

TOSHIBA MACHINE



ISG + FD

NEW SERVO HYDRAULIC INJECTION MOLDING MACHINES



Energy-Efficient Hydraulics from Toshiba Machine.

Take your shop to the next level of productivity with the ISG and ISFD Series of hydraulic molding machines from Toshiba Machine. With clamping capacities ranging from 495 to 3850 tons, these low profile, heavy-duty systems are ideal for molding medium, large and ultra-large parts with precision and ease. What's more, they require less floor space and are easier to operate than traditional hydraulic systems.

Numerical, closed loop control

Built into each system is a high-speed microprocessor, resulting in extremely stable, consistent and precise molding.

Eject-on-the-fly operation

ISG/ISFD Hydraulics automatically eject parts during mold opening, reducing cycle times and increasing productivity. Further enhancing productivity are such features as multi-stroke ejection, try-again circuitry, and forward hold capability.

More efficient clamping design

The clamping device on the ISG Series uses leak-less pre-fill valve systems resulting in fast pressure build-up time and reduced energy consumption.

The unique, direct lock clamping unit on **ISFD Series** machines is shorter than conventional devices, yet delivers the same clamping force and faster cycling speeds.

Smaller footprint

Toshiba Machine's **ISG Series** requires up to 30% less floor space than comparable hydraulics and are ideal for low ceiling production areas. The compactly designed clamping device on the **ISFD Series** significantly reduces machine size and the amount of space needed for installation space required.



Model ISGT1150 for large-size molding

Self-contained oil cleaning system

Hydraulic oil is continuously cycled through three micron filters, increasing oil life while reducing machine malfunctions, maintenance and downtime. That saves you time and money

Reduced energy costs

With their faster molding cycles and programmable speed and pressure controls, ISG/ISFD Hydraulics are extremely energy-efficient, helping you reduce operating costs.

V50 controller standard on all models

With a 40% improvement in communication speed, the V50 controller on ISG/ISFD Hydraulics uses real-time input to report molding conditions and make automatic adjustments to mold settings, resulting in greater part repeatability and fewer rejects.

MOLDLYZER™ Quality Control System

Built into the V50 controller is MOLDLYZER™, an exclusive, patented quality control program that helps ensure part-to-part repeatability for any size production run. MOLDLYZER continuously samples actual hydraulic





*New energy-efficient servo capabilities are now available for all models, helping you reduce power consumption and costs.***

pressure at different checkpoints during injection, and compares the data to an injection pressure model curve established by the operator for an acceptable part. Data is displayed on the V50 controller, providing the operator with visual indication of molding performance.

If pressure should exceed preset tolerance levels, the machine signals a defect, ejects the part and notifies the operator to make the necessary adjustments. The monitoring package includes a maximum peak pressure cut-off, protecting molds against over-packing the cavity.

Customized machine cells

The V50's intuitive, touchscreen interface and up to 40 user-programmable (optional) outputs allow you to customize machine cells without investing in additional OEM programming.

Monitoring and programming are easy, thanks to the controller's large 15-inch touchscreen. And since the screen looks and works the same as previous controllers, there's little or no learning curve for current users. Just call Toshiba whenever you need answers to your programming questions.

Enhancing your machine investment is the V50's iPAQET* Lite data management system, providing you with production monitoring, data collection and analysis.

* NOTE: A standard Ethernet interface is required for iPAQET use. Also required are a server, server peripherals, operating system and LAN wiring.

iPAQET* remote monitoring and management software (optional)

For a more powerful data management platform, simply upgrade your ISG/ISFD to the full version of iPAQET. It offers the same benefits as iPAQET Lite, plus enhanced features such as the ability to monitor 48 molding machines in real-time from any location, view machine operation status, monitor resin lots and more.



Additional features

Injection Swivel Device—Power operated device provides easy inspection of screw and barrel.

Dynamic Barrier (DBG) Screw—Unique dual barrier screw design helps stabilize melt temperatures and keep productivity at its highest level.

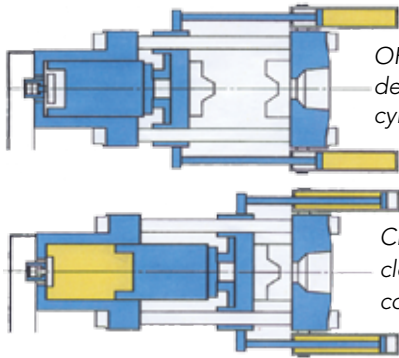
Stainless Steel Hopper—Easy to clean, non-corrosive stainless steel hopper.

Optical Linear Scales—Accurate to 0.001 mm (0.00004 in), optical scales sense clamp and injection screw positions, increasing molding consistency (fewer rejects) and allowing for tighter tolerances.

** Servo is standard on 500 to 1450 ton machines and available for order on all sizes.



Model ISF2750 for ultra heavy-duty molding



OPENING: Main cylinder decompresses and traversing cylinders open the mold.

CLOSING: Traversing cylinders close the mold and main cylinder compresses the mold.

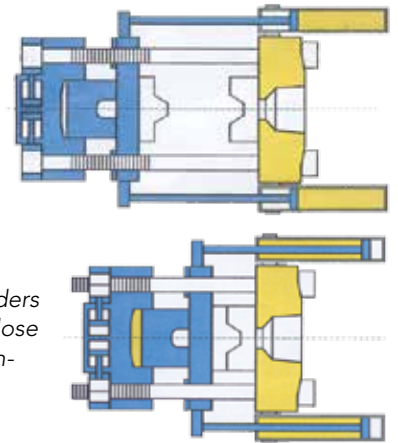
Mold clamp for ISGS 500 and 610

More than 10% shorter than conventional machines, the ISGS clamp incorporates fluted ribbed, highly rigid cast steel platens for extended mold life. It provides hydraulic characteristics such as easy mold change, wider platens, longer stroke and longer daylight. Features include a high response logic cycle prefill valve for faster cycling time, and new style hydraulic block circuit for increased energy savings.

Mold clamp for ISGT 720, 950 and 1150

The ISGT clamp combines Toshiba's unique tie bar locking system with a direct pressure type mold-clamping cylinder, making it 30% shorter than conventional models. Its main ram contains less than 10% of the oil used by conventional hydraulic clamps, decreasing fluid use by as much as 50%. Less time is required for pressure build up, reducing cycle time. Features include a new style hydraulic block circuit for increased energy savings.

OPENING: Main cylinder decompresses, tie bar lock nuts release and traversing cylinders open the mold.



CLOSING: Traversing cylinders close the mold, lock nuts close onto tie bars and main cylinder compresses the mold.






OPENING: Half nuts open when the moveable platen retracts at high speed and applies hydraulic pressure to open the mold.

CLOSING: Half nuts lock during the slow speed/low pressure closing of the moveable platen, resulting in a time loss prevention system that dramatically reduces dry cycle time.

2-platen mold clamp for ISFD 1450, 1750, 1950, 2450, 2750, 3350 and 3850

Toshiba Machine equipped the ISFD Series with a unique, two platen, direct lock clamping device. While the same stroke as conventional devices, this compact design delivers faster cycling speeds and a smaller machine footprint requiring significantly less floor space.

-  Stationary parts
-  Moving parts
-  Area where hydraulic pressure is applied

STANDARD FEATURES

HYDRAULIC INJECTION MOLDING MACHINES

ISG + FD

Injection, Plasticizing

V50 Controller

- ▶ Step switch/Ten key input
- ▶ Data setting memory for 300 sets of molds
- ▶ High-speed control cycle
- ▶ Single page setup screen
- ▶ Operation indicator
- ▶ Try again circuit for continuous automatic operation
- ▶ Active matrix full color LCD touchscreen
- ▶ Multilingual operation (English/Spanish)
- ▶ Digital display of injection and clamp pressures; clamp, screw and ejector positions
- ▶ Monitoring of cycle, clamp open-to-close, injection fill and screw recovery times; screw RPM; injection start over position; minimum and final cushions
- ▶ Table and trend displays of monitored data plus SPC
- ▶ Display of table stop, change and alarm histories
- ▶ Production completion signal with auto shutdown control
- ▶ Reduced temperature holding program
- ▶ High oil temperature alarm with auto shutdown
- ▶ Hydraulic oil warm up circuit for quick startup with stable oil temperature
- ▶ Functions for profile display, storing and measurement
- ▶ Functions for checking diagnostics, setting password, customizing external output signal, and selecting operation at production completion
- ▶ LEDs on control panel showing limit switch condition
- ▶ Preventive maintenance schedule with alarm
- ▶ iPAQET Lite data management system
- ▶ MOLDLYZER™ quality control system/injection profile monitor

Software

- ▶ Numerical closed loop control of injection speeds and pressures
- ▶ 12 speeds and 6 pressures for profile injection control
- ▶ Adjustable injection speed and pressure gradient ramp or point-to-point progressive profile capability for smooth speed transition
- ▶ Injection speed and pressure set point graph with real-time overlay

- ▶ Automatic screw speed deceleration and screw backpressure reduction for accurate screw stopping after recovery
- ▶ Digital setting of screw backpressure
- ▶ Programmable screw speed and backpressure with set point and actual graph
- ▶ Digital display of screw speed and feed throat temperature
- ▶ Digital setting of barrel temperature with set point and actual display
- ▶ High barrel temperature alarm
- ▶ Sprue break (after cure time, screw recovery or injection)
- ▶ Screw cold start protection

Clamp

- ▶ Digital setting of clamp open and close speeds and positions
- ▶ Automatic deceleration of clamp open and close
- ▶ Mold separation monitor
- ▶ Moveable platen supported on machine base for precision alignment of clamp during mold close
- ▶ Reduced lubrication of platen bushings and support shoes; chrome-plated tie bars for clean molding operation
- ▶ Automatically adjusting clamp pressure switch
- ▶ Long stroke clamping mechanism – ISF1450D - ISF3850D Machines only
- ▶ Automatic lubrication of platen bushings and support shoes – ISGT and ISFT machines only
- ▶ Top of stationary platen pre-drilled for mounting robot

Eject

- ▶ Two-step programmed ejector speed for soft start ejection
- ▶ Digital setting of ejector speeds and positions
- ▶ Eject-on-the-fly with separate pump
- ▶ Ejector plate holes through drilled for pull back rods

Hardware

- ▶ Injection plasticizing hardware
- ▶ Continuous oil filtration to three microns to reduce hydraulic component wear
- ▶ Prewired for 230/3/60 or 460/3/60 power
- ▶ Bimetallic barrel – nickel boron alloy
- ▶ Stainless steel hopper
- ▶ Extension nozzle with replaceable tip

Other features

- ▶ Ejector forward hold circuit, gate-controlled in semi-auto
- ▶ Automatic oil temperature control valve
- ▶ Robot interlock circuit
- ▶ Machine built to SPI-ANSI machinery safety standards
- ▶ Optical linear scales for precision sensing of clamp and injection position
- ▶ Cycle counter showing number of good, reject and total cycles
- ▶ Binary pump configuration to align energy use with production requirements
- ▶ Power swivel of injection unit
- ▶ SPI ejector pattern, mold mounting holes and nozzle



TOSHIBA MACHINE

ISG + FD SPECIFICATIONS

	ITEM	UNIT	MODEL ISGS500				MODEL ISGS610-WP				MODEL ISGT720-WP			
CLAMP	Clamp Closing Force	tons-US	495				605				715			
		tons-m	450				550				650			
	Clamp Opening Force	tons-US	27				33				44			
		tons-m	24.5				30				40			
	Tie Bar Spacing (H x V)	in	34.2 x 34.2				38 x 38				42.5 x 42.5			
		mm	870 x 870				965 x 965				1080 x 1080			
	Platen Dimension (H x V)	in	48.4 x 48.4				55.1 x 55.1				60.2 x 60.2			
		mm	1230 x 1230				1400 x 1400				1530 x 1530			
	Clamp Stroke	in	41.3				47				53			
		mm	1050				1200				1350			
	Daylight (Open/Close)	in	55.1 / 13.8				63 / 15.8				70.8 / 17.7~41.3			
		mm	1400 / 350				1600 / 400				1800 / 450~1050			
	Clamp Speed (Close/Open)	in/sec	30 / 30				31 / 30				29 / 29			
		mm/sec	760 / 760				800 / 760				750 / 750			
Ejector Force	tons-US	13.5				16				23				
	tons-m	12				14.5				21				
Ejector Stroke	in	6.3				6.3				7.9				
	mm	160				160				200				
INJECTION	Injection Unit		27AT	27B	34AT	34B	34AT	34B	59AT	59B	59AT	59B	81AT	81B
	Injection Capacity (GPPS)	oz	48	63	61	77	61	77	104	126	104	126	142	186
		g	1360	1780	1730	2190	1730	2190	2900	3540	2900	3540	3980	5200
	Screw Diameter	in	2.8	3.2	3.2	3.5	3.2	3.5	3.7	4.1	3.7	4.1	4.1	4.7
		mm	70	80	80	90	80	90	95	105	95	105	105	120
	Injection Volume	in ³	90	118	115	145	115	145	192	235	192	235	263	345
		cm ³	1480	1930	1880	2380	1880	2380	3150	3850	3150	3850	4320	5650
	Injection Pressure	PSI	25900	19800	26500	21000	26500	21000	26800	21900	26800	21900	26500	20300
		kgf/cm ²	1810	1380	1860	1470	1860	1470	1890	1540	1890	1540	1870	1430
	Injection Rate	in ³ /sec	32	41	31	39	31	39	38	47	48	58	48	63
		cm ³ /sec	520	680	505	640	505	640	625	765	784	955	790	1035
	Max Screw Speed	RPM	180	170	170	150	170	150	140	127	140	127	127	110
RPM		180	170	170	150	170	150	140	127	140	127	127	110	
Plasticizing Rate (GPPS)	oz/sec	2.5	3.3	3.3	3.9	3.3	3.9	4.2	4.9	4.2	4.9	4.9	5.8	
	g/sec	72	94	95	111	95	111	117	136	117	136	136	161	
GENERAL	*Core Volume Clamp Stop	gpm	60				57				50			
		L	227				215				190			
	*Core Volume On The Fly	gpm	30				19				21			
		L	113				72				79			
	Running Load @ 460V	amps	129				163 & 179				206 & 223			
		amps	129				163 & 179				206 & 223			
	Cooling Water Required	gal	13				13				13			
		L	49				49				49			
	Motor	HP	75				100				120			
		kw	55				74				90			
	Oil Reservoir Capacity	gal	343				450				264			
		l	1300				1700				1000			
Shipping Weight (Est.)	Lbs	46,200		48,400		59,400		61,600		67,100		71,500		
	kg	21,000		22,000		27,000		28,000		30,500		32,500		
Dimensions (L x W x H)	ft	23.6x7x7		23.6x7x7		26.6x7.5x6.9		28.6x7.5x6.9		27.3x8.5x8.2		28.7x8.5x8.2		
	m	7.2x2.1x2.1		7.6x2.1x2.1		8.1x2.3x2.1		8.7x2.3x2.1		8.3x2.6x2.5		8.7x2.6x2.5		

MODEL ISGT950-WP		MODEL ISGT950-WII		MODEL ISGT1150		MODEL ISGT1150-WII	
935		935		1155		1155	
850		850		1050		1050	
71		82		71		71	
65		74		65		65	
49.8 x 49.8		61.0 x 49.8		49 x 49		60.2 x 49	
1260 x 1260		1550 x 1265		1250 x 1250		1530 x 1250	
68.3 x 68.3		79.5 x 68.3		68.3 x 68.3		79.5 x 68.3	
1730 x 1730		2020 x 1735		1735 x 1735		2020 x 1735	
69		80.7		69		80.7	
1750		2050		1750		2050	
88.5/19.7~43.3		100.4/19.7~55.1		88.5/19.7~43.3		100.4/19.7~55.1	
2250 / 500~1100		2550 / 800~1400		2250 / 500~1100		2550 / 800~1400	
28 / 27		28 / 27		1.6-28/1.6-27		1.6-28/1.6-27	
715 / 690		715 / 690		715 / 690		715 / 690	
27		27		27		27	
24.5		24.5		24.5		24.5	
7.8		7.8		7.8		7.8	
200		200		200		200	

81AT	81B	110A	110B	81AT	81B	110A	110B	81AT	81B	110A	110B	81AT	81B	110A	110B
142	186	213	250	142	186	213	250	142	186	213	250	142	186	213	250
3980	5200	6040	7140	3980	5200	6040	7140	3980	5200	6040	7140	3980	5200	6040	7140
4.1	4.7	4.5	4.9	4.1	4.7	4.5	4.9	4.1	4.7	4.5	4.9	4.1	4.7	4.5	4.9
105	120	115	125	105	120	115	125	105	120	115	125	105	120	115	125
263	345	400	473	263	345	400	473	263	345	400	473	263	345	400	473
4320	5650	6560	7760	4320	5650	6560	7760	4320	5650	6560	7760	4320	5650	6560	7760
26500	20300	25100	21200	26500	20300	25100	21200	26500	20300	25100	21200	26500	20300	25100	21200
1870	1430	1760	1490	1870	1430	1760	1490	1870	1430	1760	1490	1870	1430	1760	1490
62	80	65	77	62	80	65	77	62	80	65	77	62	80	65	77
1010	1320	1070	1260	1010	1320	1070	1260	1010	1320	1070	1260	1010	1320	1070	1260
127	110	110	101	127	110	110	101	127	110	110	101	127	110	110	101
127	110	110	101	127	110	110	101	127	110	110	101	127	110	110	101
4.9	5.8	5.3	5.9	4.9	5.8	5.3	5.9	4.9	5.8	5.3	5.9	4.9	5.8	5.3	5.9
136	161	147	164	136	161	147	164	136	161	147	164	136	161	147	164

60		60		60		60	
227		227		227		227	
30		30		30		30	
113		113		113		113	
259		259		259		259	
259		259		259		259	
21		21		21		21	
80		80		80		80	
150		150		150		150	
110		110		110		110	
357		357		357		357	
1350		1350		1350		1350	
85,800	92,400	94,600	96,800	85,800	92,400	105,600	107,800
39,000	42,000	43,000	44,000	39,000	42,000	48,000	49,000
29.3x9.3x8.3	32.8x9.3x8.3	31.8x10.4x8.3	33.7x10.4x8.3	31x10x8.2	32.6x10x8.2	31.8x10.4x8.8	33.7x10.4x8.8
8.9x2.8x2.5	10x2.8x2.5	9.7x3.2x2.7	10.3x3.2x2.7	9.4x3x2.5	9.9x3x2.5	9.7x3.2x2.7	10.3x3.2x2.7

ISG + FD SPECIFICATIONS

	ITEM	UNIT	MODEL ISG1450D				MODEL ISD1450D-WP				MODEL ISF1750D			
CLAMP	Clamp Closing Force	tons-US	1430				1430				1760			
		tons-m	1300				1300				1600			
	Clamp Opening Force	tons-US	105				105				132			
		tons-m	95				95				120			
	Tie Bar Spacing (H x V)	in	52.1 x 50.4				55.1 x 55.1				59.8 x 49.8			
		mm	1325 x 1280				1415 x 1415				1520 x 1265			
	Platen Dimension (H x V)	in	74.8 x 72.8				78.3 x 78.1				84.6 x 72.8			
		mm	1900 x 1850				1990 x 1985				2150 x 1850			
	Clamp Stroke	in	51.2~70.9				51.2~70.9				66.9~94.5			
		mm	1300~1800				1300~1800				1700~2400			
	Daylight Open/Close	in	78.7~98.4 / 27.5~47.2				78.7~98.4 / 27.5~47.2				98.4~126 / 31.5~59.1			
		mm	2000~2500 / 700~1200				2000~2500 / 700~1200				2500~3200 / 800~1500			
	Clamp Speed (Close/Open)	in/sec	29 / 31				29 / 31				29 / 31			
		mm/sec	745 / 775				745 / 775				745 / 775			
Ejector Force	tons-US	33				31				49				
	tons-m	30				28				44				
Ejector Stroke	in	9.8				9.8				9.8				
	mm	250				250				250				
INJECTION	Injection Unit		110A	110B	150A	150B	110A	110B	150A	150B	110A	110B	150A	150B
	Injection Capacity (GPPS)	oz	213	250	277	348	213	250	277	348	213	250	277	348
		g	6040	7140	7750	9730	6040	7140	7750	9730	6040	7140	7750	9730
	Screw Diameter	in	4.5	4.9	4.9	5.5	4.5	4.9	4.9	5.5	4.5	4.9	4.9	5.5
		mm	115	125	125	140	115	125	125	140	115	125	125	140
	Injection Volume	in ³	400	473	514	645	400	473	514	645	400	473	514	645
		cm ³	6560	7760	8430	10570	6560	7760	8430	10570	6560	7760	8430	10570
	Injection Pressure	PSI	25100	21200	24900	19900	25100	21200	24900	19900	25100	21200	24900	19900
		kgf/cm ²	1760	1490	1750	1400	1760	1490	1750	1400	1760	1490	1750	1400
	Injection Rate	in ³ /sec	65	77	65	81	65	77	65	80	65	77	65	81
		cm ³ /sec	1070	1260	1060	1330	1070	1260	1060	1300	1070	1260	1060	1330
	Max Screw Speed	RPM	110	101	101	90	110	101	101	90	110	101	101	90
		RPM	110	101	101	90	110	101	101	90	110	101	101	90
	Plasticizing Rate (GPPS)	oz/sec	5	6	6.7	7.5	5.3	5.9	6.7	7.5	5.3	5.9	6.7	7.5
g/sec		147	164	164	150	147	164	164	150	147	164	164	150	
GENERAL	*Core Volume Clamp Stop	gpm	38				38				38			
		L	144				144				144			
	*Core Volume On The Fly	gpm	38				38				38			
		L	144				144				144			
	Running Load @ 460V	amps												
		amps												
	Cooling Water Required	gal	28				28				28			
		L	105				105				105			
	Motor	HP	180				180				180			
		kw	135				135				135			
	Oil Reservoir Capacity	gal	555				430				845			
		l	2101				1600				3199			
	Shipping Weight (Est.)	Lbs	140,800		145,200		140,000		141,000		171,600		176,000	
		kg	64,000		66,000		62,000		64,000		78,000		80,000	
Dimensions (L x W x H)	ft	33.5x10x8.8		35.5x10x8.8		35.1x10.5x9.2		37.9x10.5x10.4		38.4x10.8x9.5		39.4x10.8x9.5		
	m	10.2x3x2.7		10.8x3x2.7		10.7x3.2x2.8		11.6x3.2x3.2		11.7x3.3x2.9		12x3.3x2.9		

MODEL ISF1750D-WP				MODEL ISF1950D				MODEL ISF2450D			
1760				1980				2420			
1600				1800				2200			
132				154				182			
120				140				165			
70.8 X 59.0				70.3 x 58.5				70.8 x 63.0			
1800 X 1500				1785 X 1485				1800 x 1600			
96.4 X 84.6				96.5 x 84.6				96.5 x 88.6			
2450 X 2150				2450 X 2150				2450 x 2250			
66.9~94.5				66.9~94.5				70.9~102.4			
1700~2400				1700~2400				1800~2600			
98.4~126 / 31.5~59.1				98.4~126 / 31.5~59.1				106.3~137.8 / 35.4~66.9			
2500~3200 / 800~1500				2500~3200 / 800~1500				2700~3500 / 900~1700			
29 / 31				29 / 31				31 / 32			
745 / 775				745 / 775				775 / 810			
49				49				76			
44				44				69			
9.8				9.8				13.8			
250				250				350			

110A	110B	150A	150B	110A	110B	150A	150B	200A	150A	150B	200A	315A	315B
213	250	277	348	213	250	277	348	384	277	348	384	570	726
6040	7140	7750	9730	6040	7140	7750	9730	10890	7750	9730	10890	16260	20590
4.5	4.9	4.9	5.5	4.5	4.9	4.9	5.5	5.5	4.9	5.5	5.5	6.3	7.1
115	125	125	140	115	125	125	140	140	125	140	140	160	180
400	473	514	645	400	473	514	645	722	514	645	722	1078	1365
6560	7760	8430	10570	6560	7760	8430	10570	11840	8430	10570	11840	17680	22380
25100	21200	24900	19900	25100	21200	24900	19900	24800	24900	19900	24800	25200	19900
1760	1490	1750	1400	1760	1490	1750	1400	1740	1750	1400	1740	1770	1400
65	77	65	81	65	77	65	81	65	65	81	65	82	104
1070	1260	1060	1330	1070	1260	1060	1330	1070	1060	1330	1070	1350	1710
110	101	101	90	110	101	101	90	90	101	90	90	73	70
110	101	101	90	110	101	101	90	90	101	90	90	73	70
5.3	5.9	6.7	7.5	5.3	5.9	6.7	7.5	7.5	6.7	7.5	7.5	7.5	10
147	164	164	150	147	164	164	150	150	164	150	150	208	170

38				38				38							
144				144				144							
38				38				38							
144				144				144							
28				28				28							
105				105				105							
180				180				240							
135				135				172							
845				845				980							
3199				3199				3710							
209,000		209,000		215,600		220,000		226,600		319,000		330,000		345,400	
95,000		95,000		98,000		100,000		103,000		145,000		150,000		157,000	
38.4x12x10.5		39.4x12x10.5		38.4x12x12		39.4x12x10.5		40x12x10.5		44x13x12		44.3x13x12		44x13x12	
11.7x3.7x3.2		12x3.7x3.2		11.7x3.7x3.2		12x3.7x3.2		12.2x3.7x3.2		13.4x4x3.6		13.5x4x3.6		14.5x4x3.6	

ISG + FD SPECIFICATIONS

	ITEM	UNIT	MODEL ISF2750D					MODEL ISF3350D			MODEL ISF3850D		
CLAMP	Clamp Closing Force	tons-US	2750					3300			3850		
		tons-m	2500					3000			3500		
	Clamp Opening Force	tons-US	182					220			220		
		tons-m	165					200			200		
	Tie Bar Spacing (H x V)	in	70.8 x 63.0					74.8 x 70.8			74.8 x 70.8		
		mm	1800 x 1600					1900 x 1800			1900 X 1800		
	Platen Dimension (H x V)	in	96.5 x 88.6					100.4 x 96.5			126 x 96.5		
		mm	2450 x 2250					2550 x 2450			3200 X 2450		
	Clamp Stroke	in	70.9~102.4					70.9~106.3			70.9~106.3		
		mm	1800~2600					1800~2700			1800~2700		
	Daylight (Open/Close)	in	106.3~137.8 / 35.4~66.9					110.2~145.7 / 39.4~74.8			110.2~145.7 / 39.4~74.8		
		mm	2700~3500 / 900~1700					2800~3700 / 1000~1900			2800~3700 / 1000~1900		
	Clamp Speed (Close/Open)	in/sec	31 / 32					26 / 26			26 / 26		
		mm/sec	775 / 810					670 / 670			670 / 670		
Ejector Force	tons-US	76					76			76			
	tons-m	69					69			69			
Ejector Stroke	in	13.8					13.8			13.8			
	mm	350					350			350			
INJECTION	Injection Unit		150A	150B	200A	315A	315B	200A	315A	315B	200A	315A	315B
	Injection Capacity (GPPS)	oz	277	348	384	570	726	384	570	726	384	570	726
		g	7750	9730	10890	16260	20590	10890	16260	20590	10890	16260	20590
	Screw Diameter	in	4.9	5.5	5.5	6.3	7.1	5.5	6.3	7.1	5.5	6.3	7.1
		mm	125	140	140	160	180	140	160	180	140	160	180
	Injection Volume	in ³	514	645	722	1078	1365	722	1078	1365	722	1078	1365
		cm ³	8430	10570	11840	17680	22380	11840	17680	22380	11840	17680	22380
	Injection Pressure	PSI	24900	19900	24800	25200	19900	24800	25200	19900	24800	25200	19900
		kgf/cm ²	1750	1400	1740	1770	1400	1740	1770	1400	1740	1770	1400
	Injection Rate	in ³ /sec	65	81	65	82	104	65	82	104	65	82	104
		cm ³ /sec	1060	1330	1070	1350	1710	1070	1350	1710	1070	1350	1710
	Max Screw Speed	RPM	101	90	90	73	70	90	73	70	90	73	70
		RPM	101	90	90	73	70	90	73	70	90	73	70
	Plasticizing Rate (GPPS)	oz/sec	6.7	7.5	7.5	7.5	10	7.5	7.5	10	7.5	7.5	10
g/sec		164	150	150	208	170	150	208	170	150	208	170	
GENERAL	*Core Volume Clamp Stop	gpm	38					38			38		
		L	144					144			144		
	*Core Volume On The Fly	gpm	38					38			38		
		L	144					144			144		
	Running Load @ 460V	amps											
		amps											
	Cooling Water Required	gal	28					28			28		
		L	105					105			105		
	Motor	HP	240					275			275		
		kw	172					202			239		
	Oil Reservoir Capacity	gal	980					1110			1480		
		l	3710					4202			5602		
	Shipping Weight (Est.)	Lbs	319,000	330,000	345,400	424,600	440,000	440,000	440,000	468,600	484,000	484,000	
		kg	145,000	150,000	157,000	193,000	200,000	200,000	200,000	213,000	220,000	220,000	
Dimensions (L x W x H)	ft	44x13x12	44.3x13x13	47.5x13x12	47.5x14x13	49.2x14x13	49.2x14x13	49.2x14x13	50.5x15.7x13.5	52x15.7x13.5	52x15.7x13.5		
	m	13.4x4x3.6	13.5x4x3.6	14.5x4x3.6	14.5x4.3x3.9	15x4.3x3.9	15x4.3x3.9	15x4.3x3.9	15.4x4.8x4.1	15.9x4.8x4.1	15.9x4.8x4.1		

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