

The future we see through

IS MACHINE

IS MACHINE
PARALLEL OPENING CLOSING
ADV 1050 ADV 8050
21 LINES VALVE BLOCK
AFE SYSTEM
PROPORTIONAL VALVES
GLASS LEVEL

OUR HERITAGE

The development and integration of complex technologies to help industrial progress has been BDF Industries core business since 1906.

The **global market** requires the multi-tasking, multicultural and multi-expertise approach of BDF, that over the years has been able to evolve and shape itself according to the necessities.

With its collaboration instinct and the professionalism demonstrated in more than **115 years of tradition**, BDF offers the chance to take part in a first-rate technologic group ready to challenge current and future business opportunities in terms of **competitiveness, performances and reliability** of products and processes.

**The future
we see through.**

OUR MISSION

BDF Industries is a manufacturer of technologically advanced machinery, a Group where performance and innovation melt together in an everlasting pursuit of excellence.

MELTING



BDF Industries Melting product line includes the complete glass melting and conditioning technologies for design and supply of furnaces, working end & forehearths. The range of products includes also the **relevant equipment** like oil and gas burners, firing system air, exhaust reverse valve, batch chargers and forehearth glass mixers.

BDF Industries furnaces are engineered with an **high level of customization**, focusing in particular on energy efficiency and environmental impacts. Thanks to a long time experience, combined with a team of skilled people that work together in a synergistic way, BDF Industries is able to offer a wide range in **design, manufacture and supply** of different furnaces types for production of containers, tableware, lighting ware and technical glassware.

FORMING



BDF Industries glass container Forming product line is the historical core business. BDF Industries is able to provide a wide range of machineries with a high level of production flexibility to meet the customers' requirements.

With more than 65 years of experience in glass forming field, BDF Industries can offer a complete range of IS machine including gob forming and delivery, ware handling, container and variable equipment. The glass forming machineries are fully designed and assembled in house at BDF Industries in Italy, which has relevant knowledge of production process with the most important glass manufacturers in the world (e.g. strong credentials for forming business in O-I, Saverglass, Sisecam, Vetropack, Vitro...).

SERVICE



BDF Industries has a Service organization dedicated to provide a complete spectrum of the highest quality service solutions to satisfy the needs of our clients from a single source. Our services support the entire product value chain from melting glass making to forming, filtering, energy facilities and automation.

The service product line includes installation & startup, upgrades of mechanical equipment and automation, technical assistance for repairing and overhauling, training, performance evaluation & long term service agreement, integrated maintenance management & diagnostic solutions and systems, spare parts.

The contents of service are the following:

- Supply local qualified supervisors
- Supply of certified end/or upgraded OEM (Original Equipment Manufacturer) spare parts for all maintenance operations
- Performance of all equipment maintenance
- Repairs using state-of-the-art technology
- Optimization of Spare Parts inventory
- On the job Training of local maintenance and operation personel.

The BDF Industries Learning Center in Italy and strategically located Service Centers offer a wide range of programs in technical courses. Our technical courses are presented by field-tested experts combining understanding of theory and practical experience.



IS Machine

Glass Forming Machine

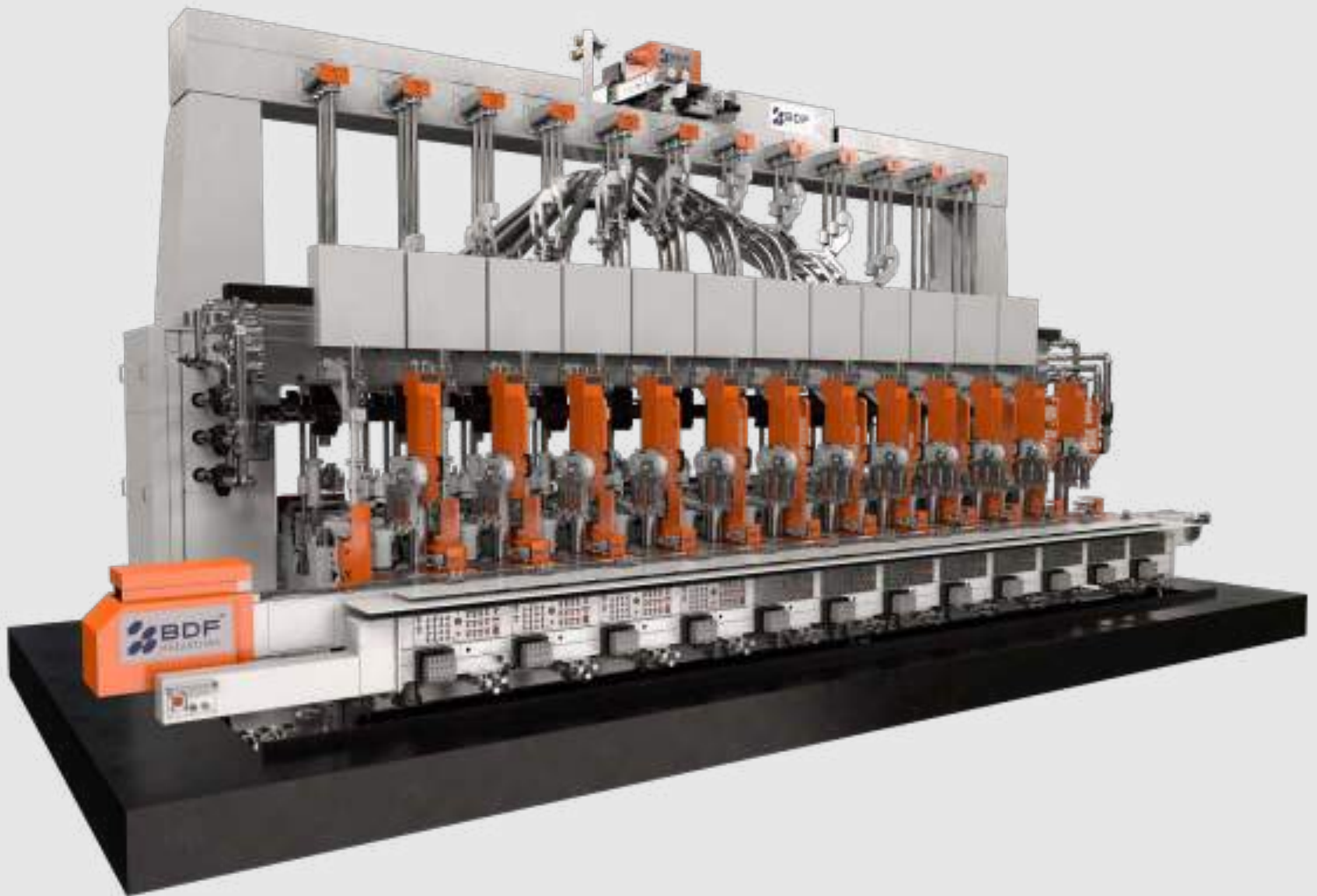
Innovation, technology and versatility make the BDF IS Machines the ideal solutions for high productivity, improved work surroundings and considerable energy savings.

The BDF machines are particularly designed for being functional in all their mechanical components (gob delivery, servo and pneumatic mechanism, molds cooling, easy mounting variable equipments, special process apparatus, wares handling) and also in electronic control systems (integrated and stand- alone).



IS ANGULAR ADV 1050-8050

6-8-10-12 SECTIONS AND TANDEM
IS 4 ¼": SG-DG-TG 3"-TG 3 ⅛"
IS 5" S: SG-DG-TG 85MM
IS 5 ½": SG-DG
IS 6 ¼": SG-DG-TG 4 ¼"



STANDARD MACHINE CONFIGURATION

FEEDER

- Servo plunger
- Gear type revolving tube mechanism
- Servo Arcuate shear
- Shear spray system

DELIVERY SYSTEM

- Servo gob distributor SGD 330
- Easy Aligning Delivery System (EADS)

MACHINE

- Angular opening close mechanism
- 21 lines valve block
- Blank and Blow side Stack-cooling
- Blow side vertical cooling
- Series 300 2-Line Mechanism:
Baffle - Funnel - Blow head
- Servo Invert
- Servo Takeout

WARE HANDLING

- Step pusher
- Conveyor
- Transfer wheel TRW 1305

TIMING SYSTEM

- ADV 8050

PROCESS

- Blow & Blow
- Press & Blow
- Narrow Neck Press and Blow (NNPB)

OPTIONAL

FEEDER

- Dual motor Servo Arcute Shear
- Servo parallel Shear mechanism

DELIVERY SYSTEM

- Multi Direct Drive servo gob distributor X2/X3/X4
- Multi Direct Drive servo gob distributor SG-DG
- Costant Angle 30° Delivery system (on 8B10-10-12 section machine)

MACHINE

- Blank side axial cooling (on IS 5" ½ -6" ¼)
- Blow side axial cooling (on IS 5" ½ -6" ¼)
- Servo Take Out with motor from the top
- Baffle pantograph
- Air-spring funnel
- Proportional valves:
Plunger up - Counter Blow - Final Blow
- IWS system
- PMPC
- Black Box
- Thermocontroller
- CWD

WARE HANDLING

- AP Pusher mechanism (dual motor)
- Air jet pusher
- Conveyor HSS
- Transfer wheel TRW HSS double chain

TIMING SYSTEM

- ADV 8050

IS PARALLEL ADV 8050

8-10-12 SECTIONS AND TANDEM
IS-P: DG 6 ¼"-TG 4 ¼"



STANDARD MACHINE CONFIGURATION

FEEDER

- Servo plunger
- Gear type revolving tube mechanism
- Servo parallel Shear mechanism
- Shear spray system

DELIVERY SYSTEM

- Servo gob distributor SGD 330
- Costant Angle 30° Delivery system

MACHINE

- Parallel opening close mechanism
- 21 lines valve block
- Blank side axial cooling
- Blow side axial cooling
- Blow side vacuum system
- Series 300 2-line mechanisms:
Baffle Pantograph - Funnel - Blow head
- Servo Invert
- Servo Take Out with motor from the top

WARE HANDLING

- AP Pusher mechanism (dual motor)
- Conveyor
- Transfer wheel TRW 1305

TIMING SYSTEM

- ADV 8050

PROCESS

- Blow & Blow
- Press & Blow
- Narrow Neck Press and Blow (NNPB)

OPTIONAL

FEEDER

- Servo arcuate dual motor shear

DELIVERY SYSTEM

- Multi Direct Drive servo gob distributor X2/X3/X4

MACHINE

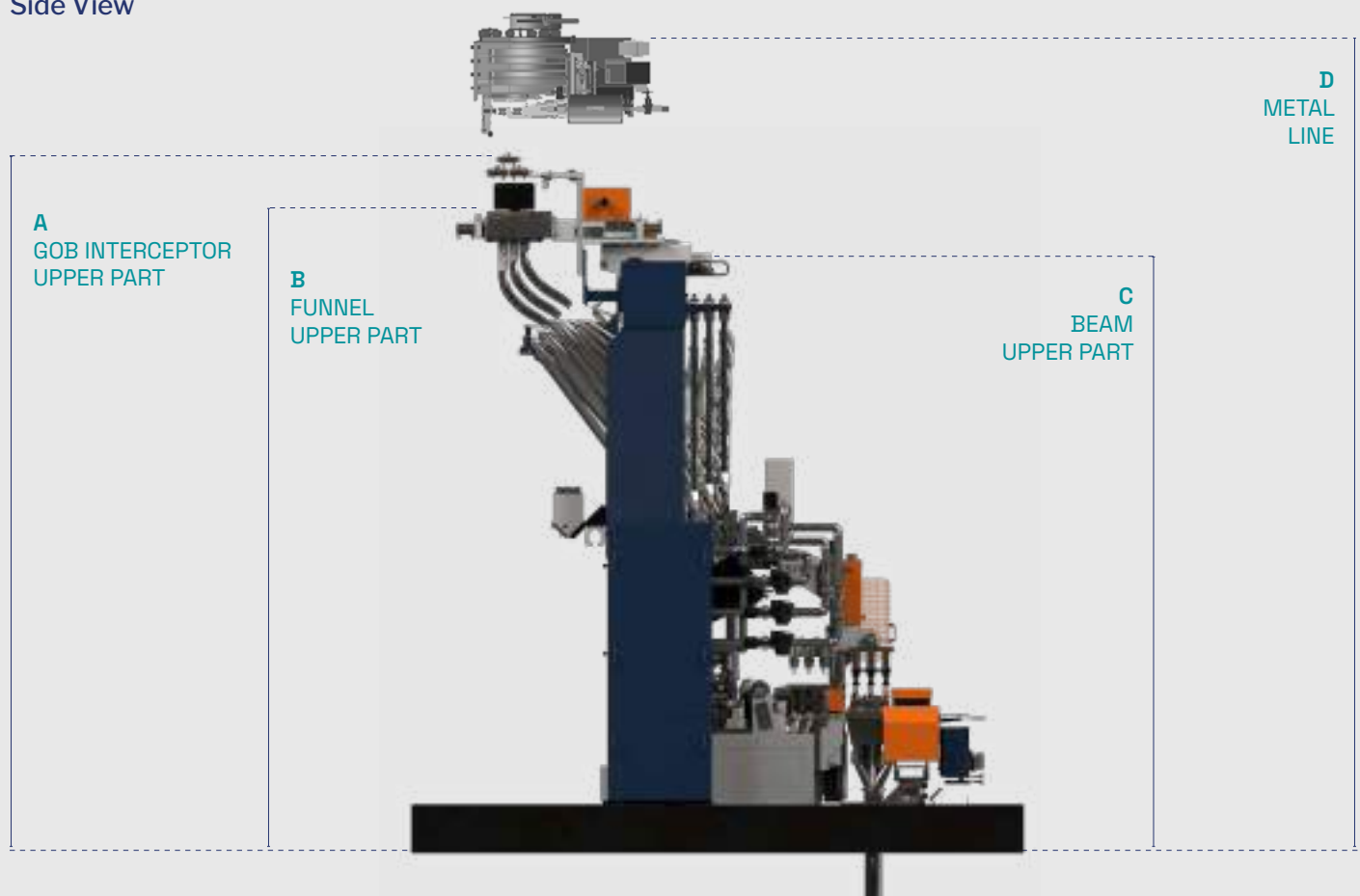
- Proportional valves:
Plunger up - Counter Blow - Final Blow
- IWS system
- PMPC
- Black Box
- Thermocontroller
- CWD

WARE HANDLING

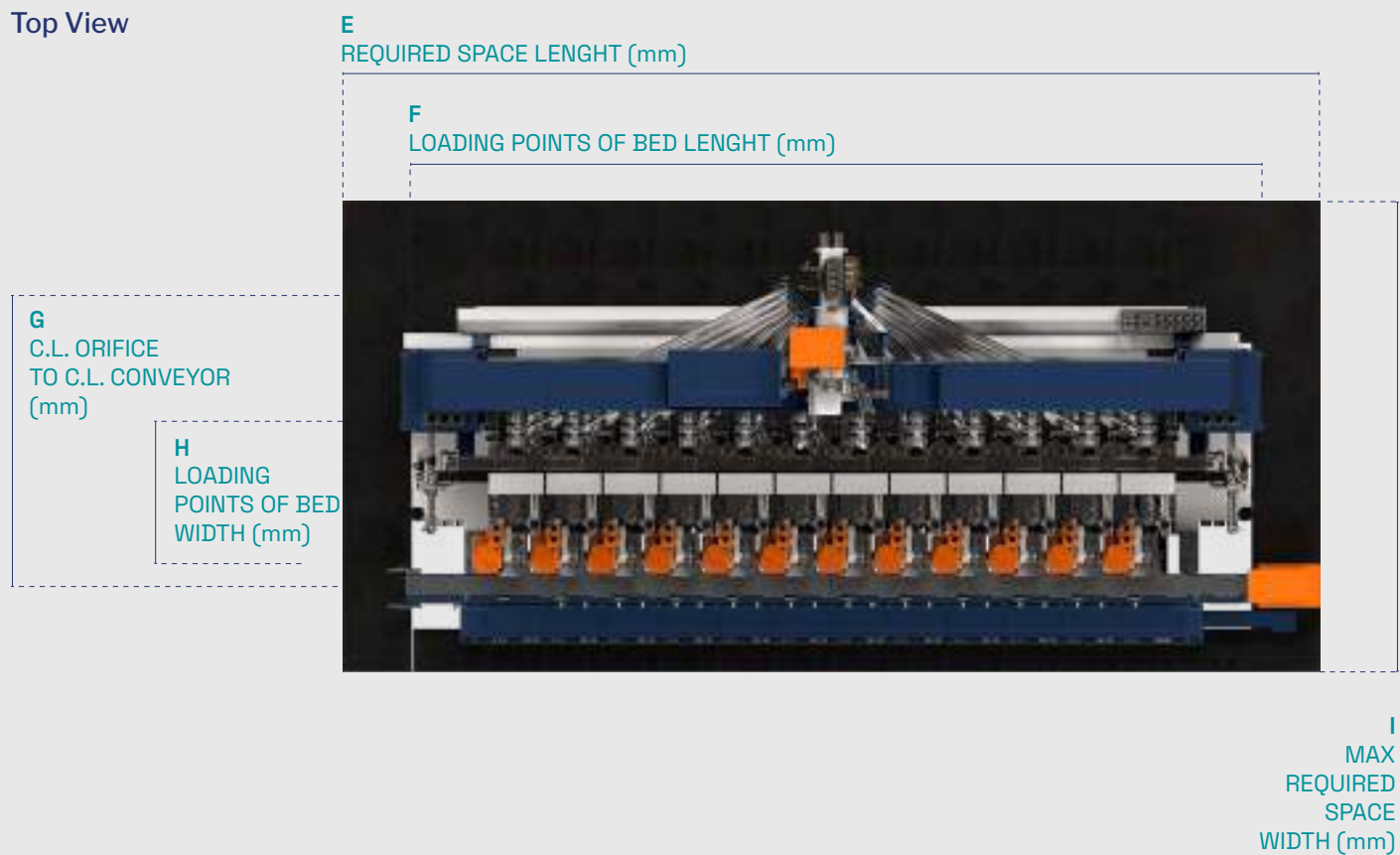
- Transfer wheel TRW HSS dual chain
- Air jet pusher

Technical Details

Side View



Top View



MACHINE TYPE

ANGULAR M.O.C.					
IS-4"¼	SG	DG 4"¼ (108 mm)	TG 3" (76 mm)	TG 80	(3 ⅙)
IS-5	SG	DG 5" (127 mm)	TG 85	(3" 11/32)	
IS-5"½	SG	DG 5"½ (140 mm)			
IS-6"¼	SG	DG 6"¼ (159 mm)	TG 4"¼ (108 mm)		

PARALLEL M.O.C.			
IS-P 6"¼	DG 6"¼ (159 mm)	TG 4"¼ (108 mm)	

MACHINES DIMENSIONS

ANGULAR M.O.C.

SIDE VIEW (easy aligning version)

DELIVERY	EASY ALIGNING											
MACHINES	IS-4"¼			IS-5			IS-5½			IS-6¼		
SECTIONS	6-8	10	12	6-8	10	12	6-8	10	12	6-8	10	12
A GOB INTERCEPTOR UPPER PART (mm)	3.666	3.975	4.380	3.705	3.975	4.380	3.765	4.065	4.455	3.765	4.065	4.455
B FUNNEL UPPER PART (mm)	3.470	3.780	4.180	3.505	3.780	4.180	3.565	3.865	4.255	3.565	3.865	4.255
C BEAM UPPER PART (mm)	3.065	3.375	3.775	3.100	3.375	3.775	3.160	3.460	3.850	3.160	3.460	3.850
D METAL LINE (mm)	4.800	5.000	5.400	4.800	5.000	5.400	4.800	5.200	5.600	4.800	5.200	5.600

SIDE VIEW (constant angle version)

DELIVERY	CONSTANT ANGLE											
MACHINES	IS-4"¼			IS-5			IS-5½			IS-6¼		
SECTIONS	8B10	10	12	8B10	10	12	8B10	10	12	8B10	10	12
A GOB INTERCEPTOR UPPER PART (mm)	4.390	4.390	4.650	4.390	4.390	4.650	4.470	4.470	4.720	4.470	4.470	4.720
B FUNNEL UPPER PART (mm)	4.205	4.205	4.460	4.205	4.205	4.460	4.270	4.270	4.520	4.270	4.270	4.520
C BEAM UPPER PART (mm)	3.805	3.805	4.055	3.805	3.805	4.055	3.865	3.865	4.120	3.865	3.865	4.120
D METAL LINE (mm)	5.500	5.500	5.800	5.500	5.500	5.800	5.600	5.600	5.900	5.600	5.600	5.900

TOP VIEW

MACHINES	IS-4 ¹ / ₄				IS-5				IS-5 ¹ / ₂				IS-6 ¹ / ₄		
	6	8	10	12	6	8	10	12	6	8	10	12	8	10	12
E REQUIRED SPACE LENGHT (mm)	5.180	6.250	7.315	8.380	5.180	6.250	7.315	8.380	5.180	6.250	7.315	8.380	6.250	7.315	8.380
F LOADING POINTS OF BED LENGHT (mm)	4.480	5.547	6.614	7.680	4.480	5.547	6.615	7.680	4.480	5.550	6.615	7.680	5.550	6.615	7.680
G C. L. ORIFICE TO C. L. CONVEYOR (mm)	2.397	2.397	2.397	2.657	2.417	2.417	2.417	2.786	2.565	2.565	2.565	2.825	2.621	2.621	2.881
H LOADING POINTS OF BED WIDTH (mm)	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465	1.465
I MAX REQUIRED SPACE (mm)	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300	5.300

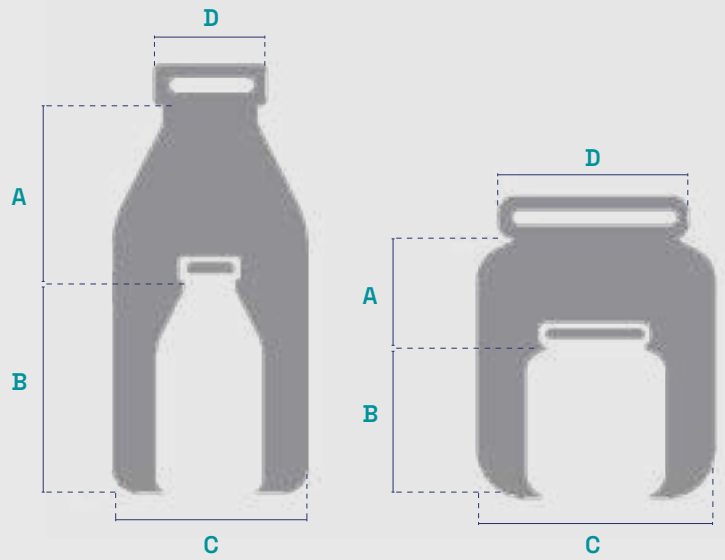
PARALLEL M.O.C.

SIDE VIEW

DELIVERY	EASY ALIGNING			CONSTANT ANGLE		
MACHINES	IS-P 6 ¹ / ₄					
SECTIONS	8	10	12	8	10	12
A GOB INTERCEPTOR UPPER PART (mm)	3.762	4.062	4.452	4.470	4.470	4.720
B FUNNEL UPPER PART (mm)	3.565	3.865	4.265	4.270	4.720	4.520
C BEAM UPPER PART (mm)	3.160	3.460	3.850	3.865	3.865	4.120
D METAL LINE (mm)	4.800	5.200	5.600	5.600	5.600	5.900

TOP VIEW

MACHINES	IS-P 6 ¹ / ₄		
SECTIONS	8	10	12
E REQUIRED SPACE LENGHT (mm)	6.247	7.314	8.380
F LOADING POINTS OF BED LENGHT (mm)	5.547	6.614	7.680
G C. L. OREFICE TO C. L. CONVEYOR (mm)	2.621	2.621	2.881
H LOADING POINTS OF BED WIDTH (mm)	1.465	1.465	1.465
D MAX REQUIRED SPACE WIDTH (mm)	5.300	5.300	5.300



PRODUCTION LIMIT TABLE

ANGULAR M.O.C.												
MACHINES	IS 4" ¼				IS 5"			IS 5" ½		IS 6" ¼		
CONFIGURATION	SG	DG	TG 3"	TG 80 (3" ½)	SG	DG	TG 85	SG	DG	SG	DG	TG 4" ¼
BLOW-BLOW												
MAX HEIGHT UNDER FINISH (mm) (A)	360	301	276	140	360	325	245	389	342	389	342	287
MIN HEIGHT UNDER FINISH (mm) (B)	74	58	59	25	74	73	95	74	68	74	115	30
MAX BODY DIAMETER (mm) WITH STACK COOLING (C)	178	90	51	60	178	102	62	178	111	178	130	80
MAX BODY DIAMETER (mm) WITH STACK COOLING/VACUUM (C)	170	76	45	50	170	95	54	170	102	170	121	76
MAX BODY DIAMETER (mm) WITH VERTICAL BLOW COOLING (C)	156	76	45	50	156	95	60	156	102	156	121	76
MAX FINISH DIAMETER (mm) (D)	48	48	30	35	48	48	30	48	48	48	48	48
PRESS-BLOW/NNPB												
MAX HEIGHT UNDER FINISH (mm) (A)	285	282	268	140	265	290	213	320	300	320	300	268
MIN HEIGHT UNDER FINISH (mm) (B)	74	40	47	45	74	55	75	65	58	74	105	30
MAX BODY DIAMETER (mm) WITH STACK COOLING (C)	178	90	51	60	178	102	62	178	111	178	130	80
MAX BODY DIAMETER (mm) WITH STACK COOLING/VACUUM (C)	170	80	45	50	170	95	54	170	102	170	121	76
MAX BODY DIAMETER (mm) WITH VERTICAL BLOW COOLING (C)	156	76	51	50	156	95	60	156	102	156	121	76
MAX FINISH DIAMETER (mm) (D)	120	83	38	45	120	90	55	120	90	120	90	70

MACHINES	IS 4" ¼				IS 5"			IS 5" ½		IS 6" ¼		
	SG	DG	TG 3"	TG 80 (3" ¼)	SG	DG	TG 85	SG	DG	SG	DG	TG 4" ¼
NNPB												
MAX HEIGHT UNDER FINISH (mm) (A)		282	268	140		290	213		300		300	268
MIN HEIGHT UNDER FINISH (mm) (B)		40	47	45		55	75		58		105	30
MAX BODY DIAMETER (mm) WITH STACK COOLING (C)		90	51	60		102	62		111		130	80
MAX BODY DIAMETER (mm) WITH STACK COOLING/VACUUM (C)		80	45	50		95	54		102		121	76
MAX BODY DIAMETER (mm) WITH VERTICAL BLOW COOLING (C)		76	45	50		95	60		102		121	76
MAX FINISH DIAMETER (mm) (D)		38	38	38		38	38		38		38	38

PARALLEL M.O.C.

MACHINES	IS-P 6" ¼	
CONFIGURATION	DG 6" ¼ (159 mm)	TG 4" ¼ (108 mm)
BLOW-BLOW		
MAX HEIGHT UNDER FINISH (mm) (A)	345	305
MIN HEIGHT UNDER FINISH (mm) (B)	115	105
MAX BODY DIAMETER (mm) WITH BLOW AXIAL COOLING (C)	121	76
MAX BODY DIAMETER (mm) WITH DOWN-UP COOLING (C)	121	76
MAX FINISH DIAMETER (mm) (D)	48	48
PRESS-BLOW/NNPB		
MAX HEIGHT UNDER FINISH (mm) (A)	300	285
MIN HEIGHT UNDER FINISH (mm) (B)	105	86
MAX BODY DIAMETER (mm) WITH BLOW AXIAL COOLING (C)	121	76
MAX BODY DIAMETER (mm) WITH DOWN-UP COOLING (C)	121	76
MAX FINISH DIAMETER (mm) (D)	105	70
MAX FINISH DIAMETER (mm) NNPB (D)	38	38

STANDARD SERVICE REQUIREMENT

ANGULAR M.O.C.														
MACHINES	PRESSURE		IS-4" ¼ – IS-5						IS-5 ½ – IS-6 ¼					
			8		10		12		8		10		12	
	P.S.I.	kg/cm ²	ft ³ /min	Nm ³ /min	ft ³ /min	Nm ³ /min	ft ³ /min	Nm ³ /min	ft ³ /min	Nm ³ /min	ft ³ /min	Nm ³ /min	ft ³ /min	Nm ³ /min
L.P. COMPRESSED AIR	34,8	2,4	282	8	353	10	424	12	311	8,8	388	11	466	13,2
H.P. COMPRESSED AIR	50,75	3,5	847	24	1.059	30	1.271	36	1.073	30,4	1.342	38	1.610	45,6
P&B - PLUNGER COOLING*	50,75	3,5	282	8	353	10	424	12	339	9,6	424	12	508	14,4
NNPB - PLUNGER COOLING*	87	6	282	8	353	10	424	12	339	9,6	424	12	508	14,4
VACUUM BLOW MOLD	25*Hg	635mm Hg	226	6,4	282	8	339	9,6	226	6,4	282	8	339	9,6
VACUUM BLANK SIDE	25*Hg	635mm Hg	113	3,2	141	4	169	4,8	113	3,2	141	4	169	4,8
MACHINE COOLING AIR	49* WC	1250mm WC	18.361	520	22.952	650	27.542	780	22.598	640	28.248	800	33.898	960
CONVEYOR COOLING AIR**	26*WC	650mm WC	4.237	120	5.297	150	6.356	180	4.237	120	5.297	150	6.3566	180
COOLING WATER	30	2		15 l/min		15 l/min		15 l/min		15 l/min		15 l/min		15 l/min

PARALLEL M.O.C.									
MACHINES	PRESSURE		IS-4" ¼ – IS-5						
			8		10		12		
	P.S.I.	kg/cm ²	ft ³ /min	Nm ³ /min	ft ³ /min	Nm ³ /min	ft ³ /min	Nm ³ /min	
L.P. COMPRESSED AIR	34,8	2,4	311	8,8	388	11	466	13,2	
H.P. COMPRESSED AIR	50,75	3,5	1.073	30,4	1.342	38	1.610	45,6	
P&B - PLUNGER COOLING*	50,75	3,5	339	9,6	424	12	508	14,4	
NNPB - PLUNGER COOLING*	87	6	339	9,6	424	12	508	14,4	
VACUUM BLOW MOLD	25*Hg	635mm Hg	226	6,4	282	8	339	9,6	
VACUUM BLANK SIDE	25*Hg	635mm Hg	113	3,2	141	4	169	4,8	
MACHINE COOLING AIR	55* WC	1400mm WC	19.209	544	24.011	680	28.813	816	
CONVEYOR COOLING AIR**	26*WC	650mm WC	4.237	120	5.297	150	6.356	180	
COOLING WATER	30	2,1		15 l/min		15 l/min		15 l/min	

* For PB-NNPB plunger cooling pressures above 3.15 Kg/cm² (if required by the customer)

** Value referred to Stack Cooling blank side and Vertiflow blow side

*** Value referred to Axial Cooling blank side and Axial Cooling or Vertiflow blow side

- Quantities specified are free air (21°C-70°F and 1 Kg/cm²-14.7 p.s.i.)
- The operating air supply must be clean and dry (it is required the installation of drying and filter system before the piping connection to the machine with an efficiency of 98% and a nominal retention of 4 ÷ 10 µ)
- Maximum temperature of compressed air supply to the machine = 80°C
- Minimum temperature of compressed air supply to the solenoid valve block = 10°C · Pilot air (Valve Block) 0.5 m³/min of free air at 21°C (clean, oil and water free) · Dew point of compressed air: -5 ÷ -2 °C
- Water hardness 100 parts CaCO₃ per 1,000,000 parts of water (P.P.M.)



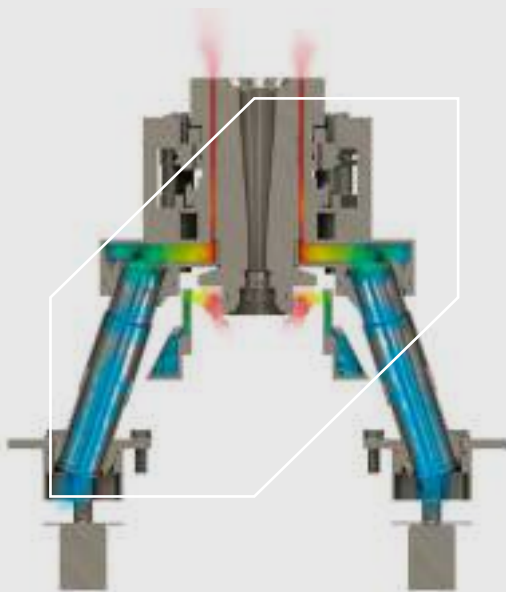
Mould Cooling

IS ANGULAR AXIAL COOLING SYSTEM ON IS DG 5"½ - IS DG 6"¼ TG 4"¼

Improved cooling efficiency and thermal homogeneity maintaining standard moulds and equipment:

- Use of standard moulds designed for stack-cooling (radial)
- Use of standard mould holders, arms, plates or inserts
- Dual on-off valve for blank cooling and neck-ring cooling (blank side)
- Neck-ring cooling design with standard nozzles and spacers (blank side)
- Telescopic tube with quick self centering clamping system

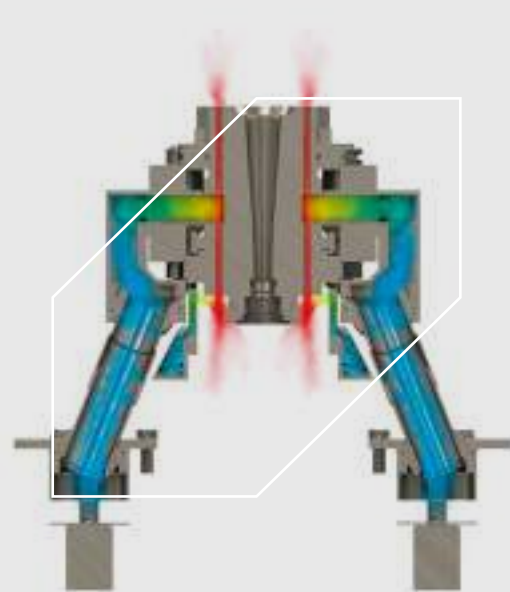
Mould Cooling



DOWN-UP BLANK AXIAL COOLING

- Dedicated plenum chamber shaped according mould's diameter and height
- One cooling air flow direction: from bottom to top

Mould Cooling



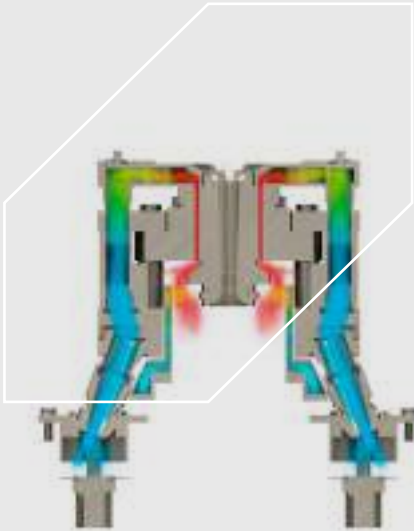
BLANK AND BLOW BIDIRECTIONAL AXIAL COOLING

- Dedicated plenum chamber shaped according mould's diameter and height
- Two separated cooling air flows (upwards and downwards) with independent air volume optimization
- Available for blank and blow side

IS PARALLEL M.O.C. AXIAL COOLING SYSTEM

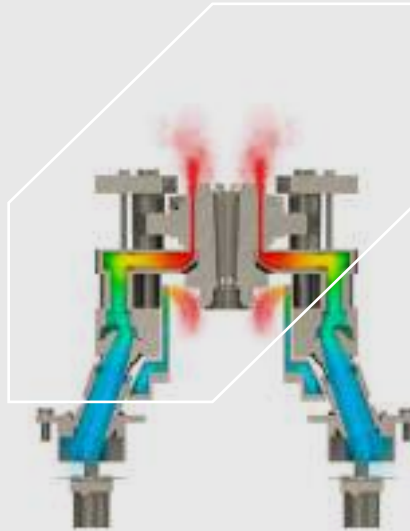
Improved cooling efficiency and thermal homogeneity

- Independent valve for blank cooling and neck-ring cooling (blank side)
- Double telescopic tube with quick self centering clamping system



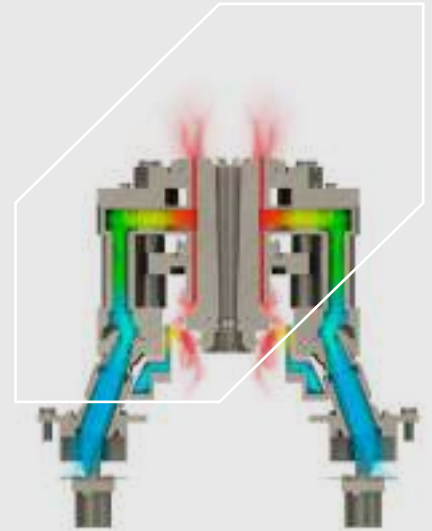
BLANK TOP-DOWN AXIAL COOLING

- Dedicated plenum chamber shaped according mould's diameter and height
- One cooling air flow direction: from top to bottom



BLANK DOWN-UP AXIAL COOLING

- Dedicated plenum chamber shaped according mould's diameter and height
- One cooling air flow direction: from bottom to top



BLANK AND BLOW BIDIRECTIONAL AXIAL COOLING

- Dedicated plenum chamber shaped according mould's diameter and height
- Two separated cooling air flow (upwards and downwards) with independent air volume optimization

IS Machine

Timing Systems

ADV SERIES

E-SAVE SYSTEM

- Complete **integrated control system** for control of the entire machine operation from stirrer to ware handling
- Real time **telediagnostic**
- Automatic set up of feeder mechanism, gob distributor mechanism, machine, transport line, articles reject according to the production changes
- Open system with **field bus architecture**
- Modular machine and industrial standard for Hw and Sw, with centralised, decentralised and with **distributed intelligence**
- Full integration of BDF stand-alone systems in 3rd part timer



ADV 1050

- User friendly
- Low cost basic functions
- Possible Servo Feeder Control
- From 4 up to 12 sect,
- Single gob, Double Gob, Triple Gob.
- Tandem Capability

The Control is made up of One CPU per section controller for each 4 sections, Independent MS and EME-Stop with certified safety relay per each section and servo motor to fit CE safety requirements, Ethernet communication and remote access.

Machine Controls for Servo Plunger, Servo Parallel Shear, Servo Gob Distributor; on demand: Servo Tube Height Positioning and Servo Tube Rotation.

Integrated Drive Controller For Mechanical Feeder (when the Servo Feeder is not present), Conveyor, Transfer and Cross Conveyor.

The Section Controller has 48 outputs, Free assignable events to outputs with attributes for blank or blow side, Integrated electric pusher with step motor, Individual Ware-Rejection with manual or automatic stop, Special cycles.

ADV 8050

- Servo Mechanisms Control
- Stand Alone Mechanisms Control
- IWS and PMPC Close loop Control
- Energy Saving With AFE Technology • From 6, up to 12 sect
- Single, Double, Triple or Quad Gob
- Tandem Capability

The Control is made up of Individual section controller and 24 VDC power supply (one per section), Independent MS and E-Stop with robust safety relay per section and servo motor to meet CE requirements, Ethernet communication and remote access through internet or telephone modem.

Machine Integrated controls for Servo Plunger, Servo Tube Height Positioning, Servo Tube Rotation, Servo Arcuate Shear, BDF Three Axis Servo, Servo Parallel Shear, Servo Gob Distributor, BDF-CWD Conveyor Ware Detector Integrated Drive Controller For Mechanical feeder, Conveyor, Transfer, Cross conveyor, BDF Dual Axes servo stacker.

E-SAVE ENERGY SAVING SYSTEM

AFE & DC BUS

We consider a complete BDF system equipped with servo plunger, servo shears, servo gob, servo pusher, servo invert and servo take-out mechanisms.

Considering the system from a mechanical point of view, there is a continuous energetic inertial changing due to the continuously mechanisms acceleration and deceleration.

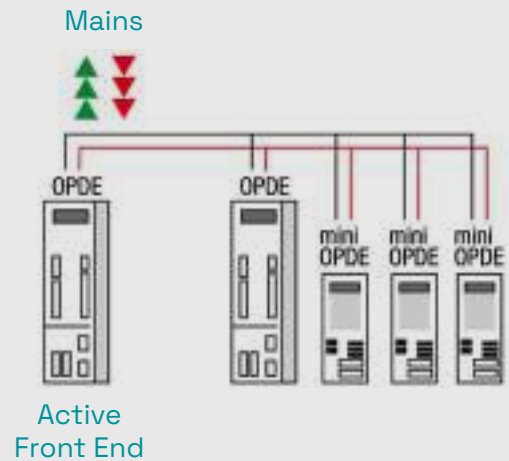
We may say that for every movement the energy needs for the acceleration is balanced with the energy needs for the deceleration, more the energy to compensate the mechanical and electronic losses. These losses are functions of the machine speed. As the servomechanisms movements are not in the same time, the exceded energy is recovered on the CC BUS.

The system takes from the main line only the energy to compensate all the losses (passive energy) that are not compensate from the recovered energy.

The system transfer from the main line to the BUS full power (without cutting) with $\cos\phi=1$.

The sinusoidal current is without low harmonic (is remaking signal), and the only harmonic signal present is very low and with high frequency, because depend from the modulation frequency (PWM signal). The converter system on the BDF control cabinet is reversible and recover the mini mini mini OPDE OPDE OPDE Hydro Power AFE Regenerated Power (kW) Inverter energy on the BUS line.

- Sinusoidal line current with reduction of the harmonic current distorsion THDi
- Compensation of line voltage variations
- Energy saving
- DC BUS Control also with power line voltage fluctuations
- Regenerative capability thus to make power flow in both directions.



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