



MCAM.
Bell Casting Basic Training Set

Introduction to sand casting: experiments with three different patterns (bell, anvil and anchor)



MCLA.
Foundry Building-up Training Set 1

Making up a casting with cavity (pipe reduction)



MCEN.
Centrifugal Casting Building-up Training Set 2

Production of a metal body in a rotating die



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Certificate of Approval



European Union Certificate



Certificates ISO 14001: 2004 and
ECO-Management and Audit Scheme
(environmental management)



Worlddidac Quality Charter
Certificate
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Detail of the finished, fettle castings

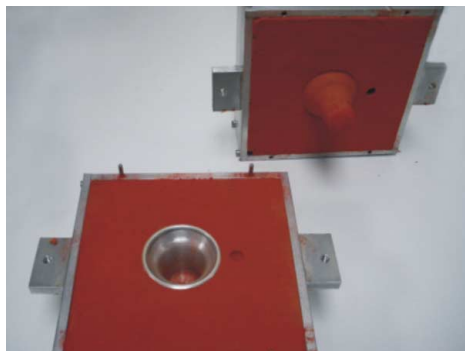
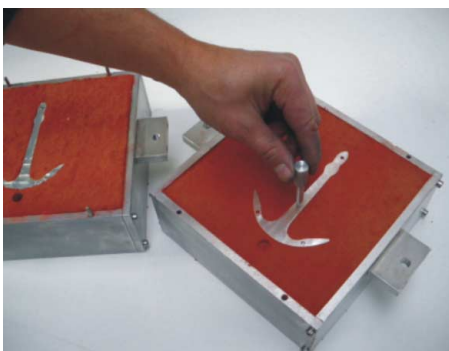
DESCRIPTION

Didactic case for the study of foundry fundamentals.

Introduction to sand casting: student experiments with 3 different patterns (bell, anvil and anchor).

Operations of ramming up of the moulding sand, melting of the metal, pouring, forming and fettling can be performed step by step.

The student will practice in first place with symmetrical pieces and after this with asymmetrical ones.



Training set in a case, containing:

Aluminium cope and drag box, screwable.

Aluminium pattern plate.

3 different aluminium patterns:

The Bell as a natural or an on-piece pattern.

The Anvil as a split, asymmetrical pattern demonstrates the shrinkage cavitation.

The Anchor, as a split, symmetrical pattern.

Rammer.

Small downgate and big downgate.

Bell clapper.

Bell mountings.

Thermometer.

Soucepan.

Pencil brush.

Pattern-draw tool.

Shovel.

Scraper.

Lancet.

Brush.

Separating agent.

2 Kg. metal alloy (melting point 200°C approx.) and 6 Kg. moulding sand in a separate container.

All instruction set is supplied ready to use, including enough test material.

All material is recoverable.

Manuals:

This unit is **supplied with the following manuals:** Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.

EXERCISES AND PRACTICAL POSSIBILITIES

Some practical possibilities of the Unit:

- 1.- Study of foundry fundamentals.
- 2.- Introduction to sand casting: student experiments with 3 different patterns (bell, anvil and anchor).
- 3.- The bell as a natural or a one-piece pattern.
- 4.- The Anvil as a split, asymmetrical pattern, demonstrate the shrinkage cavitation.
- 5.- The Anchor, as a split, symmetrical pattern.

REQUIRED SERVICES

- Electrical furnace or burner.

OPTIONAL

- FC-INS-70. Metal alloy (melting point 70°C approx.).

DIMENSIONS & WEIGHT

- MCAM dimensions: 600 x 400 x 200 mm. approx.

- MCAM weight: 15 Kg. approx.

* Specifications subject to change without previous notice, due to the convenience of improvements of the product.



Detail of the finished casting, free of sand

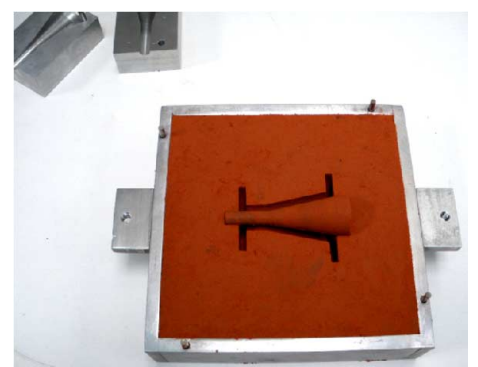
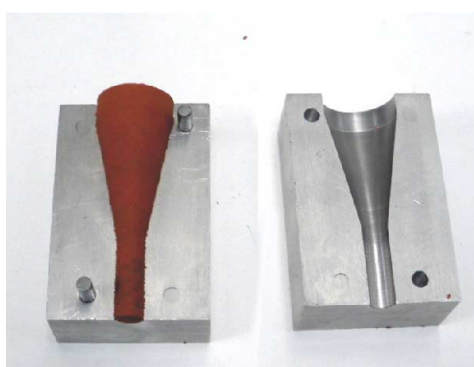
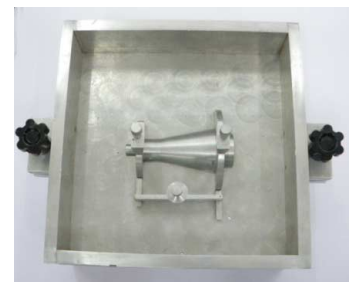
DESCRIPTION

Didactic case for the study of foundry fundamentals.

Operations of ramming up of the moulding sand, melting of the metal, pouring, forming and fettling can be performed step by step.

Practice of melting, unmelting and foundry with irregular and asymmetrical patterns.

Making up a casting with cavity (pipe reduction).



SPECIFICATIONS

Training set in a case, containing:

Aluminium cope and drag box, screwable.

Pattern plate with pattern.

Core box.

Downgate.

Small and big risers.

Shovel.

Brush.

Scraper.

Saucepan.

Ramer.

Pencil brush.

Lancet.

Thermometer.

2 Kg. metal alloy (melting point 70°C approx.), and 6 kg moulding sand in a separate container.

All instruction set is supplied ready to use, including enough test material.

All material is recoverable.

Manuals:

This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.

EXERCISES AND PRACTICAL POSSIBILITIES

Some practical possibilities of the Unit:

- 1.- Study of foundry fundamentals.
- 2.- To manufacture of a pipe-reducing flange with cavity of 1 kg-mass approx.
- 3.- Practice of melting, unmelting and foundry with irregular and asymmetrical patterns.

REQUIRED SERVICES

- Electrical furnace and burner.

DIMENSIONS & WEIGHT

- MCLA dimensions: 600 x 400 x 200 mm. approx.
- MCLA weight: 15 Kg. approx.

* Specifications subject to change without previous notice, due to the convenience of improvements of the product.



INTRODUCTION

On the real centrifugal casting, the melted metal is casted in a cast that turns around a horizontal or vertical axis. As a result, the centrifugal force throws the melted metal towards the cast walls, forming a tube whose thickness will be proportional to the metal amount used. This process is mainly applied for casting revolution pieces as tubes, caps, rings, etc., with no need to use protuberances.

The rotation of the cast starts sometimes once the cast has taken place. The high velocity generates some centrifugal forces that impulse the metal to take the shape of the cast cavity. Therefore, the outer shape of the casting can be round, octagonal, hexagonal or any other. However, the inside shape of the casting is perfectly round, due to the radial symmetry taking part in it.

The castings made with a real centrifugal one are characterized by their high density, especially on the outer areas of the piece, where the centrifugal force is higher. The contraction by solidification in the melted tube is not important, due to the fact that the centrifugal force throws continually the melted metal during the solidification. Any impurity in the casting tends to move to the inner wall and can be eliminated through a mechanisation, if necessary.

In this practices unit, only the horizontal real centrifugal casting will be studied.

DESCRIPTION

This unit is designed for production of hollow bodies in a fast rotating die.
The unit is mounted on a thick steel sheet and hold by a frame of extruded and anodised aluminium, which provides a great stiffness and resistance.
This unit is made up of an electric motor, connected to a speed variator that will allow the modification of the motor turn velocity. On the motor axis, a pulley is mounted, which will transmit the rotational movement to the cast axis through a drive belt.
The cast axis is made of a 20mm. diameter stainless steel. The axis has got a pulley to receive the movement of the electric motor, whereas the cast is placed on the other end. The axis holds two intermediate supports made up of two units of bearings with supports made of casting materials. The unit has got rid ball bearings, with a spherical diameter to absorb a moderate lack of alignment between both supports. The axis is screwed on through two grub screws placed on the inner cap of the bearing.
The cast is cylindrical and is made of aluminium. The cast is closed on the left side with a lid adapted for the cylinder inside to avoid leaks of melted tin. This cast is pressed strongly into the axis through screws. On the right side, it holds a lid with a hole in which an unload tube for the crucible is put so that the melted metal falls into the cast. The cast useless length is 110mm., once the lids have been placed.
Both lids are dismantled to allow the extraction of the piece. For a later and correct assembly, marks of the cast on the outer side and on the lids should match one each other. Afterwards, screws should be pressed into.
The cast is made with a little cone-shape to make easier the extraction of the piece towards the inlet side.

SPECIFICATIONS

This unit is mounted on a 2 mm. thick steel sheet, primed and painted with epoxy paint, and hold by a frame of extruded and anodized aluminium, which provides a great stiffness and resistance.
Three-phase motor that does 1.67A with 2700 rpm.
A variator that controls the motor. It can turn with a maximum frequency of 50Hz (which corresponds to 3000 rpm. approximately) and a minimum one of 5Hz. The motor turning speed can be changed from this variator. Turning anticlockwise direction.
Stainless steel cast axis with a diameter of 20 mm.
The cast is cylindrical and is made of aluminium, outer diameter of 82 mm., inner diameter of 70 mm. and length of 150 mm.
The cast useless length is 110 mm., once the lids have been placed.
The cast is made with a little cone-shape to make easier the extraction of piece towards the inlet side.
A small saucepan in which the tin can be heated.
A crucible from which the tin can be pour in order to the start the experiment.
2 Kg. tin bar.
Thermometer.
All instruction set is supplied ready to use, including enough test material.
All material is recoverable.
Cables and accessories, for normal operation.
Manuals:
This unit is supplied with the following manuals: Required Services, Assembly and Installation, Starting-up, Safety, Maintenance & Practices Manuals.

EXERCISES AND PRACTICAL POSSIBILITIES

Some practical possibilities of the Unit:

- 1.- Study of foundry fundamentals.
- 2.- Production of hollow bodies in a fast rotating die.
- 3.- Centrifugal casting with different turn speeds.
- 4.- Centrifugal casting with different temperatures of tin.
- 5.- Centrifugal casting for different amounts of tin.

REQUIRED SERVICES

- Electrical supply: single-phase, 220V./50Hz or 110V./60Hz.
- The unit needs an electrical burner/furnace, necessary to heat up the tin over its fusion temperature (230°C approximately).

DIMENSIONS & WEIGHT

- Dimensions: 700 x 500 x 500 mm. approx.
- Weight: 30 Kg. approx.

* Specifications subject to change without previous notice, due to the convenience of improvements of the product.



C/ Del Agua, 14. Polígono Industrial San José de Valderas.
28918 LEGANÉS. (Madrid). SPAIN.
Phone: 34-91-6199363 FAX: 34-91-6198647
E-mail: edibon@edibon.com WEB site: www.edibon.com

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