

FE/FE-A Series

Bole Electric (FE/FE-A) Injection Molding Machine



The Passionate Pursuit of Perfection

www.boleamerica.com

BOLE Machinery Inc.

ADD: 4706 Hudson Drive Stow, Oh 44224

Tel: (330) 983-4700

Email: office@boleamerica.com

THIS CATALOGUE ARE PROTECTED BY LAW OF COPY RIGHT.
ANY USE WITHOUT THE EXPRESS PERMISSION OF THE LAW OF COPY RIGHT,
MUST GET APPROVAL OF BOLE IN ADVANCE.

THIS VERSION WAS PRINTED IN JUNE 2024.

FE/FE-A Series Electrical Injection Molding Machine

Version: 2024.06.12-US



Injection Molding Machine



BOLE Electric Injection Molding Machine FE/FE-A



Energy Saving

Reduced power consumption provides efficient energy usage; no cooling water needed

Efficient

Smooth, synchronous machine movement enables shorter cycle times

Precise

Positioning control accuracy (up to 0.01 mm) ensures precision molded product quality; reduces scrap for greater material savings

Clean

Requires no hydraulic oil which means the FE is clean-room ready; offers cleaner production floor in all manufacturing environments

Fast

The FE's smart movement controls offer high-speed injection for faster cycle times and increased molding efficiencies for high-volume applications

Quiet

The FE all-electric machine has low noise level to create a comfortable environment for employees

Bole Electric (FE/FE-A) Injection Molding Machine

Precise / Clean / Reliable / Energy Saving



Intelligent Control

Thanks to KEBA Controller and patent software.



Central Clamp System (Patent)

Patented central clamping toggle system offers uniform clamping force, reduces platen deformation for higher quality parts.



Linear Guide

Both CU and IU moving are supported and guided by high precise linear guide.

- Smoothest moving
- More precise
- Low energy consumption



German Engineering PU

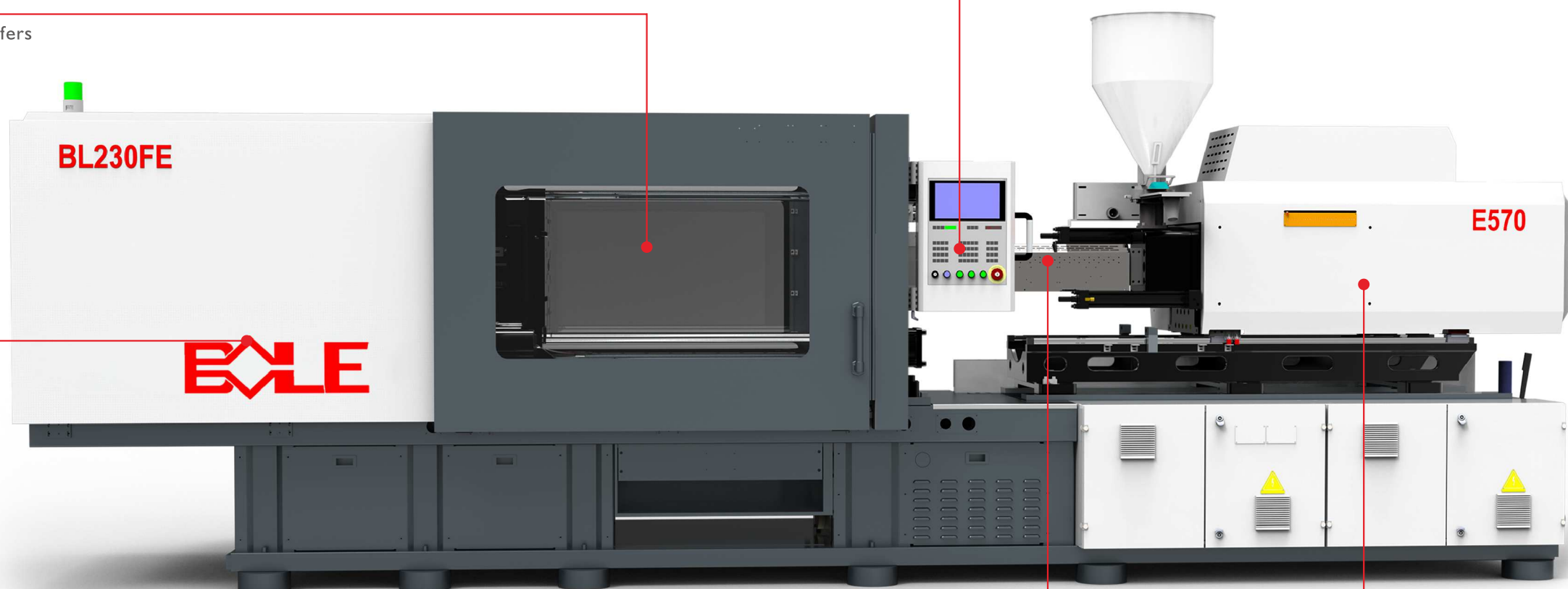
German designed plasticizing system provides increased production efficiencies (over 20%)



Encapsulated Balls (Patent)Screw

Patented encapsulated ball screw for lower maintenance requirements

- No contamination
- Best cleanliness
- Longer life time of ball screw



Central Clamping System(E-Version)



Greater savings in

Material consumption
Energy consumption
Maintenance requirements

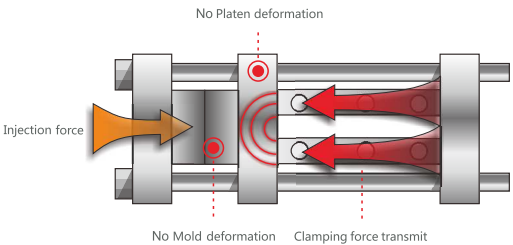
Extended Space between Tie Bars

Ultra Precision for

Precise mold positioning
Precise speed
Precise parallelism

Full-Electric means oil-free operation ideal for clean-room molding

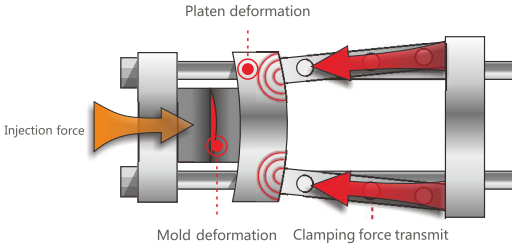
Toggle System Comparison:



BOLE

BOLE Central Clamping Structure

- 100% clamping force efficiency
- Reduces mold wear
- Less possibility of material flashing means 2-5% material savings



Others

Traditional Toggle System

- 80-85% clamping force efficiency
- Platen deformation results in flash increasing scrap and labor costs

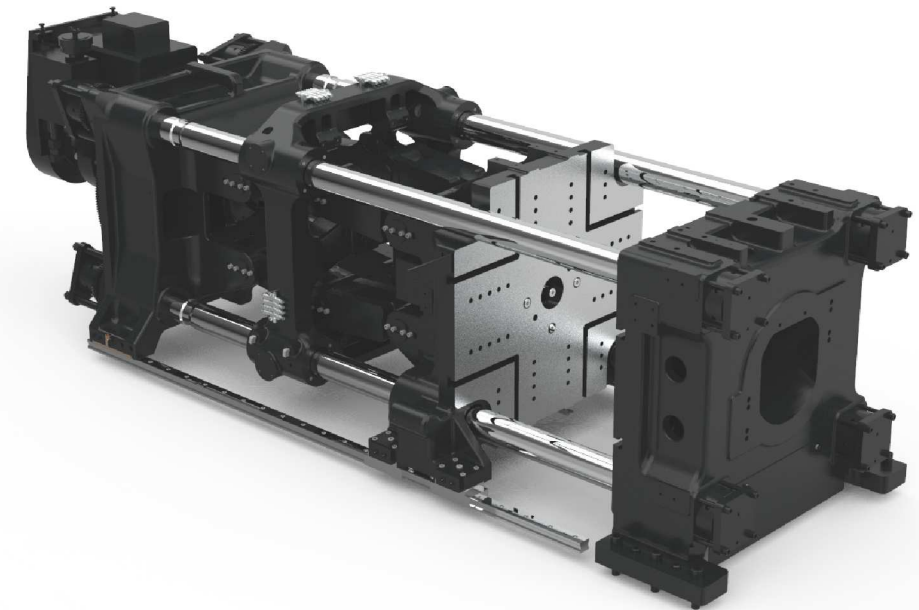
Central Clamping System(E-Version)



Driven by Servo Motor:

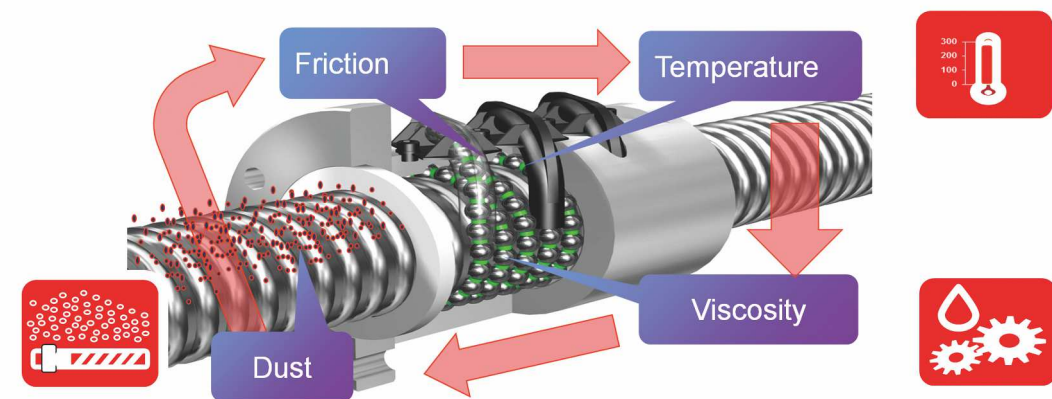
- Precision control of mold movement
- Repeatability up to 0.01 mm
- Ideal for In-mold labeling (IML) and automation
- Flexible control curve

Supported by Linear Guide

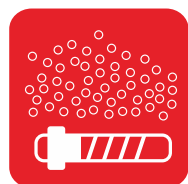


- Fast, smooth mold movement with no platen deflection
- Greater platen parallelism
- No lubrication required on moveable platens
- Clean surfaces in part-drop areas

Encapsulated Ball Screw(Patent)



Tradition



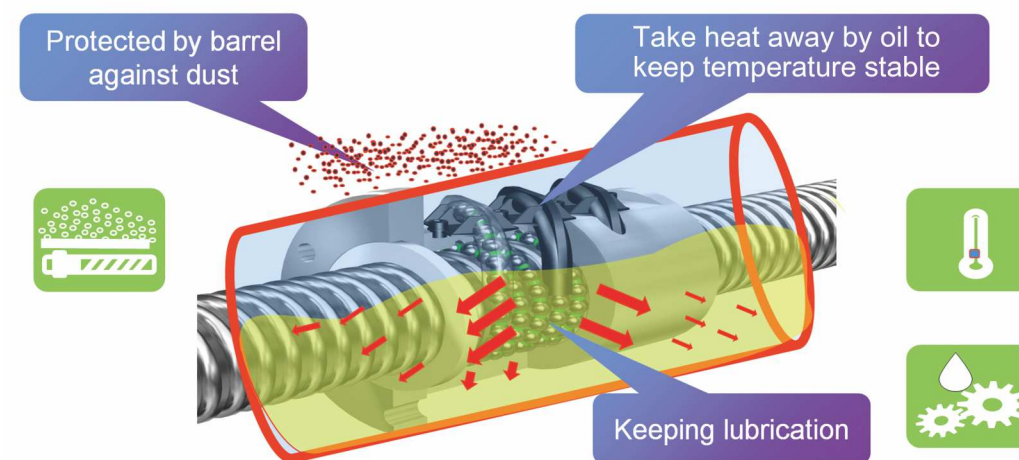
Traditional design of ball screw structure is open to the air, dust will stick on the ball screw surface



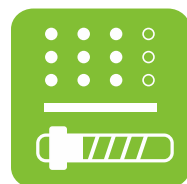
Friction will increase ball screw temperature



Lubrication condition become worse



BOLE Solution



Encapsulated ballscrew, reduce the requirement of workshop environment



The heat created by friction is taken by oil bath, Ballscrew is well kept cool.

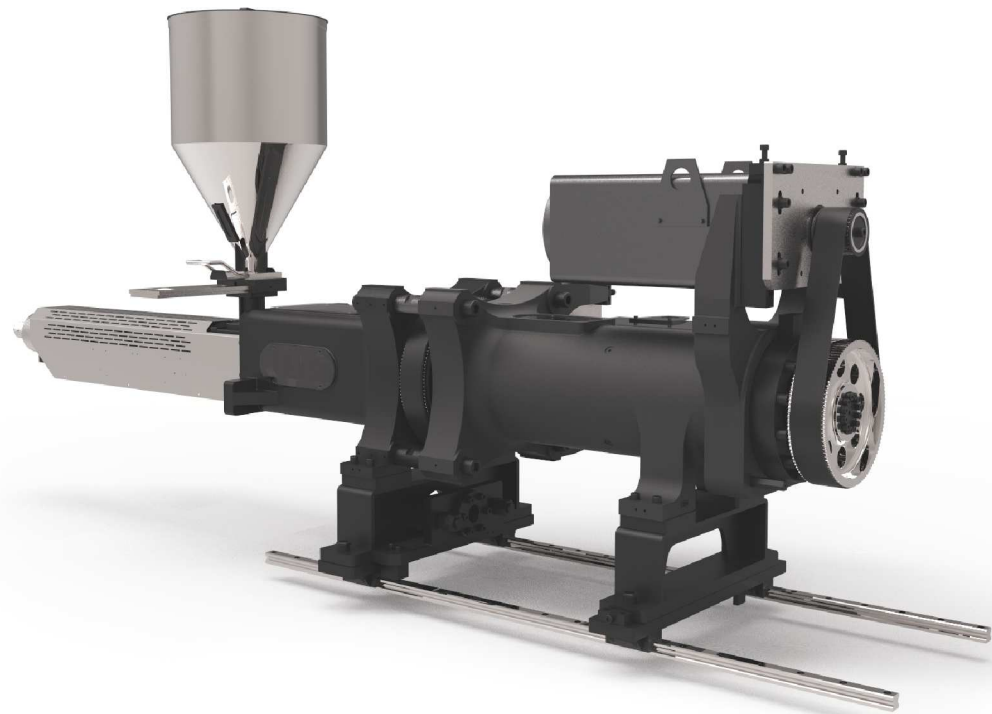


Lubrication is kept on the friction surface by oil bath

Encapsulated Ball Screw(Patent)

Advantages of BOLE FE Encapsulated Ball Screw:

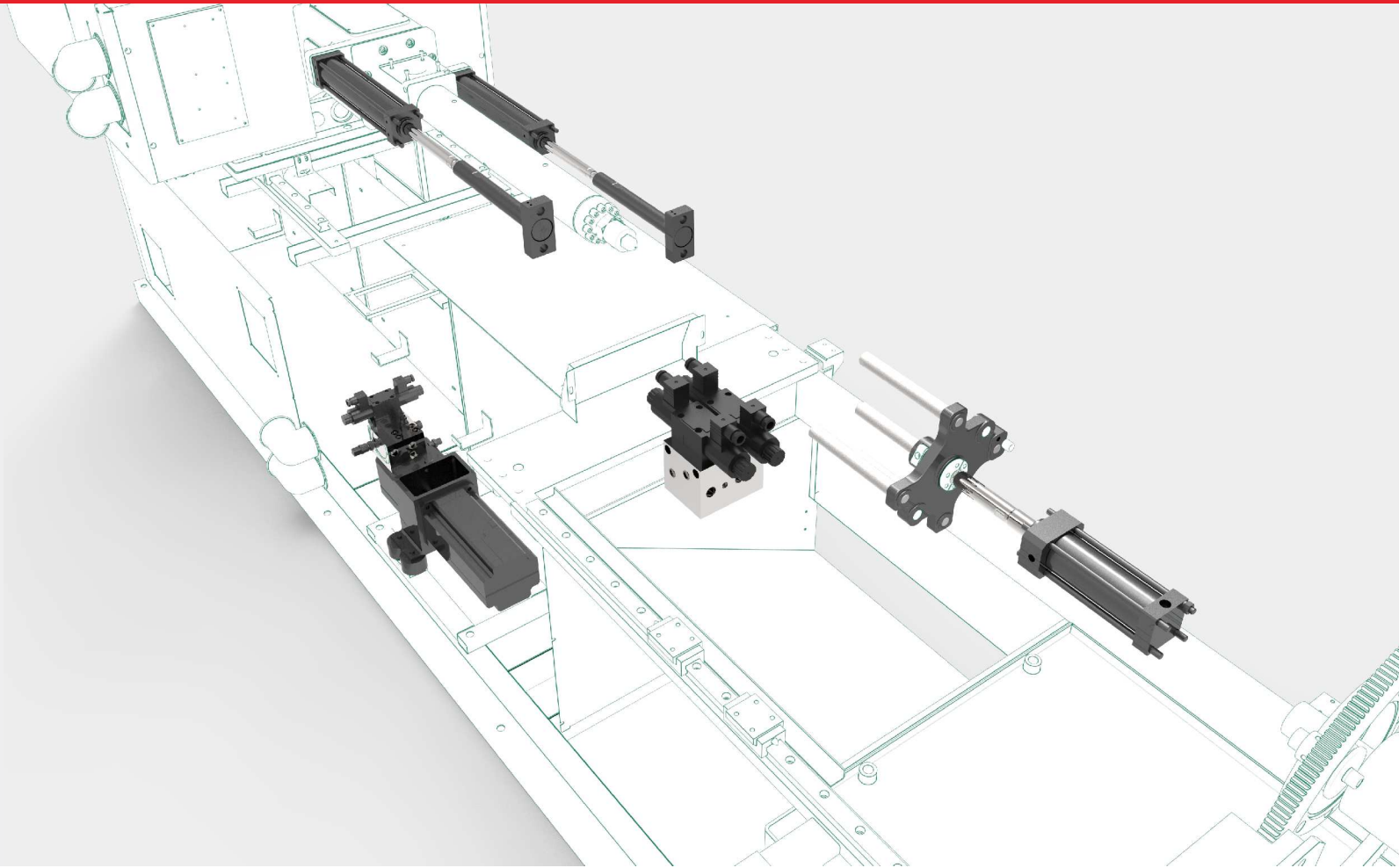
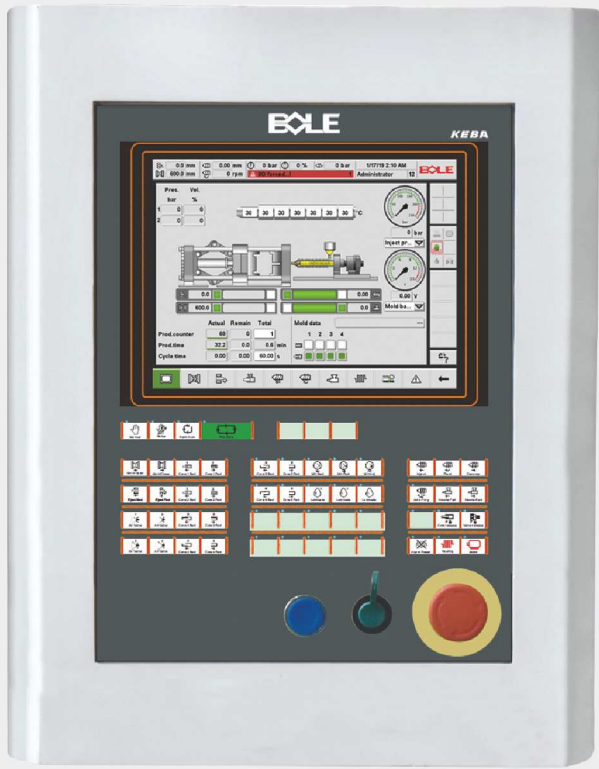
- Reduces ball screw temperature and abrasion resulting in friction heat being removed quickly
- Prevents dust and debris collection
- No expensive lubrication grease is required
- Easy for maintenance



German Engineered Plasticizing Unit

- Excellent plasticizing efficiency
- Options for different molding applications

Control System



- Integrated with accuracy control software for the Mold open-close positioning, accuracy of the injection molding machine can reach +/- 5mm.
- Integrated with the patented control software for Intelligent Injection Process Compensation, the repeatability of part dimensions can be less than 0.3%.
- Equipped with I/O safety protection against short circuiting
- Primary electrical components from premier brand Schneider, ABB and Fuji to ensure longer life.
- Independent strong and weak wire layout, high anti-interference and independent electrical control box means convenient installation, maintenance and repair.

Integrated Servo Hydraulic Pump Station:

- Symmetrical cylinder arrangement offers reliable and balanced nozzle contact with the injection sprue
- Servo drive hydraulic pump station means energy savings and efficiency
- Hydraulic ejector and core pulls are flexible to meet different mold requirements.
- Option for Full-Electrical version:
 - Without hydraulic pump station and core pull
 - Without electrical drive for carrier movement and ejector



Various Applications

- Adoption of low inertia and high response for injection speed
- Greater injection precision repeatability ($\pm 0.01\text{ mm}$) for higher stability in the molded product
- Ideal for thin-wall packaging as well as thick-walled lens applications

Technical Data

DESCRIPTION	UNIT	BL50FE-A						BL110FE/BL110FE-A								BL150FE/BL150FE-A								BL180FE/BL180FE-A							
Clamp Unit																															
Clamping force	us ton	55						121								165								198							
Opening stroke	in	11.81						15.75								17.72								19.69							
Distance between tie bars (h x v)	in	14.17×12.99						18.11×16.14								20.08×18.11								22.05×20.08							
Platen dimension (h x v)	in	20.9×19.7						26.0×24.0								29.8×27.8								33.5×31.4							
Min. mold height	in	5.51						5.91								7.09								7.87							
Max. mold height	in	15.35						17.72								19.69								21.65							
Max. daylight	in	27.17						33.46								37.40								41.34							
Ejector stroke	in	2.76						3.94								4.72								5.12							
Ejector force forward	us ton	2						3								4								5							
Ejector force backward	us ton	2.2						3.4								3.9								5.1							
Number of ejector bar	pc	5						5								5								5							
Injection Unit																															
Injection model		E100			E100H			E225				E225H				E325				E325H				E400				E400H			
Screw specification		A	B	C	A	B	C	AA	A	B	C	AA	A	B	C	AA	A	B	C	AA	A	B	C	AA	A	B	C	AA	A	B	C
Screw diameter	mm	22	25	26	22	25	26	25	28	32	36	25	28	32	36	28	32	36	40	28	32	36	40	32	36	40	45	32	36	40	45
Screw diameter	in	0.87	0.98	1.02	0.87	0.98	1.02	0.98	1.10	1.26	1.42	0.98	1.10	1.26	1.42	1.10	1.26	1.42	1.57	1.10	1.26	1.42	1.57	1.26	1.42	1.57	1.77	1.26	1.42	1.57	1.77
Screw Ratio	L/D	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
Theoretical injection capacity	cm³	38	49	53	38	49	53	69	86	113	143	69	86	113	143	99	129	163	201	99	129	163	201	145	183	226	286	145	183	226	286
Theoretical injection capacity	cu in	2.32	2.99	3.23	2.32	2.99	3.23	4.21	5.25	6.90	8.73	4.21	5.25	6.90	8.73	6.04	7.87	9.95	12.27	6.04	7.87	9.95	12.27	8.85	11.17	13.29	17.45	8.85	11.17	13.29	17.45
Max. shot weight(PS)	g	35	45	48	35	45	48	63	78	102	130	63	78	102	130	90	117	148	183	90	117	148	183	132	167	206	261	132	167	206	261
Max. shot weight(PS)	oz	1.2	1.6	1.7	1.2	1.6	1.7	2.2	2.8	3.6	4.6	2.2	2.8	3.6	4.6	3.2	4.1	5.2	6.5	3.2	4.1	5.2	6.5	4.7	5.9	7.3	9.2	4.7	5.9	7.3	9.2
Injection rate into the air	cu in/s	5	6	8	8	10	12	6	8	10	12	10	12	16	21	8	10	12	15	12	16	21	25	10	12	15	19	16	21	25	32
Injection rate into the air(PS)	oz/s	2.4	3.1	4.0	4.0	5.2	6.5	3.1	4.0	5.2	6.5	5.2	6.5	8.5	10.8	4.0	5.2	6.5	8.1	6.5	8.5	10.8	13.3	5.2	6.5	8.1	10.2	8.5	10.8	13.3	16.9
Injection pressure	psi	41191	31908	29443	41191	31908	29443	47572	37855	29008	22916	47572	37855	29008	22916	48007	36695	29008	23496	48007	36695	29008	23496	45397	35824	29008	22916	45397	35824	29008	22916
Screw stock	in	3.94						5.51								6.30								7.09							
Max. injection speed	in/s	7.87	7.87	7.87	12.99	12.99	12.99	7.87	7.87	7.87	7.87	12.99	12.99	12.99	12.99	7.87	7.87	7.87	7.87	12.99	12.99	12.99	12.99	7.87	7.87	7.87	7.87	12.99	12.99	12.99	12.99
Max. Screw speed	r/min	400						400								350								350							
General																															
Total power	kw	25.4(36.8)						52.6 (69.6)								59.6 (71.6)								60.5 (76.5)							
Heater power	kw	5.4		6.2		7.2		5.6		6.4		7.4		8.4		7		7.9		8.85		9.8		7.8		8.65		9.6		10.7	
Machine dimensions(L×W×H)	ft	14.09×4.05×7.58						16.45×5.05×7.04								18.37×5.19×7.65								19.49×5.61×7.78							
Machine weight	lbs	7716						9259								12566								15212							

Technical Data

DESCRIPTION	UNIT	BL230FE/BL230FE-A								BL280FE/BL280FE-A								BL350FE/BL350FE-A							
Clamp Unit																									
Clamping force	us ton	254								309								386							
Opening stroke	in	23.62								25.59								29.53							
Distance between tie bars (h x v)	in	25.98×24.02								27.95×25.98								31.89×29.92							
Platen dimension (h x v)	in	38.4×36.3								41.6×39.6								46.1×44.1							
Min. mold height	in	7.87								8.66								9.45							
Max. mold height	in	25.59								27.56								31.50							
Max. daylight	in	49.21								53.15								61.02							
Ejector stroke	in	5.12								5.91								5.91							
Ejector force forward	us ton	5								6								7							
Ejector force backward	us ton	5.1								5.6								6.7							
Number of ejector bar	pc	13								13								13							
Injection Unit																									
Injection model		E570				E570H				E800				E800H				E1100				E1100H			
Screw specification		AA	A	B	C	AA	A	B	C	AA	A	B	C	AA	A	B	C	AA	A	B	C	AA	A	B	C
Screw diameter	mm	36	40	45	50	36	40	45	50	40	45	50	55	40	45	50	55	45	50	55	60	45	50	55	60
Screw diameter	in	1.42	1.57	1.77	1.97	1.42	1.57	1.77	1.97	1.57	1.77	1.97	2.17	1.57	1.77	1.97	2.17	1.77	1.97	2.17	2.36	1.77	1.97	2.17	2.36
Screw Ratio	L/D	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
Theoretical injection capacity	cm³	204	251	318	393	204	251	318	393	289	366	452	546	289	366	452	546	414	511	618	735	414	511	618	735
Theoretical injection capacity	cu in	12.45	15.32	19.41	23.98	12.45	15.32	19.41	23.98	17.64	22.33	27.58	33.32	17.64	22.33	27.58	33.32	25.26	31.18	37.71	44.85	25.26	31.18	37.71	44.85
Max. shot weight(PS)	g	185	229	289	357	185	229	289	357	263	333	411	497	263	333	411	497	376	465	562	669	376	465	562	669
Max. shot weight(PS)	oz	6.5	8.1	10.2	12.6	6.5	8.1	10.2	12.6	9.3	11.7	14.5	17.5	9.3	11.7	14.5	17.5	13.3	16.4	19.8	23.6	13.3	16.4	19.8	23.6
Injection rate into the air	cu in/s	12	15	18	23	16	19	24	30	15	18	23	28	19	24	30	36	16	20	24	28	24	30	36	43
Injection rate into the air(PS)	oz/s	6.2	7.7	9.7	12.0	8.2	10.1	12.8	15.8	7.7	9.7	12.0	14.5	10.1	12.8	15.8	19.1	8.4	10.4	12.6	15.0	12.8	15.8	19.1	22.7
Injection pressure	psi	45397	36695	29008	23496	45397	36695	29008	23496	45397	35824	29008	23931	45397	35824	29008	23931	39015	31618	26107	21901	39015	31618	26107	21901
Screw stock	in	7.87								9.06								10.24							
Max. injection speed	in/s	7.48	7.48	7.48	7.48	9.84	9.84	9.84	9.84	7.48	7.48	7.48	7.48	9.84	9.84	9.84	9.84	6.50	6.50	6.50	6.50	9.84	9.84	9.84	9.84
Max. Screw speed	r/min	300								300								300							
General																									
Total power	kw	70.2 (82.2)								110.3 (132.3)								156 (178)							
Heater power	kw	9.7		11.7		13.6		15.5		13.3		15		16.9		18.8		17.2		19.1		21.9		24.5	
Machine dimensions(L×W×H)	ft	22.40×5.88×8.13								24.66×6.17×8.48								25.99×6.40×8.35							
Machine weight	lbs	18739								25353								33069							

Technical Data

DESCRIPTION	UNIT	BL450FE/BL450FE-A								BL550FE/BL550FE-A																			
Clamp Unit																													
Clamping force	us ton	496								606																			
Opening stroke	in	32.28								37																			
Distance between tie bars (h x v)	in	35.83×33.86								38.19×38.19																			
Platen dimension (h x v)	in	51.8×49.8								55.12×55.12																			
Min. mold height	in	13.78								15.75																			
Max. mold height	in	32.68								39.37																			
Max. daylight	in	64.96								76.77																			
Ejector stroke	in	7.09								7.09																			
Ejector force forward	us ton	11								17																			
Ejector force backward	us ton																												
Number of ejector bar	pc	17								21																			
Injection Unit																													
Injection model		E2150				E2150H				E1400			E1400H			E1700			E1700H			E2150				E3250			
Screw specification		A	B	C	D	A	B	C	D	A	B	C	A	B	C	A	B	C	A	B	C	AA	A	B	C	AA	A	B	C
Screw diameter	mm	60	65	70	75	60	65	70	75	55	60	65	55	60	65	60	65	70	60	65	70	60	65	70	75	70	75	80	85
Screw diameter	in	2.36	2.56	2.76	2.95	2.36	2.56	2.76	2.95	2.17	2.36	2.56	2.17	2.36	2.56	2.36	2.56	2.76	2.36	2.56	2.76	2.36	2.56	2.76	2.95	2.76	2.95	3.15	3.35
Screw Ratio	L/D	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
Theoretical injection capacity	cm³	919	1078	1251	1436	919	1078	1251	1436	665	792	929	665	792	929	792	929	1078	792	929	1078	919	1078	1251	1436	1424	1635	1860	2100
Theoretical injection capacity	cu in	56.08	65.78	76.34	87.63	56.08	65.78	76.34	87.63	40.58	48.33	56.69	40.58	48.33	56.69	48.33	56.69	65.78	48.33	56.69	65.78	56.08	65.78	76.34	87.63	86.90	99.77	113.50	128.15
Max. shot weight(PS)	g	836	981	1138	1307	836	981	1138	1307	605	720	846	605	720	846	720	846	981	720	846	981	836	981	1138	1307	1296	1487	1692	1911
Max. shot weight(PS)	oz	29.5	34.6	40.1	46.1	29.5	34.6	40.1	46.1	21.3	25.4	29.8	21.3	25.4	29.8	25.4	29.8	34.6	25.4	29.8	34.6	29.5	34.6	40.1	46.1	45.7	52.5	59.7	67.4
Injection rate into the air	cu in/s	28	33	39	44	43	51	59	67	24	28	33	36	43	51	28	33	39	43	51	59	28	33	39	44	39	44	51	57
Injection rate into the air(PS)	oz/s	15.0	17.6	20.4	23.4	22.7	26.6	30.9	35.5	12.6	15.0	17.6	19.0	22.7	26.6	15.0	17.6	20.4	22.7	26.6	30.9	15.0	17.6	20.4	23.4	20.4	23.4	26.6	30
Injection pressure	psi	34084	29008	24946	21756	34084	29008	24946	21756	30457	26106	22480	30457	26106	22480	30602	26106	22480	30602	26106	22480	35533	30457	26106	22770	34083	29732	26106	23060
Screw stock	in	12.80								11.02											12. 80				14. 57				
Max. injection speed	in/s	6.50	6.50	6.50	6.50	9.84	9.84	9.84	9.84	6.50	6.50	6.50	9.84	9.84	9.84	6.50	6.50	6.50	9.84	9.84	9.84	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Max. Screw speed	r/min	200								300											200								
General																													
Total power	kw	220.9 (244.9)								187			205			205			216			247.6				275.3			
Heater power	kw	21.8		24		26.2		26.2		22.9	24.5	26.1	22.9	24.5	26.1	24.5	26.1	29.3	24.5	26.1	29.3	21.8	24	26.2	26.2	29	33	37	37
Machine dimensions(L×W×H)	ft	29.00×7.79×6.67								29.69x8.23x8.30			29.69x8.23x8.30			29.69x8.23x8.30			29.69x8.23x8.30			29.69x8.23x8.30				29.69x8.23x8.30			
Machine weight	lbs	44092								47040			47040			47040			47040			56000				56000			

.21. Due to the continuous product improvement, we reserve the right to adjust the individual parameters, without notice.

Due to the continuous product improvement, we reserve the right to adjust the individual parameters, without notice.

.22.