

2020

Integrated Design Project – Parts List



D.I. Paterson

CUED

9/25/2020

Table of Contents

SECTION 1 EIETL AND DYSON TOOLS AND TEST EQUIPMENT	2
EIETL- SETUP	2
DYSON-SETUP	2
EIETL-TOOLS.....	3
EIETL-TEST EQUIPMENT	3
DYSON TOOLS AND EQUIPMENT	4
SECTION 2 EIETL ELECTRONIC PARTS.....	5
PASSIVE COMPONENTS	5
LUMINAIRE	5
SENSORS	6
INTEGRATED CIRCUITS.....	6
SEMI-CONDUCTORS.....	6
MOTORS, WHEELS AND SERVOS	7
SWITCHES, BUTTONS AND RELAYS	7
CONNECTORS, PLUGS AND SOCKETS	7
PROCESSOR, BATTERY AND MOTOR CONTROL.....	8
GEARS, PULLEYS AND CHAIN	8
CABLE.....	9
MISCELLANEOUS.....	9
SECTION 3 DYSON MECHANICAL PARTS	10
SHEET, BAR, ROD, ANGLE ETC.....	10
FASTENERS, FIXINGS AND ADHESIVES	11
WOOD SHEET, PLA AND CARDBOARD.....	12

Section 1 EIETL and Dyson Tools and Test Equipment

EIETL- Setup

Teams are responsible for cleaning tools, test equipment and benches after every session.

Teams are to ensure all items are returned to their dedicated location after every session.

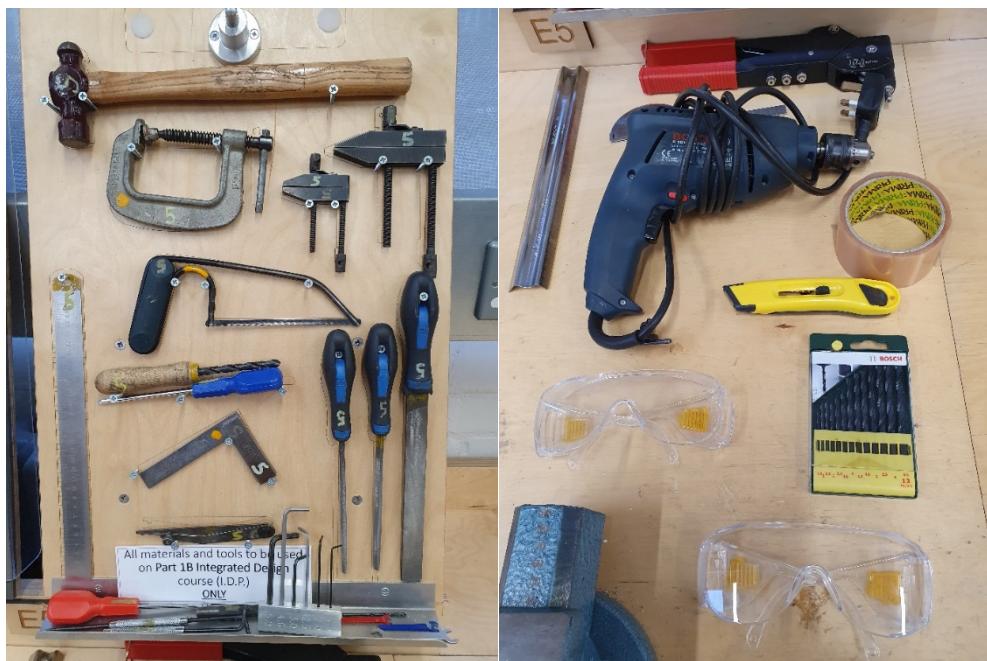
Robots may be stored on the bench.



Dyson-Setup

Teams are responsible for cleaning tools, test equipment and benches after every session.

Teams are to ensure all items are returned to their dedicated location after every session.



EIETL-Tools	Quantity	Location
Tool Box	1	EIETL Team Bench
Side Cutters	1	Tool Box
Wire Strippers Draper 19779 150mm	1	Tool Box
Flat Screwdriver 3mm	1	Tool Box
Flat Screwdriver 2.5mm	1	Tool Box
Phillips Screwdriver No 1	1	Tool Box
Phillips Screwdriver No 2	1	Tool Box
Trimming Tool	1	Tool Box
Tape Measure	1	Tool Box
De-Soldering Pump	1	Tool Box
Track Cutter	1	Tool Box
Chip Lifting Tool	1	Tool Box
Soldering Station	1	EIETL Team Bench
Solder Reel	1	Tool Box
Crimping Tool	1	Tool Box
Heat Gun Station	1	EIETL Team Bench
Scissors	1	Tool Box
Spanners, 5mm,4mm,3mm,2.5mm		Tool Box

EIETL-Test Equipment	Quantity	Location
Multi-Meter	1	Tool Box
Oscilloscope	1	EIETL Team Bench
Signal Generator	1	EIETL Team Bench
Power Supply	1	EIETL Team Bench
Various Test Leads	1	EIETL Team Bench
Mini Testing Board	1	EIETL Team Bench
Arduino USB2 Communications Lead	1	Tool Box

Dyson Tools and Equipment	Quantity	Location
Bench vice with soft jaws	1	Tool Board
Hammer	1	Tool Board
G clamp	1	Tool Board
Engineers clamp small	1	Tool Board
Engineers clamp Large	1	Tool Board
Hacksaw	1	Tool Board
Files (round, flat, half-moon)	3	Tool Board
Scriber	2	Tool Board
Spanners for 2.5, 3, 4,5mm nuts	3	Tool Board
De-burring tool	1	Tool Board
300mm steel rule	1	Tool Board
Engineers square	1	Tool Board
Divider/Calipers	1	Tool Board
Center punch	1	
Drill Bit set (13 drill bits 1.5-6.5mm)	1	Team Bench
Allen key set 1.5, 2, 2.5, 3, 4,5mm (6 keys)	2	
Protractor	1	
Pop rivet pliers	1	
Electric drill and chuck key	1	Team Bench
Flat head screwdriver	1	
Cross head screwdriver	1	
300mm safety rule	1	Team Bench
Retractable craft knife	1	
Clear sticky tape		
Safety glasses (students to bring their own safety glasses please)	2	
Trays of nuts and bolts		

Section 2 EIETL Electronic Parts

Passive Components	Data Sheets	Supplier and Part Number	Quantity	Location
Capacitors, Ceramic	🔗	Rapid	10pF - 220nf	Parts Tray
Capacitors, Electrolytic 10uF	🔗	Rapid	2	Parts Tray
Capacitors, Electrolytic 22uF	🔗	Rapid 11-0830	2	Parts Tray
Capacitors, Electrolytic 47uF	🔗	Rapid 11-0835	2	Parts Tray
Capacitors, Electrolytic 100uF	🔗	Rapid 11-0875	2	Parts Tray
Resistors, Carbon Film 0.25W 5%	🔗	Onecall	10R – 1M Kit	Tool Box
Resistor, Trimmer Pot 1K	🔗	Rapid 68-1956	2	Parts Tray
Resistor, Trimmer Pot 10K	🔗	Rapid 68-1959	2	Parts Tray
Resistor, Trimmer Pot 20K	🔗	Rapid 68-1960	2	Parts Tray
Resistor, Variable Panel Mount 1K	🔗	Rapid 65-0751	0	Request
Resistor, Variable Panel Mount 10K	🔗	Rapid 65-0753	0	Request
Resistor, Variable Panel Mount 100K	🔗	Rapid 65-0755	0	Request

Luminaire	Data Sheets	Supplier and Part Number	Quantity	Location
LED 3mm Red	🔗	Rapid 55-1776	6	Parts Tray
LED 3mm Yellow	🔗	Rapid 55-1774	3	Parts Tray
LED 3mm Green	🔗	Rapid 55-1772	3	Parts Tray
LED 3mm Blue	🔗	Rapid 55-1762	3	Parts Tray
LED 3mm White	🔗	Rapid 55-1766	3	Parts Tray
LED 5mm Red	🔗	Rapid 55-1796	1	Request
LED 5mm White	🔗	Rapid 55-1758	1	Request

INTEGRATED DESIGN PROJECT – PARTS LIST

Sensors	Data Sheets	Supplier and Part Number	Quantity	Location
IR Line Sensor OPB704		OneCall SCO1254	4	Parts Tray
IR Distance Sensor GP2Y0A21YKOF 80cm		OneCall 1243869	1	Parts Tray
IR Distance Sensor GP2Y0A02YKOF 150cm		OneCall 070891	1	Parts Tray
IR TSOP4838 Infrared Receiver 38 kHz		Rapid 55-0905	1	Parts Tray
IR KTIR0611S Photo Interrupter		Rapid 58-0942	1	Parts Tray
IR Transmitter Diode TSAL6200 5mm 940nm		Rapid 49-4513	1	Parts Tray
IR Emitter SFH 485P		Rapid 58-0446	1	Parts Tray
LDR NSL 5112		Rapid 58-0128	2	Parts Tray
IR NPN Phototransistor SFH 313A		RS 6655397	1	Parts Tray
Hall Effect (Magnet) Sensor SS 495A		OneCall		Request
Ultrasonic Distance Sensor		Rapid 74-1109	2	Parts Tray

Integrated Circuits	Data Sheets	Supplier and Part Number	Quantity	Location
Comparator Dual LM393P		Rapid 82-0272	2	Parts Tray
Comparator Quad LM339N		Rapid	2	Parts Tray
Gate Quad 2-Input Nand SN74HC00N		Rapid 83-0036	2	Parts Tray
Invertor Hex SN7414N		RS 9232329	2	Parts Tray
PCF 8574 8 channel I/O expander		RS 9203374	Request	EIETL
555 Timer		RS 169718	1	Parts Tray

Semi-Conductors	Data Sheets	Supplier and Part Number	Quantity	Location
MOSFET ZVN4306A		Rapid 47-0166	1	Parts Tray
Diode IN4001		Rapid 47-3130	Request	

Motors, Wheels and Servos	Data Sheets	Supplier and Part Number	Quantity	Location
Large Motor 1308-12-100	 	Rapid 37-1147	2	Motor Box
Small Motor 1271-1290	 	RS 245-6102	2	Motor Box
Standard Servo MC-410		Rapid 49-9395	2	Parts Tray
4" Wheel Vex 276-1497			2	Tool Box
4" Wheel Adaptors		Locally Manufactured	2	Tool Box
Ball Caster 3/4" Pololu 995		Rapid 75-0627	1	Tool Box

Switches, Buttons and Relays	Data Sheets	Supplier and Part Number	Quantity	Location
Micro switch SPDT MS-118305-A		RS 154-3591	2	Parts Tray
Push Button Black US-101A		Rapid 78-0118	2	Parts Tray

Connectors, Plugs and Sockets	Data Sheets	Supplier and Part Number	Quantity	Location
Crimp Housing 2-Pole JYK		Rapid 22-0905	4	Parts Tray
Crimp Housing 3-Pole		Rapid 22-0910	4	Parts Tray
Crimp Housing 4-Pole		Rapid 22-0915	4	Parts Tray
Header Right Angle 2-Pole		Rapid 22-1005	4	Parts Tray
Header Right Angle 3-Pole		Rapid 22-1010	4	Parts Tray
Header Right Angle 4-Pole		Rapid 22-1015	4	Parts Tray
Crimp Terminals JYK T2500		Rapid 22-1098	20	Parts Tray
Single Row PCB Sockets – 2 Way		Rapid 12-0081	4	Parts Tray
Single Row PCB Sockets – 3 Way		Rapid 12-0082	4	Parts Tray
Single Row PCB Sockets – 4 Way		Rapid 12-0083	4	Parts Tray

Processor, Battery and Motor control	Data Sheets	Supplier and Part Number	Quantity	Location
Arduino Uno Wi-Fi Rev2 + 5v Power Supply	📎📎	RS 1763651	1	Tool Box
Adafruit Motor Shield V2	📎📎📎	Rapid 73-4497	1	Tool Box
Power Lead – Battery to Arduino		Locally Manufactured	1	Accessories
Battery Pack	📎📎📎	Locally Manufactured	1	Charging Rack
Mains to 12v DC PSU		Onecall 3472600	1	Tool Box

Gears, Pulleys and Chain	Data Sheets	Supplier and Part Number	Quantity	Location
Spur Gear 10 Teeth	📎	Rapid 37-0276	Request	EIETL
Spur Gear 20 Teeth	📎	Rapid 37-0271	Request	EIETL
Spur Gear 30 Teeth	📎	Rapid 37-0266	Request	EIETL
Spur Gear 40 Teeth	📎	Rapid 37- 0261	Request	EIETL
Bevel Gear 20 Teeth	📎	Rapid 37-0236	Request	EIETL
Spur Gear Set	📎	Rapid 37-0280	1	EIETL
Chain	📎	Rapid 06-0650	Request	EIETL
Rack Gears	📎	Rapid 37-0246	Request	EIETL
Worm Gears	📎	Rapid 37-0240	Request	EIETL
Compression Springs (in a variety of sizes)			Request	EIETL/Dyson
Extension Springs (in a variety of sizes)			Request	EIETL/Dyson
Deep Grove Bearings			Request	EIETL
Flange Bushings			Request	EIETL
Pulley 10mm		Rapid 37-0407	Request	EIETL
Pulley 20mm		Rapid 37-0405	Request	EIETL
Pulley 30mm		Rapid 37-0399	Request	EIETL

Cable	Data Sheets	Supplier and Part Number	Quantity	Location
Multi Core 7/0.2 Black		Rapid 01-0400	1m	Tool Box
Multi Core 7/0.2 Brown		Rapid 01-0410	1m	Tool Box
Multi Core 7/0.2 Red		Rapid 01-2214	1m	Tool Box
Multi Core 7/0.2 Orange		Rapid 01-0425	1m	Tool Box
Multi Core 7/0.2 Green		Rapid 01-0415	1m	Tool Box
Single Core Black		Rapid	1m	Tool Box
Single Core Brown		Rapid 01-0310	1m	Tool Box
Single Core Red		Rapid	1m	Tool Box
Single Core Orange		Rapid 01-0325	1m	Tool Box
Single Core Green		Rapid 01-0315	1m	Tool Box

Miscellaneous	Data Sheets	Supplier and Part Number	Quantity	Location
Light Filters LEF-56SET		Onecall DP264712	Set	Parts Tray
Selection of Heat Shrink Tubing		Rapid 84-0145	Set	Parts Tray
Strip Board 25mm x 64mm		Rapid 34-0500	1	Tool Box
Strip board 95mm x 127mm		Rapid 34-0515	1	Tool Box
3 way JST Cable		Rapid 70-6412	With Sensor	Parts Tray

Section 3 Dyson Mechanical Parts

Sheet, Bar, Rod, Angle ETC	Maximum Quantity	Location
Mild steel sheet, 0.7mm thick	450mm×450mm	Dyson
Aluminum sheet, 1.5mm thick	200mm×150mm	Dyson
Aluminum tube, 19mm diameter, 1mm wall	150mm long	Dyson
Aluminum rod, 8mm diameter	150mm long	Dyson
Aluminum angle, 12.5×12.5×1.6 1 21swg = 0.8mm	600mm Long	Dyson
Mild steel tube (5/16 od × 21swg) 1 18swg = 1.2mm	300mm long	Dyson
Mild steel tube (3/8 od × 22swg) 1 16swg = 1.6mm	300mm long	Dyson
Polypropylene sheet 300×150×1.5 1	300×150×1.5 1	Dyson
Mild steel rod 4mm diameter	300mm long	Dyson
Mild steel rod 5mm diameter	300mm long	Dyson
Mild steel rod 6mm diameter	300mm long	Dyson
Brass rod 6mm diameter	100mm long	Dyson
Brass hex 6 AF	100mm long	Dyson

Fasteners, Fixings and Adhesives	Maximum Quantity	Location
M2.5 × 12 Socket head Cap Screws (motor mounts)		Dyson
M3/M4/M5/M6 All thread		Dyson
Pop rivets		Dyson
M3 × 4, 10, 16, 20 Socket Head Cap Screws		Dyson
M4 × 10, 16, 20, 25 Socket Head Cap Screws		Dyson
M5 × 16, 20, 25 Socket Head Cap Screws		Dyson
M6 × 16, 25, 40 Socket Head Cap Screws		Dyson
No4 x 25mm Round Head Screws		Dyson
No4 x 25mm Countersunk Screws		Dyson
M2.5, 3, 4, 5, 6 Nuts Steel		
M2.5, 3, 4, 5, 6 Washers		
M3 Nylon nut, bolts and screws		Dyson
M4 Nylon nut, bolts and screws		Dyson
M5 Nylon nut, bolts and screws		Dyson
M6 Nylon nut, bolts and screws		Dyson
M2.5 Slotted Screws 12mm, 20mm		
Adhesives (Hot glue, Rapid araldite, White wood glue)		Dyson
Superglue HV (EIETL		EIETL

Wood Sheet, PLA and Cardboard	Maximum Quantity	Location
MDF 300mm x 600mm (3mm, 4mm, 6mm) for laser cutting		Dyson
Plywood 300mm x 600mm (3mm, 4mm, 6mm for laser cutting)	2 x Sheets Max	Dyson
PLA for 3D printing		Dyson
Cardboard for testing		Dyson