



TECHNICAL BUYER'S GUIDE · PRATISHNA ENGINEERS

ELECTRICAL BUILDING PRODUCTS COMPONENTS INJECTION MOULDING MACHINE GUIDE

A practical guide for makers of wiring devices and electrical building products: components, materials, mould requirements, production planning, automation, quality, worked examples and what to send for a machine recommendation.

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WHO THIS GUIDE IS FOR

Owners, plant and production managers, process engineers and purchase teams making switches, sockets, plugs, boxes, fittings and wiring accessories.

HOW TO USE IT

Sections 01 to 04 define the part, material and mould. Section 05 plans output. Sections 06 to 09 cover automation, quality, examples and your enquiry. Clamp force and shot sizing are covered in our Machine Selection Guide.

NEED A RECOMMENDATION?

Send your drawing, material, part weight, cavities and output target to sales@pratishnaengineers.com. The checklist in Section 09 lists what to include.

SECTION 01 · OVERVIEW

ELECTRICAL BUILDING PRODUCTS & INJECTION MOULDING

The plastic parts that carry, enclose, protect and connect a building's wiring, and why electrical safety shapes every material and moulding decision.

WHERE INJECTION MOULDING FITS IN ELECTRICAL BUILDING PRODUCTS

Switch and socket plates, plug tops, junction boxes, conduit fittings, distribution board covers, MCB housings, terminal blocks, lamp holders, cable glands and cable ties sit next to live conductors. Most are thermoplastic injection moulded; urea, phenolic and BMC/DMC parts are thermosets made on thermoset equipment.

These are regulated products in India. Switches under IS 3854 and plugs and socket-outlets under IS 1293 must protect users from shock and ensure correct earthing^[1], and plugs and socket-outlets to IS 1293 came under a mandatory BIS Quality Control Order from 1 December 2020^[2].

MAIN COMPONENT CATEGORIES

WIRING DEVICES Modular switch and socket plates, internal contact carriers	PLUGS 2-pin and 3-pin plug tops	BOXES & ENCLOSURES Junction boxes, distribution board enclosures and covers	PROTECTION DEVICES MCB and circuit-breaker housings
CONDUIT & TRUNKING Conduit bends, couplers, boxes; trunking end caps, joints, bends	CONNECTION Terminal blocks and connectors, cable glands and cord grips	LIGHTING FITTINGS Lamp holders, ceiling roses	FIXING Cable ties, clips and saddles; wall plugs and anchors

WHY INJECTION MOULDING SUITS THESE PARTS

- Insulating housings with precise pockets for metal contacts and terminals.
- Flame-retardant grades moulded into complex shapes in one shot.
- High-gloss face plates and colours without secondary finishing.

TYPICAL MANUFACTURING CHALLENGES

- Gloss and colour on visible plates.
- Flame-retardant grades with narrow processing windows.
- Tight dimensions around contacts and pins.

WHERE MOULDING SITS IN THE PRODUCT CHAIN

FR COMPOUND PC, PA, PBT, ABS, PVC	DRYING PC, PA, PBT, ABS	INJECTION MOULDING housings, plates	PRINTING symbols, ratings	ASSEMBLY contacts, springs	TESTING electrical, fire	ISI MARKING dealers, projects
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KEY REQUIREMENTS FOR ELECTRICAL BUILDING PRODUCTS

SHOCK PROTECTION Live parts must not be accessible once installed; plug pins are checked with a finger test ^[1] .	EARTHING IS 1293 requires current-carrying pins to separate before the earth connection breaks ^[1] .	FIRE RESISTANCE Insulating parts are checked with glow-wire tests at set temperatures from 550 to 960 °C ^[4] .
TRACKING RESISTANCE Parts near contacts need high comparative tracking index (CTI) grades ^[5] .	DIMENSIONS Pin, contact and fitting dimensions ensure interoperability and firm connections ^[1] .	APPEARANCE Visible plates and covers need even gloss, colour and clean edges.

SECTION 02 · COMPONENTS

MAJOR ELECTRICAL BUILDING PRODUCTS COMPONENTS

The electrical building parts covered by this guide, their materials and what each asks of the moulding process.

COMPONENT	APPLICATION	MATERIAL(S)	INJECTION MOULDING CONSIDERATIONS
Modular switch / socket plate	Face and cover plates	PC, FR-PC, urea (UF), glass-filled nylon, ABS	Flame-retardant grades; high-gloss polished cavities for face plates. UF plates are thermoset, compression moulded.
Switch / socket internal contact carrier	Holds metal contacts	Nylon (PA66), PBT, urea (UF)	Heat and arc-resistant grade holds the contacts. Tight pocket dimensions and thin ribs.
Plug top (2/3-pin)	Appliance plugs	Urea (UF), PC, nylon (PA66), ABS	UF for household low-current plugs; PC or PA66 for industrial, heavy-duty and UV-exposed use. Pin location and cord grip.
Junction box	Wiring connections	ABS, PVC, PC	Flame-retardant, insulating; integrated knockouts and mounting bosses.
Distribution board enclosure / cover	DB housing	ABS, PC, FR thermoplastic	Larger parts; size drives the machine. Flame-retardant, insulating grades; flat covers and hinges.
MCB / circuit-breaker housing	Protection device body	Modified nylon (PA); thermosets (DMC/BMC, phenolic, melamine)	Thermoplastic PA versions mould on standard machines; BMC/DMC versions need a thermoset moulding machine.
Terminal block / connector	Wire termination	Nylon (PA66), PBT, PC	Flame-retardant, high-CTI grades, often glass-filled ^[5] . Screw and clamp pockets.
Lamp holder / ceiling rose	Lighting points	Urea (UF), phenolic, PBT, PC, PET	Heat-resistant grades near the lamp; UF and phenolic (bakelite) are thermosets.
Electrical conduit fitting	Bends, couplers, boxes	UPVC, PVC, PP	High-impact UPVC to IS 9537 and IS 3419 ^[3] ; flame-retardant, non-conductive. Heat-sensitive PVC melt ^[6] .
PVC trunking accessories	End caps, joints, bends	UPVC, PVC, PP	Trunking body is extruded; accessories are injection moulded to match its profile.
Cable gland / cord grip	Cable entry sealing	Nylon (PA66), PP	PA66 for strength and flame resistance; threads and clamping fingers. Sealing uses a separate rubber seal.
Cable tie / clip / saddle	Cable fixing	Nylon (PA66), PP	PA66 for tensile strength and flex; very high-cavity moulds.
Wall plug / anchor / fastener	Fixing to walls	Nylon (PA6/PA66), PP, PE	Nylon for grip and expansion strength; small multi-cavity tooling.

Urea (UF), phenolic, melamine and BMC/DMC parts are thermosets and need thermoset moulding equipment, not a standard thermoplastic injection moulding machine. Conduit and trunking bodies are extruded.

WHERE THE PARTS GO IN A BUILDING

DISTRIBUTION DB enclosures and covers, MCB housings, terminal blocks.	WIRING ROUTES Conduit fittings, trunking accessories, junction boxes, glands, ties, saddles.	POINTS OF USE Switch and socket plates, contact carriers, plug tops.	LIGHTING & FIXING Lamp holders, ceiling roses, wall plugs and anchors.
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SECTION 03 · MATERIALS

MATERIALS USED FOR ELECTRICAL BUILDING PRODUCTS

In electrical parts, flame, tracking and heat performance of the grade matter as much as mechanical properties.

MATERIAL	TYPICAL COMPONENTS	RELEVANT PROPERTIES	PROCESSING CONSIDERATIONS	LIMITATIONS TO CHECK
PC, FR-PC	Switch plates, plug tops, junction boxes, DB covers, terminal blocks, lamp holders	Tough, heat resistant, glossy; FR grades for wiring devices.	Must be dried; high melt and mould temperatures; FR grades need controlled temperatures.	Stress cracking at bosses.
Nylon (PA66, PA6), modified and glass-filled PA	Contact carriers, plug tops, MCB housings, terminal blocks, glands, ties, plugs	Strength, heat resistance; FR and high-CTI grades.	Hygroscopic: moisture above 0.2% harms moulding ^[9] . Glass fibre wears screws.	Properties change with moisture; brittle when dry.
PBT	Contact carriers, terminal blocks, lamp holders	Dimensionally stable, good electrical properties.	Must be dried; thin walls need fast, even filling.	Hydrolysis at high heat and humidity.
ABS	Switch plates, plug tops, junction boxes, DB enclosures	Good surface, rigid, low cost.	Needs drying; FR grades for electrical use.	Lower heat resistance than PC.
UPVC, PVC	Conduit fittings, trunking accessories, junction boxes	Rigid, insulating, flame retardant.	Temperature-sensitive melt that decomposes and burns if overheated ^[6] ; corrosion-resistant screw and steel.	Heat limits in service.
PP	Conduit fittings, trunking accessories, glands, ties, plugs	Low cost, tough, chemical resistant.	Shrinkage and warpage.	Burns readily unless FR grade.
PE	Wall plugs and anchors	Flexible, tough.	High shrinkage.	Low stiffness.
PET	Lamp holders	Heat resistant.	Must be dried; hot mould.	Grade-dependent heat rating.
Thermosets: UF, phenolic, melamine, DMC/ BMC	Switch plates, plug tops, contact carriers, MCB housings, lamp holders	Heat and arc resistance, rigidity.	Thermoset moulding (compression or thermoset injection).	Separate equipment from thermoplastics.

General material behaviour only. Confirm flame, glow-wire and CTI ratings and standard compliance for the exact grade with the supplier.

THERMOPLASTIC OR THERMOSET?

POINT	THERMOPLASTICS (PC, PA, PBT, ABS, PVC, PP, PET)	THERMOSETS (UF, PHENOLIC, MELAMINE, BMC/DMC)
Machine	Standard thermoplastic injection moulding machine.	Compression press or thermoset injection machine.
Mould	Cooled mould; melt freezes in the cavity.	Heated mould; material cures in the cavity.

FLAME AND TRACKING RATINGS

Glow-wire tests press a heated wire at 550, 650, 750, 850 or 960 °C against the part for 30 seconds; any flame must go out within 30 seconds^[4]. CTI is measured by dripping up to 50 drops of electrolyte between electrodes at voltages up to 600 V^[5]. The product standard sets the level.

MATERIAL SELECTION QUESTIONS

- ☐ Which IS standard and certification apply?
- ☐ Which glow-wire and CTI levels does the part need?
- ☐ Does it hold live parts, or only cover them?

SECTION 04 · DESIGN & MOULD

COMPONENT DESIGN & MOULD REQUIREMENTS

Electrical parts combine insulation distances, contact pockets and visible surfaces. The mould must hold all three.

DESIGN FEATURES THAT AFFECT MOULDING

FEATURE	WHY IT MATTERS IN ELECTRICAL PARTS	MOULDING IMPLICATION
Contact & terminal pockets	Hold contacts and screws in position.	Accurate cores, stable shrinkage, thin ribs filled completely.
Insulation distances	Creepage depends on rib geometry ^[5] .	No short shots or thin spots; dimensions held on ribs and barriers.
Screw bosses	Plates, boxes and covers are screwed together.	Weld lines away from bosses; no sinks behind visible faces.
Gloss faces	Switch plates and covers are judged by appearance.	High-polish cavities, gates off visible faces, clean material.
Knockouts	Junction boxes and DB enclosures have break-out entries.	Thin webs that fill but break cleanly.
Threads & fingers	Cable glands have threads and clamping fingers.	Unscrewing or collapsible cores; dried PA66.
Pin locations	Plug top pins must match socket dimensions ^[1] .	Insert or assembly features held to tight tolerance.

MOULD CONSIDERATIONS

ITEM	ELECTRICAL-PRODUCT POINTS	ITEM	ELECTRICAL-PRODUCT POINTS
Cavity layout	Ties, anchors, carriers: 16 to 64. Plates: 1 to 4. DB enclosures: 1.	Steel	Corrosion-resistant steel for PVC and some FR grades.
Runner	Hot runners keep gate marks small on plates; balanced runners on carriers.	Moving cores	Slides for side entries; unscrewing for glands.
Surface	Mirror polish for gloss plates; texture for boxes and covers.	Mould temperature	PC, PBT and PET need controlled hot moulds.
Venting	FR grades can release gases; good venting avoids burns.	Mould size	DB enclosure moulds are large; get dimensions early.

SAFETY FEATURES THE MOULD MUST HOLD

BARRIERS Ribs between live parts must be complete and full height.	SHUTTERS & COVERS Parts that stop access to live parts must fit and move freely.	EARTH PATH Pockets that locate the earth contact must hold position.	WALL THICKNESS Minimum walls matter for glow-wire and insulation tests.
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SECONDARY OPERATIONS THAT SHAPE THE MOULD

OPERATION	TYPICAL PARTS	WHAT IT ASKS OF THE MOULDED PART
Contact assembly	Switches, sockets, terminal blocks, MCBs	Accurate pockets, snap fits and rivet points.
Printing & marking	Plates, plug tops, MCBs	Clean surface for symbols, ratings and ISI marks.
Seal fitting	Cable glands	Seal seats held to size.

SECTION 05 · PRODUCTION PLANNING

PRODUCTION CAPACITY & CYCLE-TIME PLANNING

Small internal parts run in multi-cavity moulds, plates run a few at a time, and enclosures run one per cycle. Plan each against assembly-line demand.

OUTPUT

Parts/hour = Cavities × 3600 ÷ Cycle time (s)

Effective/hour = Parts/hour × Utilisation

Day = Effective/hour × Hours run

Utilisation covers mould and colour changes, start-up, maintenance and rejects.

EXAMPLE 1 · 16-CAVITY PBT CONTACT CARRIER

16 × 3600 ÷ 18 s = 3,200 /h

× 0.85 utilisation = 2,720 /h

× 22 h = 59,840 /day

× 26 days = 1,555,840 /month

Working backwards: for 1,000,000 carriers a month in 572 running hours, you need 1,748 per hour. Cavities = $1,748 \times 18 \div (3600 \times 0.85) \approx 10.3$, so 12 cavities is the minimum and 16 gives headroom.

WHAT SETS THE CYCLE TIME

PHASE	ELECTRICAL-PRODUCT INFLUENCE
Injection & hold	Fast filling of thin ribs; packing thick bosses.
Cooling	Usually the largest share; rises roughly with wall thickness squared ^[8] .
Mould temperature	Hot moulds for gloss PC and PBT lengthen cooling.
Core pulls	Side entries and unscrewing add time.
Part removal	Careful take-out of gloss plates.

EXAMPLE 2 · DB ENCLOSURE COVER, 1 CAVITY

1 × 3600 ÷ 50 s = 72 /h

× 0.85 = 61 /h · × 22 h = 1,346 /day

× 26 days = 35,006 /month

Few parts per hour, so changeovers weigh more.

Illustrative example. Cycle times of 18 s and 50 s, 85% utilisation, 22 h per day and 26 days per month are assumptions. Actual requirements depend on the component, material, mould and production conditions.

BALANCING CAVITIES, CLAMP FORCE AND OUTPUT

PC SWITCH PLATE MOULD	PROJECTED AREA	CALCULATED FORCE	RATED AT 85%	SHOT	EFFECTIVE OUTPUT
1 cavity	69 cm ²	44 t	51 t	44 g	102 /h
2 cavities	138 cm ²	87 t	103 t	87 g	204 /h
4 cavities	274 cm ²	173 t	204 t	172 g	408 /h

Illustrative example. Force = projected area × clamp factor K × safety factor S. PC and PA are commonly given 3 to 5 US tons per square inch^[7], about 0.42 to 0.70 t/cm²; K = 0.55 t/cm² and S = 1.15 assumed. Also assumed: 65 cm² and 40 g per plate, runner area 4 / 8 / 14 cm² and weight 4 / 7 / 12 g, 30 s cycle, 85% utilisation.

FEEDING AN ASSEMBLY LINE

Moulded parts/hour = Devices/hour × Parts of that type per device

Illustrative: a line assembling 2,000 switch modules an hour with one carrier each needs 2,000 carriers an hour. Example 1 gives 2,720 an hour, which covers the line with a buffer for mould maintenance.

MACHINE UTILISATION AND PLANNED DOWNTIME**COLOUR RANGES**

Plates come in several colours and finishes; sequence runs to limit purging.

FR GRADE CARE

Purge FR grades before stops to avoid degraded material.

DRYING

PC, PA, PBT, PET and ABS need drying before use.

LINE MATCHING

Match moulding output to switch and socket assembly lines.

SECTION 06 • AUTOMATION

AUTOMATION & PRODUCTION EFFICIENCY

Wiring devices are assembled from many small parts. Automation around the moulding machine protects gloss surfaces and feeds assembly lines steadily.

AUTOMATION	WHERE IT ADDS VALUE IN ELECTRICAL PARTS	WHEN IT USUALLY MAKES SENSE
Robot take-out	Removes gloss switch plates and DB covers without scratching them.	Appearance parts and large covers.
Sprue picker	Removes cold runners from carrier, tie and anchor moulds.	Multi-cavity cold-runner moulds.
Insert loading	Places brass terminals or inserts where parts are insert-moulded.	Terminal blocks and connectors with moulded-in metal.
Conveyors & counting	Carries and counts ties, anchors, glands and small carriers.	High-cavity small parts sold by count.
Printing & marking	Symbols, ratings and ISI marks on plates, plug tops and MCBs.	Where marks are not moulded in.
Assembly	Contacts, springs and rockers into carriers and plates.	Switch and socket lines at volume.
Electrical test	Checks assembled devices on the line.	Finished switches, sockets and MCBs.
Vision inspection	Detects short shots, flash and missing pockets.	Carriers, terminal blocks and plates.
Material handling	Central drying and conveying for PC, PA and PBT.	Several machines on hygroscopic grades.

DECIDING ON AUTOMATION

SURFACE Gloss plates are easily marked by hand; robots place them the same way every time.	VOLUME & LABOUR Ties, anchors and carriers run in huge numbers; counting and packing add up.	LINE SUPPLY Steady automated output keeps assembly lines fed.
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In switch and socket plants, the moulding shop usually supplies an assembly hall. The biggest gains often come from delivering parts in trays or bins ready for the assembly line, so they are not counted, sorted and handled again.

INTERFACES TO SPECIFY ON THE MACHINE

ROBOT Signal interface and safety interlocks.	HOT RUNNER Zones for plate and carrier moulds.	MOULD HEATING Temperature control for PC and PBT moulds.	CORE PULLS Slides and unscrewing for boxes and glands.
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WHERE THE COST OF A MOULDED PART COMES FROM

MATERIAL FR grade + colour	MACHINE cost per machine hour	LABOUR handling, assembly	POWER incl. mould heating	MOULD amortisation, upkeep	REJECTION gloss, short shots	PACKING by count or set
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Flame-retardant engineering grades cost more than commodity plastics, so rejects on PC plates and PA carriers are expensive. On ties and anchors, machine hours and packing dominate. Use your own rates to compare options.

SECTION 07 · QUALITY

QUALITY, TESTING & COMMON DEFECTS

Electrical building products are certified products. Moulding quality shows up directly in safety tests.

TESTS AND CHECKS

CHECK	WHAT IT INVOLVES	LINK TO MOULDING
Switches & sockets	IS 3854 and IS 1293 cover earthing, protection against shock with a finger test, and dimensions for interoperability ^[1] . Plugs and socket-outlets need mandatory BIS certification ^[2] .	Pocket and pin dimensions, wall integrity
Glow wire	Heated wire at 550 to 960 °C pressed on the part for 30 s; flames must go out within 30 s and must not ignite material below ^[4] .	Correct FR grade, no degradation, wall thickness
Tracking (CTI)	Material rated by electrolyte drops between electrodes ^[5] .	Correct grade; clean, undegraded material
Conduit fittings	Fittings to IS 3419 for conduits to IS 9537 ^[3] .	Socket fit, impact resistance
Electrical tests	Insulation, dielectric strength and temperature rise on finished devices, as the product standard specifies.	Wall integrity, barrier ribs, material
Dimensional & visual	Pockets, pins, knockouts, gloss and colour against masters.	Shrinkage, cavity match, surface

Test methods and limits come from the product standard. Confirm the current edition and certification requirements for each product.

IN-PROCESS CONTROLS

WEIGHT BY CAVITY Flags short shots in thin ribs.	GAUGES Go / no-go on pockets, pins and threads.	GLOSS & COLOUR Visual checks against master plates.	MOISTURE Resin moisture checks for PC, PA and PBT.
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TROUBLESHOOTING COMMON DEFECTS

DEFECT	POSSIBLE CAUSES	EFFECT ON THE ELECTRICAL PART	AREAS TO INVESTIGATE
Short shot	Thin ribs, blocked vents, cold mould	Missing barriers; reduced insulation distance	Venting, injection speed, mould temperature
Splay	Moisture in PC, PA or PBT	Streaks on plates; weaker parts	Dryer settings, dew point, hopper time
Gloss variation, flow marks	Mould temperature, gate position, speed	Rejected face plates	Mould temperature control, gating, speed profile
Cracked bosses	Weld lines at bosses, moulded-in stress	Plates or boxes crack on screwing	Gate position, melt temperature, hold
Burns, black specks	Degraded FR grade or PVC, trapped gas ^[6]	Visual rejects; possible loss of FR performance	Barrel temperatures, residence time, venting
Warpage	Uneven cooling on large covers	DB covers that do not close flat	Cooling layout, gate position, packing
Brittle ties and glands	Dry-as-moulded or degraded PA66	Breakage during installation	Drying, melt temperature, conditioning

SECTION 08 · WORKED EXAMPLES

PRACTICAL MACHINE-SELECTION EXAMPLES

Three typical electrical building parts show how the selection logic changes with the component. These are engineering illustrations with assumed inputs, not customer case studies.

A · PC MODULAR SWITCH PLATE		GLOSS + FLAME RATING
APPLICATION · MATERIAL	Modular switch face plate · FR-PC (grade to be confirmed)	
CHARACTERISTICS	About 40 g, 65 cm ² projected area (assumed); high-gloss face, screw bosses	
CAVITIES · OUTPUT	2 · about 204 per hour at 30 s (Section 05)	
MOULD CONSIDERATIONS	Polished cavities, hot runner, gates off the face, controlled mould temperature	
SECONDARY	Assembly with frames and switch modules, packing	
EVALUATE The Section 05 table gives about 87 t calculated and an 87 g shot, so a clamp rated around 103 t or more. Drying, mould temperature control and robot take-out matter as much as tonnage. STILL NEEDED CAD projected area, grade data, colour range, volume.		

B · PA66 CABLE GLAND		THREADS + MOISTURE
APPLICATION · MATERIAL	Cable entry gland body and nut · PA66	
CHARACTERISTICS	Threaded body with clamping fingers; separate rubber seal	
CAVITIES · OUTPUT	Multi-cavity per size · volume per size range	
MOULD CONSIDERATIONS	Unscrewing cores for threads, finger geometry, venting	
SECONDARY	Seal and nut assembly, packing by size	
EVALUATE Tonnage needs projected area per size. Unscrewing circuits, drying and consistent PA66 moisture after moulding decide quality. STILL NEEDED size range, drawings, grade, volume per size.		

C · MCB HOUSING		PROCESS ROUTE FIRST
APPLICATION · MATERIAL	Miniature circuit-breaker body · modified PA or thermoset (BMC/DMC)	
CHARACTERISTICS	Two housing halves with pockets for the mechanism and arc chamber	
CAVITIES · OUTPUT	Matched cavities for each half · set by assembly line	
MOULD CONSIDERATIONS	Precise pockets, rivet holes, flatness of mating faces	
SECONDARY	Mechanism assembly, riveting, printing, testing	
EVALUATE	Confirm the material first: modified PA runs on a thermoplastic machine; BMC/DMC needs a thermoset machine. STILL NEEDED material decision, drawings, required standard, volume.	

WHAT DECIDED THE MACHINE IN EACH EXAMPLE

SELECTION FACTOR	A · SWITCH PLATE	B · CABLE GLAND	C · MCB HOUSING
Main limit	Gloss, mould temperature	Threads, drying	Material and process route
Clamp force	About 103 t rated for 2 cavities	Needs projected area	Needs projected area
Screw & barrel	Suited to PC, clean melt	Suited to PA66	Thermoplastic or thermoset unit
Auxiliaries	Dryer, mould heater, robot	Dryer, unscrewing control	Depends on route

Illustrative example. Actual requirements depend on the component, material, mould and production conditions.

SECTION 09 • BUYER CHECKLIST

MACHINE BUYER'S CHECKLIST

What to prepare before asking an injection moulding machine manufacturer for a recommendation on an electrical building product.

COMPONENT

- ☐ 2D drawing and 3D CAD model
- ☐ Part weight, runner weight, wall thickness
- ☐ Material grade with FR, glow-wire and CTI data
- ☐ Critical dimensions: pockets, pins, threads
- ☐ Surface: gloss, texture, colour range

PRODUCTION

- ☐ Monthly and yearly volume per part
- ☐ Colour and model variants
- ☐ Cavity count and target cycle time
- ☐ Assembly line rate to be fed
- ☐ Operating hours and shifts

MOULD

- ☐ New or existing mould; size and weight
- ☐ Hot or cold runner; number of zones
- ☐ Slides, unscrewing, inserts
- ☐ Mould temperature needed
- ☐ Previous machine specification, if any

ELECTRICAL APPLICATION

- ☐ Product standard and BIS certification
- ☐ Glow-wire and CTI levels required
- ☐ Thermoplastic or thermoset material
- ☐ Current and voltage rating of the device
- ☐ Indoor, outdoor or UV exposure

DOCUMENTS TO REQUEST FROM THE MACHINE SUPPLIER

PLATEN DRAWING

Tie-bar spacing, mounting holes, ejector pattern, nozzle details.

LAYOUT

Footprint, robot and conveyor space, access.

UTILITIES

Connected load, cooling water, air and oil needs.

TRIAL REPORT

Trial or acceptance data at your settings.

QUESTIONS TO ASK BEFORE YOU BUY A MACHINE

#	QUESTION	WHY IT MATTERS FOR ELECTRICAL PARTS
1	How accurate is barrel temperature control for FR grades?	FR grades and PVC degrade if overheated.
2	What shot repeatability does the machine hold at my shot size?	Thin ribs and pockets in carriers and terminal blocks.
3	Which screw and barrel suit glass-filled PA and PBT?	Wear from glass fibre.
4	How many hot-runner zones can the control run?	Gloss plates and multi-cavity carriers.
5	How many core-pull and unscrewing circuits are available?	Boxes with side entries and threaded glands.
6	What mould temperature control can be connected?	Hot moulds for PC, PBT and PET.
7	Will my largest DB enclosure mould fit?	Large covers and enclosures.
8	Can the control store settings for each mould and colour?	Frequent colour changes on plates.
9	Can the machine log shot data for traceability?	Certified products and batch records.
10	What installation, training and spare-parts support is included?	Certified products need a stable process.

SECTION 10 • TECHNICAL CONSULTATION

PRATISHNA ENGINEERS & TECHNICAL CONSULTATION

Pratishna Engineers Ltd. is a Mumbai-based injection moulding machine manufacturer with in-house design, manufacturing, assembly, testing and service, supplying plastic component manufacturers in India and international markets.

35+

YEARS OF EXPERIENCE

9,000+

MACHINES SUPPLIED

1,000+

CUSTOMERS

In-house

DESIGN TO SERVICE

Machines are used for automotive, packaging, electrical and electronics, medical, consumer, agriculture and industrial applications.

OUR TECHNICAL APPROACH

COMPONENT	MATERIAL	MOULD	PRODUCTION REQUIREMENT	MACHINE CONFIGURATION
1 • CALCULATE Clamp force and shot weight from part, cavities and grade.	2 • CHECK THE MOULD Size, stroke, core pulls and inserts.	3 • CHECK OUTPUT Cycle and cavities against your volume.	4 • CONFIGURE Screw, barrel, controls and auxiliaries.	

SEND YOUR COMPONENT & PRODUCTION REQUIREMENTS

Component drawing • material • part weight • mould details • cavity count • production requirement • other requirements such as FR grade, standard or automation.

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