



TECHNICAL BUYER'S GUIDE · PRATISHNA ENGINEERS

LUGGAGE & BAGS COMPONENTS INJECTION MOULDING MACHINE GUIDE

A practical guide for luggage, bag and travel hardware makers: trolley, wheel, zip, buckle and lock components, materials, moulds, production planning, automation, quality, worked examples and what to send for a machine recommendation.

INDEX

Click any heading to go to that section

01	LUGGAGE & BAGS COMPONENTS & INJECTION MOULDING	02
02	MAJOR LUGGAGE & BAGS COMPONENTS	03
03	MATERIALS USED FOR LUGGAGE & BAGS COMPONENTS	04
04	COMPONENT DESIGN & MOULD REQUIREMENTS	05
05	PRODUCTION CAPACITY & CYCLE-TIME PLANNING	06
06	AUTOMATION & PRODUCTION EFFICIENCY	07
07	QUALITY, TESTING & COMMON DEFECTS	08
08	PRACTICAL MACHINE-SELECTION EXAMPLES	09
09	MACHINE BUYER'S CHECKLIST	10
10	PRATISHNA ENGINEERS & TECHNICAL CONSULTATION	11

WHO THIS GUIDE IS FOR

Owners, plant and production managers, process engineers and purchase teams making luggage hardware, wheels, buckles, zip parts, locks and small carry cases.

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

LUGGAGE & BAGS COMPONENTS & INJECTION MOULDING

A suitcase or backpack is fabric, shell and tube held together by moulded hardware. That hardware is where most bags fail, and it is what this guide covers.

WHERE INJECTION MOULDING FITS IN A BAG

A trolley case carries a family of moulded parts: handle housings, grips, rail guides, base brackets, wheels and forks, corner guards, feet, latches and lock housings. Soft bags and backpacks add buckles, strap adjusters, cord locks, zip pulls and moulded zip teeth. Each part is small, but a failed wheel or buckle is what the traveller notices and returns.

The telescopic handle tubes are aluminium in many cases, and some makers produce shell material from extruded sheet^[2]. Fabric, bearings, axles, rivets and springs are bought in. Moulded tooth zips such as the VISLON type, lighter than metal zips of the same size, are injected polyacetal elements formed on the tape^[3], usually on dedicated zip machines.

MAIN COMPONENT CATEGORIES

TROLLEY SYSTEM Handle housings, base brackets, rail guides, corner guards	WHEELS Spinner wheel, hub, housing and fork	HANDLE GRIPS Trolley grip and end cap, soft-touch	ZIP PARTS Moulded tooth chain, sliders, pull tabs, trim
BUCKLES & WEBBING Side-release buckles, ladder locks, adjusters	CORD HARDWARE Cord locks and toggles	LOCKS & LATCHES TSA lock bodies, dials, latches, hinges, catches	FEET & SMALL CASES Feet, corner protectors, studs, tool case bodies

WHY INJECTION MOULDING SUITS THESE PARTS

- Snap fits, detents and sliding fits moulded to size.
- Load-bearing ribs and bosses in glass-filled grades.
- Soft-touch and tread layers added by overmoulding.
- Colour and brand detail moulded in, not painted.
- Light parts that help cut the weight of the bag.

TYPICAL MANUFACTURING CHALLENGES

- A trolley set is 10 to 20 moulds, not one part.
- Nylon absorbs moisture and changes size^[7].
- Soft-on-hard bonding needs a matched pair^[4].
- Many colours and short runs per colour.
- Die-cast and moulded parts mixed in one product.

WHERE MOULDING SITS IN THE PRODUCT CHAIN

RESIN PA-GF, POM, ABS, PP, TPE	DRYING nylon, PC/ABS	INJECTION MOULDING hardware, wheels	OVERMOULD treads, grips	ASSEMBLY bearings, springs, rivets	TESTING drop, wheel, cycle	BAG MAKING fabric, shell
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KEY REQUIREMENTS FOR LUGGAGE HARDWARE

LOAD AND FATIGUE Brackets, grips and latches take the packed weight through lever arms, again and again.	ROUGH HANDLING IS 8517 drops a loaded bag from 1 m ten times ^[1] . Corners and wheels take the hits.	ROLLING Wheels are run over abrasive surfaces for long distances to check bearings and wear ^[2] .
MECHANISM FEEL Lock dials, buckles and cord locks are judged by click, free play and smooth sliding.	APPEARANCE Grips, pull tabs and trim carry the brand and are the first things touched.	LOW WEIGHT Every gram of hardware counts against the traveller's baggage allowance.

SECTION 02 · COMPONENTS

MAJOR LUGGAGE & BAGS COMPONENTS

The moulded hardware covered by this guide, its materials and what each part asks of the moulding process.

COMPONENT	APPLICATION	MATERIAL(S)	INJECTION MOULDING CONSIDERATIONS
Trolley component (handle housing, base bracket, rail guide, corner guard)	Telescopic handle system	PA6-GF, PA66-GF, ABS, PC/ABS, POM, TPE	A set of 10 to 20 mouldings; quote as a set. Base bracket carries the case load: glass-filled nylon, fatigue tested. POM for latch and sliding parts.
Luggage wheel (spinner wheel, hub, housing, fork)	Rolling and steering	PA6-GF, PA66-GF, PC/ABS, POM, PP, TPR/TPU tread	Rigid hub with overmoulded tread, bond checked by peel test. Housing and fork often PC/ABS. Bearings and axle assembled.
Bag buckle (side-release, ladder lock, strap adjuster)	Straps and webbing	POM, PA6, PA66, ABS	Prong root radius and wall section set fatigue life. 16 to 32 cavities, small shot. UV grades outdoors.
Zipper slider	Opening and closing the zip	POM, PA66, ABS and PC (pull tabs)	Most sliders are die-cast zinc; plastic ones are chosen for corrosion or weight. Match chain type and size.
Moulded zipper chain / tooth element	Zip closure	POM (acetal)	Teeth moulded onto the tape on dedicated zip-chain machines; colour moulded in.
Trolley handle grip and end cap	Hand contact on the handle	ABS, PC/ABS, PA6-GF, TPE/TPU	Rigid core plus soft-touch second shot. Bosses carry the pulling load. Cosmetic.
Luggage lock housing (TSA body, dial, shackle housing)	Case security	POM, PA6-GF, ABS, PC/ABS	Precision small parts; detent feel and free play. Some bodies are die-cast, confirm scope.
Bag feet, corner protectors, studs	Base and corner protection	PP, PA6, ABS, TPE, TPU	Impact at low temperature. Soft versions need bonded or mechanical fixing. High cavitation.
Cord lock, toggle, webbing hardware	Drawcords and straps	POM, PA6, PA66, ABS	Body, plunger and steel spring: two tools and assembly. Retention after cycling.
Case latch, hinge and catch	Hard case closure	PA6-GF, PA66-GF, POM, ABS	Load path into the case body; fatigue tested. Gauge nylon at conditioned size. PP for living-hinge catches.
Small carry / tool case body with living hinge	One-piece case and lid	PP copolymer, ABS, PP-GF	Gate so melt crosses the hinge; flex after ejection. Latch and stacking features moulded in.
Zip pull tab, puller, branded trim	Brand and grip	POM, ABS, PC, TPU, PA6	Finish, colour and logo crispness. Often overmoulded on a slider or cord. Very high cavitation.

Hard shells, aluminium handle tubes, fabric, bearings, axles, springs and die-cast zinc parts are outside this guide.

SCOPE CHECK BEFORE QUOTING

PRODUCT	OFTEN MADE BY ANOTHER PROCESS	MOULDED CONTENT
Zipper slider	Die-cast zinc body	Pull tab, cover, plastic sliders for corrosion or weight
Luggage lock	Die-cast body on many locks	Surround, buttons, dials, shackle housing
Trolley handle	Aluminium tubes ^[2]	Grip, housings, guides, brackets, corner guards
Wheel	Bearings, steel axle, rivets	Hub, tread, housing, fork

SECTION 03 · MATERIALS

MATERIALS USED FOR LUGGAGE & BAGS COMPONENTS

Luggage hardware uses a short list of resins, each chosen for one job: carrying load, sliding, snapping, absorbing impact or feeling soft.

MATERIAL	TYPICAL COMPONENTS	RELEVANT PROPERTIES	PROCESSING CONSIDERATIONS	LIMITATIONS TO CHECK
PA6-GF, PA66-GF	Base brackets, wheels, grip cores, lock bodies, latches	Stiff and strong; the usual spinner wheel material ^[2] .	Dry before moulding ^[7] . Glass wears screw and mould.	Size changes with absorbed moisture.
PA6, PA66	Buckles, cord locks, feet, pull tabs, zip parts	Tough, flexible, good fatigue.	Must be dried ^[7] .	Moisture changes stiffness and size.
POM	Buckles, zip teeth ^[3] , sliders, lock dials, cord locks, wheels, sliding parts	Stiff, low friction, consistent size ^[8] .	Keep melt temperature and residence time under control.	Poor bonding for overmoulds.
ABS	Grips, buckles, lock housings, feet, latches, tool cases, pull tabs	Rigid, good surface, easy to colour.	Dry before moulding.	Lower fatigue and chemical resistance than nylon or POM.
PC/ABS, PC	Wheel housings, forks, grips, lock housings, pull tabs	Tough blend; bonds well to TPU ^[5] .	Dry; watch stress around bosses and inserts.	PC alone is notch sensitive.
PP, PP copolymer, PP-GF	Wheels, feet, tool case bodies	Light, tough; PP is the living hinge material ^[6] .	Shrinkage and warpage on large bodies.	Low stiffness unless filled.
TPE	Corner guards, grip overmoulds, feet	Soft touch, impact absorbing.	Choose the grade for the substrate ^[4] .	Bond, wear and heat.
TPU / TPR	Wheel treads, grips, feet, pull tabs	Wear resistant, quiet rolling.	Dry TPU; bond checked by peel test ^[4] .	Tread wear and heat build-up.

General material behaviour only. Confirm grade data with the resin supplier.

SOFT-ON-HARD PAIRS FOR TREADS, GRIPS AND GUARDS

RIGID SUBSTRATE	BONDING BEHAVIOUR	WHAT TO PLAN
ABS	High surface energy; TPE and TPU both bond well ^[5] .	Standard bonding grades.
PC, PC/ABS	TPU and PC-bonding TPE grades ^{[4][5]} .	Specify the grade for PC.
Glass-filled nylon	Moisture in the nylon affects bonding ^[5] .	Dry substrate, nylon-bonding grade, interlocks.
PP	Low surface energy; polar elastomers bead and do not wet ^[5] .	PP-bonding grade or mechanical fixing.

MATERIAL SELECTION QUESTIONS

- ☐ Does the part carry the case load or only its own weight?
- ☐ Must feet and guards stay tough in cold handling?
- ☐ Does it slide, snap or turn against another part?
- ☐ Is there a soft layer, and which rigid grade sits under it?
- ☐ Outdoor use: UV-stabilised grade needed?
- ☐ Colour matching across buckles, pulls and trim?
- ☐ Will any resin or regrind change trigger retesting?
- ☐ Is glass fibre acceptable on visible surfaces?

SECTION 04 · DESIGN & MOULD

COMPONENT DESIGN & MOULD REQUIREMENTS

Luggage moulds range from 32-cavity buckle tools to two-shot wheel tools and single-cavity case bodies, and most programmes need all of them.

DESIGN FEATURES THAT AFFECT MOULDING

FEATURE	WHY IT MATTERS IN LUGGAGE	MOULDING IMPLICATION
Load bosses and ribs	Base brackets and grips pass the case load into rivets and screws.	Even walls, no voids at bosses, fibre orientation along the load path.
Snap-fit prongs	Buckle prongs flex on every use.	Root radius held, weld lines kept away from the prong.
Sliding and turning fits	Lock dials, cord lock plungers, rail guides.	Tight shrinkage control; POM parts moulded consistently ^[8] .
Soft zones	Treads, grip overmoulds, corner guards.	Shut-offs on the substrate, interlocks, bond area ^{[4][5]} .
Living hinge	One-piece tool and carry cases.	Melt must flow across the hinge; flex while warm ^[6] .
Bearing and axle seats	Wheels and forks.	Round, stable bores; press-fit allowance.
Brand surfaces	Pull tabs, grips, trim, lock faces.	Gate hidden, polish or texture, crisp logos.

MOULD CONSIDERATIONS

ITEM	LUGGAGE POINTS	ITEM	LUGGAGE POINTS
Cavity layout	Buckles, feet, pulls: 16 to 32. Wheels, housings: 2 to 4. Case bodies: 1.	Steel	Hardened steel for glass-filled nylon.
Runner and gate	Balanced runners for small POM parts; hidden gates on cosmetic parts.	Cooling	Thick brackets and wheel hubs set the cycle ^[10] .
Two-shot	Rotary or transfer tool for tread and grip overmoulds.	Hinge cooling	Good cooling at the hinge lengthens hinge life ^[6] .
Side actions	Rail guides, lock bodies and brackets often need slides.	Inserts	Metal axles, rivet sleeves or slider bodies loaded before overmoulding.

PLANNING A TROLLEY OR HARDWARE SET

FAMILY MOULDS	HANDED PARTS	COLOUR RUNS	SIZE RANGE
Small matching parts of one resin can share a tool.	Left and right brackets and guides in one mould.	Group parts by colour to limit purging.	Cabin, medium and large cases often share hardware.

SECONDARY OPERATIONS THAT SHAPE THE MOULD

OPERATION	TYPICAL PARTS	WHAT IT ASKS OF THE MOULDED PART
Bearing and axle assembly	Spinner wheels and forks	Bore size and roundness held after moulding.
Spring and plunger assembly	Cord locks, lock mechanisms	Guide bores and spring seats to size.
Riveting and screwing	Brackets, grips, latches to the case	Bosses without voids; holes square to face.

SECTION 05 · PRODUCTION PLANNING

PRODUCTION CAPACITY & CYCLE-TIME PLANNING

Luggage output is counted in sets: four wheels, one handle set and a lock per case, several buckles per backpack. Plan each mould from the set count.

OUTPUT

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

Effective/hour = Parts/hour × Utilisation

Day = Effective/hour × Hours run

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

EXAMPLE 1 · 32-CAVITY POM BUCKLE PART

$32 \times 3600 \div 20 \text{ s} = 5,760 \text{ /h}$

$\times 0.85 \text{ utilisation} = 4,896 \text{ /h}$

$\times 22 \text{ h} = 107,712 \text{ /day}$

$\times 26 \text{ days} = 2,800,512 \text{ /month}$

EXAMPLE 2 · 2-CAVITY PA6-GF WHEEL HOUSING

$2 \times 3600 \div 40 \text{ s} = 180 \text{ /h}$

$\times 0.85 = 153 \text{ /h} \cdot \times 22 \text{ h} = 3,366 \text{ /day}$

$\times 26 \text{ days} = 87,516 \text{ /month}$

Working backwards: 30,000 four-wheel cases a month need 120,000 housings in 572 running hours, or 210 per hour. Cavities = $210 \times 40 \div (3600 \times 0.85) \approx 2.7$, so a 4-cavity mould or a second machine.

Illustrative example. Cycle times of 20 s and 40 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.

WHAT SETS THE CYCLE TIME

PHASE	LUGGAGE INFLUENCE
Injection & hold	Packing thick glass-filled bosses and hubs.
Cooling	Usually the largest share; rises roughly with wall thickness squared ^[10] .
Second shot	Treads and grips add a stage or a transfer.
Handling	Inserts, axles and hinge flexing at ejection.

BALANCING CAVITIES, CLAMP FORCE AND OUTPUT

POM BUCKLE PART MOULD	PROJECTED AREA	CALCULATED FORCE	RATED AT 85%	SHOT	EFFECTIVE OUTPUT
16 cavities	78 cm ²	40 t	47 t	56 g	2,448 /h
24 cavities	116 cm ²	60 t	71 t	83 g	3,672 /h
32 cavities	154 cm ²	80 t	94 t	110 g	4,896 /h

Illustrative example. Force = projected area × clamp factor K × safety factor S^[9]. K = 0.45 t/cm² and S = 1.15 assumed for POM. Also assumed: 4 cm² and 3 g per part, runner area 14 / 20 / 26 cm² and weight 8 / 11 / 14 g, 20 s cycle, 85% utilisation.

PLANNING BY SET

Parts needed per month = Cases or bags per month × Parts per set

Four wheels, two or more housings, one grip and several guides per case. Work out each mould from its own count, then add the machine hours.

RESIN CHANGES AND REQUALIFICATION

Brand customers often ask for hardware to be retested after a change of resin grade, colour masterbatch or regrind ratio. Keep lot records by mould and colour, and plan test time into the schedule before switching a running part.

MACHINE UTILISATION AND PLANNED DOWNTIME**COLOUR CHANGES**

Group colours and run light to dark to cut purge time.

NYLON DRYING

Dryer capacity must match the hourly resin use.

MOULD CHANGES

Short runs of many parts; quick mould change helps.

SEASONAL DEMAND

Build stock of hardware ahead of travel and school seasons.

SECTION 06 · AUTOMATION

AUTOMATION & PRODUCTION EFFICIENCY

Luggage hardware is small, numerous and often assembled, so automation mostly saves handling, sorting and assembly labour.

AUTOMATION	WHERE IT ADDS VALUE IN LUGGAGE HARDWARE	WHEN IT USUALLY MAKES SENSE
Sprue picker	Removes runners from buckle, pull and feet moulds.	High-cavitation cold-runner moulds.
Robot take-out	Removes wheels, housings and case bodies; flexes living hinges.	Larger parts, two-shot transfers, hinge cases.
Insert loading	Places axles, sleeves or slider bodies before overmoulding.	Overmoulded parts at volume.
Two-shot or transfer cell	Adds TPU tread or TPE grip layer.	Wheels and grips in steady volume.
Conveyors and separators	Separate parts from runners and carry them away.	Small parts in many colours.
Assembly fixtures	Wheels with bearings, cord locks with springs, buckle pairs.	Multi-part products sold assembled.
Counting and bagging	Counts buckles, pulls and feet into packs.	Hardware sold to bag makers by count.
Dryers and loaders	Dries nylon, PC/ABS and TPU at the machine.	Every machine running hygroscopic resins ^[7] .

AUTOMATION BY PRODUCT GROUP

PRODUCT GROUP	MAIN AUTOMATION	WHY
Buckles, pulls, feet	Sprue picker, conveyor, counting	High counts per hour, sold by count
Wheels	Two-shot cell, bearing assembly	Tread layer and assembly on every wheel
Trolley and lock parts	Robot, assembly fixtures	Many parts per set, springs and rivets
Hinged cases	Robot with hinge flexing	Hinge flexed while warm ^[6]

DECIDING ON AUTOMATION

VOLUME AND LABOUR Sorting, counting and assembly across many small parts add up.	CONSISTENCY Timed insert loading and take-out keep the cycle and bond steady.	COLOUR RANGE Automation that works across colours pays back faster than single-tool cells.
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INTERFACES TO SPECIFY ON THE MACHINE

ROBOT Signal interface and safety interlocks.	CORE PULLS Hydraulic circuits for slides in housings and brackets.	SECOND SHOT Interface for a rotary table or second unit.	AUXILIARIES Dryer, loader, conveyor and counter.
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WHERE THE COST OF A MOULDED PART COMES FROM

MATERIAL resin, colour	MACHINE per machine hour	LABOUR sorting, assembly	POWER kWh per part	MOULD many small tools	REJECTION flash, bond	PACKING by count
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On wheels and brackets, glass-filled resin and cooling time dominate. On buckles and pulls, machine hours, colour changes and packing dominate. Use your own rates to compare options.

SECTION 07 · QUALITY

QUALITY, TESTING & COMMON DEFECTS

Luggage hardware is tested by abuse: dropped, dragged, snatched and cycled. Most failures trace back to fatigue, bonding or moisture.

TESTS AND CHECKS

CHECK	WHAT IT INVOLVES	LINK TO MOULDING
Handle snatch	IS 8517: 100 N applied suddenly to the handle, 10 times; the handle must not snap or loosen ^[1] .	Grip bosses, voids, weld lines
Drop test	IS 8517: bag filled to 5 kg, dropped 1 m onto wood 10 times, no damage or splits ^[1] .	Corner guards, feet, wheel housings
Wheel mileage	Loaded wheels run over abrasive surfaces for long distances ^[2] .	Hub and tread bond, bearing seats
Handle jerk cycles	Loaded bag lifted by the handle repeatedly ^[2] .	Bracket and grip fatigue
Overmould peel	90° peel of the soft layer from the rigid part ^[4] .	Substrate dryness, grade pairing, shut-offs
Cycle and pull tests	Buckle, cord lock and latch cycling with a pull test, to the customer specification.	Prong root, resin and regrind consistency
Dimensional	Bores, snap fits, dial detents, conditioned nylon size.	Shrinkage, moisture, cooling

IS 8517:1977 was written for leather and canvas air travel bags and was reaffirmed in 2019^[1]. Confirm the current edition, any certification requirement and each brand's own test protocol.

IN-PROCESS CONTROLS

MOISTURE Check dryer dew point and resin moisture before nylon runs.	WEIGHT BY CAVITY Flags filling imbalance in 32-cavity tools.	FUNCTION Buckle snap, dial click and wheel spin on the line.	COLOUR Compare with the approved master under set light.
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TROUBLESHOOTING COMMON DEFECTS

DEFECT	POSSIBLE CAUSES	EFFECT ON THE PART	AREAS TO INVESTIGATE
Bracket or latch cracks	Voids at bosses, weld lines on the load path, dry nylon	Handle or latch fails in use	Gate position, hold pressure, conditioning
Tread or grip peeling	Wrong grade pairing, wet substrate, thin edges ^[5]	Wheel noise, loose grip	Grade, drying, shut-off, interlocks
Buckle prong breaks	Sharp root, weld line, degraded or reground POM	Strap releases	Root radius, gate, regrind ratio
Hinge cracks	Flow along the hinge, no flexing at ejection ^[6]	Case lid breaks off	Gate location, hinge cooling, flexing
Sink and voids	Thick hubs and bosses, short hold	Weak or loose bearing seats	Hold time, wall design
Flash	Worn shut-offs, low clamp	Rough edges, poor fit	Parting line, clamp setting
Splay	Moisture in PA, PC/ABS or TPU	Streaks, lower strength	Drying
Size drift	Nylon moisture uptake ^[7]	Latch or lock fit changes	Gauge at conditioned size

SECTION 08 · WORKED EXAMPLES

PRACTICAL MACHINE-SELECTION EXAMPLES

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

A · POM SIDE-RELEASE BUCKLE PART		VOLUME
APPLICATION · MATERIAL	Backpack strap buckle · POM	
CHARACTERISTICS	About 3 g, 4 cm ² projected area (assumed); flexing prongs	
CAVITIES · OUTPUT	32 · about 4,896 per hour at 20 s (Section 05)	
MOULD CONSIDERATIONS	Balanced runner, prong root radius, gate away from prongs	
SECONDARY	Pairing male and female parts, counting	
EVALUATE The Section 05 table gives about 80 t calculated and a 110 g shot, so a clamp rated around 94 t or more. Shot consistency across 32 cavities matters as much as tonnage. STILL NEEDED CAD projected area, grade, cycle test target, colours.		

B · SPINNER WHEEL WITH TPU TREAD		TWO-SHOT
APPLICATION · MATERIAL	Spinner wheel · PA6-GF hub, TPU tread	
CHARACTERISTICS	Thick hub, bearing seat, soft outer tread	
CAVITIES · OUTPUT	2 to 4 · set by case volume (Section 05)	
MOULD CONSIDERATIONS	Two-shot or insert overmould, interlocks, bearing bore	
SECONDARY	Bearing and axle assembly, mileage test	
EVALUATE Needs dried nylon, a TPU grade that bonds to it and either a second injection unit or a transfer step. Tonnage follows the hub and tread projected area. STILL NEEDED wheel drawing, grades, peel and mileage targets, volume.		

C · PP TOOL CASE WITH LIVING HINGE		LARGE SINGLE PART
APPLICATION · MATERIAL	Small tool case · PP copolymer	
CHARACTERISTICS	Body and lid moulded open; about 480 cm ² projected (assumed)	
CAVITIES · OUTPUT	1 · set by cycle of a deep part	
MOULD CONSIDERATIONS	Gate across the hinge, hinge cooling, latch features	
SECONDARY	Hinge flexed at ejection, latch fitting	
EVALUATE At K = 0.35 t/cm ² and S = 1.15: 480 × 0.35 × 1.15 ≈ 193 t, so a clamp rated around 230 t or more. Opening stroke must clear the deep body. STILL NEEDED case drawing, depth, grade, hinge life target.		

WHAT DECIDED THE MACHINE IN EACH EXAMPLE

SELECTION FACTOR	A · BUCKLE PART	B · SPINNER WHEEL	C · TOOL CASE
Main limit	Cavities, shot consistency	Two materials, drying	Part size, depth
Clamp force	About 94 t rated	Needs projected area	About 230 t rated
Auxiliaries	Sprue picker, counter	Dryer, second shot, assembly	Robot with hinge flexing

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 luggage or bag hardware.

COMPONENT

- ☐ 2D drawing and 3D CAD model
- ☐ Part and runner weight, wall thickness
- ☐ Resin grade, filler and colour
- ☐ Snap fits, bores and bond areas
- ☐ Inserts, springs and bearings

PRODUCTION

- ☐ Monthly cases or bags, parts per set
- ☐ Colour range and run lengths
- ☐ Cavity count and target cycle time
- ☐ Operating hours and shifts
- ☐ Packing and counting quantities

MOULD

- ☐ New or existing mould; size and weight
- ☐ Slides, two-shot or overmould stage
- ☐ Hardened steel for glass-filled grades
- ☐ Family or handed moulds
- ☐ Previous machine specification, if any

LUGGAGE APPLICATION

- ☐ Case or bag type and load
- ☐ Drop, wheel and handle test targets
- ☐ Buckle and latch cycle targets
- ☐ Outdoor use and UV grade
- ☐ Brand test protocol or standard

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 LUGGAGE HARDWARE
1	What shot repeatability does the machine hold at my small shot size?	Buckle and pull tools with 16 to 32 cavities.
2	Is a wear-resistant screw and barrel available for glass-filled nylon?	Brackets, wheels and latches.
3	Can a second injection unit or rotary table be added?	TPU treads and TPE grips.
4	How many hydraulic core-pull circuits are available?	Housings, rail guides and lock bodies.
5	Will my case body mould fit, with the opening stroke it needs?	Deep one-piece tool cases.
6	What robot, dryer and loader interfaces are supported?	Take-out, hinge flexing and nylon drying.
7	Can the control store settings for each mould and colour?	Frequent mould and colour changes.
8	What is the energy use per part at my cycle?	Low price per buckle or pull.
9	Can the machine log shot data for traceability?	Retesting after resin changes and brand audits.
10	What installation, training and spare-parts support is included?	Seasonal peaks need reliable uptime.

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 two-shot parts, inserts or colour range.

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