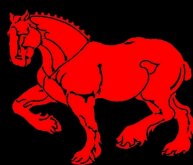


# ACETARC

## ENGINEERING



**ACETARC FOUNDRY LADLES**  
**With motorised gearing for powered rotation**



## **Acetarc Workhorse ladles fitted with Motorised Gearing For powered rotation.**

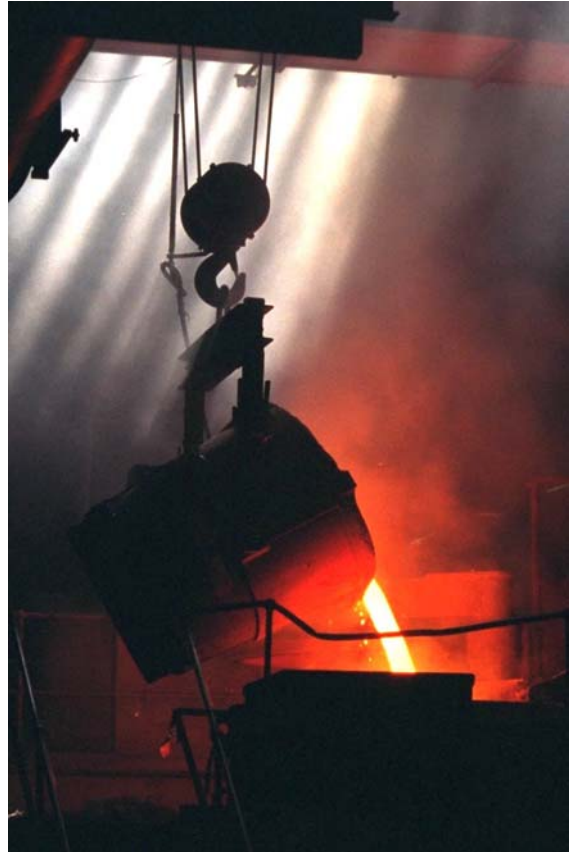
The Workhorse range of heavy-duty foundry ladles can be supplied with either the standard manually operated wormgear assembly or with a motorized gear assembly for the rotation of the ladle. The ladle construction is normally identical for both the manual and motorized ladle options.

The Motor gear assembly can be offered with either an electric motor or pneumatic motor option depending on which best suits the foundry.

### **The Motorised Tilting Arrangement (Electric Motor).**

The ladle powered tilting arrangement consists of a motor gear drive unit and an Acetarc gearbox linked, via a quick release clutch assembly, to give a double reduction gearing resulting in high torque with a low output speed. The two gear units are mounted on a common back plate assembly and are protected by a steel splash guard enclosure.

In normal working conditions, the ladle is rotated using the powered gear arrangement. However in the event of a power failure etc, the two gear units can be disengaged, via the clutch assembly. A handwheel can then be fitted to the Acetarc gearbox pinion shaft and the ladle can be then rotated manually as if it is a standard manually operated ladle.



### **The ACETARC gearbox**

The ACETARC gearbox incorporates a S.G. iron worm wheel, which is driven by a steel, single lead, right hand worm. The gearing runs in a sealed cast iron case that protects the gears from dirt etc, and also forms an oil bath, which provides constant lubrication for the gears. Grease points are located around the gear case for the lubrication of all parts that are not reached by the oil bath.

All the gears are machine cut, and all moving parts are mounted in either taper thrust or roller bearings.

The Acetarc worm & wheel gearbox is a proven design that has been fitted to our ladles for over forty years.

The same gearbox is fitted to both powered rotation and manual rotation version of the same ladle.

## The Electric Gear Motor unit

Standard Acetarc Motor drive layout

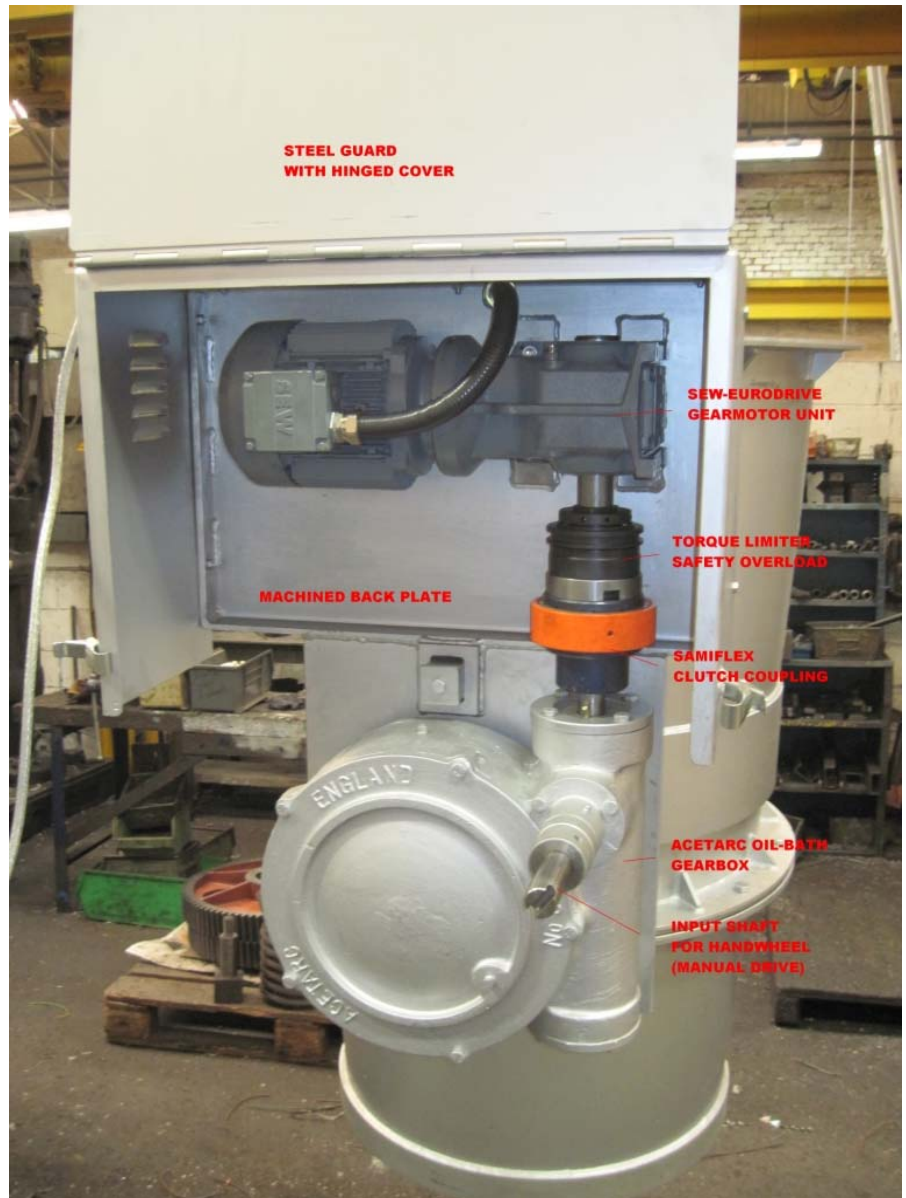
The nominal rotation of the ladle shell, when being rotated by a single speed motor gear drive is typically 0.4 RPM, giving full to empty in approximately 38 seconds, but this can be set to suit your requirements.

The motor gear unit can be supplied with a number of gearbox ratio options to give a different rotation speed

Standard options including a two-speed motor or inverter control are also available for an additional cost.

- Power rating will vary depending on the size of the ladle.
- The motor voltage and frequency can be supplied to suit your requirements.

The geared motor is protected by a steel guard, which covers the entire unit. The guard has a lift-up front section that allows access to the unit for maintenance reasons, but can be clamped closed during use.





## The Torque Limiter.

Between the geared motor and the ACETARC gearbox is a torque-limiting device. This is designed to act as a fail safe device in the event that the load on the gearing becomes excessive due to some outside influence, such as the ladle fouling on a static object whilst being rotated.

If the torque requirement, to rotate the ladle, exceeds the permitted level, the torque Limiter will automatically disengage the two gear units. This means that even if the operator does not fully appreciate the situation and continues try to rotate the ladle, the gearing will not suffer damage. The Acetarc gearbox is sized to be more than adequate to hold the ladle in position with the motor-gearbox disconnected.

To re-engage the torque Limiter, the motor drive need only be rotated in the opposite direction.

## The Clutch Assembly

The clutch assembly is a manually operated unit that allows the motorgear drive and the Acetarc gearbox to be separated so that the Acetarc gearbox can be operated independently from the motor gear drive.



### Control Equipment for the Electric motor ladle

Unless otherwise stated in a specific quotation, all Acetarc electric motor ladles are supplied to the customer without control equipment and it is the customer's responsibility to fit suitable control equipment for the safe and efficient operation of this equipment.

If the customer wishes Acetarc Engineering to supply the control equipment, we would be happy to offer a quotation following full consultation with the customer.

Various options are available, including two speed rotation, inverter control and radio remote control. Contact our design office for more details





## Power Supply to the Electric Motor ladle

Acetarc electric motor drive ladles require a suitable electrical power supply to be connected to the motor terminal box. It is assumed that the power supply will either be taken from a permanent overhead supply such as the bus-bar fitted to the crane, monorail or ladle carrier etc or alternatively via a “flying lead” for connecting into local power points.

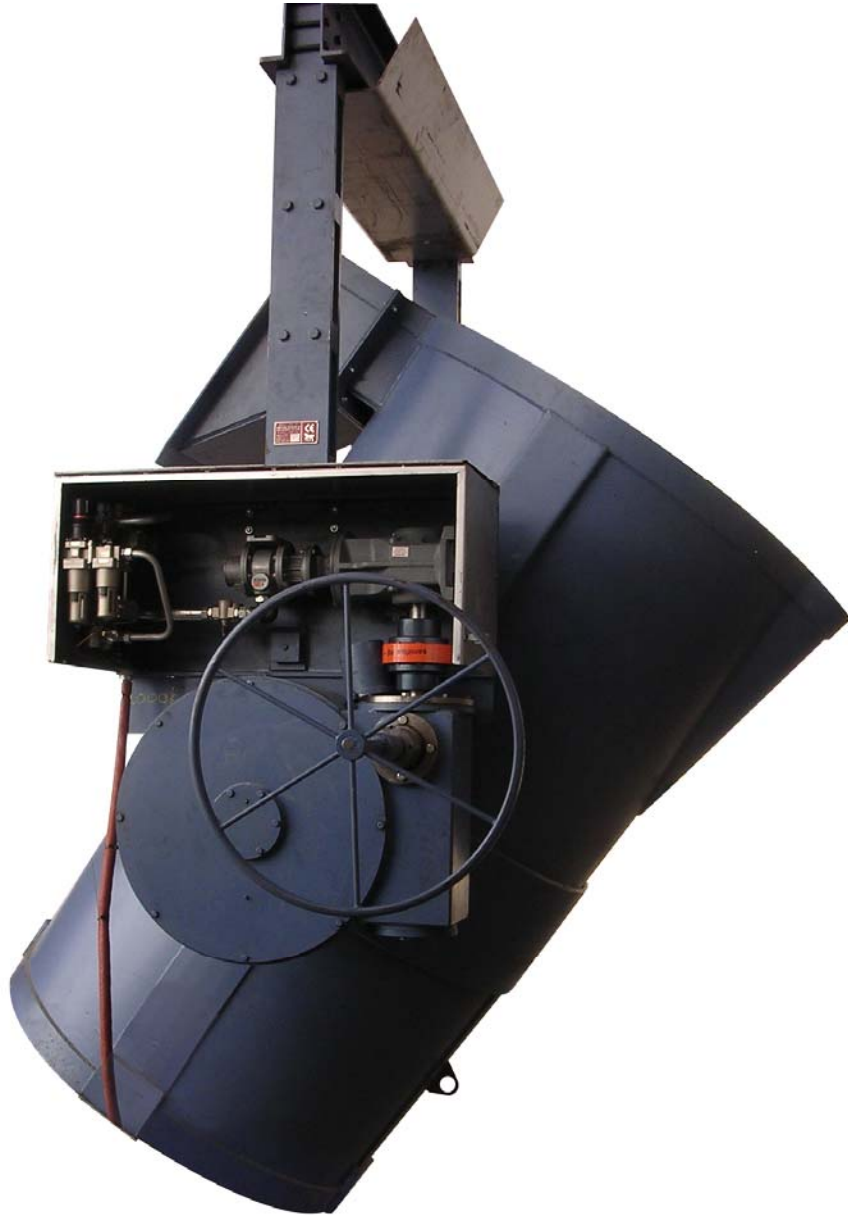
Unless otherwise stated in a specific quotation, all Acetarc motorised ladles are supplied to the customer with just the motor terminal box fitted. The supply and fitting of all quick release power couplings etc by Acetarc Engineering, must be agreed to in writing prior to an order being placed.

It is the customer's responsibility to supply and connect a suitable power supply for the safe and efficient operation of this equipment.



## **Pneumatic Motorised gearbox.**

The pneumatic motor ladle follows the standard electric motor drive configuration but has an air motor fitted instead of the electric motor. The drive assembly also includes for the basic air controls as standard.



The drive assembly comprises of the following items:

- Acetarc worm & wheel gearbox with the standard conversion for a motor drive.
- Clutch assembly: This allows the motor drive to be disengaged from the Acetarc gearbox, thereby enabling the ladle to be fitted with a handwheel and manually rotated. However the handwheel should not be fitted whilst the ladle is being used for powered operation.
- Helical worm gearbox
- Reversible air motor
- Pneumatic controls comprising of the following standard configuration: A filter/regulator/lubricator unit, two flow controls for adjusting the speed of rotation, a manually operated lever valve (lever set- spring return to centre) push to rotate in the required direction and stop when the lever returns to the centre position. The exhaust ports are fitted with simple silencer/filter valves.
- The air supply to the ladle is made via quick release self sealing airline couplings.





## General points regarding pneumatic motor ladles

The customer **MUST** ensure that a suitable air supply is available.

The air consumption of the motor will depend on the air pressure and the motor rotation speed. The air supply must be able to maintain an adequate flow rate.

The air pressure should be 6.3 Bar at the ladle. If the air pressure and/or flow rate falls below the recommended levels the performance of the air motor will be reduced.

The standard pneumatic motor ladle is supplied with a lever operated control valve attached to the ladle via a handlebar assembly attached to the gearbox. We can alternatively supply the ladle with push button controls either directly attached to the ladle or connected via a flying lead.

### Rotation Speed of the pneumatic motor ladle

The speed of rotation of the ladle is generally determined by the GSS gear unit and the air motor rotation speed. However, it should be noted that the rotation speed can be fine tuned by adjusting the air pressure and the flow regulators fitted to the system.



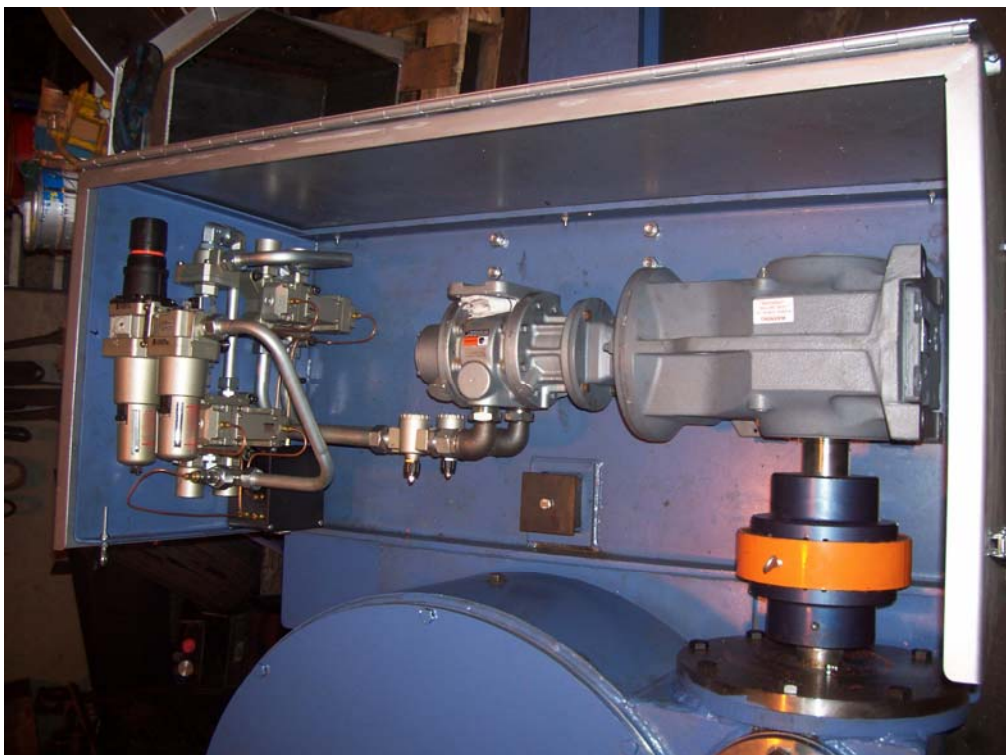
## Advantages of the pneumatic motor ladle

The pneumatic motor option offers a number of advantages when compared to the electric motor option.

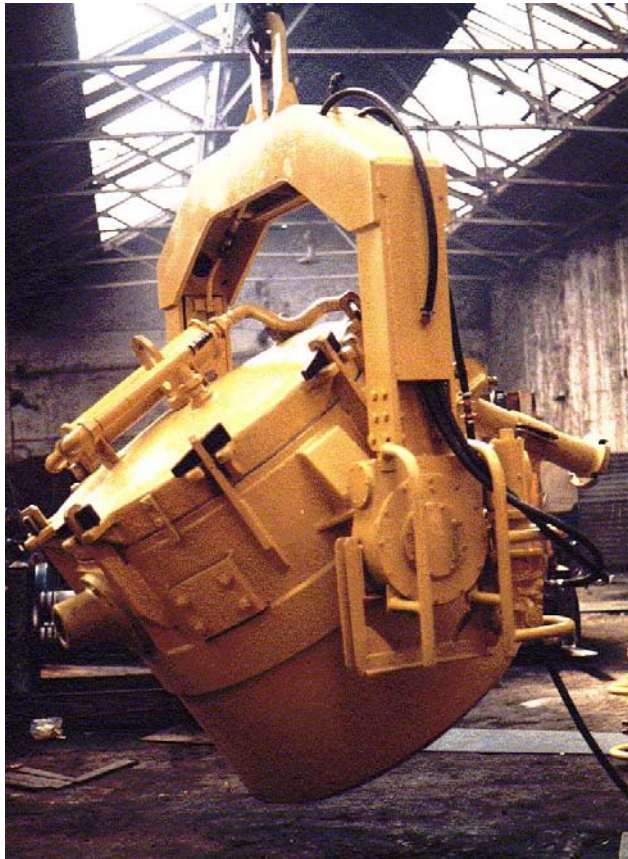
- The speed of the pneumatic motor can be easily varied by adjusting the flow controls, the supply air pressure supply and the air supply flow rate, or a combination of all three.
- Under increasing and abnormal load situations, the pneumatic motor increases its torque output until the motor stalls at the point when the motor cannot deliver enough torque to rotate the ladle. Therefore the actual torque that the pneumatic motor can deliver under abnormal circumstances is greatly increased over the normal torque rating of the motor. Electric motors will deliver increased torque under start up conditions but do not have the capability to deliver the reserves of torque available to the pneumatic motor when faced with abnormal loads.
- The pneumatic motor can be repeatedly run under an increasing load until the motor stalls without incurring damage. If an electric motor stalls under load, it is highly likely that it will incur damage.
- The pneumatic motor is rated at 100% duty and can be continually operated at full load with frequent stop/starts, unlike the electric motor that has a lower duty rating and is normally restricted in both its full load usage and the number of hourly stop/starts.

## Torque Limiters and Pneumatic drive systems.

Please note that unless otherwise requested, torque limiters are not fitted to pneumatic drive ladles due to the ability of the air motor to “stall out” without the air motor incurring damage.







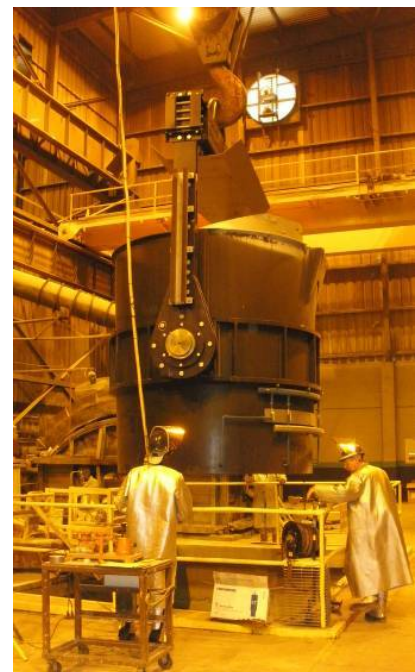
Special Aluminium vacuum transfer ladle  
with pneumatic motor rotation



6t capacity teapot spout treatment ladle  
(ductile iron) with electric motor rotation.



50t capacity ladle with electric motor rotation, variable speed inverter control and radio  
remote control operation  
Undergoing site commissioning at Rolls Royce Naval Marine and first use





For further information please contact the office or visit our web site at [www.acetarc.co.uk](http://www.acetarc.co.uk)

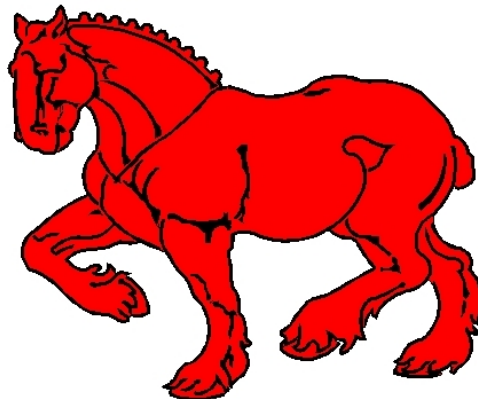


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