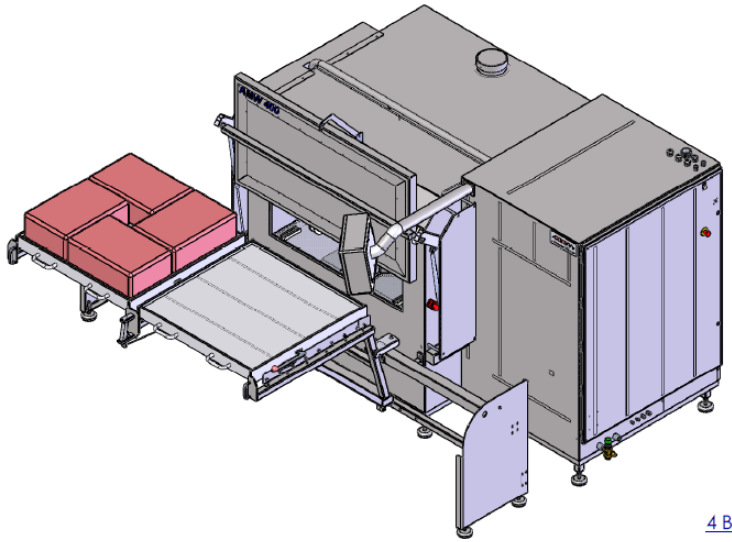
TECHNICAL CARACTERISTICS

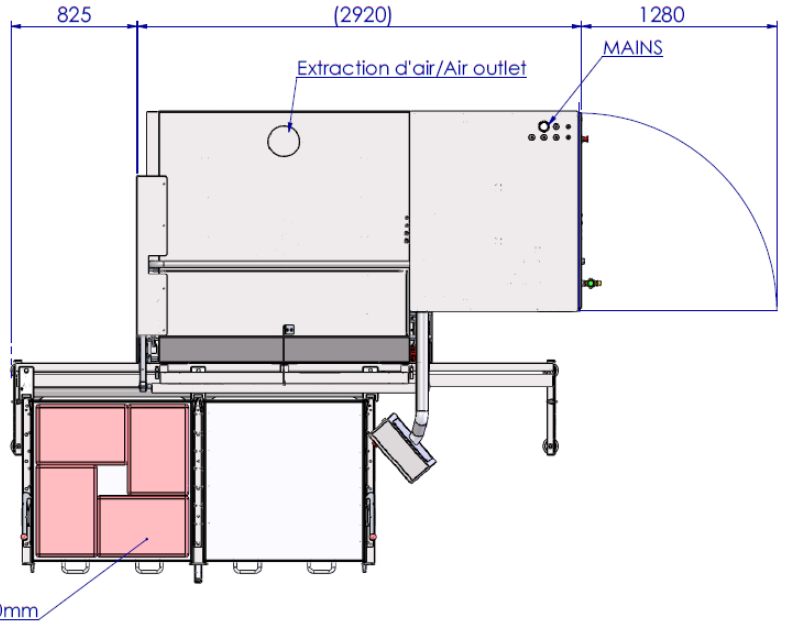
Reference	**AMW 400**
Construction	**Batch**: 304 L stainless steel, microwave door with ¼ λ choke, sliding door pneumatically driven, turn table with automatic stop, touch screen, MW distribution above and below, **Microwave generator**: integrated, IP54, interchangeable microwave power supply with quick connectors for easy maintenance, high reliability.
Tempering capacity	Depends on final temperature, product, fat content.
Sliding table(s)	2 sliding tables, polyethylene, with usable surface 1030 x 1030 mm, sliding mechanism consists of rollers with position locking. Load per sliding table : 4 blocks
Maximum size of blocks	600 x 400 x 250 (height) mm, 30 kg maximum per block.
Microwave frequency	915 MHz (other frequencies are available according to specific regulations of each country)
Microwave power	60 kW maximum, adjustable from 10 kW to 60 kW
HMI (Human Machine interface) and PLC	7,5" digital touch screen, multi lingual, control of microwave power and time, 50 programmable recipes, oven status, faults history etc. Microwave start, door opening/closing push buttons installed on each side of the sliding table, emergency stop etc.
Specific safety	**In option,** a microwave leakage detector ref. SAIREM DFM L24 DC signals any accidental leakage.
Mains electricity & consumption	400 V, 3-phase, no neutral + earth 50/60 Hz, 90 kVA at full power.
Cooling water	Recirculated water, flow min. 50 l/min with differential pressure min. 3 bar, inlet temperature 18 °C to 22 °C, max power to dissipate 20 kW; 1" GF. **Optional:** air/water chiller
Compressed air for pneumatic door	Min. 6 bar, consumption 30 l/min during 10 s (for door opening/closing). Average 0.7 l/min
Cleaning	With low pressured water jet for cleaning inside the AMW, evacuation under the AMW.
EC standards	89/392, 91/368, 73/23, 89/336, 92/31, 519-6 CEE/EWG EN55011 (specific)
Size, weight	See drawings below, weight 2200 kg

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INDICE	DATE	DESSINE	VERIFIE	APPROUVE	MODIFICATION DU DESSIN
B	04-02-11	BDE			MAJ TEXTES FR
A	26/07/10	ML			EMISSION ORIGINALE

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01707 NEYRON Cedex - FRANCE
tél: 04 72 01 81 60 fax: 04 72 01 81 79
www.sairem.com

FORMAT: A3

ECHELLE : 1:30

WEIGHT:

TITRE: AMW400

DESSIN NO. 3000-COM

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