



**INSTALLATION & OPERATING
INSTRUCTIONS FOR THE
CRM700 TILTING
CRUCIBLE FURNACE**

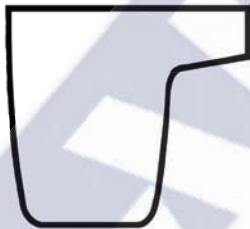
FLAMEFAST (UK) LIMITED

Unit 2 · Labtec Street · Swinton · Manchester M27 8SE
Telephone 0161 793 9998 · Fax 0161 793 0098
www.flamefast.co.uk · email: sales@flamefast.co.uk

CRM700 TILTING CRUCIBLE FURNACE

BEFORE FIRING UP THE CRUCIBLE FURNACE FOR THE FIRST TIME REFER TO THE CARE OF THE CRUCIBLE INSTRUCTIONS ON PAGE 6.

A super conductive crucible is supplied as standard equipment. Only crucibles of the correct size must be used.



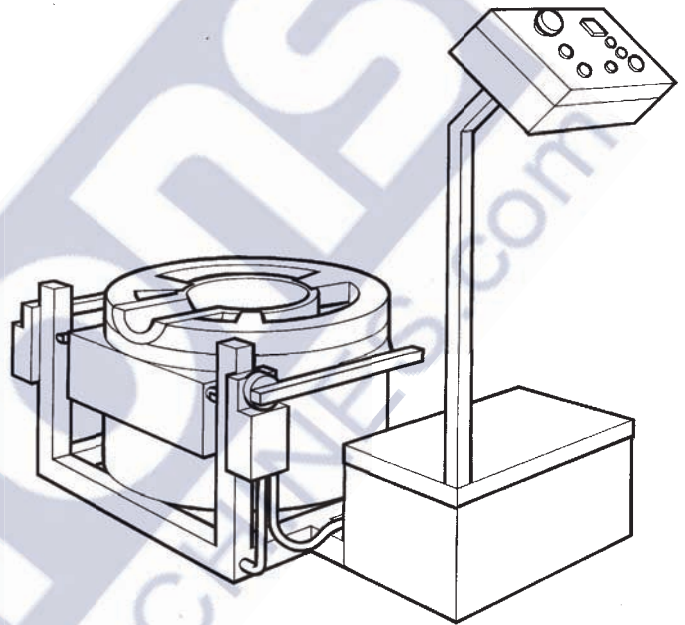
AX25 CRUCIBLE POT
3.5 Litres Capacity

Typical melting times from cold:-

- Al - 4kgs in 25 minutes
- Cu/Zn - 11kgs in 55 minutes

Safety check the crucible after each melt and replace it if cracked.

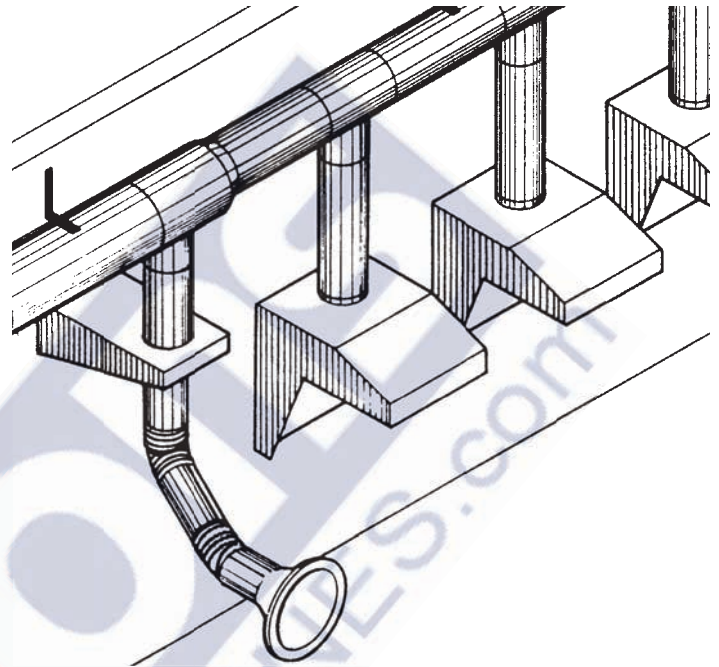
See Care of the Crucible on pages 6 and 7



FUME EXTRACTION

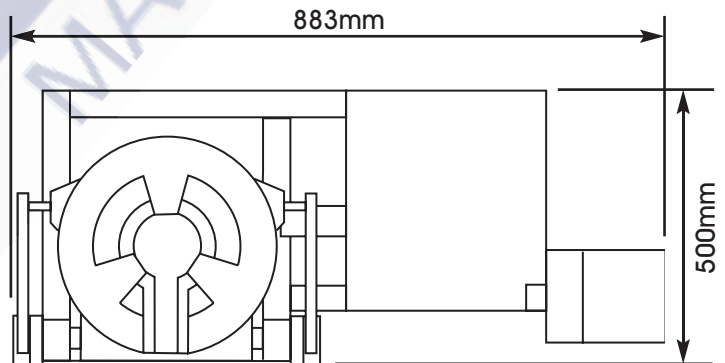
Wherever Hot Metals equipment is fitted, Fume Extraction systems are recommended to remove unwanted heat and fumes.

The Flamefast Varivac Fume Extraction System is recommended for this application.



WILL IT FIT?

Allow for access around the unit and for operation of the tilting crucible.



HOW MUCH GAS?

The CRM700 uses only miserly quantities of Gas - due to high efficiency insulation. The required heat input is only 100,000Btu/h, 29.3Kw.

APPROXIMATE GAS CAPACITY

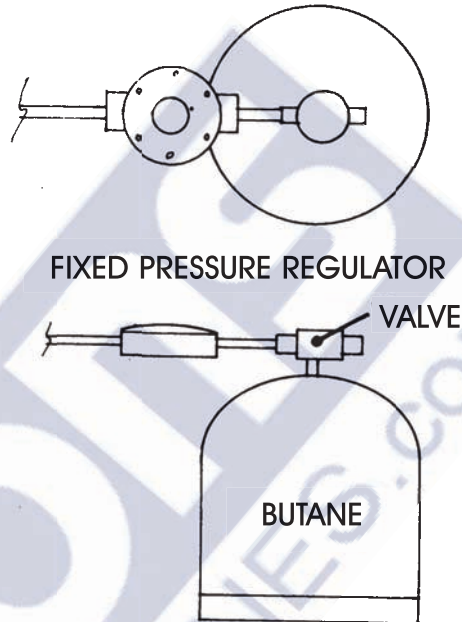
Natural Gas	2.7m. ³ /h
Propane	2.1kg./h
Butane	2.1kg./h

GAS PRESSURE

It is important that the furnace is supplied with gas at the correct pressure.

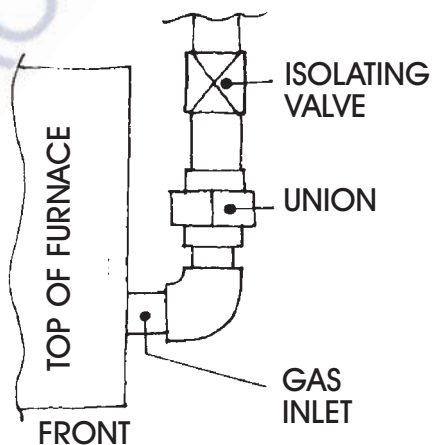
You must fit a fixed (not variable) pressure regulator, see your gas supplier.

GAS	PRESSURE	
Natural Gas	8in WG	20mbar
Propane	14in WG	35mbar
Butane	11in WG	28mbar



GAS INSTALLATION

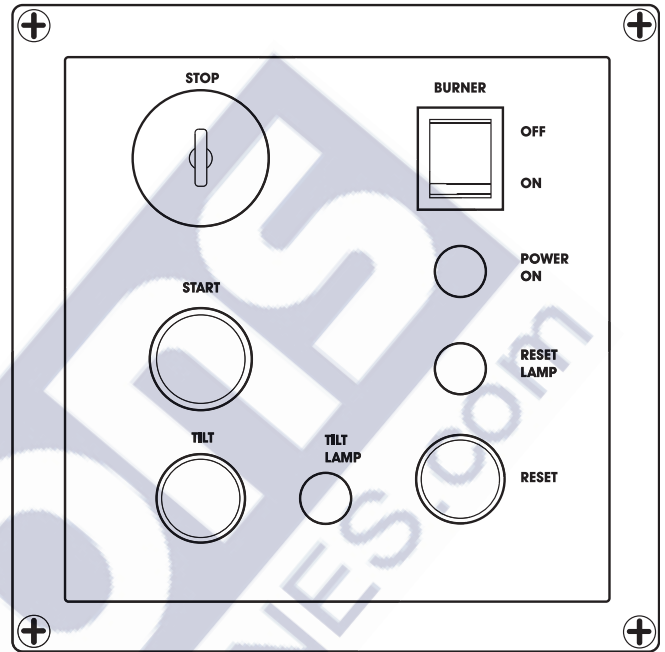
The gas inlet pipe is $\frac{1}{2}$ in BSP/NPT pipe thread and should be fitted with a Union and Isolating Valve.



BURNER ADJUSTMENT

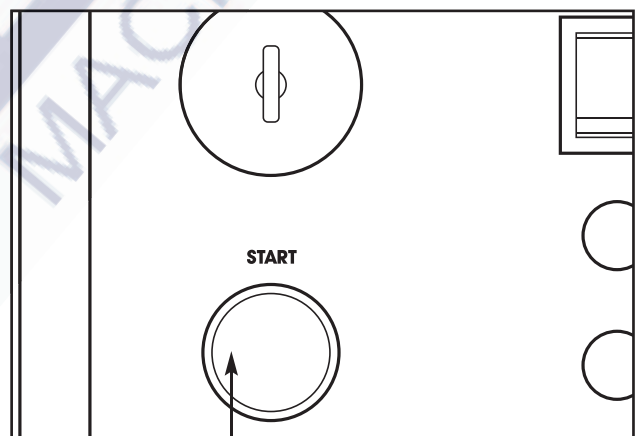
The burner settings are FACTORY SET and DO NOT REQUIRE ADJUSTING.

OPERATIONAL PROCEDURE



CONTROL PANEL

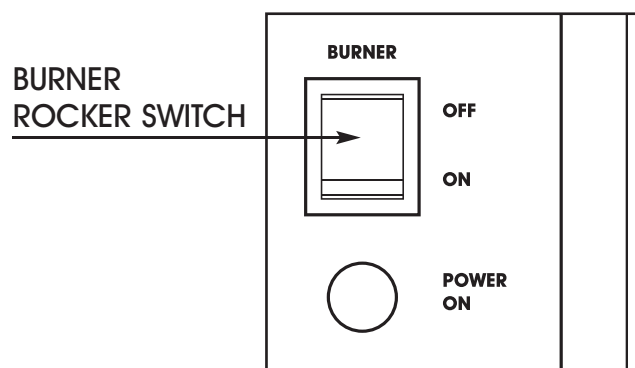
1- Press the Green 'Start' button.



GREEN START BUTTON

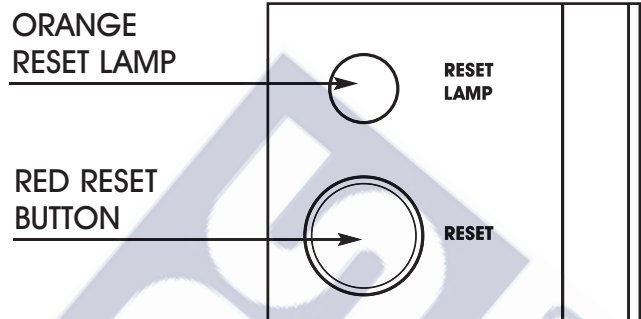
2- Switch burner 'on'.

3- If burner fails to ignite, the burner sequence will restart a maximum of 5 times.



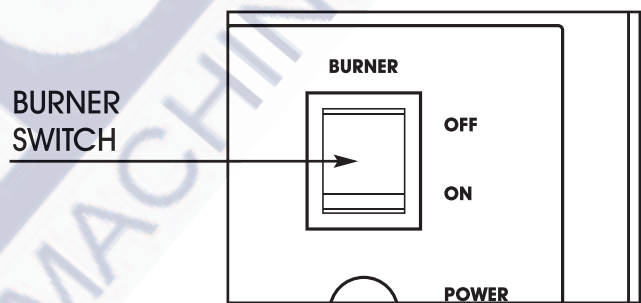
BURNER
ROCKER SWITCH

4- If the burner fails to start, the orange reset lamp will illuminate. Press the red reset button, this will start the sequence over again.



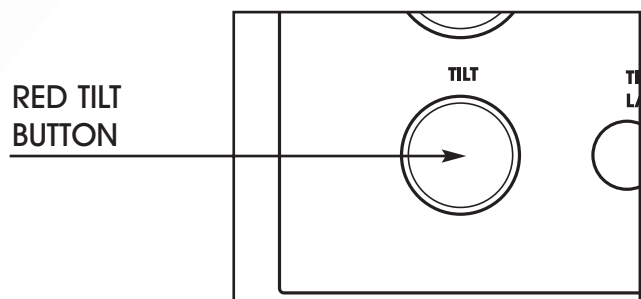
5- If the burner refuses to start refer back to the supplier. The CRM 700 contains no serviceable parts.

6- When the melt is complete and before tilting, turn the burner switch to the 'off' position then press the red tilt button to pour.

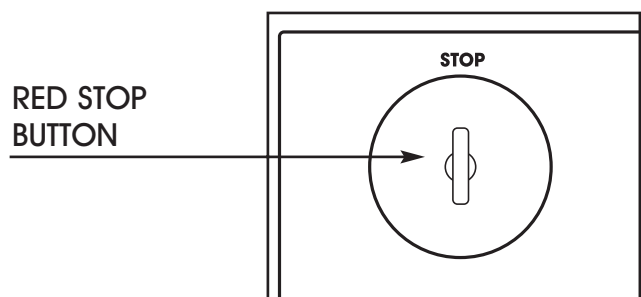


7- If the 'tilt' button is released the drum will return to the rest position.

8- To hold the pour position press the 'tilt' button then release. Repeat this process until the pour is complete.

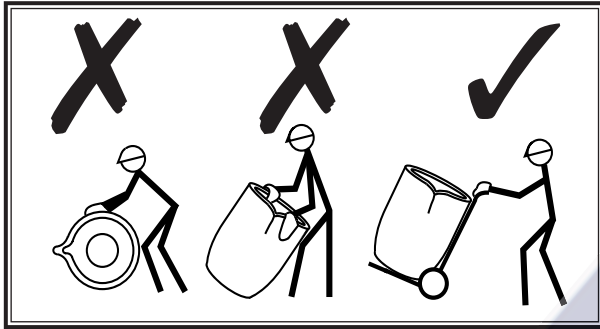


9- To switch the unit off press the red 'Stop' button.



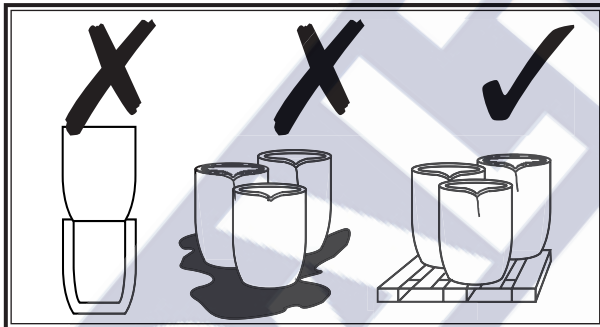
HANDLING

Always handle crucibles with care to avoid damage which can result in reduced crucible life. Even damage which appears insignificant, such as glaze abrasion or chipping, can result in shorter crucible life, longer melt times and higher fuel usage.



STORAGE

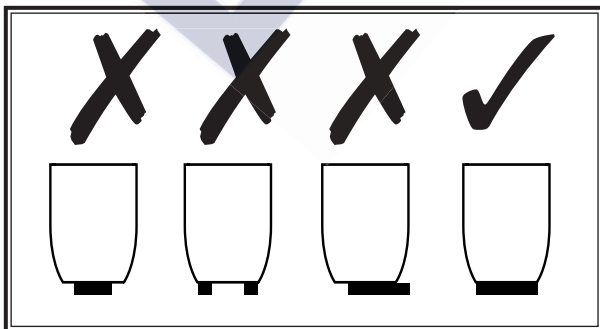
1. Store crucibles in a warm and dry atmosphere.
2. Stand crucibles on pallets, NEVER directly on to the floor.
3. DO NOT stack crucibles one inside the other.
4. When stacking crucibles, use hardboard or similar material as a cushion between layers.



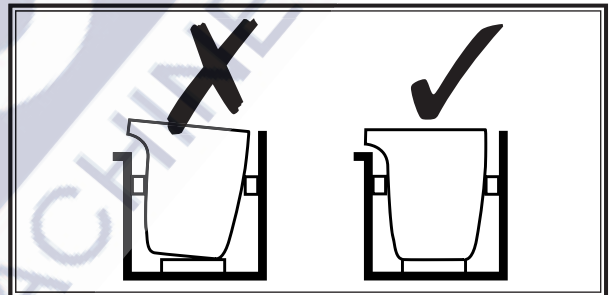
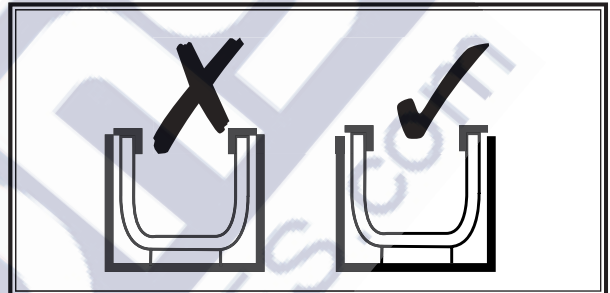
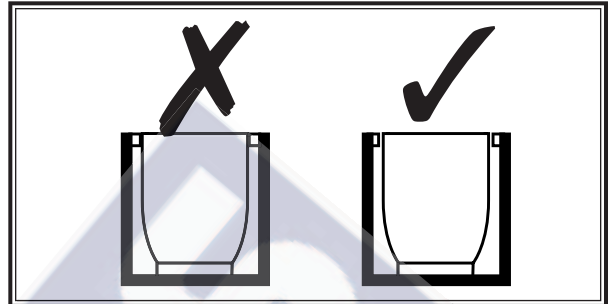
SETTING

LIFT OUT FURNACES

Use a parting medium on the stand to prevent the crucible sticking.. A thin layer of coke dust or similar carboniferous material applied between each melt is sufficient. Rocking or levering to free a crucible which has stuck to the stand can cause fracturing in the lower wall of the crucible.



According to the Health & Safety at Work Act 1974, BS 4163 and COSHH Regulations it is mandatory that all fumes must be removed at source.



LIGHTING UP

GENERAL

1. Ensure the burner is free of carbon build-up and in good working order.
2. Ensure the burner is set to fire tangentially between the crucible and firing tube.

MANUAL BURNERS

Thermal stress is one of the most common causes of early failure. It is therefore very important that the correct warming up procedure is followed.

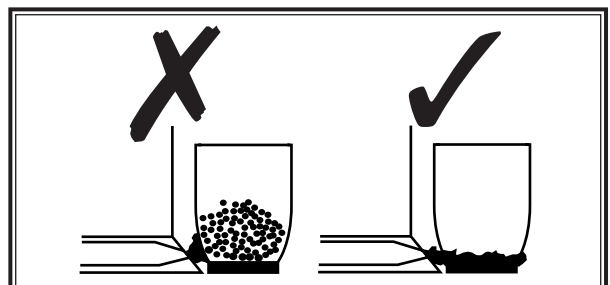
All crucibles should always be pre-heated empty.

NEVER charge a crucible until it is red hot all over. Increase the burner setting in four stages of 10 minutes at each stage so that the crucible is brought up **gradually** to bright red heat. NEVER use a wet crucible until it has dried out.

AUTOMATIC BURNERS

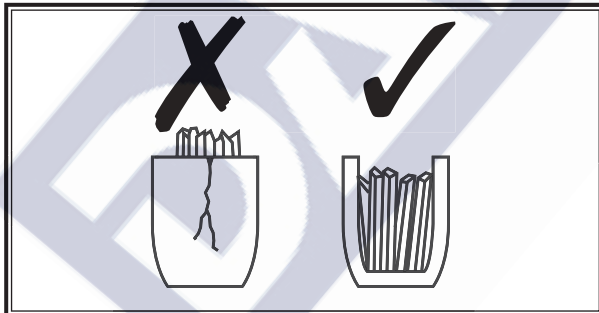
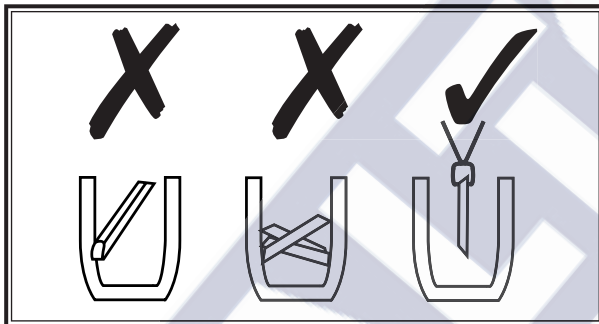
Most modern furnaces are now fitted with automatic burners which, when properly adjusted, give good conditions for even heating of the crucible.

Nevertheless some thermal shock is always present.



CHARGING

- As soon as the crucible has reached red hot all over, charge and melt immediately. Prolonged preheating of empty crucibles is detrimental, resulting in shorter crucible life and higher fuel usage.
- NEVER INTRODUCE MOIST CHARGE MATERIAL INTO THE CRUCIBLE.
- Wherever possible charge the crucible in the vertical position.
- When possible charge light scrap first to form a cushion for the heavier metal to follow.
- Use tongs to charge ingots or large pieces of metal to avoid damage to the crucible.
- Place ingots and large pieces vertically in the crucible to avoid bridging or wedging the charge.
- Do not pack the metal tightly in the crucible, ALWAYS allow sufficient space for the metal to expand.
Metal expansion is approximately 7 times greater than crucible expansion.



SOME IMPORTANT DONT'S

- Don't store Crucibles in freezing temperatures.
- Don't roll crucibles.
- Don't use crucibles which have been wet until they have dried out.
- Don't use fire bricks as crucible stands.
- Don't use sand as a parting medium between the crucible and stand.
- Don't let metal solidify in the crucible.
- Don't pour molten metal into a cold crucible.
- Don't throw or drop metal into the crucible.
- Don't allow slag or dross to build up in the crucible.
- Don't wedge metal tightly in the crucible.
- Don't let extraneous air enter the furnace chamber.
- Don't allow the furnace lining to fall into disrepair.

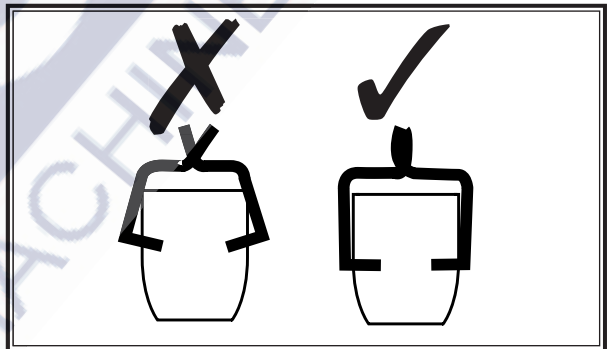
MELTING AND POURING

GENERAL

- Melt as quickly as possible.
- Avoid overheating the melt. ALWAYS melt to the lowest possible temperature compatible with casting.
- Avoid holding the molten metal for long periods at temperature. Pour the metal as soon as it is ready, and completely empty the crucible as quickly as possible.
- Avoid delay between heats and use the crucible for as many melts a day as possible.

TONGS

- With lift out crucibles use basket tongs, ensuring the tongs are a correct fit for the crucible.
- Lifting devices which rely on internal pressure to grip the crucible should be used with great care, to avoid undue pressure which can result in cracking or breakage of the crucible.
- Never grip the crucible close to the top edge, but always low down where the stress can be spread more evenly through the crucible.



CLEANING OUT

Crucibles should be cleaned out by careful scraping between melts whilst the crucible is still red hot. Any slag which remains in the crucible will cause rapid thinning of the crucible wall during subsequent melting and shorten the crucible life.

Any dross/oxide which remains will become extremely hard during subsequent melting, producing longer melt times, higher fuel usage and shorter crucible life.

Dross in conjunction with aggressive fluxes will result in extremely short crucible life.

Dross expansion is approximately 5 times greater than that of the crucible.

