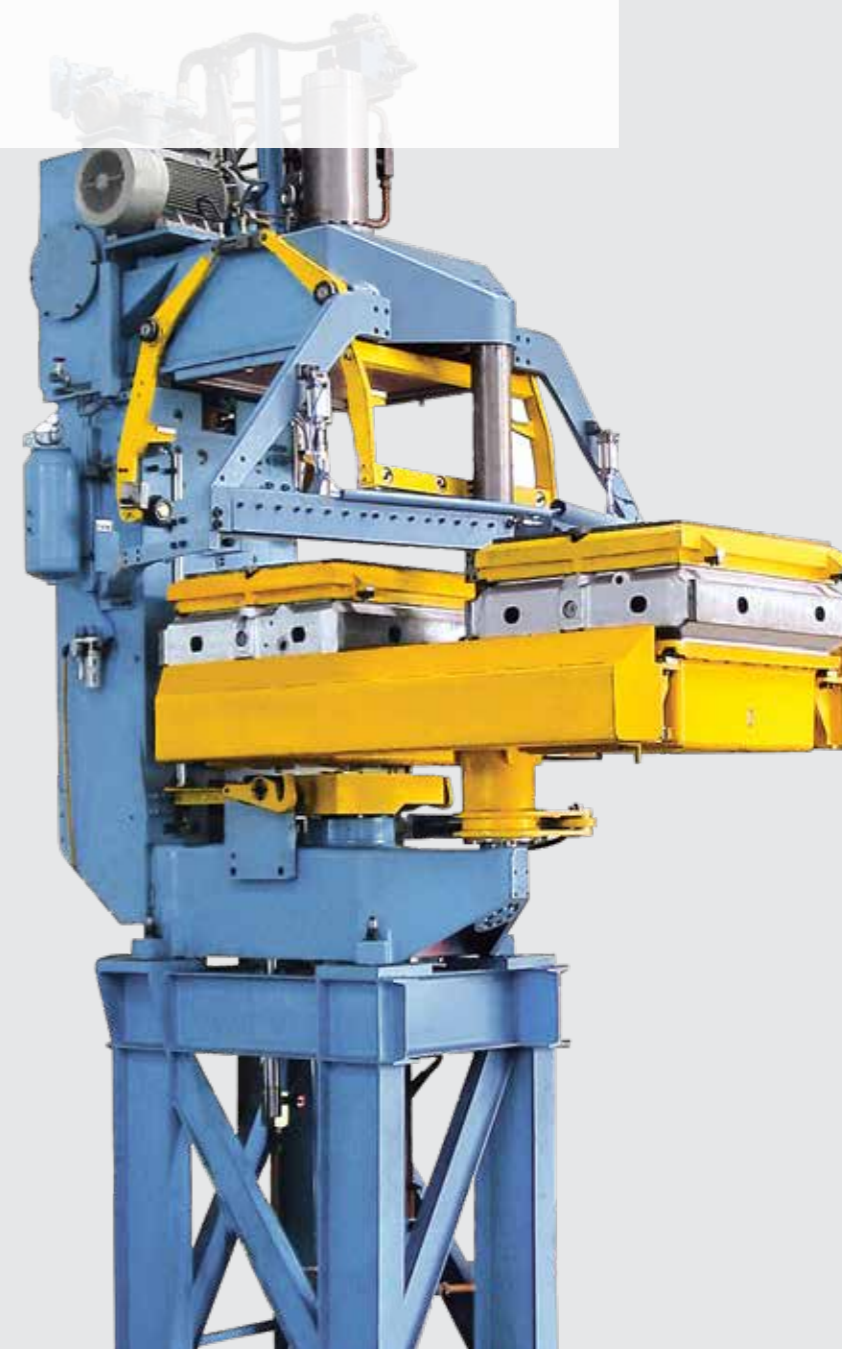


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DISA FLEX



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Horizontal flask moulding line



The DISA FLEX is a horizontal flask turn-table moulding machine, designed for foundries wanting a flexible solution for production of high quality, medium and heavy near net shape castings.

Unique moulding technology

DISA FLEX is well proven technology that combines the unique DISA high pressure, double-blow and hydraulic squeeze moulding technique with a rigid machine design, giving the best conditions for the profitable production of high quality castings.

Application

The DISA FLEX moulding machine can be used for the production of grey iron, nodular iron, malleable iron, steel, aluminium and other non-ferrous metals.

Patterns made of plastic, wood and metal can be used.

Improved productivity and quality

The DISA FLEX offers:

- Optimum casting quality due to high pressure, uniform mould compaction
- Near net shape castings and less cleaning
- Constant and lower casting weight
- Full utilisation of the pattern plate due to better compaction of pattern areas located close to the flask wall
- Enhanced working environment due to pattern spray and closed sand filling funnel

DISA double-blow/squeeze mould compaction



Stator housing



Engine block



Features that make the difference

Unique mould compaction

The DISA double-blow/squeeze system is designed to ensure uniform mould compaction throughout the mould. By combining a double-blow mould compaction system (giving an inverse mould hardness profile with highest values on the pattern which decreases towards the back of the mould), with a mechanical squeeze (that has the opposite effect), the advantages of both methods are obtained.

To optimize the squeeze process, the DISA FLEX machine also has a specially designed FLEXIPAD. The pad automatically adapts the squeeze pressure to the patterns, ensuring a uniform mould hardness.

Due to the high compaction in the mould, exothermic sleeves, downgate inserts and iron chills can be moulded in.

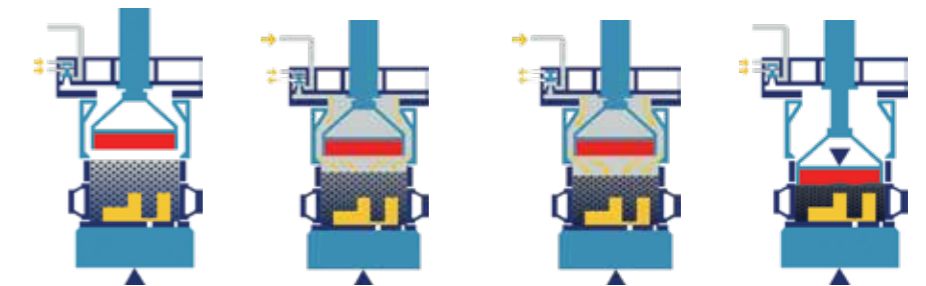
Double-blow pre-compaction

The pressure impulse is divided into two phases. The first wave is a pre-compaction air pressure (0.5 bar), followed by a second wave of higher pressure gradient compaction (5 bar). This ensures a perfect mould filling in critical pattern areas and effective pre-compaction.

Hydraulic FLEXIPAD squeeze

Final compaction by hydraulic squeezing with the FLEXIPAD (10 bar) ensures uniform compaction all over the mould and minimum maintenance.

The FLEXIPAD is very hard-wearing, it has a long service life and is very easy to maintain.



Control system that keeps you on track



DISA FLEX 70 flask line

DISA FLEX line controller

The complete mould handling line is controlled by a Siemens PLC control system.

With very advanced programming developed by DISA over many years, the PLC system ensures that all movements are coordinated with excellent movement control to avoid jerks and vibrations of the mould.

The control system can restart the complete line after shutdown and power failure. The system automatically corrects the line units, so all movements are set for starting up the line. With new employees or in case of production stop the control system will guide the operator step by step, indicating what to check and what to do to bring the line back into production as quickly as possible.

The DISA control system is an important function to help foundry management to get the optimum performance from of the equipment.

The DISA FLEX line

Mould Handling System (MHS)

The DISA MHS protects the mould integrity through perfect synchronisation with the DISA FLEX machine.

The DISA MHS protects the mould integrity through perfect synchronization with the DISA FLEX moulding machine (as used) The system consists of all needed auxiliary machines and devices for a stable and continuous production of near net shape castings in a tight flask line. The selection of the equipment will be tailor-made combined for our customer needs and can include the following devices:

- Separating unit
- Unit cleaner
- Rollover devices
- Sand cutter

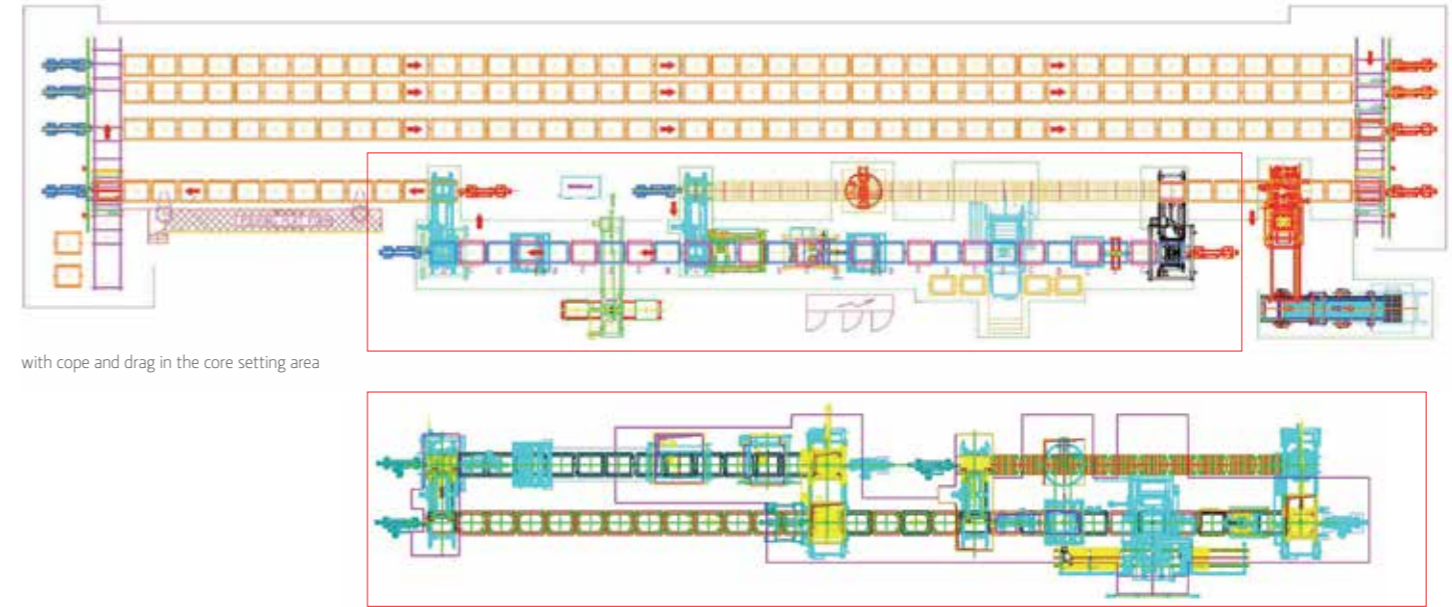
- Drilling station
- Flask closer
- Transfer station
- Cooling lines
- Punch out

All described in the following.

The separating unit

The DISA FLEX moulding line starts with a separating unit setting the cope and drag flask on the moulding line. The emptied flask pair along with the pallet car will be transferred to the Mould conveyor and lifted up to separate it from the pallet. meanwhile gripper unit moves up/downwards to separate the cope & drag flask and transfer to the moulding machine.

Mould handling system



with cope and drag in the core setting area

The separated lines for cope and drag for the intensive use of cores

Unit cleaner

Before the flasks move into the moulding machine special units clean the flask inside, the flask top surface, pin, bushes and checks the flask top surface for melt pearls burnt to the top surface. This feature ensures the smooth operation of the line and helps to improve mould quality.

Rollover devices

The rollover devices are specially designed to avoid sand spill on the mould. The motor drive is on the top of the station for easy service access.

Sand cutter

After the moulding machine, the excess sand on the mould back side is removed by a heavy duty sand cutter.

Drilling station

DISA offers both a low cost pouring cup drilling station, where the position is set manually by the operator or an automatic drilling station where the pouring cup position is set automatically by data from the control system.

For high production lines DISA offers fully automated vent hole drilling stations and core setting stations.

Flask closer

The flask closer and the clamping functionality are very important units. The cope flask is set on the drag with high precision, due to heavy guide rods and active position units of both cope and drag flasks. This ensures that the mould halves go together without distortion of sand and cores.

Transfer station

The finished moulds are handled by transfer stations with reliable frequency inverter drives which ensure good motion control and a long service life.

Cooling lines

The cooling lines are equipped with robust hydraulic push and breaking cylinders for good control of acceleration and de-acceleration to ensure the safe handling of moulds.

Punch out

A very robust mould punch out completes the system. The mould is punched out from the lower side, so the mould is pushed up. This gives a safe handling of the castings on their way to the shake-out. By lifting up the moulds the shake-out can be positioned on floor level for easy operator access to the castings.

Performance enhancing options



Flasks



External pattern changer



Mould handling system

Optimum sand filling

The DISA FLEX has a unique sand filling system that ensures even distribution of the sand into the flask.

The batch hopper is mounted with load cells, which stop the sand feed as soon as a pre programmed weight has reached, flaps below batch hopper open up and uniform distribution will be ensured by VFD. Flask area is accessible for placement of chills and risers, pattern spray nozzles are provided to create the separating medium from pattern to sand.

Provision of facing and backing sand is also available with the use of screening drum.

External pattern changer

Automatic pattern change station enable complete pattern sets to be changed with in the cycle time. A lifting table lifts the previously used pattern set off the turntable or lowers the new set in the position. Driven roller ways take the pattern sets to and from the station.

Cope transfer and drag lifter/lower device

Cope transfer and drag lifter/lower device is specially designed to transfer cope mould to cope conveyor and drag mould to drag conveyor which helps to facilitate more number of core setting places and more number of vent hole drilling stations/sprue cup cutting stations with the utilization of optimum area.

Flasks

The robust flasks are designed to withstand the high pressure forces during blow and squeeze, ensuring that the precision of the mould is maintained after the forces are released. Solid hooks in the flask corners keep the cope and drag together during pouring. All hooks are integrated in the flasks so the hooks are protected against melt spill.

Pattern heating system offline

The optional device allows pre heating of the pattern at low temperature conditions which helps to easy stripping of the pattern after squeeze.

Technical specifications

Type:	Metric	FLEX 70HS	FLEX 80	FLEX 90	US	FLEX 70HS	FLEX 80	FLEX 90
Mould dimensions:								
Height	mm	200/250/300/ 325/350*	200/250/300/ 325/350	250/300/350/ 400/450*	inches	7.9/9.8/11.8/ 12.8/13.8*	7.9/9.8/11.8/ 12.8/13.8	9.8/11.8/13.8/ 15.7/17.7*
Width	mm	700	800	1000	inches	27.6	31.5	39.4
Length	mm	800/900/ 1000	900/1000/ 1100	1000/1200/ 1300	inches	31.5/35.4/39.4	35.4/39.4/43.3	39.4/47.2/51.2
Mismatch, max	mm	0.25	0.25	0.25	inches	0.010	0.010	0.010
Machine capacity:								
Uncored	mould/hr**	120	110	100	mold/hr**	120	110	100
Sand consumption max	tonnes/hr**	67	77	106	tons/hr**	74	85	118
Average power consumption	kW	100	100	110	kW	100	100	110
Connected load	KVA	120	120	130	KVA	120	120	130
Air consumption	Nm ³ /min	12	11	17	cu ft/min	424	389	601
Water consumption (DMS): at 15 °C inlet temp. and 4 bar pressure					at 59 °F inlet temp. and 59 psi pressure			
	litres/min	35	35	40	gallons/ min	9	9	11
Pressure:								
Squeeze pressure	bar	1.5-10	1.5-10	1.5-10	psi	22 - 148	22 - 148	22 - 148
Shot pressure	bar	0-5	0-5	0-5	psi	0 - 74	0 - 74	0 - 74
Pneumatic requirements:								
Air pressure min	bar	5	5	5	psi	74	74	74
Hydraulic fluid (DMM):								
Machine dimensions (DMM):								
Height (without SSU)	mm**	4600	4500	5500	inches**	181	165	217
Width	mm**	3500	3500	3500	inches**	138	138	138
Length	mm**	4500	4500	5500	inches**	165	165	217
Net weight:	tonnes**	25	25	35	tons**	28	28	39

* Max height available for 800x700 mm, 1000x1000 mm and 1200x1000 mm
** At 900x700x250 mm, 1000x800x250 mm and 1000x1000x300 mm.
Speed, sand consumption and weight varies with flask size.

* Max height available for 31.5x27.6 inches, 39.4x39.4 inches and 47.2x39.4 inches
** At 35.4x27.6x9.8 inches, 39.4x31.5x9.8 inches and 39.4x39.4x11.8 inches.
Speed, sand consumption and weight varies with flask size.