



TECHNICAL BUYER'S GUIDE · PRATISHNA ENGINEERS

SANITARY & BATHROOM FITTINGS COMPONENTS INJECTION MOULDING MACHINE GUIDE

A practical guide for tap, shower, cistern and drainage fitting manufacturers: 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 plastic taps, cocks, showers, cistern fittings, traps, drains and plumbing 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

SANITARY & BATHROOM FITTINGS COMPONENTS & INJECTION MOULDING

Taps, cocks, showers, cistern valves, traps and drains are small, precise parts that must seal under pressure, look good on the wall and survive years of hot and cold water.

WHAT SANITARY MOULDERS ACTUALLY MAKE

A bathroom set combines water-control parts that carry line pressure, cosmetic parts that are often chrome plated, and drainage parts that are bulky but lightly loaded. Most are assemblies: a single tap has a body, spindle, bonnet, handle and seals, each moulded in its own tool.

IS 9763 covers plastic bib taps, pillar taps, stop valves and angle valves for hot and cold water, and lists the moulding materials allowed for bodies, bonnets, spindles and handles^[1]. PVC socket fittings with solvent-cement joints fall under IS 7834^[6].

MAIN COMPONENT CATEGORIES

TAPS & COCKS Plastic taps, bib cocks, angle and stop cocks	SHOWERS & FAUCETS Overhead and hand showers, health faucets	VALVES uPVC and PP ball valves	CISTERN FITTINGS Fill, float and flush valves
TRAPS & WASTE Waste couplings, bottle traps, P-traps	FLOOR DRAINS Nahani trap bodies and gratings	PIPE FITTINGS Threaded fittings, SWR drainage fittings	TANK, SUPPORT, CONDUIT Tank connectors, clips, saddles, wall plugs, conduit boxes

WHY INJECTION MOULDING SUITS THESE PARTS

- Threads, seats and spindle bores moulded to size in one shot.
- Corrosion-free parts that replace brass at lower cost.
- Colour or plating-ready surfaces straight from the mould.
- High cavitation for small cocks, clips and plugs.

TYPICAL MANUFACTURING CHALLENGES

- PTMT (PBT) and nylon lose strength if moulded wet^[2].
- POM and PVC must never meet in one barrel^[4].
- Weld lines and stress show through chrome plating^[5].
- Curved trap paths need arc or split cores.

WHERE MOULDING SITS IN THE PRODUCT CHAIN

RESIN PTMT, POM, ABS, PP, uPVC	DRYING PBT, PA66, ABS, PC	INJECTION MOULDING bodies, spindles, heads	PLATING ABS showers, handles	ASSEMBLY seals, springs, cartridges	TESTING leak, pressure, torque	PACKING sets and cartons
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Pipes are extruded and ceramic WCs and basins are cast, so both are outside this guide. The cistern body itself is a much larger separate tool from the fittings inside it.

KEY REQUIREMENTS FOR SANITARY FITTINGS

LEAK-TIGHT UNDER PRESSURE IS 9763 tests every tap and valve at 1.6 MPa water for at least 60 s ^[1] .	HOT AND COLD SERVICE Maximum 90 °C, with 65 °C the recommended working limit ^[1] .	DRINKING-WATER SAFETY Materials must not change the taste, smell or appearance of the water ^[1] .
CONCENTRIC THREADS AND BORES Assembled parts must be axial, parallel and cylindrical ^[1] .	CHLORINE RESISTANCE Taps are immersed in 10% hydrochloric acid for 24 h ^[1] .	FINISH Coloured, chrome or gold plated, or powder coated finishes ^[1] .

SECTION 02 • COMPONENTS

MAJOR SANITARY & BATHROOM FITTINGS COMPONENTS

The sanitary parts covered by this guide, the materials used for them and what each asks of the moulding process.

COMPONENT	APPLICATION	MATERIAL(S)	INJECTION MOULDING CONSIDERATIONS
Water tank fitting (tank nipple, connector, bulkhead)	Tank inlets and outlets	PP copolymer, HDPE, uPVC, PA66, GF PA66	Male and female BSP threads need unscrewing or collapsible cores. Thick hex boss is sink and void prone; flash-free sealing face. Potable-water grade.
Plastic tap	Basin and kitchen taps	PP, POM, ABS, PA66, PTMT (PBT)	Body, spindle, handle and aerator are separate tools. POM degrades if held hot. Weld lines behind the spout core; unscrewing inlet thread.
Bib cock	Wall-mounted taps	PTMT (PBT), POM, PP, ABS, GF PA66	Dry PTMT before moulding. Long-body variants add area. 15 mm BSP inlet thread with tight concentricity; PTMT regrind is hard to reuse.
Angle cock, stop cock	Isolating supply lines	PTMT (PBT), POM, PP	Small part, often 4 to 8 cavities. Thread and spindle bore concentricity decide the leak test.
Health faucet (head, trigger, handle)	Toilet jet spray	ABS, POM, PP	Plating-grade ABS and high polish if chromed. Tight spring and valve seats.
Overhead and hand shower	Shower heads	ABS, PP, POM, PC	Large flat face plate; even nozzle-plate wall for an even spray. Dry ABS; splay on plated parts is a reject.
uPVC / CPVC threaded pipe fitting (15 to 50 mm)	Supply-line elbows, tees, couplers	uPVC, CPVC	PVC-specification screw and barrel; narrow melt window (about 170 to 190 °C); long hold, cooling-limited cycle.
uPVC SWR / drainage fitting (75 to 90 mm)	Soil, waste and vent lines	uPVC	Arc or curved core pulls for bends and S-traps; thick socket sets the cycle. Larger sizes need much larger machines.
uPVC / PP ball valve (body, ball, handle)	Line shut-off	uPVC, CPVC, PP, ABS	Three or four tools per valve. Ball sphericity and seat finish drive leak-test yield.
Cistern fittings (fill, float, flush valves)	WC cistern internals	PP, POM, HDPE, ABS	8 to 15 small mouldings per set. POM for sliding and sealing parts, PP for structure.
Waste coupling, bottle trap, P-trap	Basin and sink waste	PP, ABS, uPVC	Curved water path needs arc or split cores; thick trap bend; slip-joint threads need unscrewing.
Floor drain / nahani trap (body, grating)	Bathroom floor drains	PP, ABS, uPVC	Slotted grating is a large flat area; uneven cooling warps it into a rocking cover.
PVC conduit fittings, junction and switch boxes	Concealed wiring	uPVC, PVC, PP	PVC machine precautions; thin walls, so fill pressure is often the limit. Fire-retardant grade and thread quality.
Pipe clamps, clips, saddles, wall plugs	Pipe support and fixing	PP, HDPE, PA66, uPVC	16 to 32 cavities and hot runners. Living-hinge clips in PP flexed right after ejection.

Seals, springs, cartridges and brass inserts are bought-in parts. The conduit fittings are listed here as sanitary-trade accessories; their electrical requirements are covered in the electrical building products guide.

GROUPING BY MOULDING DEMAND

PRESSURE PARTS

Taps, cocks, valves, tank fittings. Threads, bore concentricity, dried engineering resins.

COSMETIC PARTS

Showers, health faucets, handles. Plating-grade ABS, polish, no weld lines on show faces.

DRAINAGE AND SUPPORT

Traps, drains, SWR fittings, clips. Core pulls, flatness, cavitation and PVC processing.

SECTION 03 · MATERIALS

MATERIALS USED FOR SANITARY & BATHROOM FITTINGS

Sanitary plants run several resin families side by side, and some of them must be kept strictly apart on the moulding floor.

MATERIAL	TYPICAL COMPONENTS	RELEVANT PROPERTIES	PROCESSING CONSIDERATIONS	LIMITATIONS TO CHECK
PTMT (PBT)	Bib cocks, angle and stop cocks, tap bodies	Stiff polyester; listed for tap bodies, bonnets, spindles and handles ^[1] .	Dry 3 to 5 h at 120 to 130 °C to 0.02% moisture or less ^[3] . Wet resin hydrolyses with no visible defect ^[2] .	Regrind limits ^[3] ; grade for hot water.
POM (acetal)	Tap parts, spindles, cistern valve members, shower parts	Stiff, low friction; listed for tap parts ^[1] .	Degrades to formaldehyde if overheated or held in the barrel. Never mix with PVC ^[4] .	Separate machine or full strip-clean from PVC ^[4] .
ABS	Showers, health faucets, handles, traps, drains	Rigid, platable; listed for tap bodies and handles ^[1] .	Dry before moulding. Plated parts need low moulded-in stress ^[5] .	Plating grade needed for chrome finish.
PP, PP copolymer	Taps, tank fittings, cistern fittings, traps, clips, valves	Tough, low cost, chemical resistant.	Hardly absorbs moisture ^[2] ; shrinkage and warpage on flat parts.	Lower stiffness than engineering resins.
HDPE	Tank fittings, cistern parts, clips	Tough and flexible.	Easy flow; high shrinkage.	Low stiffness at hot-water temperatures.
uPVC, PVC	Threaded and SWR fittings, ball valves, traps, drains, conduit boxes	Rigid, self-extinguishing ^[8] .	Heat-sensitive; degrades and burns if overheated ^[7] . Corrosion-resistant screw and barrel.	Cold water in pressure use.
CPVC	Hot and cold threaded fittings, ball valves	Higher service temperature than uPVC.	Narrower window than uPVC; same corrosion precautions.	Match compound to pipe system.
PA66, GF PA66	Tank fittings, bib cocks, wall plugs	Strong, stiff; listed for tap bodies ^[1] .	Hygroscopic; dry before moulding ^[2] . Glass fibre wears screws and gates.	Moisture changes stiffness in service.
PC	Shower parts	Tough, clear or high-gloss.	Hydrolysis-sensitive; dry thoroughly ^[2] .	Stress cracking with some cleaners.

General material behaviour only. Confirm grade data, potable-water approval and plating suitability with the resin supplier.

WHAT IS 9763 SAYS ABOUT TAP MATERIALS

TAP PART	MATERIALS LISTED IN IS 9763 TABLE 1
Body	PP copolymer, nylon 66, PBT, GF nylon 66, polyacetal, ABS, ABS-PC alloy, PVC
Bonnet and spindle	PP copolymer, nylon 66, PBT, GF nylon 66, polyacetal, ABS, ABS-PC alloy
Handle	PP copolymer, PBT, polyacetal, ABS, ABS-PC alloy

Edition read: IS 9763:2000^[1]. Check the current edition and amendments before certification.

PVC AND POM IN ONE PLANT

Heated PVC releases acid products that rapidly degrade acetal. The two must never mix, even in traces. Run them on separate machines, or purge thoroughly before a change^[4]. Keep dryers, loaders and grinders separate too.

MATERIAL SELECTION QUESTIONS

- ☐ Hot, cold or drainage service?
- ☐ Coloured, chrome-plated or powder-coated finish?
- ☐ Which parts slide or seal against each other?
- ☐ Is BIS certification to IS 9763 required?

SECTION 04 · DESIGN & MOULD

COMPONENT DESIGN & MOULD REQUIREMENTS

Sanitary moulds are built around threads, bores and seats that must line up after assembly, plus show faces that must plate cleanly.

DESIGN FEATURES THAT AFFECT MOULDING

FEATURE	WHY IT MATTERS IN SANITARY FITTINGS	MOULDING IMPLICATION
BSP threads	Taps and cocks are 15 mm or 20 mm with pipe threads to IS 2643 ^[1] .	Unscrewing or collapsible cores; thread start and pitch accuracy.
Spindle bores and seats	Seal between spindle and seat decides drip-proofness ^[1] .	Core concentricity, stable shrinkage, clean seat finish.
Minimum wall	Body and bonnet walls not less than 2.5 mm ^[1] .	Balanced wall thickness; packing at thick hex bosses.
Show faces	Handles, showers and faucets are often chrome plated.	No weld lines or gate marks on plated faces; high polish.
Spout and trap cores	Bent water paths in taps and traps.	Arc core pulls or split cores; weld lines behind cores.
Flat plates	Shower face plates and drain gratings.	Uniform cooling to hold flatness; many small holes or slots.
Living hinges and snaps	Pipe clips and cistern parts.	PP grade, gate position and flexing after ejection.

MOULD CONSIDERATIONS

ITEM	SANITARY POINTS	ITEM	SANITARY POINTS
Cavity layout	Cocks and clips: 4 to 32. Tap bodies and showers: 1 to 4.	Steel	Polished, corrosion-resistant cavities for plated ABS and PVC.
Runner	Balanced runners for multi-cavity cocks; hot runners for clips.	Cooling	Even cooling for flat plates and plated faces.
Unscrewing	Rack, motor or hydraulic unscrewing for BSP threads.	Families	Body and bonnet of one tap size in one mould base.
Venting	Burn-free fill at thread ends and seat areas.	Ejection	Stripper rings on threads; no marks on show faces.

SECONDARY OPERATIONS THAT SHAPE THE MOULD

OPERATION	TYPICAL PARTS	WHAT IT ASKS OF THE MOULDED PART
Electroplating	Shower heads, faucet handles, tap bodies	Plating-grade resin, low residual stress, no weld lines on show faces ^[5] .
Assembly with seals and springs	Taps, cocks, health faucets, cistern valves	Seats, grooves and spring pockets held to size.
Marking	Taps and valves	Brand, size, batch or date and flow arrow on the body ^[1] .

SECTION 05 · PRODUCTION PLANNING

PRODUCTION CAPACITY & CYCLE-TIME PLANNING

Fast multi-cavity cocks and clips run beside slow, bulky traps and drains in many sizes and colours.

OUTPUT

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

Effective/hour = Parts/hour × Utilisation

Day = Effective/hour × Hours run

Utilisation covers colour changes, resin changes, drying waits, start-up and rejects.

EXAMPLE 1 · 8-CAVITY PTMT ANGLE COCK BODY

8 × 3600 ÷ 30 s = 960 /h

× 0.85 utilisation = 816 /h

× 22 h = 17,952 /day

× 26 days = 466,752 /month

EXAMPLE 2 · 2-CAVITY PP BOTTLE TRAP BODY

2 × 3600 ÷ 45 s = 160 /h

× 0.85 = 136 /h · × 22 h = 2,992 /day

× 26 days = 77,792 /month

Working backwards: for 100,000 traps a month in 572 running hours, you need 175 per hour. Cavities = $175 \times 45 \div (3600 \times 0.85) \approx 2.6$, so 3 or 4 cavities or a second machine.

Illustrative example. Cycle times, 85% utilisation, 22 h/day and 26 days/month are assumed. Actual requirements depend on the component, material, mould and production conditions.

WHAT SETS THE CYCLE TIME

PHASE	SANITARY INFLUENCE
Injection & hold	Packing thick hex bosses and seats.
Cooling	Usually the largest share; rises roughly with wall thickness squared ^[10] .
Cores	Thread unscrewing and arc core pulls.

BALANCING CAVITIES, CLAMP FORCE AND OUTPUT

PP FLOOR DRAIN GRATING MOULD	PROJECTED AREA	CALCULATED FORCE	RATED AT 85%	SHOT	EFFECTIVE OUTPUT
1 cavity	114 cm ²	46 t	54 t	43 g	122 /h
2 cavities	230 cm ²	93 t	109 t	86 g	245 /h
4 cavities	460 cm ²	185 t	218 t	172 g	490 /h

Illustrative example. Force = projected area × clamp factor K × safety factor S. PP, PE and PS are commonly given 2 to 3 US tons per square inch^[9], about 0.28 to 0.42 t/cm²; K = 0.35 t/cm² and S = 1.15 assumed. Also assumed: 110 cm² and 40 g per slotted grating, runner area 4 / 10 / 20 cm² and weight 3 / 6 / 12 g, 25 s cycle, 85% utilisation.

PLANNING AN ASSEMBLY LINE

Parts/hour needed per tool = Assemblies/hour × Parts of that type per assembly

Each tap tool runs at the assembly rate; a cistern set of 8 to 15 parts spreads over several small machines.

WHAT LIMITS OUTPUT BY PRODUCT GROUP

PRODUCT GROUP	USUAL LIMIT	PLANNING POINT
Tap bodies, tank fittings	Unscrewing time and thick bosses	Plan by assembly rate, not by one tool
Showers, handles	Plating line capacity	Mould only what the plating line can take
Traps, drains, SWR fittings	Cooling of thick or flat sections	Size family planning across diameters

MACHINE UTILISATION AND PLANNED DOWNTIME

DRYING Dryers start before PTMT and PA66 runs ^[3] .	COLOUR CHANGES Run light to dark colours.	RESIN SEGREGATION POM and PVC on separate machines ^[4] .	PLATING BATCHES Match runs to plating capacity.
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SECTION 06 · AUTOMATION

AUTOMATION & PRODUCTION EFFICIENCY

In sanitary plants automation pays back mostly in assembly, leak testing and in protecting cosmetic parts from handling damage.

AUTOMATION	WHERE IT ADDS VALUE IN SANITARY FITTINGS	WHEN IT USUALLY MAKES SENSE
Sprue picker	Removes runners from cock, clip and cistern-part moulds.	Multi-cavity cold-runner moulds on long runs.
Robot take-out	Places shower heads and handles without scratches.	Cosmetic and plated parts, heavy trap bodies.
Dryer and closed loader	Keeps PTMT, PA66 and PC dry to the hopper ^{[2][3]} .	Every hygroscopic resin run.
Unscrewing drives	Turns out BSP thread cores each cycle.	Tank fittings, cocks, tap inlets, traps.
Conveyors & counting	Carries and counts clips, plugs and small cocks.	Small parts sold or assembled by count.
Assembly stations	Fits spindles, seals, springs and handles.	Taps, cocks, health faucets, cistern valves.
Leak and pressure test	Water or air test on every assembled tap ^[1] .	Any product sold to IS 9763.
Plating racks and jigs	Parts hung straight from the machine onto racks.	Chrome-plated showers and handles.

IS 9763 makes the hydraulic pressure test a production routine test on every tap and valve^[1]. A test station sized to the assembly rate is therefore part of the line, and its cycle often sets how many moulding machines feed one assembly cell.

AUTOMATION BY PRODUCT GROUP

PRODUCT GROUP	MAIN AUTOMATION	WHY
Taps, cocks, valves	Assembly, leak test, torque check	Every unit is pressure tested
Showers, faucets, handles	Robot take-out, plating racks	Scratches and handling marks show after plating
Cistern fittings	Part feeders, assembly	8 to 15 parts per set
Clips, plugs, small cocks	Sprue picker, conveyor, counter	High counts per hour

DECIDING ON AUTOMATION

VOLUME & LABOUR Assembly and testing usually take more labour than moulding.	COSMETIC YIELD Every touch on a plated part is a scratch risk.	REPEATABILITY Stable dried resin and steady cycles keep threads and seats in size.
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INTERFACES TO SPECIFY ON THE MACHINE

UNSCREWING Hydraulic motor or core circuits with sequence control.	ROBOT Signal interface and safety interlocks.	DRYER LINK Hopper loader and dryer alarm interlock.	MOULD HEATING Controller zones for hot runners and hot plating tools.
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WHERE THE COST OF A MOULDED PART COMES FROM

MATERIAL PTMT, ABS, PP	MACHINE per machine hour	LABOUR assembly, testing	POWER drying and moulding	MOULD several per product	REJECTION leaks, plating	PACKING sets, cartons
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SECTION 07 · QUALITY

QUALITY, TESTING & COMMON DEFECTS

A tap is judged by the plumber and the user: it must fit the thread, seal when closed and look the same after years of use.

TESTS IN IS 9763

TEST	WHAT THE STANDARD SPECIFIES	LINK TO MOULDING
Hydraulic pressure	1.6 MPa water for at least 60 s, or 0.6 MPa air for 20 s; no leak, sweat, bulge or pressure drop ^[1] .	Voids, weld lines, seat and thread accuracy
Drip proofness	0.1 MPa for 15 min with no leakage, or 0.04 MPa air ^[1] .	Spindle bore and seat concentricity
Thermal shock	10 cycles between about 65 °C water and water at 15 °C or below ^[1] .	Moulded-in stress, dried resin
Residual chlorine	Unaffected after 24 h in 10% hydrochloric acid ^[1] .	Correct material grade
Mechanical strength	At least 6 N·m closing torque for 5 min with no deformation ^[1] .	Spindle strength, thread engagement
Visual and dimensional	Sound parts free of cracks, spots and blowholes; minor shrink marks allowed ^[1] .	Packing, venting, drying

Pressure, drip and torque tests are production routine tests; chlorine and thermal shock are type tests^[1]. Edition read: IS 9763:2000. Confirm the current edition and certification requirements. PVC socket fittings follow IS 7834^[6].

IN-PROCESS CONTROLS

THREAD GAUGES Go / no-go on BSP threads every shift.	MOISTURE CHECK Resin moisture before PTMT and PA66 runs ^[3] .	WEIGHT BY CAVITY Flags imbalance in multi-cavity moulds ^[7] .	PRE-PLATING CHECK Weld lines, splay and scratches before racking.
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TROUBLESHOOTING COMMON DEFECTS

DEFECT	POSSIBLE CAUSES	EFFECT ON THE PART	AREAS TO INVESTIGATE
Brittle PTMT or PA66 parts	Wet resin, hydrolysis ^[2]	Cracks at threads under torque	Dryer temperature, time, dew point
Splay, silver streaks	Moisture in ABS, PC or nylon	Plating reject, weaker part	Drying, hopper residence
Black specks, odour in POM	Overheating, long residence ^[4]	Weak spindles, fumes	Barrel temperatures, shot size, purging
Burns in PVC	Degraded PVC, trapped air ^[7]	Weak fittings, rejects	Temperatures, residence, venting
Weld lines on show faces	Flow fronts meeting around cores	Visible after plating ^[5]	Gate position, mould temperature
Plating blisters	Moulded-in stress, wrong grade ^[5]	Peeling chrome	Injection speed, hold, mould temperature
Sink and voids at hex boss	Thick section, short hold	Leaks, weak thread root	Hold pressure and time, gate size
Warped grating or face plate	Uneven cooling, early ejection	Rocking cover, uneven spray	Cooling layout, mould temperature

SECTION 08 · WORKED EXAMPLES

PRACTICAL MACHINE-SELECTION EXAMPLES

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

A · PTMT BIB COCK BODY		DRIED RESIN + THREADS
APPLICATION · MATERIAL	15 mm bib cock body · PTMT (PBT)	
CHARACTERISTICS	BSP inlet thread, spout core, seat and bonnet thread	
CAVITIES · OUTPUT	2 to 4 per mould · set by assembly rate	
MOULD CONSIDERATIONS	Unscrewing core, balanced runner, venting at seat	
SECONDARY	Assembly, 1.6 MPa pressure test, marking	
EVALUATE Tonnage needs the projected area of the longest body in the family. Drying capacity, shot repeatability and unscrewing circuits matter more than clamp size. STILL NEEDED CAD of all body lengths, resin grade data, monthly volume.		

B · CHROME-PLATED ABS HAND SHOWER		COSMETIC + PLATING
APPLICATION · MATERIAL	Hand shower head and handle · plating-grade ABS	
CHARACTERISTICS	Flat face plate with many nozzle holes; plated show faces	
CAVITIES · OUTPUT	1 or 2 per mould · limited by plating rack capacity	
MOULD CONSIDERATIONS	Gates and weld lines off show faces, high polish, even cooling	
SECONDARY	Robot take-out onto racks, plating, assembly	
EVALUATE The face plate area sets clamp force though the part is light. Injection speed control and mould temperature control drive plating yield. STILL NEEDED face plate area, plating line capacity, cosmetic standard.		

C · PP FLOOR DRAIN GRATING		FLAT AREA
APPLICATION · MATERIAL	Slotted nahani trap grating · PP	
CHARACTERISTICS	About 110 cm ² and 40 g (assumed), flat with many slots	
CAVITIES · OUTPUT	2 · about 245 per hour at 25 s (Section 05)	
MOULD CONSIDERATIONS	Even cooling for flatness, many slot cores, venting	
SECONDARY	Flatness check, packing with trap bodies	
EVALUATE The Section 05 table gives about 93 t calculated and an 86 g shot, so a clamp rated around 109 t or more. STILL NEEDED CAD projected area, volume, flatness tolerance.		

Only the grating is sized mainly by clamp force. For the bib cock and the shower, the enquiry should lead with resin handling, thread tooling and surface quality, and the tonnage follows from the drawing.

WHAT DECIDED THE MACHINE IN EACH EXAMPLE

SELECTION FACTOR	A · BIB COCK	B · HAND SHOWER	C · GRATING
Main limit	Drying, threads, repeatability	Surface quality for plating	Flat projected area
Clamp force	Needs longest body area	Set by face plate area	About 109 t rated
Auxiliaries	Dryer, unscrewing, leak test	Robot, mould heater	Sprue picker, conveyor

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 a tap, shower, cistern or drainage part.

COMPONENT

- ☐ 2D drawing and 3D CAD model
- ☐ Part weight, runner weight, wall thickness
- ☐ Resin grade and drying data
- ☐ Thread, bore and seat dimensions
- ☐ Show faces and finish
- ☐ Sample or photo of the current part

PRODUCTION

- ☐ Monthly volume per size and colour
- ☐ Assembly rate for each product
- ☐ Cavity count and target cycle time
- ☐ Operating hours and shifts
- ☐ Resins run on each machine
- ☐ Seasonal or project peaks

MOULD

- ☐ New or existing mould; size and weight
- ☐ Unscrewing and core-pull needs
- ☐ Hot runner or cold runner
- ☐ Mould heating for plating grades
- ☐ Previous machine specification, if any
- ☐ Size family and insert plan

SANITARY APPLICATION

- ☐ Hot, cold or drainage service
- ☐ IS 9763 or other certification
- ☐ Plated, coloured or coated finish
- ☐ Potable-water approval of the resin
- ☐ Leak and torque test plan
- ☐ Marking and batch coding

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 SANITARY FITTINGS
1	What shot repeatability does the machine hold at my shot size?	Threads and seats decide the leak test.
2	How many hydraulic core and unscrewing circuits are available?	BSP threads and arc cores in traps.
3	Is a PVC-ready screw and barrel available, and how is it protected?	uPVC fittings, traps and conduit boxes.
4	Which screw suits PTMT, POM and glass-filled PA66?	Mixed engineering resins, glass wear.
5	How precisely is injection speed profiled?	Weld lines and stress on plated parts.
6	Will my largest shower plate or grating fit the tie bars and platens?	Flat parts set the machine size.
7	What dryer, loader and robot interfaces are supported?	Dried resin and damage-free handling.
8	Can the control store settings for each size and colour?	Frequent product changes.
9	What is the energy use per part at my cycle?	Low selling price per fitting.
10	What installation, training and spare-parts support is included?	Uptime to meet dealer and project orders.

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 plating, thread standard, BIS marking or assembly.

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