

Materials List for:

Design and Implementation of a Bespoke Robotic Manipulator for Extracorporeal Ultrasound

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Materials

Name	Company	Catalog Number	Comments
3D-printed link L ₀	3D printing service	1	As shown in Figure 1, with the STL file provided
3D-printed link L ₁	3D printing service	1	As shown in Figure 1, with the STL file provided
3D-printed link L ₂	3D printing service	1	As shown in Figure 1, with the STL file provided
3D-printed link L ₃	3D printing service	1	As shown in Figure 1, with the STL file provided
3D-printed link L ₄	3D printing service	1	As shown in Figure 1, with the STL file provided
3D-printed end-effector	3D printing service	1	As shown in Figure 1, with the STL file provided
20-teeth spur gear	3D printing service	12	0.5 module, 5 mm face width, with mounting keyway, as shown in Figure 2, with the STL file provided
18-teeth bevel gear	3D printing service	2	0.5 module, 5 mm face width, with mounting keyway, as shown in Figure 2, with the STL file provided
120-teeth spur gear (Type A)	3D printing service	1	0.5 module, 6 mm face width, with mounting keyway, bearing housing, and bore, as shown in Figure 2, with the STL file provided
120-teeth spur gear (Type B)	3D printing service	2	0.5 module, 6 mm face width, with detent holes, bearing housing, and bore, as shown in Figure 2, with the STL file provided
120-teeth spur gear (Type C)	3D printing service	1	0.5 module, 6 mm face width, with mounting key, bearing housing, and bore, as shown in Figure 2, with the STL file provided
20-teeth long spur gear	3D printing service	1	0.5 module, 21.5 mm face width, with mounting keyways, as shown in Figure 2, with the STL file provided
144-teeth bevel gear	3D printing service	1	0.5 module, 7 mm face width, with mounting keyways, as shown in Figure 2, with the STL file provided
Bearing (37 mm O.D and 30 mm I.D)	Bearing Station Ltd., UK	5	Bearing size and supplier can be varied

Bearing (12 mm O.D and 6 mm I.D)	Bearing Station Ltd., UK	2	Bearing size and supplier can be varied
Bearing (32 mm O.D and 25 mm I.D)	Bearing Station Ltd., UK	1	Bearing size and supplier can be varied
Bearing (8 mm O.D and 5 mm I.D)	Bearing Station Ltd., UK	2	Bearing size and supplier can be varied
Plastic/metal shaft (6 mm O.D, 70 mm long)	TR Fastenings Ltd., UK	1	e.g. Could be an M6 bolt and a nut
Plastic/metal shaft (5 mm O.D, 70 mm long)	TR Fastenings Ltd., UK	1	e.g. Could be an M5 bolt and a nut
Ball-spring pairs	WDS Ltd., UK	4	Numbers of ball-spring pairs could varied to adjust the triggering force of the clutch
Clutch covers	3D printing service	2	104 mm O.D, 5mm face width, 6 mm bore, as shown in Figure 2, with the STL file provided
3D-printed shaft collar	3D printing service	1	35 mm O.D and 30 mm I.D, 8mm face width, as shown in Figure 2, with the STL file provided
3D-printed end-effector collar	3D printing service	1	As shown in Figure 2, with the STL file provided
Small geared stepper motors	AOLONG TECHNOLOGY Ltd., China	14	Part number: GM15BYS; Internal gear ratio 232:1 or 150:1, all acceptable