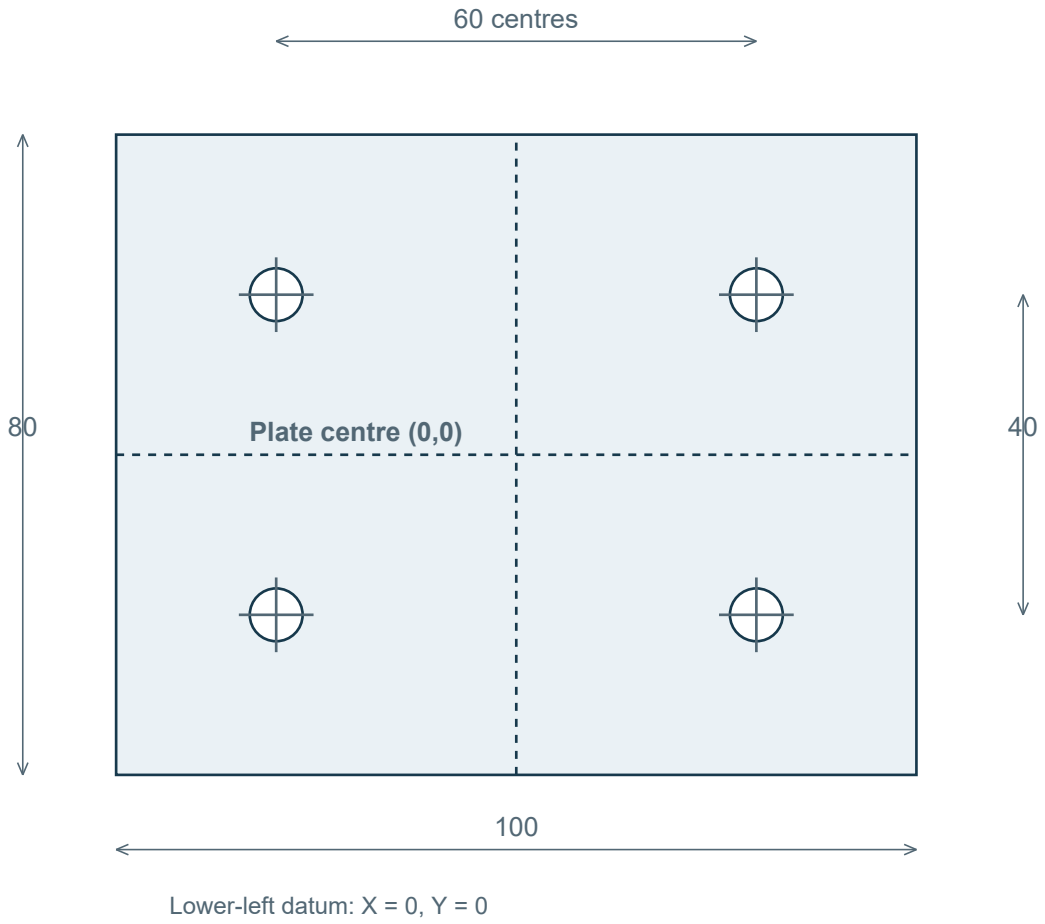
The four-hole interface

Give this sheet to the rig fabricator. Same pattern for all three camera modules.

4 x diameter 6.6 through, on 60 x 40 centres.
M6 clearance holes, not M6 tapped holes. The rig-side reference plate is 100 x 80 x 6.



Hole	From plate centre (X,Y)	From lower-left (X,Y)
1	-30, -20	20, 20
2	+30, -20	80, 20
3	-30, +20	20, 60
4	+30, +20	80, 60

Proposed metal machining target: centres +/-0.10; hole diameter 6.6 +0.2/-0. Agree with the fabricator. Printed parts need measured calibration and finishing. DXF is 1:1 mm; this PDF view is not a scale template.

The industrial carrier is 100 x 160, with the same four holes centred on the bed. Do not measure its holes from the 100 x 80 plate corner. These holes attach the carrier to the rig; they never go into camera bodies.

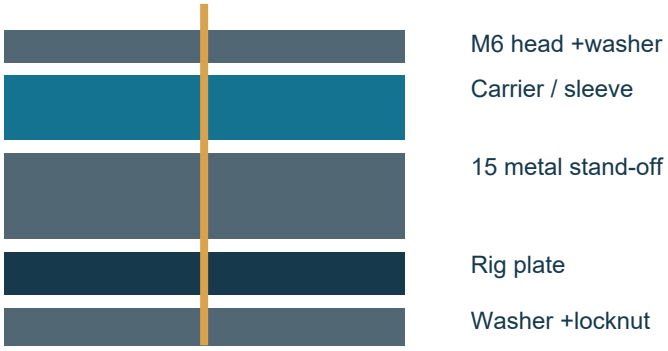
Printed and metal options

The common connection stays the same; the material and clamping details differ.

Recommended development path: print and fit the geometry first. Evaluate a metal-base / printed-locator version for field qualification. The all-printed carrier alternative includes metal compression sleeves.

Item	Metal-base option	Printed-base option
Carrier thickness	6	10
Four rig attachment holes	6.6 through	10.2 sleeve sockets; installed sleeve bore6.6
Camera screw head pocket	3 deep, leaves3 solid grip	5 deep, leaves5 solid grip
Carrier-to-rig space	4 metal stand-offs,15 long	Same; also4 metal compression sleeves,10 long
Bolt length starting point	M6x40, verify stack	M6x45, verify stack
Primary printed threads	None	None

Section through one common bolt - not to scale

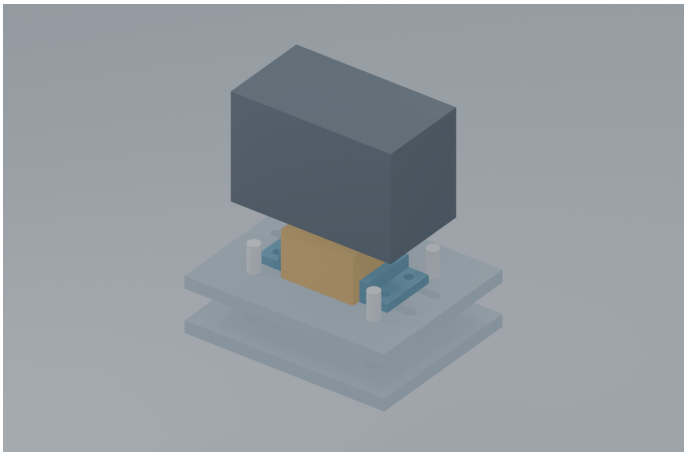


Keep M4 nuts, camera screw heads and bolt ends inside the 15 mm installation gap. Check all head/rotor surfaces and tool access. Stand-offs are included in the mount-only STEP assemblies; the fabricator supplies the rig plate.

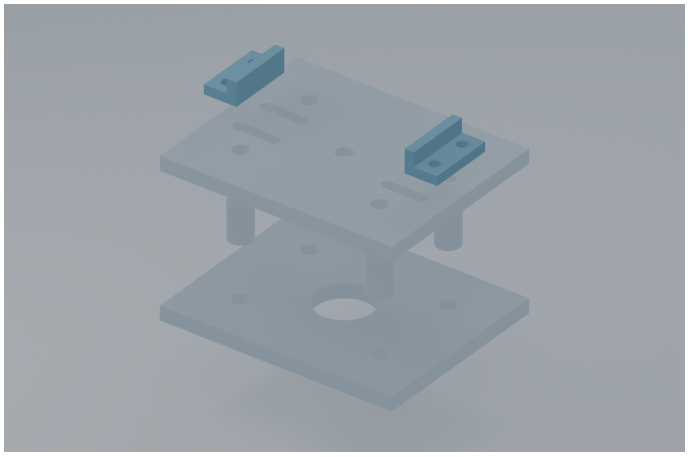
A compression sleeve protects the printed base from bolt crushing. It does not remove camera loads from the print or establish a safe load rating. Do not use a sleeve that is longer or shorter than the finished grip without redesigning the stack.

GoPro MISSION 1 PRO module

Actual CAD mounts; camera / purchased adapter shapes are reference envelopes only.



Assembled with size envelope



Custom connection separated

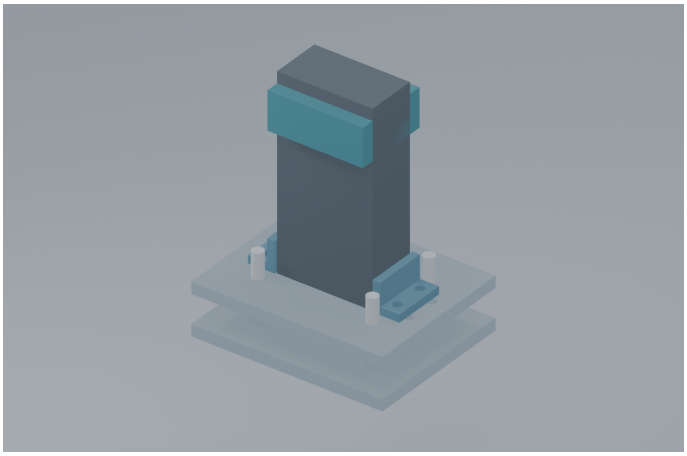
Use the fixed-lens MISSION 1 PRO with its built-in fingers, a purchased metal finger adapter and two adjustable low keepers. GoPro recommends built-in fingers for high-vibration use [G1,G2].

Feature	Design dimensions / meaning
Base	100 x 80;6 metal or10 print
Rig interface	4 holes on60 x40; same for every module
Metal adapter candidate	Kupo KG012911: overall36 x36 x23;1/4-20 female foot [K1,K2]
Keeper fasteners	4 x M4 clearance4.5; slot centres X=+/-32,Y=+/-8; slots20 x4.5 alongX
Camera fastener	Central diameter7; underside diameter14 head pocket
Keeper gap	Initial36.6 bare; actual adapter foot must be measured
Camera size reference	80.1W x52.1H x44.3D, including lens/buttons, excluding hood;207g [G1]

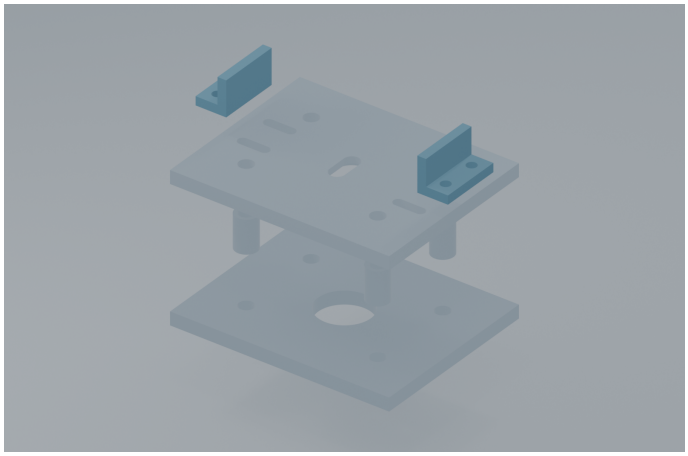
Print list: GP02 +GP04 +GP05, one each. Use4 metal sleeves and4 metal stand-offs. GP03 is an alternative plain-hole fit-check base. Camera finger geometry, adapter foot profile, socket depth and pivot screw clearance are not verified by the overall dimensions. Use the correct supplied / verified metal pivot screw; fit before release.

Insta360 X6 module

Actual CAD mounts; camera / purchased adapter shapes are reference envelopes only.



Assembled with size envelope



Custom connection separated

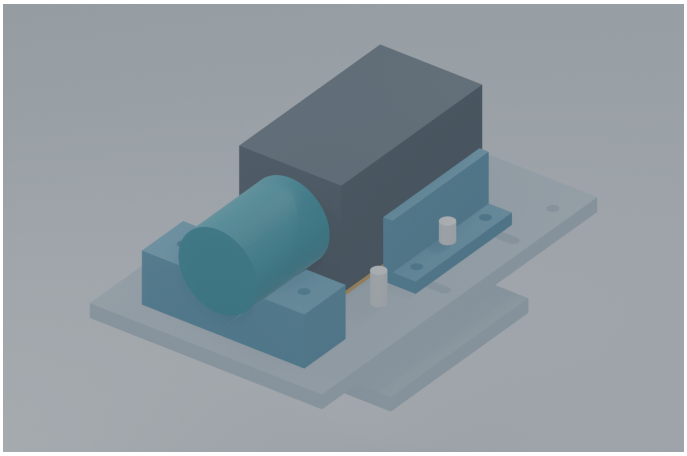
Use the bottom threaded camera connection and two adjustable open lower-body locators. Insta360 specifies the bottom threaded interface instead of magnetic quick release for violent vibration [X2].

Feature	Design dimensions / meaning
Base	100 x80;6 metal or10 print
Rig interface	4 holes on60 x40
Tripod screw positioning	Central slot16 x7 alongY, centre0,0;9mm screw-centre travel
Locator adjustment	4 slots14.5 x4.5 alongX; centres X=+/-35.5,Y=+/-8
Lower-body locator	Wall16 high above base; foot14 x28 x4; one left, one right
Locator gap	44..64 bare adjustable; start51.2, then fit liner / body
Camera envelope	50W x100H x26.4D body;40D including lenses;196g [X1]

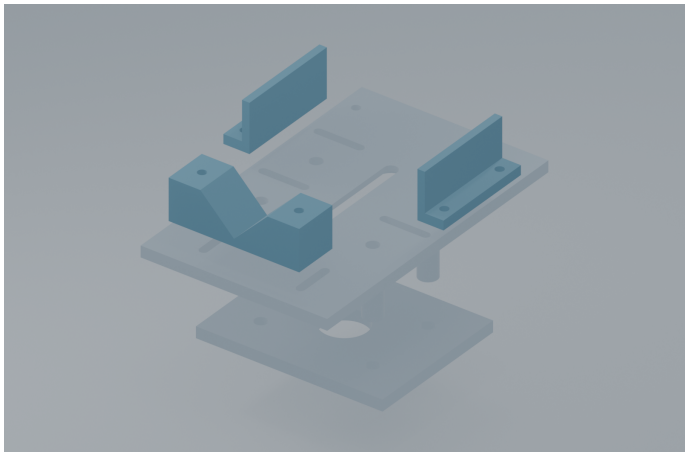
Print list: X602 +X604 +X605, one each, plus metal sleeves and stand-offs. X603 is a plain fit-check alternative. Exact bottom socket offset, safe screw depth, lower contours and cable / battery-door access need the real X6. Locators are not a full protective cage. The larger depth block in the render is an illustrative lens zone, not an exact lens location.

Universal industrial carrier

Actual CAD mounts; camera / purchased adapter shapes are reference envelopes only.



Assembled with size envelope



Custom connection separated

Universal within a stated size range: the factory body-to-tripod adapter provides the secure camera interface; sliding side jaws locate the body. C-mount is the lens connection, not a universal body mounting pattern.

Feature	Design dimensions / meaning
Bed	100 x160;6 metal or10 print; common60 x40 rig pattern
Camera tripod slot	54 x7 alongY, centre(0,10);47mm screw-centre travel
Body side jaws	Bare gap26..70; nominal1mm pad each side gives24..68 body-width range
Jaw adjustment slots	26.5 x4.5 alongX; centres(+/-32.5,0) and(+/-32.5,40);22mm centre travel
Optional lens saddle	70 x24 x22;90 degree V; apex4 above foot
Saddle bed slots	22 x4.5 alongY at(+/-26,-58);17.5mm centre travel
Cable clamp holes	2 x4.5 at(+/-42,65)

Print list: IND02 +IND04 +IND08. Add IND05 saddle and selected shims if required. Exact factory plate, screw depth, body/connector clearance, optical axis and lens support need fitting. LUCID TRX-TR80 x36 x6 with suppliedM3 body screws is a Triton10 example only [L1]. Its nominal4.5mm tripod-screw projection must not be applied to other cameras without verification.

Accessory part dimensions

Left/right printable parts are separate files. Dimensions below use each part local datum.

Part / feature	Dimensions and hole locations
GP04 /GP05 keeper	Foot14 x28 x4; wall4 x28 x10. Right-hand inner faceX0, foot toX14. Two4.5 holes at(8.5,+/-8). Left part mirroredX.
X604 /X605 locator	Foot14 x28 x4; wall4 x28 x16. Same hole locations as keeper. Left mirroredX.
IND04 /IND08 side jaw	Foot14 x56 x5, wall4 x56 x26. Y=-8..48. Right holes4.5 at(8.5,0),(8.5,40). Left mirroredX.
IND05 V saddle	70 x24 x22.90deg V, mouth36, apexZ4. Two4.5 holes on52 centres, at(+/-26,0).
IND06 saddle shims	70 x24; thickness1,2,4,8,16 available separately. Same52 centre hole pattern. Select only needed thickness.
IND07 body riser	40 x80,10 or20 high.7 x54 slot alongY centred at(0,10). Requires supported factory plate and a suitably longer camera screw.
IF03 compression sleeve	MetalOD10,ID6.6,L10. Four per printed sleeved base.
IF04 stand-off	MetalOD10,ID6.6,L15. Four per module, both material options.
IF02 fit coupon	Print100 x80 x5 with four6.6 holes on60 x40; measurement only.

Sharp CAD edges are nominal. Deburr metal edges and agree corner finishing with the fabricator. Do not alter contact datums or thin the bolt seats. Printed base underside camera-head recess is5 deep; metal base recess is3 deep. See STEP for the exact solid geometry and DXF for metal-base cut profiles.

Lens height is not automatic: measure the lens axis relative to the factory plate and use only a properly supported shim / riser arrangement. Support a fixed barrel region, keeping focus/iris rings free. Unusually large/heavy lenses need a separate support design.

Print and purchase list

Quantities are per camera module unless the row identifies a specific module.

Item	Quantity / selection
Base	One selected GP /X6 /IND base. Metal and print styles are alternatives.
Left/right locators	One of each hand per module; optional lens saddle for industrial.
Compression sleeves	4 per sleeved print base; none for metal base.
Metal stand-offs	4 x15 long, all modules.
Common M6 hardware	4 bolts,8 washers,4 locking nuts. Nominal lengths40 metal /45 print, then verify.
Side locator M4 hardware	4 bolts,8 washers,4 locknuts. Nominal20 metal /25 print, then verify under-base clearance.
Lens saddle M4 hardware	2 bolts,4 washers,2 locknuts. Length depends on actual shims / bed.
Camera tripod screw	1 per module; correct thread and measured length / engagement.
GoPro-specific hardware	Metal finger adapter +correct metal GoPro pivot screw.
Industrial-specific hardware	Factory body-to-tripod plate with correct supplied body screws.
Pads / restraints	2 thin side liners; lens liner/strap if needed; independent camera tether and metal rig anchor.
Cable support	Retained strain-relief clamp and suitable service loop.

Full item specifications, source references and conditional items are in Hardware_and_Print_List.csv. For one GoPro +one X6 +one industrial printed module:3 selected bases,6 side locators,12 metal sleeves,12 metal stand-offs,12 M6 bolts,24 M6 washers,12 M6 nuts; add camera-specific hardware, M4 hardware and optional lens support.

Buy KG012911 at B&H [K2]; obtain industrial body adapters from the camera manufacturer [L1]. Obtain screws / nuts / washers from a fastener supplier [F1], and have sleeves / stand-offs machined. Quote PA12 SLS prints with a service bureau [P1,P2]. Prices and final fastener grades are not fixed by this prototype package.

Assemble, fit and measure

Adjust while parked with the module supported. Then clamp and inspect.

1 - Check the interface

Measure the coupon and rig plate. Confirm60 x40 centres and6.6 clearance. Check the actual printed width is100mm after slicing; STL stores no unit metadata.

2 - Fit camera hardware off the rig

Install the purchased camera adapter, factory body plate or X6 tripod screw. Verify thread pitch and safe engagement with a depth gauge. Camera screw projection =under-head length -solid grip -under-head washers.

3 - Set locator positions

Fit one left/right pair, using M4 through hardware. Close gently onto safe flat surfaces with firm liners. Keep camera doors, vents, cables and lens rings clear. Locators supplement the camera fastener.

4 - Add optional lens support

Measure the lens axis and fixed-barrel diameter. Set the sliding V saddle and selected shims. Retain the lens without loading focus/iris mechanisms.

5 - Attach module to rig

For print base, fit4 metal compression sleeves. Place4 metal15mm stand-offs on common bolt centres. Install4 M6 through bolts /washers /locknuts. Check all underside projections stay clear.

6 - Secure and articulate

Add independent camera/cage-to-metal-rig tether and cable strain relief. Test the full planned head angle range with the actual camera/lens/cable assembly. No cable winding around a rotating axis.

7 - Obtain service release

Record masses, fastener specification, torque, retention and vibration checks. Evaluate print creep /heat /fatigue and actual vehicle conditions. These files do not establish a highway rating.

Camera fit record

Complete for each exact camera, lens, housing and adapter combination before service.

Measurement / check	Record actual value / result
Camera model, serial /lens /cage	_____
Assembly mass and centre of gravity	_____
Bottom thread pitch /safe engagement	_____
Body/foot width /height /length	_____
Socket position vs body centre	_____
Tripod screw length /grip /projection	_____
Side-jaw gap and liner thickness	_____
Lens axis /barrel diameter /shim	_____
Port, vent, door and cable clearance	_____
M6 /M4 bolt grades, locks, lengths, torque	_____
Printed material /process /inspection	_____
Tether /anchor /retention checks	_____
Vibration /thermal /fatigue review	_____
Engineering release /date /limitations	_____

Overall manufacturer dimensions do not locate screw threads, ports, fingers or curved contact surfaces. Reference boxes in the STEP assemblies and images are marked accordingly. Universal industrial jaws cover a range; the exact body adapter is still camera-specific.

Open in SolidWorks or a slicer

Mounts only - no vehicle chassis or full rig is included in this package.

SolidWorks

Open CAD/STEP_Assemblies/GP_Mount_ONLY_Print_Sleeved.step (or X6 /IND). Use Mount_ONLY_Metal for the alternative. Open an individual STEP_Parts file when designing a single part. Confirm millimetres, retain assembly structure, run Import Diagnostics, then Save As .SLDPRT / .SLDASM [S1,S2].

What STEP contains

Exact solid geometry and assembly locations. It does not contain native SolidWorks feature history, mates or a tested native SolidWorks assembly. Native files have to be created and checked in SolidWorks.

3D printing

Use STL_Print_Prototypes. Select one base style and one of each handed locator. Lay flat feet /bases down; plan underside recess support with the print shop. PA12 SLS is a prototype candidate [P1]. Desktop prints can check fit; print settings alone are not service qualification.

Metal fabrication

DXF files are1:1 mm, withCUT layer outlines and through features. POCKET_REFERENCE describes underside machining, not through cutting. Use STEP and this drawing for pocket depths. Do not cut the text or reference layers.

Existing G15 deck

The60 x40 interface is preserved. The old40 x30 rotor screws /heads remain inside it; the new15mm stand-offs provide clearance space but exact heads, tooling and surrounding gimbal still need inspection. The old G16 blank is replaced by the selected new module.

Checks supplied

CAD_Checks records part validity, STEP round trips and nominal custom-solid interference. Package_Checks adds STL /DXF /file checks. Physical fit, native SolidWorks import and road-use qualification remain open.

Verified references and suppliers

Links checked 8 November 2026. Product dimensions are references, not fit certification.

G1 - GoPro MISSION 1 series: dimensions and interfaces

G2 - GoPro high-vibration mounting guidance

K1 - Kupo KG012911 metal GoPro tripod adapter

K2 - Buy Kupo KG012911 at B&H

X1 - Insta360 X6 hardware dimensions

X2 - Insta360 X6 high-vibration mounting guidance

L1 - LUCID Triton10 factory tripod adapter TRX-TR

L2 - LUCID Triton10 reference camera

P1 - Formlabs Nylon 12 SLS material

P2 - Xometry SLS print service

F1 - McMaster-Carr fasteners

S1 - SolidWorks 2026 STEP support

S2 - SolidWorks importing documents

M1 - OnlineMetals aluminium stock

The common60 x40 interface and the printed carrier dimensions are project design choices. Manufacturer references support camera /adapter envelopes and connection types. They do not certify these custom mounts for vehicle use.