Clippard Instrument Laboratory, Inc.

Clippard is a family owned and operated company. There are currently six family members, second and third generation, working there. The family emphasis extends to all employees and dictates all company policies. Quality is stressed as a matter of pride and family



support of co-workers. Company goals are not business school imperatives but basic family values: honesty, fairness, strength, compassion, and mutual respect. This translates to our products and customers as quality, performance, service, and value. It translates to our community as a company that supports local activities and charities, and is known as a "good place to work."



The people of Clippard have many unique talents and abilities. They have built a wealth of experience in all aspects of miniature pneumatics. The company's headquarters are located in Cincinnati, Ohio. All sales and corporate offices are housed there as well as the manufacture of valves, modules, and fittings. Clippard runs over twenty-five automatic screw machines and twelve CNC machining centers to make most of its component

parts. Some parts are also purchased from carefully selected vendors, most of which have a long term relationship with Clippard. Extensive secondary operations and assembly complete the core of manufacturing. The unique aspect is the extensive use of Clippard products on all machinery, fixtures, and jigs throughout the plant, most of which are custom made in Clippard's own shop. Clippard Minimatics® are widely used to speed and improve production. Few other manufacturers can demonstrate such an earnest commitment to the value of their own products.



In nearby Fairfield, Ohio, Clippard built a new plant in 1998 to manufacture electronic interface valves and air cylinders. Situated on 16.9, acres this facility has plenty of room for growth. In Madison, Indiana, a small subsidiary makes acrylic modular circuit subplates. The fourth Clippard facility is four thousand miles away, a sales and distribution

center, Clippard Europe S.A., in Belgium.

Visitors to the Clippard plants are most impressed not just with machines and facilities, but with the people. Indeed these achievements are not accidental. Clippard has honed its policies and procedures to create a positive and

efficient workplace. Things like job enrichment, cross training, safety training, process controls, individual empowerment, and continuing education opportunities have made our work-force second to none.



Mission

The people at Clippard recognize the importance of keeping business and manufacturing thriving in a rapidly changing world economy. Today's fast-paced, industrial market demands productivity. By supplying high quality miniature pneumatic components at affordable prices, along with expert application assistance, Clippard makes the benefits of increased productivity available to everyone.

Markets Served

Clippard's worldwide distributor network has grown to include offices in 30 countries and throughout the U.S., providing quality components for an unlimited list of applications. From a simple two step machine process, to complex automation of sophisticated machinery, Clippard Minimatics are used virtually everywhere for control, interface, sensing, logic, and actuation functions. This broad range of applications spans a variety of industries including: machinery, packaging, textiles, medical equipment, animation, agriculture, material handling, mobile equipment, assembly, recreation, electronics, food processing, coatings, security, chemicals, construction, testing, mining, and many more.

History

Leonard Clippard founded Clippard Instrument Laboratory in 1941, (Inc., 1946). The initial product line consisted of electronic test equipment and radio frequency coils. The manufacturing of these products required machinery employing the use of small, yet powerful, pneumatic cylinders and valves. Since no such products were commercially available, Leonard Clippard designed and built his own. Because the need for these components was widespread, particularly in manufacturing automated fixturing, Clippard presented them as a

new product line in 1949. Until his retirement in 1977, Leonard Clippard continued to be a pioneer in miniature pneumatic components. Today, the company is managed by William L. Clippard, III, president and Robert L. Clippard, vice-president; the Minimatic line has grown to include over 5,000 standard products.

Product Lines

Some of the many products offered include Minimatic® valves, cylinders, fittings, modular components, push buttons, stainless steel cylinders, electronic manifold cards, circuit analyzers, and prepiped circuit manifold subplates. Special components designed for customer's OEM applications are also available.

Quality

Quality remains a primary feature with every product Clippard produces. This is achieved through the excellence in manufacturing practices and craftsmanship that has continued throughout the years. The high standards set by Leonard Clippard, in company relationships with customers, distributors, suppliers. And employees continue to be upheld. The company motto, "Quality People, Quality Products," emphasizes the important role every employee plays in maintaining the company's reputation.

Distribution

A fully-trained, professional distributor network markets and supports Clippard products, worldwide. To assure quality performance, close customer contact is maintained through a network of over 100 stocking distributors, with over 800 fluid power specialists. Clippard maintains close ties with these distributors through special conferences, training seminars, and the complete support of the factory sales and service team.



Cylinders		1
STAINLESS STEEL CYLINDERS		2
	Options	4
	Accessories	6, 7
	5/16" Bore Cylinders	8, 9
	5/16" Bore Cylinder Mounting	10
	1/2" Bore Cylinders	12 - 14
	1/2" Bore Cylinder Mounting	15
	5/8" Bore Cylinders	16 - 18
	5/8" Bore Cylinder Mounting	19
	3/4" Bore Cylinders	20 - 24
	3/4" Bore Cylinder Mounting	25
	7/8" Bore Cylinders	26 - 28
	7/8" Bore Cylinder Mounting	29
	1 1/16" Bore Cylinders	30 - 34
	1 1/16" Bore Cylinder Mounting	35
	1 1/4" Bore Cylinders	36 - 38
	1 1/4" Bore Cylinder Mounting	39
	1 1/2" Bore Cylinders	40 - 46
	1 1/2" Bore Cylinder Mounting	47
	1 3/4" Bore Cylinders	48 - 50
	1 3/4" Bore Cylinder Mounting	51
	2" Bore Cylinders	52 - 54
	2" Bore Cylinder Mounting	55
	2 1/2" Bore Cylinders	56
	2 1/2" Bore Cylinder Mounting	57
	3" Bore Cylinders	58
	3" Bore Cylinder Mounting	59
	Magnetic Position Sensors	60
	Air Volume Tanks	61
CORROSION RESISTANT CYLIN	NDERS	62
	5/8" Bore Cylinders	64
	3/4" Bore Cylinders	65
	1 1/16" Bore Cylinders	66
	1 1/4" Bore Cylinders	67
	1 1/2" Bore Cylinders	68
	Magnetic Position Sensors	69

AIR FORCE ONE COMPACT (Cylinders	70
	5/8" Bore Cylinders	72
	3/4" Bore Cylinders	73
	1 1/16" Bore Cylinders	74
	1 1/2" Bore Cylinders	75
	2" Bore Cylinders	76
	2 1/2" Bore Cylinders	77
	Magnetic Position Sensors	78
MINIMATIC® CYLINDERS		82
	Engineering Data	84
	5/32" Bore Stainless Cylinders	85
	1/4" Bore Brass Cylinders	85
	3/8" Bore Brass Cylinders	86, 87
	9/16" Bore Brass Cylinders	88, 89
	9/16" Bore Heavy Duty Brass Cylinders	90, 91
	7/8" Bore Brass Cylinders	92
	7/8" Bore Heavy Duty Brass Cylinders	92, 93
	1 1/8" Bore Brass Cylinders	94, 95
	Cylinder Mounting	96 - 99
	Minimatic® Super Structure	100, 101
CONTROL VALVES		103
2-Way Valves		106
Z-VVAY VALVES	Character Allerman Hay Classed Walking	
	Stem Operated, Normally Closed Valves	106
	Stem Operated, Normally Open Valves	107
	J- Series, Stem Operated, Normally Closed Valves J- Series, Stem Operated, Normally Open Valves	
	Air Piloted Valves	109
	Toggle Valves	110 - 112
3-WAY VALVES		113
	Subminiature 3-Way Valves	113
	Stem Operated, Normally Closed Valves	114
	Stem Operated, Normally Open Valves	115
	J- Series, Stem Operated, Normally Closed Valves	
	J- Series, Stem Operated, Normally Open Valves	
	Air Piloted Valves	117
	Toggle Valves	118 - 120

TABLE OF CONTENTS Clippard Minimatic*

4-WAY VALVES		122
	Stem Operated Valves	122
	Toggle Valves	123
	Fully Ported Toggle Valves	124
FV AND FTV SERIES 3-WAY VALVES		126, 127
	Stem Operated Valves	126
	Toggle Valves	127
FV Series 4-Way Valves		128, 129
	Stem Operated Valves	128
	Stem Operated Fully Ported Valves	129
TV Series 4-Way Toggl	e Valves	130
FBV Series FILL AND BLE	ED TOGGLE VALVES	131
VALVE ACTUATORS		132
	Foot Pedal Actuators	133
	Roller Ball Actuators	133
	Air Piloted Actuators	134 - 136
	Vacuum Piloted Actuators	136
PUSH BUTTON ACTUATOR	Push Button Actuators	
	Brass Push Buttons	136
	Captivated Push Buttons	137
	Panel Type Push Button Actuators	138 - 143
Pressure Actuated Elec	TRIC SWITCHES	144 - 147
SLEEVE VALVES		148 - 149
MINIATURE PRESSURE REG	SULATORS	150 - 151
CHECK VALVES		151 - 153
	10-32 Check Valves	151, 152
	1/8" Check Valves	153
FLOW CONTROLS		154 - 157
	10-32 Flow Controls	154, 155
	1/8" Flow Controls	156
	Manifold Flow Controls	157
NEEDLE VALVES		158 - 161
SHUTTLE VALVES		162, 163
	10-32 Shuttle Valves	162
	1/8" Shuttle Valves	163
	1/4" Shuttle Valves	163

EXHAUST VALVES		164, 165
	10-32 Exhaust Valves	164
	1/8" Exhaust Valves	165
	1/4" Exhaust Valves	165
SPECIALTY COMPONENTS		166 - 169
	Pulse Valves	166
	Pilot Sensors	166
	Water Draw Back Valve	167
	Whisker Valve	167
	Miniature Air Filter	168
	Fixed Orifices	168
	Pressure Indicators	169
HEAVY DUTY LIMIT VALVES		170, 171
	Normally Closed Valves	170
	Normally Open Valves	170
	LVA Actuator Arms	171
Special Function Valves		172 - 177
	Proximity Sensors	172
	Pressure Sensors	173
	Low Pressure Pilot Valves	172 - 177
MECHANICAL SEQUENCE PRO	OGRAMMER	178
Mechanical Sequence Pro Cams	OGRAMMER	178 179
CAMS		179
CAMS VALVE MOUNTING BRACKETS		179 180
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES		179 180 181
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES PNEUMATIC COUNTERS PALM BUTTON VALVES		179 180 181 182 - 183 183
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES PNEUMATIC COUNTERS		179 180 181 182 - 183
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES PNEUMATIC COUNTERS PALM BUTTON VALVES	EC Series Valves)	179 180 181 182 - 183 183 189 191 - 206
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES PNEUMATIC COUNTERS PALM BUTTON VALVES ELECTRONIC VALVES	EC SERIES VALVES) 2-Way In-line Mount	179 180 181 182 - 183 183 189 191 - 206
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES PNEUMATIC COUNTERS PALM BUTTON VALVES ELECTRONIC VALVES	EC SERIES VALVES) 2-Way In-line Mount 2-Way Manifold Mount	179 180 181 182 - 183 183 189 191 - 206 194 195
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES PNEUMATIC COUNTERS PALM BUTTON VALVES ELECTRONIC VALVES	EC SERIES VALVES) 2-Way In-line Mount 2-Way Manifold Mount 3-Way In-line Mount	179 180 181 182 - 183 183 189 191 - 206 194 195 196
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES PNEUMATIC COUNTERS PALM BUTTON VALVES ELECTRONIC VALVES	EC SERIES VALVES) 2-Way In-line Mount 2-Way Manifold Mount 3-Way In-line Mount 3-Way Manifold Mount	179 180 181 182 - 183 183 189 191 - 206 194 195 196 197
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES PNEUMATIC COUNTERS PALM BUTTON VALVES ELECTRONIC VALVES	EC SERIES VALVES) 2-Way In-line Mount 2-Way Manifold Mount 3-Way In-line Mount 3-Way Manifold Mount 2-Way, Normally Open, Manifold Mount	179 180 181 182 - 183 183 189 191 - 206 194 195 196 197 198
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES PNEUMATIC COUNTERS PALM BUTTON VALVES ELECTRONIC VALVES	EC SERIES VALVES) 2-Way In-line Mount 2-Way Manifold Mount 3-Way In-line Mount 3-Way Manifold Mount 2-Way, Normally Open, Manifold Mount 3-Way, Normally Open, Manifold Mount	179 180 181 182 - 183 183 189 191 - 206 194 195 196 197 198 199
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES PNEUMATIC COUNTERS PALM BUTTON VALVES ELECTRONIC VALVES	EC SERIES VALVES) 2-Way In-line Mount 2-Way Manifold Mount 3-Way In-line Mount 3-Way Manifold Mount 2-Way, Normally Open, Manifold Mount 3-Way, Normally Open, Manifold Mount 3-Way, Fully Ported, In-line Mount	179 180 181 182 - 183 183 189 191 - 206 194 195 196 197 198 199 200
CAMS VALVE MOUNTING BRACKETS PRESSURE GAUGES PNEUMATIC COUNTERS PALM BUTTON VALVES ELECTRONIC VALVES	EC SERIES VALVES) 2-Way In-line Mount 2-Way Manifold Mount 3-Way In-line Mount 3-Way Manifold Mount 2-Way, Normally Open, Manifold Mount 3-Way, Normally Open, Manifold Mount	179 180 181 182 - 183 183 189 191 - 206 194 195 196 197 198 199

TABLE OF CONTENTS Clippard Minimatic*

1	ΓHE MOUSE VALVE (EV, ET, E	C Series Valves) (continued)	191 - 206
		EV, ET, EC Series Booster Valves	203, 204
		Manifolds	204, 205
E	EVP Series Proportional C	ONTROL VALVES	207 - 211
		2-Way In-line Mount	210
		2-Way Manifold Mount	211
I	NTRINSICALLY SAFE EI & EIO	VALVES	213 - 217
E	ES, ESO SERIES COMPACT VA	LVES	219 - 227
		2-Way Manifold Mount	221
		3-Way Manifold Mount	222
		3-Way, Fully Ported, Manifold Mount	223
		Manifolds	224 - 226
I	EE3 Series Subminiature Va	LVES	229 - 233
		Normally Open Valve	232
		Normally Closed Valve	232
		Manifolds	233
E	EAGLE SERIES VALVES		235 - 246
		3-Way Valves	237 - 238
		Manifolds	239
		4-Way Valves	241 - 245
		Manifolds	246
E	ELECTRONIC MANIFOLD CARD	os.	247 - 251
Į.	RACK SYSTEM VALVE DRAWER		253 - 255
•	WER STSTEM VALVE BRAWER		233 233
Modulai	r Valves		257
3	3-Way Series Valves		264 - 273
		Multipiloted Valves	264 - 267
		Combination Valves	268 - 270
		Delay Valves	270 - 271
		Dual 3-Way Valves	272 - 273
4	1-Way Series Valves		274 - 286
		Multipiloted Valves	274 - 279
		Reset Valves	276
		Bleed Pilot Valves	280
		Delay Valves	281 - 283
		Low Pressure Interface Valves	284 - 285
		Electronically Piloted Valves	286

Specialty Modular Valves		287 - 291
	Flow Control Valves	287
	Dual Shuttle Valves	287
	Pressure Regulator	288
	Pulse Valve	288
	Filters & Volume Chambers	291
	Sequencing Valves	289 - 294
Applications		295 - 302
Pneumatic Circuit Boards	S	303 - 322
	Adapter Manifolds	300, 301
	Manifolds	302
	R-471/481 Manifolds	303
	Electronic Piloted Valve Manifolds	304
	R-932 Sequencing Circuits	305 - 307
	Binary Circuits	308
	Two Hand No Tie Down	309, 311
	Latching Circuits	311
	Oscillating Circuits	312
	Cycling Without Limits	313, 314
ITTINGS, HOSE & TUBE		323
Push-Quick Fittings		325 - 329
i usii-Quick i ittiiigs		
		330 - 335
Slip-On Fittings	Connector Fittings	
	Connector Fittings Adapter Fittings	330 - 335
		330 - 335
	Adapter Fittings	330 - 335 330 330
	Adapter Fittings Tee Fittings	330 - 335 330 330 331
	Adapter Fittings Tee Fittings Cross Fittings	330 - 335 330 330 331 332
	Adapter Fittings Tee Fittings Cross Fittings Universal Fittings	330 - 335 330 330 331 332 333
Slip-On Fittings	Adapter Fittings Tee Fittings Cross Fittings Universal Fittings	330 - 335 330 330 331 332 333 334, 335
Slip-On Fittings	Adapter Fittings Tee Fittings Cross Fittings Universal Fittings Swivel Fittings	330 - 335 330 330 331 332 333 334, 335 336 - 347
Slip-On Fittings	Adapter Fittings Tee Fittings Cross Fittings Universal Fittings Swivel Fittings Barb Fittings	330 - 335 330 330 331 332 333 334, 335 336 - 347 336, 337
Slip-On Fittings	Adapter Fittings Tee Fittings Cross Fittings Universal Fittings Swivel Fittings Barb Fittings L, T, X, Fittings	330 - 335 330 330 331 332 333 334, 335 336 - 347 336, 337 338
Slip-On Fittings	Adapter Fittings Tee Fittings Cross Fittings Universal Fittings Swivel Fittings Barb Fittings L, T, X, Fittings Connector Fittings	330 - 335 330 330 331 332 333 334, 335 336 - 347 336, 337 338 339
Slip-On Fittings	Adapter Fittings Tee Fittings Cross Fittings Universal Fittings Swivel Fittings Barb Fittings L, T, X, Fittings Connector Fittings Swivel Fittings	330 - 335 330 330 331 332 333 334, 335 336 - 347 336, 337 338 339 340
Slip-On Fittings	Adapter Fittings Tee Fittings Cross Fittings Universal Fittings Swivel Fittings Barb Fittings L, T, X, Fittings Connector Fittings Swivel Fittings Gaskets	330 - 335 330 330 331 332 333 334, 335 336 - 347 336, 337 338 339 340 342
Slip-On Fittings	Adapter Fittings Tee Fittings Cross Fittings Universal Fittings Swivel Fittings Barb Fittings L, T, X, Fittings Connector Fittings Swivel Fittings Gaskets Subminiature Fittings	330 - 335 330 330 331 332 333 334, 335 336 - 347 336, 337 338 339 340 342 343

TABLE OF CONTENTS Clippard Minimatic*

Brass Fittings (continued)		2.45
	Bulk Head Fittings	345
	Manifolds	346 - 347
Quick Connect Fittings		348 - 353
	J- Series Quick Connects	349
	J- Series Caps	350
	J- Series Bodies	351
	Miniature Quick Connects	352, 353
Fittings Kits		354, 355
Tubing & Hose		356 - 361
_	Braided Hose	360
	Clamps	361
	Copper Tubing	357
	Nylon Tubing	357
	Polyethylene Tubing	359 - 360
	Polyurethane Hose	258
	Ribbon Hose	358
	Urethane Hose	359
	Vinyl Hose	357
PPENDIX		
SIMPLIFIED SYMBOLS		363 - 370
ENGLISH TO METRIC		371 - 372
INDEX		373 - 389
APPLICATION STORIES		
	Owl Application	38
	Pneumatic Stapler	46
	Dual Double Stacked Cylinder Press	50
	Miniature Swing-In Press Fixture	80
	Miniature Swing-In Automated Arbor Press	102
	Pneumatic Pulse Valve Leak Tester	125
	Two Hand No Tie Down	184
	Pneumatic Liquid Dispenser	279
	Clippard Slip-On Fitting Assembly	341

