Drucker Diagnostics
Making People Safer, Healthier, and More Productive

200 Shadylane Drive
Philipsburg, PA 16866

Phone: +1 (814) 692-7661 or +1 (866) 265-1486
Fax: +1 (814) 692-7662
https://druckerdiagnostics.com/

Service Manual

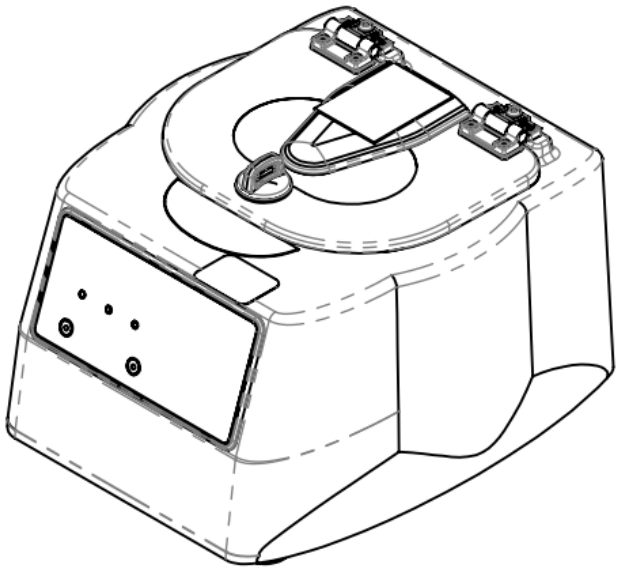
Models:

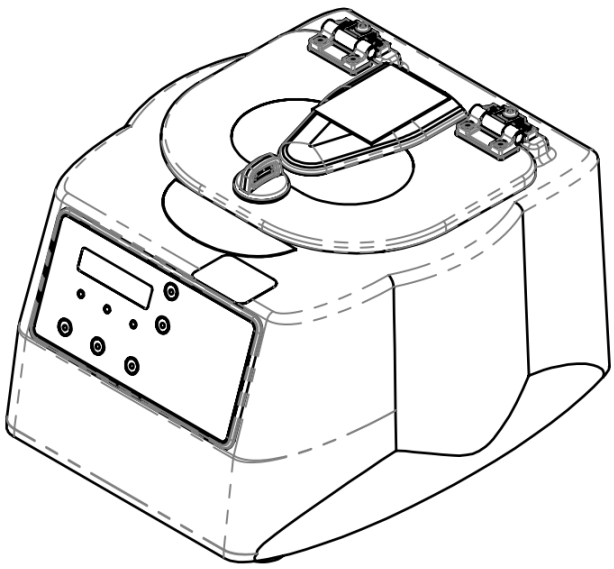
Horizon 6 (DC) Centrifuge

Horizon 6 FA (DC) Centrifuge

Horizon 6 Flex (DC) Centrifuge

Horizon 6 Flex FA (DC) Centrifuge





CONTENTS

1 PREFACE 3

2 GENERAL DESCRIPTION OF MAJOR COMPONENTS 3

3 WARRANTY INFORMATION 3

4 SPECIFICATIONS 3

5 TROUBLESHOOTING 4

6 SERVICE INSTRUCTIONS 4

7 ASSEMBLY DRAWINGS – HORIZON 6 (DC) 9

8 ASSEMBLY DRAWINGS – HORIZON 6 FA (DC) 13

9 ASSEMBLY DRAWINGS – HORIZON 6 FLEX (DC) 17

10 ASSEMBLY DRAWINGS – HORIZON 6 FLEX FA (DC) 21

11 REVISION HISTORY 25

1 PREFACE

1.1 The purpose of this manual is to provide the service technician with information for troubleshooting, testing, and repair of laboratory centrifuge model Horizon 6 (DC) and Horizon 6 Flex (DC). Only qualified technically trained personnel should attempt any of the servicing described in this document. Failure to follow the procedures in this document may result in personal injury or instrument damage. Drucker Diagnostics will not be held liable for any injury or damage as a result of improper servicing.

1.2 Information contained within this manual is subject to change without notice.

2 GENERAL DESCRIPTION OF MAJOR COMPONENTS

2.1 Motor: Brushless DC Motor

2.2 Printed Circuit Board: The PCB is the microcontroller-based control center of the centrifuge. All control signals are generated in the printed circuit board (PCB).

2.3 Lid Locking Tray Assembly: The lid tray assembly contains a solenoid and limit switch that are used to determine the state of the lid (Open or Closed) and to keep the lid locked during centrifugation cycles.

2.4 Rotor: The centrifuge rotor is the main component that spins in the centrifuge. The rotor is loaded with tube holders, and the samples are placed into the tube holders for processing.

3 WARRANTY INFORMATION

3.1 Drucker Diagnostics warrants its centrifuges to be free from defects in workmanship and parts for two years.

4 SPECIFICATIONS

	Horizontal Rotor	Fixed-angle Rotor
Maximum Speed	3800 RPM (+/- 100)	3900 RPM (+/-100)
Maximum RCF	2000 xg	1850 xg
Maximum Capacity	6 Tubes (17 x 100mm)	6 Tubes (17 x 125mm)
Dimensions (in)	9.0 (H) x 12.0 (W) x 14.0 (L)	9.0 (H) x 12.0 (W) x 14.0 (L)
Ambient Temperature	5 - 40 deg C	5 - 40 deg C
Typical Noise Level (At Maximum Speed)	< 62 dB A	< 62 dB A

Supply Voltage	100 – 240 (+/- 10%) VAC (+/- 10V) power supply input (48VDC output)	100 – 240 (+/- 10%) VAC (+/- 10V) power supply input (48VDC output)
Supply Frequency	50 – 60 Hz	50 – 60 Hz
Current consumption	2.2A at 115VAC; 1.1A at 230VAC	2.2A at 115VAC; 1.1A at 230VAC

5 TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
The lid does not open.	No Power	Check line cord.
	No Power	Check wall outlet.
	Lid knob is ajar	Rotate the lid knob fully clockwise before pressing the 'OPEN' button.
	Lid lock is active (Unlock timed out)	Press the 'OPEN' button to de-activate the lid.
	Lid tray is unplugged from PCB or defective	Requires service.
	PCB is damaged	Requires service.
		To gain access to the rotor - Remove the 'OPEN/CLOSE' sticker and slide the lid latch lever toward the front of the centrifuge. This will unlock the lid.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Excessive vibration	Rotor improperly loaded	Load equally filled tubes symmetrically in the rotor. All carriers and/or tube holders must be present in the rotor, whether loaded, or empty.
	Debris lodged within the rotor or tube carriers	Carefully inspect all rotor pockets, tube holders and crevasses for debris.
	Centrifuge housing is loose	Requires service.
	Missing/damaged feet	Requires service.
	Motor failure	Requires service.
	Rotor windshield damage	Requires service.
	Rotor damaged	Replacement required.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Rotor does not spin	No Power	Check line cord.
	No Power	Check wall outlet.
	Lid not properly latched	Press down firmly on lid and rotate lid knob clockwise until the 'Locked' light illuminates.
	Internal connection failure	Requires service.
	PCB failure	Requires service.
	Motor Failure	Requires service.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Clicking noise during braking	Rotor is loose	Tighten rotor screw.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Whistling noise while running	Debris in air intake / exhaust ports	Remove power before clearing debris.
	Gasket failure	Requires service.
	Gasket failure	Requires service.

6 SERVICE INSTRUCTIONS

6.1 Cleaning

a) Use appropriate Personal Protective Equipment (PPE).

b) The cabinet, rotor top and accessories shall be thoroughly cleaned using soap and water, isopropyl alcohol, or a mild bleach solution.

c) Apply cleaning solutions with a dampened towel or cloth ONLY. Do not spray or pour cleaning solution directly onto or into the centrifuge. Do not saturate or submerge the

centrifuge in water or other cleaning solutions as this will cause damage, create a safety risk; and void the warranty.

d) Under no circumstances should any of the following be used: Fully/Partially Halogenated Hydrocarbons, Ketones and Esters.

e) Use of any chemicals not prescribed by the manufacturer may cause damage to the rotor and tube carriers / holders and shall not be used.

6.2 Maintaining the Rotor

a) Keep the rotor clean; any corrosive materials must not be allowed contact with the rotor and should be cleaned immediately.

b) The rotor should be checked periodically for signs of wear.

c) Remove the rotor from service if any of the following are found: cracks, deep scratches, corrosion or discoloring.

6.3 Speed Calibration

a) Check the centrifuge speed periodically, every two years is recommended.

b) Important: When verifying rotor speed, make certain that all tube holders are installed in the rotor.

c) No calibration adjustment of speed can be made, only a verification of rotor speed.

6.4 Removing the Cabinet (Upper Housing)

a) There are nine (9) screws that fasten the centrifuge cabinet to the base.

b) Begin by unplugging the centrifuge and waiting 10 minutes for internal voltages to dissipate.

c) Use a #2 Phillips screwdriver to remove the cabinet screws (three on the back, six on the underside).

d) The centrifuge control panel is attached to the base internally with cable harnesses. Be careful not to stress the cables when removing the cabinet.

e) Stand directly in front of the centrifuge and lift the cabinet straight up and off the base, setting it down on its right side.

f) Gently remove the motor harness from the PCB.

g) Gently remove the power supply harness from the PCB.

6.5 Replacing the Lid Tray Assembly

a) The lid tray assembly is accessible once the cabinet has been removed.

b) The lid tray assembly is held in place with four (4) screws.

c) Peel the ‘open/close’ label off of the cabinet.

d) Use a #2 Phillips screwdriver to remove the two lid tray screws concealed beneath the label.

e) Gently remove the lid tray wire harness from the PCB.

f) Use a #2 Phillips screwdriver to remove the two lid tray screws inside the cabinet.

g) To install the lid tray, reverse steps F through D above.

h) Complete the installation by gently plugging the lid tray wire harness into the PCB header 'J2'.

i) Replace the 'open/close' label once screws have been reinstalled.

6.6 Replacing the PCB

a) The PCB is accessible once the cabinet has been removed. Make certain that all wire harnesses have been disconnected.

b) The PCB has capacitors that will remain charged for a period after the centrifuge is unplugged. Make certain to use standard precautions for handling potentially charged capacitors when working with the PCB.

c) The PCB is held in place with six (6) #6 screws.

d) Use a #2 screwdriver to remove the PCB screws.

e) To install the PCB, align the PCB with the mounting standoffs of the front panel.

f) Use a #2 screwdriver to install the PCB screws.

g) Important: Over-tightening the PCB screws can cause malfunction by stripping the screw threads away from the plastic mounting boss.

6.7 Replacing Rotor

a) The rotor is accessible once the cabinet has been removed.

b) The rotor is held in place with the rotor screw and washer.

- For Horizontal rotor: Use a 1/8" hex driver to remove the center rotor screw and washer (turn counterclockwise).
- For Fixed Angle rotor: Use a 5/16" hex driver to remove the center rotor screw and washer (turn counterclockwise).

c) Pull up on rotor to remove from guard bowl. Make sure the red rotor hub stays on the motor shaft, and that motor shaft pin is properly seated in keyway of rotor hub.

d) Place new rotor onto rotor hub and fully seat inside the guard bowl.

e) Place washer onto center of rotor core and insert rotor screw. Use a 1/8" hex driver and tighten to 2.0 N-m.

6.10 Replacing the Motor

a) Make certain that a new rubber gasket is used on the motor mounting studs when installing a motor.

b) Position the motor assembly so its wires are adjacent to the notch in the bottom rim of the guard bowl.

c) Install the motor and gasket into the guard bowl with the wire harness positioned as described above.

d) Secure the motor to the guard bowl using four (4) #8 washers and four (4) 8-32 Nylok nuts.

e) Drive the four #8 Nylok nuts onto the motor studs with an 11/32" nut driver.

f) Turn the guard bowl assembly upside down.

g) Place the base assembly onto the guard bowl.

h) Ensure the motor wires pass through the notch in the bottom rim of the guard bowl.

i) Ensure the guard bowl and base assembly are oriented such that the motor wires exit the guard bowl closest to the back left corner of the base assembly.

j) **IMPORTANT: Make certain that no wires are pinched between the guard bowl and base!**

k) Fasten the guard bowl to the base with six (6) #8 thread forming screws.

l) Install the exhaust air cover with three (3) 8-32 screws and washers.

m) Secure the wire harnesses to the base assembly with zip ties.

n) The lower assembly is complete.

6.11 Power Connections and Final Assembly

a) Make certain that the lower assembly is unplugged.

b) Connect the motor/power connector to J14 on the PCB.

c) Connect the motor/hall sensor connector to J10 on the PCB.

d) Connect the power supply harness connector to J17.

e) Carefully place the cabinet onto the base taking care not to pinch any wires between the two.

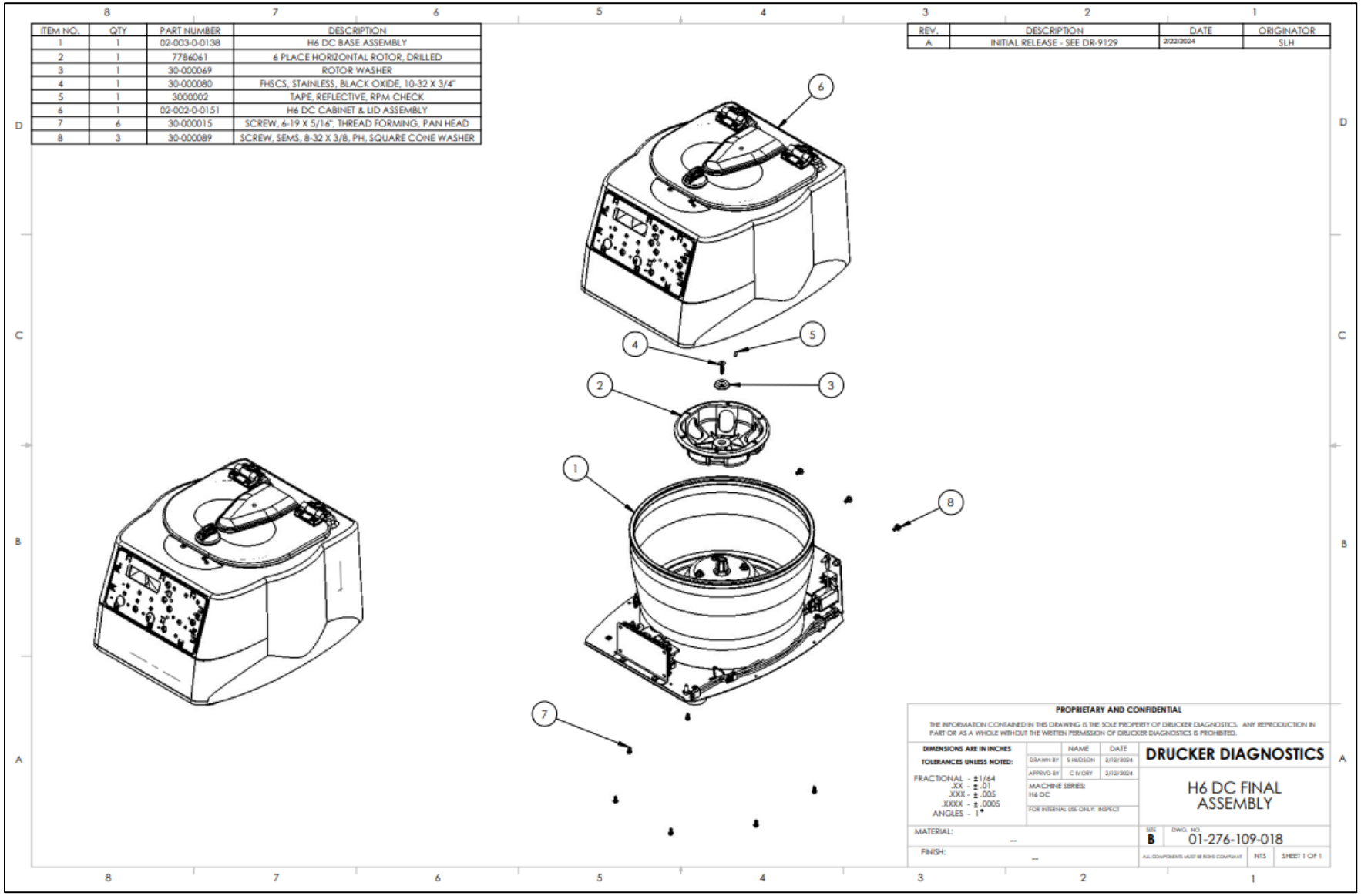
f) Complete the assembly by replacing the nine (9) screws using a #2 Phillips screwdriver.

7 ASSEMBLY DRAWINGS – HORIZON 6 (DC)

7.1 FINAL CENTRIFUGE ASSEMBLY – 01-276-109-018

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	02-003-0-0138	H6 DC BASE ASSEMBLY
2	1	7786061	6 PLACE HORIZONTAL ROTOR, DRILLED
3	1	30-000069	ROTOR WASHER
4	1	30-000080	FHSCS, STAINLESS, BLACK OXIDE, 10-32 X 3/4"
5	1	3000002	TAPE, REFLECTIVE, RPM CHECK
6	1	02-002-0-0151	H6 DC CABINET & LID ASSEMBLY
7	6	30-000015	SCREW, 6-19 X 5/16", THREAD FORMING, PAN HEAD
8	3	30-000089	SCREW, SEMS, 8-32 X 3/8, PH, SQUARE CONE WASHER

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9129	2/22/2024	SLH



DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL ± 1/64
.XX ± .01
.XXX ± .005
.XXXX ± .0005
ANGLES ± 1°

	NAME	DATE
DRAWN BY	S HUDSON	2/12/2024
APPRVD BY	C IVORY	2/12/2024

MACHINE SERIES: H6 DC
FOR INTERNAL USE ONLY: INSPECT

MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

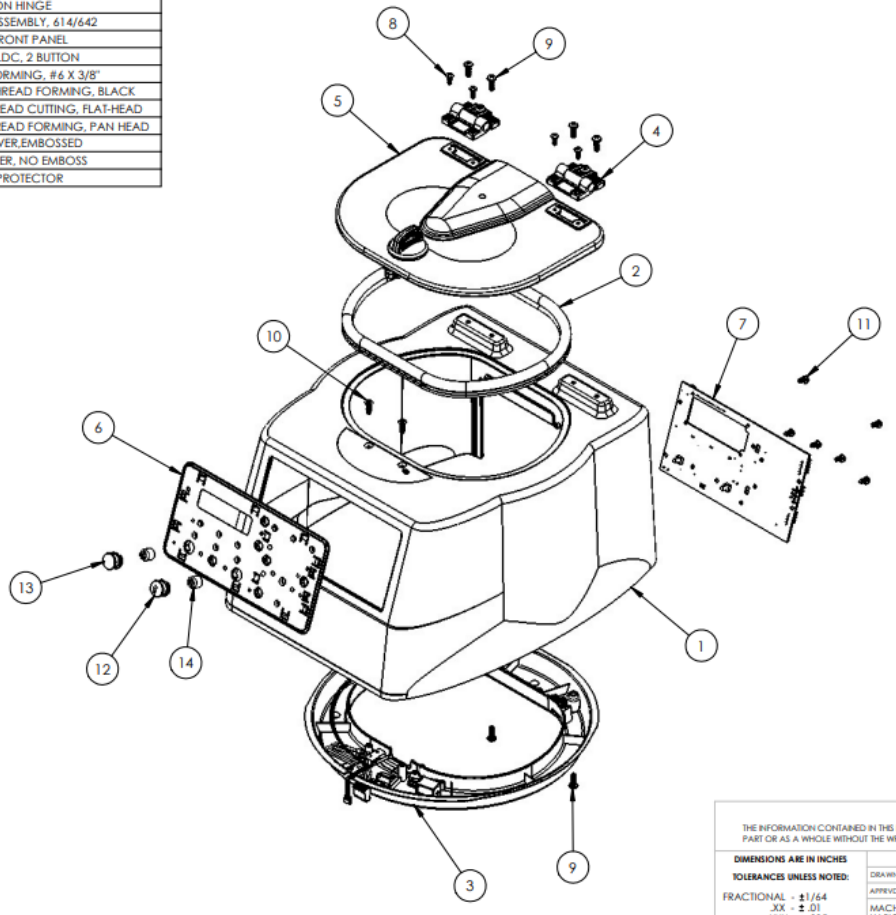
H6 DC FINAL ASSEMBLY

SIZE B | DWG. NO. 01-276-109-018
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

7.2 CABINET ASSEMBLY – 02-002-0-0151)

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	03-1-0002-0054	614/642 PLASTIC CABINET
2	1	02-002-1-0056	MOLDED CABINET LID GASKET
3	1	02-002-1-0114	DASH APEX 6 LID TRAY ASSY, VARIABLE LED PCBA
4	2	7724071	FRICTION HINGE
5	1	02-002-1-0027	MOLDED LID ASSEMBLY, 614/642
6	1	03-1-0002-0055	614/642 FRONT PANEL
7	1	02-006-0-0057	PCBA, H6 BLDC, 2 BUTTON
8	4	30-000106	PHS, THREAD FORMING, #6 X 3/8"
9	6	30-000013	SCREW, 8-16 X 1/2", THREAD FORMING, BLACK
10	2	30-000014	SCREW, 8-32 X 1/2", THREAD CUTTING, FLAT-HEAD
11	6	30-000015	SCREW, 6-19 X 5/16", THREAD FORMING, PAN HEAD
12	1	03-1-0002-0089	BUTTON COVER,EMBOSSED
13	1	03-1-0002-0090	BUTTON COVER, NO EMBOSS
14	2	03-1-0002-0099	BUTTON PROTECTOR

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9129	2/22/2024	SLH



DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL - ±1/64
.XX - ± .01
.XXX - ± .005
.XXXX - ± .0005
ANGLES - 1°

	NAME	DATE
DRAWN BY	S HUDSON	2/12/2024
APPROVD BY	C IVORY	2/12/2024

MACHINE SERIES: H6 BLDC
FOR INTERNAL USE ONLY: INSPECT

MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

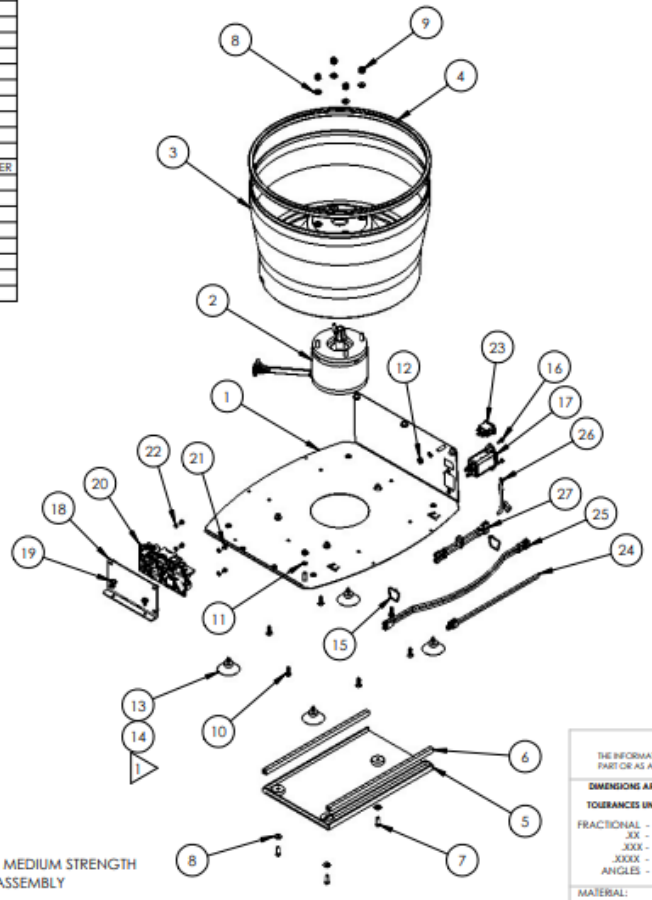
H6 DC CABINET & LID ASSEMBLY

SIZE B | DWG. NO. 02-002-0-0151
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

7.3 BASE ASSEMBLY – 02-003-0-0138)

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	02-003-1-0039	DASH APEX 6 BASE ASSEMBLY
2	1	02-005-1-0010	MOTOR ASSEMBLY, DASH APEX 6
3	1	03-1-0004-0037	GUARD BOWL, MOLDED, 600 SERIES
4	34.75"	03-1-0004-0036	GASKET, MOLDED GB
5	1	7713027	EXHAUST AIR DEFLECTOR
6	2	7732009	EXHAUST GASKET
7	3	3012007	SCREW, PHILLIPS, 8-32, 0.50 LONG
8	7	3033003	WASHER #8, FLAT, SILVER
9	4	3022003	8/32 NYLOCK NUT
10	6	30-000013	SCREW, 8-16 X 1/2", THREAD FORMING, BLACK
11	2	3033012	#8 INTERNAL TOOTH WASHER
12	2	3022001	NUT, HEX, 8-32
13	4	7724037	614/642 #8-32 SUCTION FOOT
14	A/R	0000-099-172	LOCTITE 242
15	2	3094002	TIES, PLASTIC, SELF LOCKING, 4.0"
16	2	30-000110	PHMS, 4-40 X 5/16", SS, BLACK
17	1	03-1-0005-0194	AC LINE FILTER, 250V, 3A
18	1	03-1-0002-0095	BRACKET, IPS, W/ INSERTS
19	2	30-000089	SCREW, SEMS, 8-32 X 3/8, PH, SQUARE CONE WASHER
20	1	03-1-0005-0192	INTERNAL POWER SUPPLY, 225W, 48V
21	4	30-000127	PHMS, SS, W/SPRING WASHER, 4-40 X 1/4"
22	4	30-000128	NYLON PLASTIC WASHER, #4, .250 OD
23	1	03-1-0005-0118	POWER SWITCH
24	1	03-1-0005-0321	H6 DC POWER HARNESS IPS TO PCBA
25	1	03-1-0005-0227	POWER HARNESS, AC INLET TO IPS
26	1	03-1-0005-0228	GROUND WIRE ASSEMBLY
27	1	03-1-0005-0220	POWER HARNESS, AC INLET TO SWITCH

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9129	2/26/2024	SLH
B	GB MOUNT HARDWARE - SEE DR-	5/30/2024	SLH



NOTES:

1. FOLLOWING THE MANUFACTURER'S INSTRUCTIONS FOR USE, APPLY A MEDIUM STRENGTH THREAD LOCKER TO THE THREADS OF EACH SUCTION FOOT BEFORE ASSEMBLY

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL - ±1/64
.XX - ± .01
.XXX - ± .005
.XXXX - ± .0005
ANGLES - 1°

	NAME	DATE
DRAWN BY	S HUDSON	2/9/2024
APPROVED BY	C IVORY	2/9/2024

MACHINE SERIES: H6 BLDC
FOR INTERNAL USE ONLY: INSPECT

MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

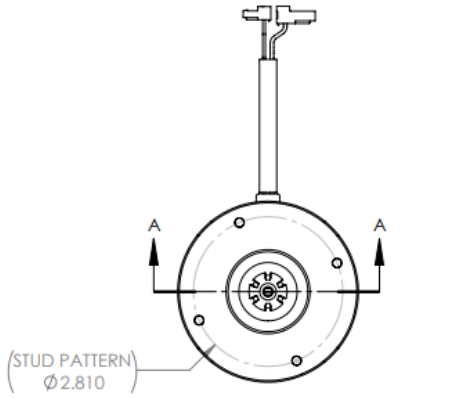
H6 BLDC BASE ASSEMBLY

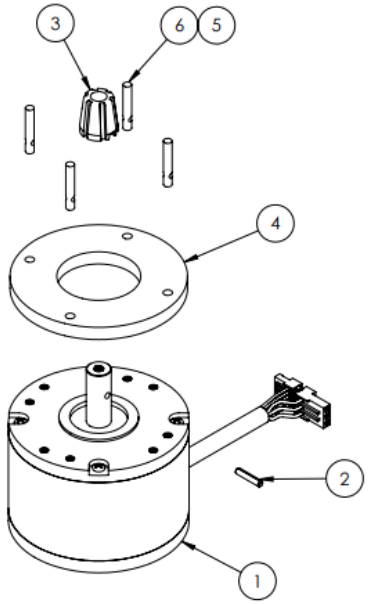
SIZE B | DWG. NO. 02-003-0-0138
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

7.4 MOTOR ASSEMBLY (Reference drawing 02-005-1-0010)

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	03-1-0006-0008	BLDC MOTOR
2	1	3062003	1/8 x 5/8 ROLL PIN
3	1	7786006	653V ROTOR CONE
4	1	03-1-0006-0005	842E MOTOR MOUNT SEAL
5	A/R	0000-099-172	LOCTITE 242
6	4	30-000074	CRIMPED THREADED STUD, 8-32 X 1 X .23 CRIMP, SST

REV.	DESCRIPTION	DATE	ORIGINATOR
A	FIRST RELEASE - SEE DR-4271	10/28/2015	DDR
B	DR-4369	12/15/2015	DDR
C	DR-5662	1/23/2018	SLH
D	DR-5971	7/2/2018	MDD
E	UPDATE MOTOR - SEE DR-7093	1/30/2020	SLH





NOTES:

1. APPLY MINIMAL AMOUNT OF ITEM (5) TO CRIMPED END OF ITEM (6)
2. INSERT CRIMPED END OF ITEM (5) INTO BODY OF ITEM (1)

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL ± 1/64
.XX ± .01
.XXX ± .005
.XXXX ± .0005
ANGLES ± 1°

	NAME	DATE
DRAWN BY	D ROBINSON	9/1/2015
APPRVD BY	C IVORY	10/29/2015

MACHINE SERIES: DASH APEX 6
FOR INTERNAL USE ONLY: INSPECT D
MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

MOTOR ASSEMBLY, DASH APEX 6

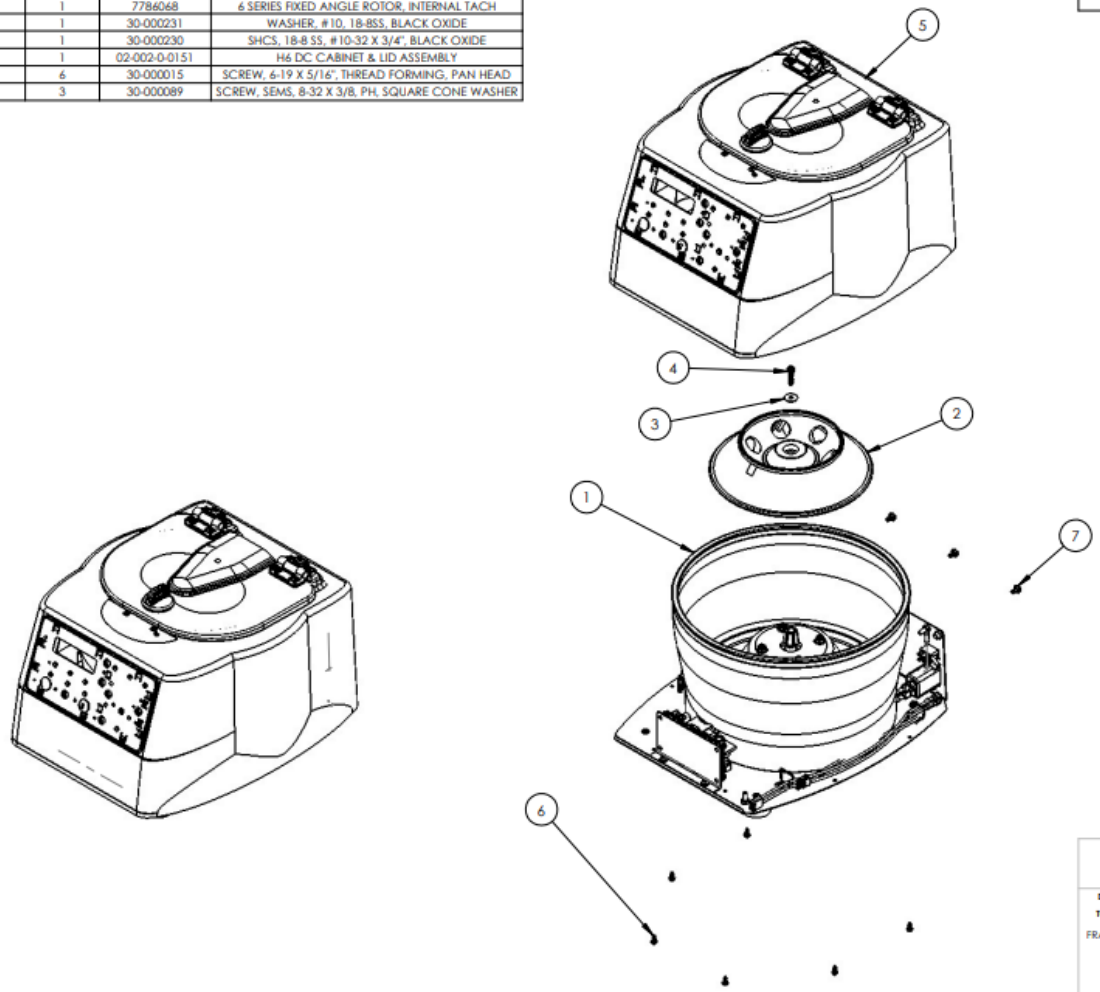
SIZE B | DWG. NO. 02-005-1-0010
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

8 ASSEMBLY DRAWINGS – HORIZON 6 FA (DC)

8.1 FINAL CENTRIFUGE ASSEMBLY – 01-276-109-019

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	02-003-0-0138	H6 DC BASE ASSEMBLY
2	1	7786068	6 SERIES FIXED ANGLE ROTOR, INTERNAL TACH
3	1	30-000231	WASHER, #10, 18-8SS, BLACK OXIDE
4	1	30-000230	SHCS, 18-8 SS, #10-32 X 3/4", BLACK OXIDE
5	1	02-002-0-0151	H6 DC CABINET & LID ASSEMBLY
6	6	30-000015	SCREW, 6-19 X 5/16", THREAD FORMING, PAN HEAD
7	3	30-000089	SCREW, SEMS, 8-32 X 3/8, PH, SQUARE CONE WASHER

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9129	2/26/2024	SLH
B	ROTOR SWAP - SEE DR-9413	7/15/2024	SLH



DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL - ±1/64
.XX - ±.01
.XXX - ±.005
.XXXX - ±.0005
ANGLES - 1°

	NAME	DATE
DRAWN BY	S HUDSON	2/14/2024
APPRVD BY	C IVORY	2/14/2024

MACHINE SERIES: H6 FA DC
FOR INTERNAL USE ONLY: INSPECT

MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

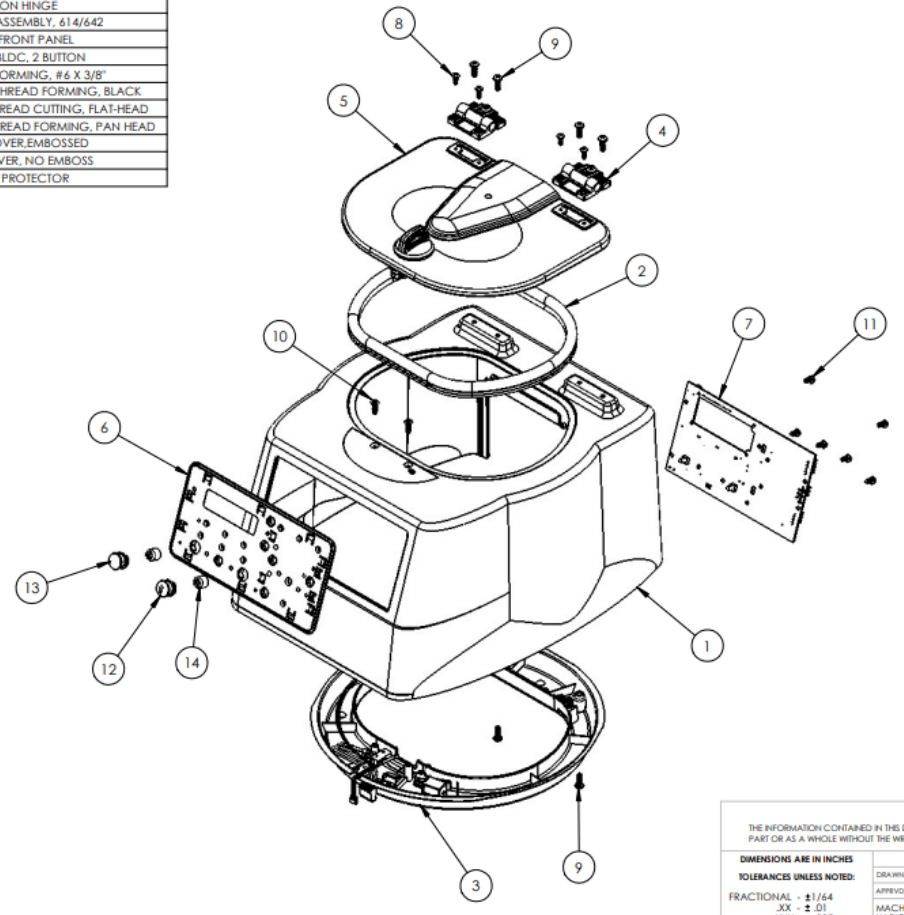
H6 FA DC FINAL ASSEMBLY

SIZE B | DWG. NO. 01-276-109-019
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

8.2 CABINET ASSEMBLY – 02-002-0-0151)

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	03-1-0002-0054	614/642 PLASTIC CABINET
2	1	02-002-1-0056	MOLDED CABINET LID GASKET
3	1	02-002-1-0114	DASH APEX 6 LID TRAY ASSY, VARIABLE LED PCBA
4	2	7724071	FRICTION HINGE
5	1	02-002-1-0027	MOLDED LID ASSEMBLY, 614/642
6	1	03-1-0002-0055	614/642 FRONT PANEL
7	1	02-006-0-0057	PCBA, H6 BLDC, 2 BUTTON
8	4	30-000106	PHS, THREAD FORMING, #6 X 3/8"
9	6	30-000013	SCREW, 8-16 X 1/2", THREAD FORMING, BLACK
10	2	30-000014	SCREW, 8-32 X 1/2", THREAD CUTTING, FLAT-HEAD
11	6	30-000015	SCREW, 6-19 X 5/16", THREAD FORMING, PAN HEAD
12	1	03-1-0002-0089	BUTTON COVER,EMBOSSED
13	1	03-1-0002-0090	BUTTON COVER, NO EMBOSS
14	2	03-1-0002-0099	BUTTON PROTECTOR

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9129	2/22/2024	SLH



DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL - ±1/64
.XX - ± .01
.XXX - ± .005
.XXXX - ± .0005
ANGLES - 1°

	NAME	DATE
DRAWN BY	S HUDSON	2/12/2024
APPROVD BY	C IVORY	2/12/2024

MACHINE SERIES: H6 BLDC
FOR INTERNAL USE ONLY: INSPECT

MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

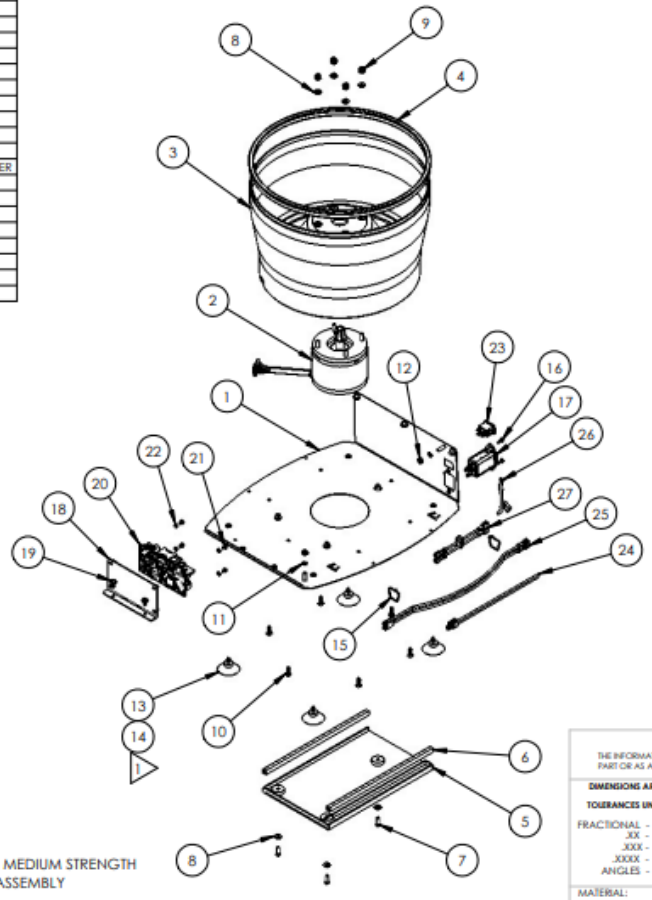
H6 DC CABINET & LID ASSEMBLY

SIZE B | DWG. NO. 02-002-0-0151
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

8.3 BASE ASSEMBLY – 02-003-0-0138)

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	02-003-1-0039	DASH APEX 6 BASE ASSEMBLY
2	1	02-005-1-0010	MOTOR ASSEMBLY, DASH APEX 6
3	1	03-1-0004-0037	GUARD BOWL, MOLDED, 600 SERIES
4	34.75"	03-1-0004-0036	GASKET, MOLDED GB
5	1	7713027	EXHAUST AIR DEFLECTOR
6	2	7732009	EXHAUST GASKET
7	3	3012007	SCREW, PHILLIPS, 8-32, 0.50 LONG
8	7	3033003	WASHER #8, FLAT, SILVER
9	4	3022003	8/32 NYLOCK NUT
10	6	30-000013	SCREW, 8-16 X 1/2", THREAD FORMING, BLACK
11	2	3033012	#8 INTERNAL TOOTH WASHER
12	2	3022001	NUT, HEX, 8-32
13	4	7724037	614/642 #8-32 SUCTION FOOT
14	A/R	0000-099-172	LOCTITE 242
15	2	3094002	TIES, PLASTIC, SELF LOCKING, 4.0"
16	2	30-000110	PHMS, 4-40 X 5/16", SS, BLACK
17	1	03-1-0005-0194	AC LINE FILTER, 250V, 3A
18	1	03-1-0002-0095	BRACKET, IPS, W/ INSERTS
19	2	30-000089	SCREW, SEMS, 8-32 X 3/8, PH, SQUARE CONE WASHER
20	1	03-1-0005-0192	INTERNAL POWER SUPPLY, 225W, 48V
21	4	30-000127	PHMS, SS, W/SPRING WASHER, 4-40 X 1/4"
22	4	30-000128	NYLON PLASTIC WASHER, #4, .250 OD
23	1	03-1-0005-0118	POWER SWITCH
24	1	03-1-0005-0321	H6 DC POWER HARNESS IPS TO PCBA
25	1	03-1-0005-0227	POWER HARNESS, AC INLET TO IPS
26	1	03-1-0005-0228	GROUND WIRE ASSEMBLY
27	1	03-1-0005-0220	POWER HARNESS, AC INLET TO SWITCH

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9129	2/26/2024	SLH
B	GB MOUNT HARDWARE - SEE DR-	5/30/2024	SLH



NOTES:

1. FOLLOWING THE MANUFACTURER'S INSTRUCTIONS FOR USE, APPLY A MEDIUM STRENGTH THREAD LOCKER TO THE THREADS OF EACH SUCTION FOOT BEFORE ASSEMBLY

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL - ±1/64
.XX - ± .01
.XXX - ± .005
.XXXX - ± .0005
ANGLES - 1°

	NAME	DATE
DRAWN BY	S HUDSON	2/9/2024
APPROVED BY	C IVORY	2/9/2024

MACHINE SERIES: H6 BLDC
FOR INTERNAL USE ONLY: INSPECT

MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

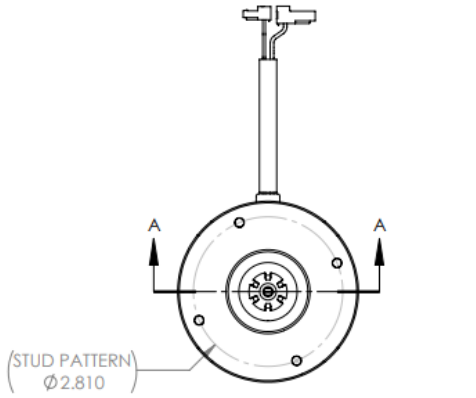
H6 BLDC BASE ASSEMBLY

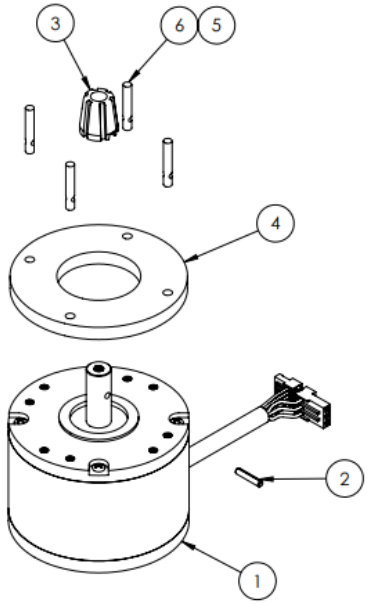
SIZE B | DWG. NO. 02-003-0-0138
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

8.4 MOTOR ASSEMBLY (Reference drawing 02-005-1-0010)

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	03-1-0006-0008	BLDC MOTOR
2	1	3062003	1/8 x 5/8 ROLL PIN
3	1	7786006	653V ROTOR CONE
4	1	03-1-0006-0005	842E MOTOR MOUNT SEAL
5	A/R	0000-099-172	LOCTITE 242
6	4	30-000074	CRIMPED THREADED STUD, 8-32 X 1 X .23 CRIMP, SST

REV.	DESCRIPTION	DATE	ORIGINATOR
A	FIRST RELEASE - SEE DR-4271	10/28/2015	DDR
B	DR-4369	12/15/2015	DDR
C	DR-5662	1/23/2018	SLH
D	DR-5971	7/2/2018	MDD
E	UPDATE MOTOR - SEE DR-7093	1/30/2020	SLH





NOTES:

1. APPLY MINIMAL AMOUNT OF ITEM (5) TO CRIMPED END OF ITEM (6)
2. INSERT CRIMPED END OF ITEM (5) INTO BODY OF ITEM (1)

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL ± 1/64
.XX ± .01
.XXX ± .005
.XXXX ± .0005
ANGLES ± 1°

	NAME	DATE
DRAWN BY	D ROBINSON	9/1/2015
APPRVD BY	C IVORY	10/29/2015

MACHINE SERIES: DASH APEX 6
FOR INTERNAL USE ONLY: INSPECT D
MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

MOTOR ASSEMBLY, DASH APEX 6

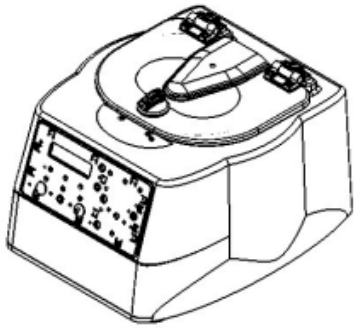
SIZE B | DWG. NO. 02-005-1-0010
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

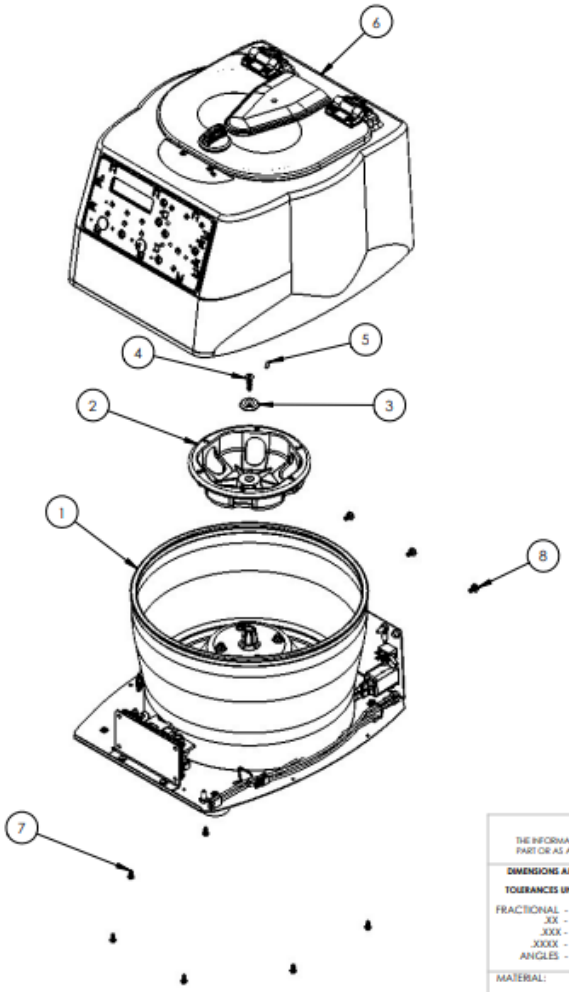
9 ASSEMBLY DRAWINGS – HORIZON 6 FLEX (DC)

9.1 FINAL CENTRIFUGE ASSEMBLY (Reference drawing 01-376-109-015)

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	02-003-0-0138	H6 DC BASE ASSEMBLY
2	1	7786061	6 PLACE HORIZONTAL ROTOR, DRILLED
3	1	30-000069	ROTOR WASHER
4	1	30-000080	FHSCS, STAINLESS, BLACK OXIDE, 10-32 X 3/4"
5	1	3000002	TAPE, REFLECTIVE, RPM CHECK
6	1	02-002-0-0155	H6 FLEX DC CABINET & LID ASSEMBLY
7	6	30-000015	SCREW, 6-19 X 5/16", THREAD FORMING, PAN HEAD
8	3	30-000089	SCREW, SEMS, 8-32 X 3/8, PH, SQUARE CONE WASHER

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9351	6/20/2024	SLH





DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL - ±1/64
.XX - ± .01
.XXX - ± .005
.XXXX - ± .0005
ANGLES - 1°

	NAME	DATE
DRAWN BY	S HUDSON	6/10/2024
APPROVED BY	C IVORY	6/10/2024

MACHINE SERIES: H6 FLEX DC
FOR INTERNAL USE ONLY. INSPECT

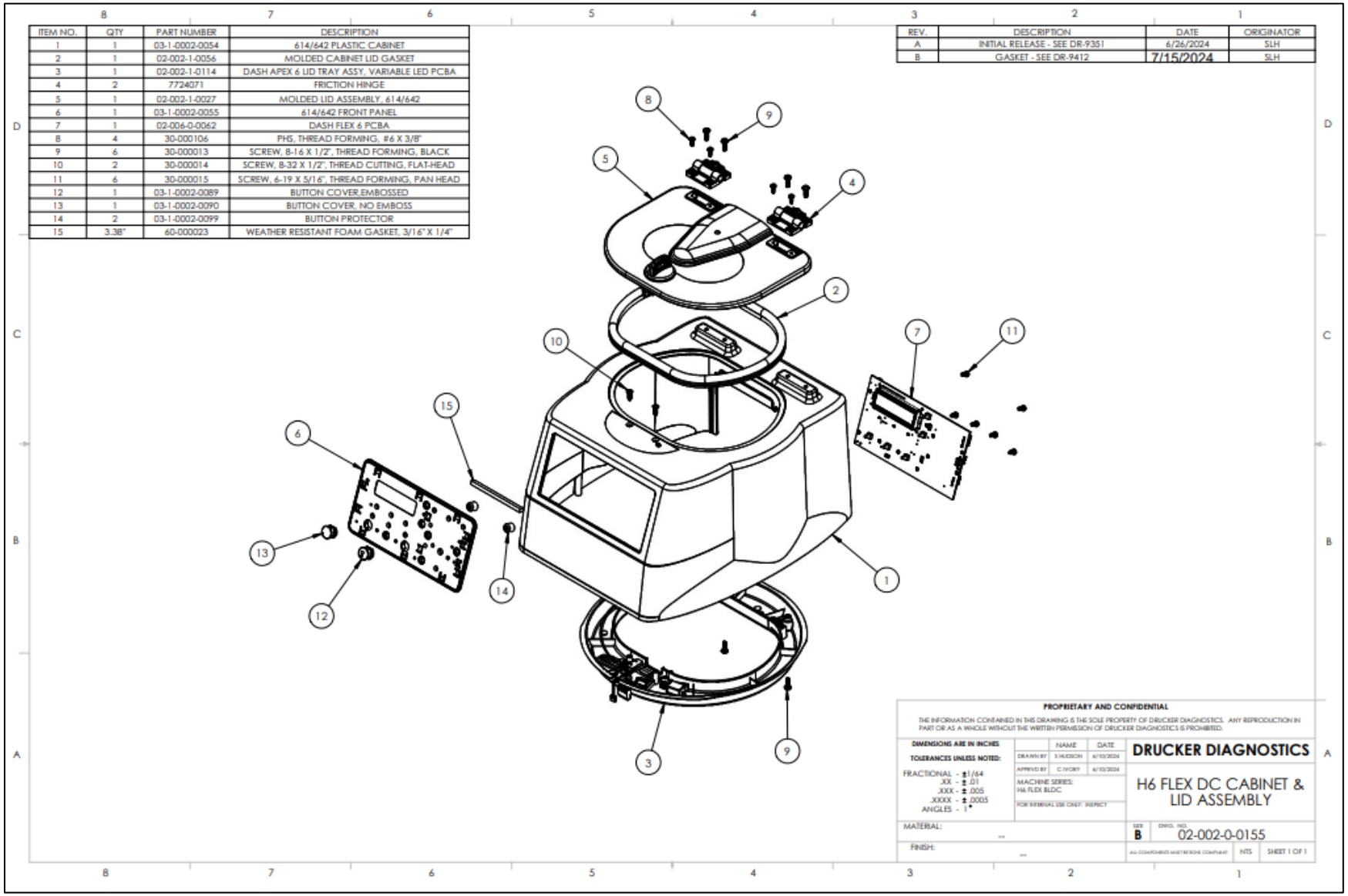
MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

H6 FLEX DC FINAL ASSEMBLY

SIZE B | DWG. NO. 01-376-109-015
NTS | SHEET 1 OF 1

9.2 CABINET ASSEMBLY (Reference drawing 02-002-0-0155)



ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	03-1-0002-0054	614/642 PLASTIC CABINET
2	1	02-002-1-0056	MOLDED CABINET LID GASKET
3	1	02-002-1-0114	DASH APEX 6 LID TRAY ASSY, VARIABLE LED PCBA
4	2	7724071	FRICTION HINGE
5	1	02-002-1-0027	MOLDED LID ASSEMBLY, 614/642
6	1	03-1-0002-0055	614/642 FRONT PANEL
7	1	02-006-0-0062	DASH FLEX 6 PCBA
8	4	30-000106	PHS, THREAD FORMING, #6 X 3/8"
9	6	30-000013	SCREW, B-16 X 1/2", THREAD FORMING, BLACK
10	2	30-000014	SCREW, B-32 X 1/2", THREAD CUTTING, FLAT-HEAD
11	6	30-000015	SCREW, 6-19 X 5/16", THREAD FORMING, PAN HEAD
12	1	03-1-0002-0089	BUTTON COVER,EMBOSSED
13	1	03-1-0002-0090	BUTTON COVER, NO EMBOSS
14	2	03-1-0002-0099	BUTTON PROTECTOR
15	3.38"	60-000023	WEATHER RESISTANT FOAM GASKET, 3/16" X 1/4"

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9351	6/26/2024	SLH
B	GASKET - SEE DR-9412	7/15/2024	SLH

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF DRUCKER DIAGNOSTICS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF DRUCKER DIAGNOSTICS IS PROHIBITED.

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL - ±1/64
.XX - ± .01
.XXX - ± .005
.XXXX - ± .0005
ANGLES - 1°

	NAME	DATE
DRAWN BY	S HUDSON	6/10/2024
APPROVED BY	C IVORY	6/10/2024

MACHINE SERIES: H6 FLEX BLDC
FOR INTERNAL USE ONLY: INSPECT

MATERIAL: ---
FINISH: ---

DRUCKER DIAGNOSTICS

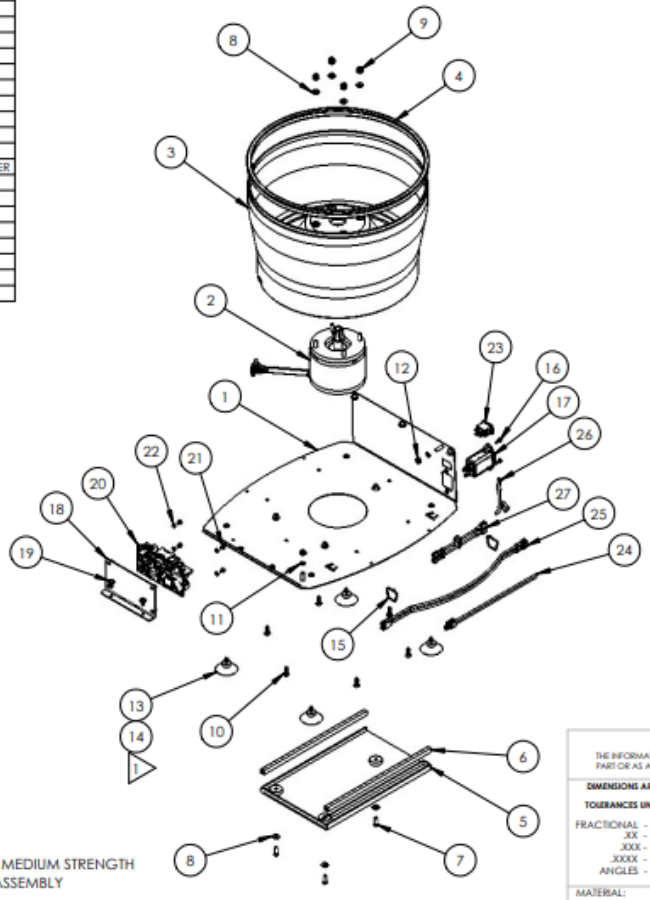
H6 FLEX DC CABINET & LID ASSEMBLY

SIZE B | DWG. NO. 02-002-0-0155
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

9.3 BASE ASSEMBLY (Reference drawing 02-003-0-0138)

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	02-003-1-0039	DASH APEX 6 BASE ASSEMBLY
2	1	02-005-1-0010	MOTOR ASSEMBLY, DASH APEX 6
3	1	03-1-0004-0037	GUARD BOWL, MOLDED, 600 SERIES
4	34.75"	03-1-0004-0036	GASKET, MOLDED GB
5	1	7713027	EXHAUST AIR DEFLECTOR
6	2	7732009	EXHAUST GASKET
7	3	3012007	SCREW, PHILLIPS, 8-32, 0.50 LONG
8	7	3033003	WASHER #8, FLAT, SILVER
9	4	3022003	8/32 NYLOCK NUT
10	6	30-000013	SCREW, 8-16 X 1/2", THREAD FORMING, BLACK
11	2	3033012	#8 INTERNAL TOOTH WASHER
12	2	3022001	NUT, HEX, 8-32
13	4	7724037	614/642 #8-32 SUCTION FOOT
14	A/R	0000-099-172	LOCTITE 242
15	2	3094002	TIES, PLASTIC, SELF LOCKING, 4.0"
16	2	30-000110	PHMS, 4-40 X 5/16", SS, BLACK
17	1	03-1-0005-0194	AC LINE FILTER, 250V, 3A
18	1	03-1-0002-0095	BRACKET, IPS, W/ INSERTS
19	2	30-000089	SCREW, SEMS, 8-32 X 3/8, PH, SQUARE CONE WASHER
20	1	03-1-0005-0192	INTERNAL POWER SUPPLY, 225W, 48V
21	4	30-000127	PHMS, SS, W/SPRING WASHER, 4-40 X 1/4"
22	4	30-000128	NYLON PLASTIC WASHER, #4, .250 OD
23	1	03-1-0005-0118	POWER SWITCH
24	1	03-1-0005-0321	H6 DC POWER HARNESS IPS TO PCBA
25	1	03-1-0005-0227	POWER HARNESS, AC INLET TO IPS
26	1	03-1-0005-0228	GROUND WIRE ASSEMBLY
27	1	03-1-0005-0220	POWER HARNESS, AC INLET TO SWITCH

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9129	2/26/2024	SLH
B	GB MOUNT HARDWARE - SEE DR-	5/30/2024	SLH



NOTES:

1. FOLLOWING THE MANUFACTURER'S INSTRUCTIONS FOR USE, APPLY A MEDIUM STRENGTH THREAD LOCKER TO THE THREADS OF EACH SUCTION FOOT BEFORE ASSEMBLY

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL - ±1/64
.XX - ± .01
.XXX - ± .005
.XXXX - ± .0005
ANGLES - 1°

	NAME	DATE
DRAWN BY	S HUDSON	2/9/2024
APPROVED BY	C IVORY	2/9/2024

MACHINE SERIES: H6 BLDC
FOR INTERNAL USE ONLY: INSPECT

MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

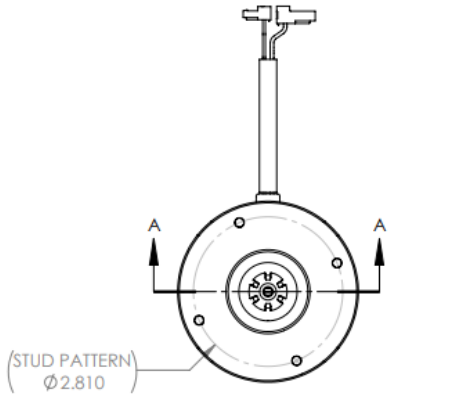
H6 BLDC BASE ASSEMBLY

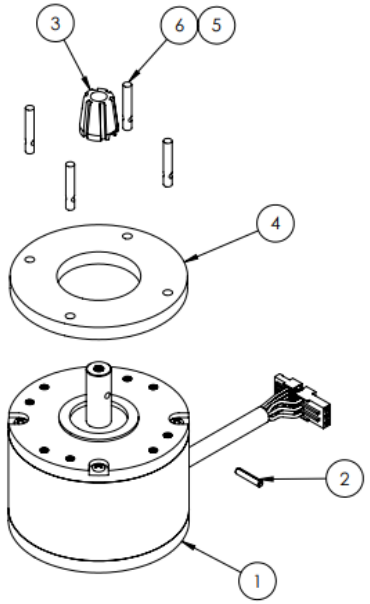
SIZE B | DWG. NO. 02-003-0-0138
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

9.4 MOTOR ASSEMBLY (Reference drawing 02-005-1-0010)

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	03-1-0006-0008	BLDC MOTOR
2	1	3062003	1/8 x 5/8 ROLL PIN
3	1	7786006	653V ROTOR CONE
4	1	03-1-0006-0005	842E MOTOR MOUNT SEAL
5	A/R	0000-099-172	LOCTITE 242
6	4	30-000074	CRIMPED THREADED STUD, 8-32 X 1 X .23 CRIMP, SST

REV.	DESCRIPTION	DATE	ORIGINATOR
A	FIRST RELEASE - SEE DR-4271	10/28/2015	DDR
B	DR-4369	12/15/2015	DDR
C	DR-5662	1/23/2018	SLH
D	DR-5971	7/2/2018	MDD
E	UPDATE MOTOR - SEE DR-7093	1/30/2020	SLH





NOTES:

1. APPLY MINIMAL AMOUNT OF ITEM (5) TO CRIMPED END OF ITEM (6)
2. INSERT CRIMPED END OF ITEM (5) INTO BODY OF ITEM (1)

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL ± 1/64
.XX ± .01
.XXX ± .005
.XXXX ± .0005
ANGLES ± 1°

	NAME	DATE
DRAWN BY	D ROBINSON	9/1/2015
APPRVD BY	C IVORY	10/29/2015

MACHINE SERIES: DASH APEX 6
FOR INTERNAL USE ONLY: INSPECT D
MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

MOTOR ASSEMBLY, DASH APEX 6

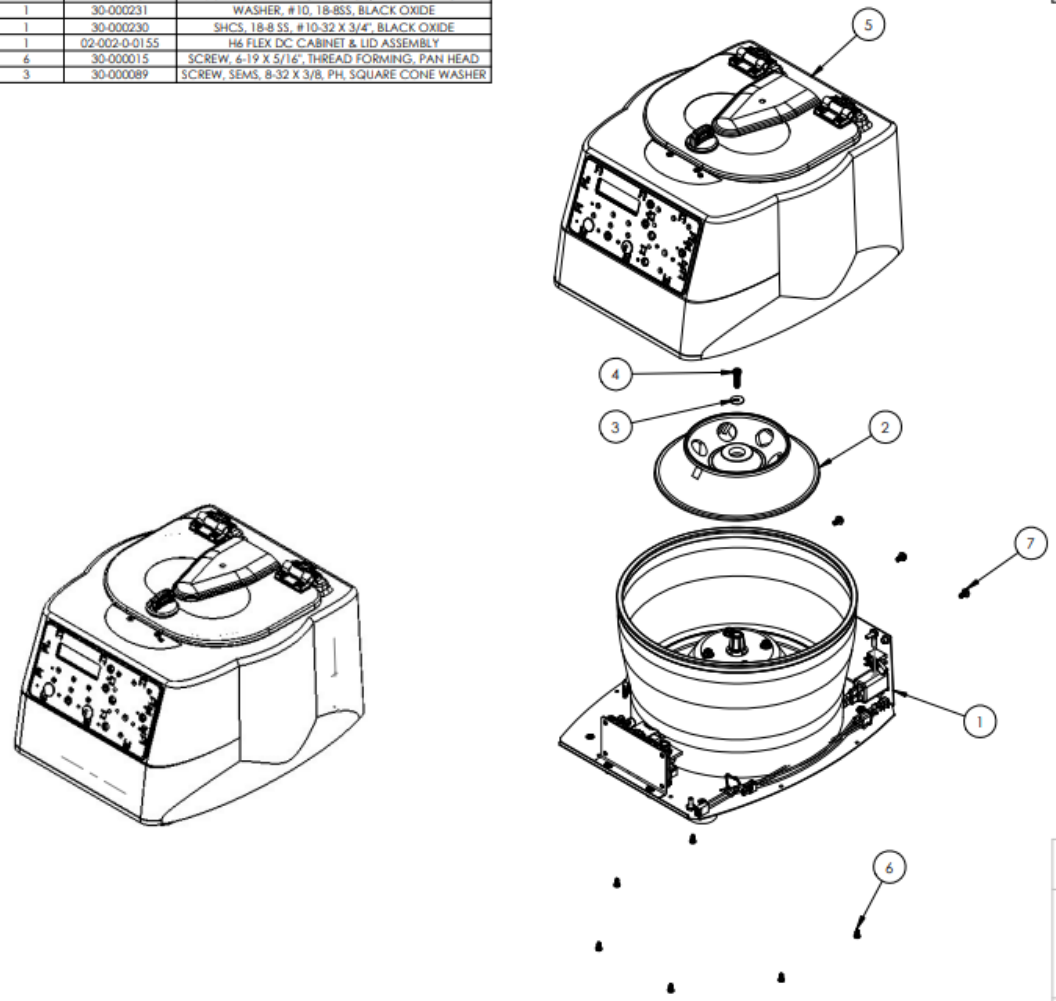
SIZE B | DWG. NO. 02-005-1-0010
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

10 ASSEMBLY DRAWINGS – HORIZON 6 FLEX FA (DC)

10.1 FINAL CENTRIFUGE ASSEMBLY (Reference drawing 01-376-109-016)

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	02-003-0-0138	H6 DC BASE ASSEMBLY
2	1	7786068	6 SERIES FIXED ANGLE ROTOR, INTERNAL TACH
3	1	30-000231	WASHER, #10, 18-8SS, BLACK OXIDE
4	1	30-000230	SHCS, 18-8 SS, #10-32 X 3/4", BLACK OXIDE
5	1	02-002-0-0155	H6 FLEX DC CABINET & LID ASSEMBLY
6	6	30-000015	SCREW, 6-19 X 5/16", THREAD FORMING, PAN HEAD
7	3	30-000089	SCREW, SEMS, 8-32 X 3/8, PH, SQUARE CONE WASHER

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9351	6/26/2024	SLH
B	ROTOR SWAP - SEE DR-9413	7/15/2024	SLH



DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL ± 1/64
.XX ± .01
.XXX ± .005
.XXXX ± .0005
ANGLES ± 1°

	NAME	DATE
DRAWN BY	S HUDSON	6/10/2024
APPROVED BY	C IVORY	6/10/2024

MACHINE SERIES:
H6 FLEX FA DC
FOR INTERNAL USE ONLY: INSPECT

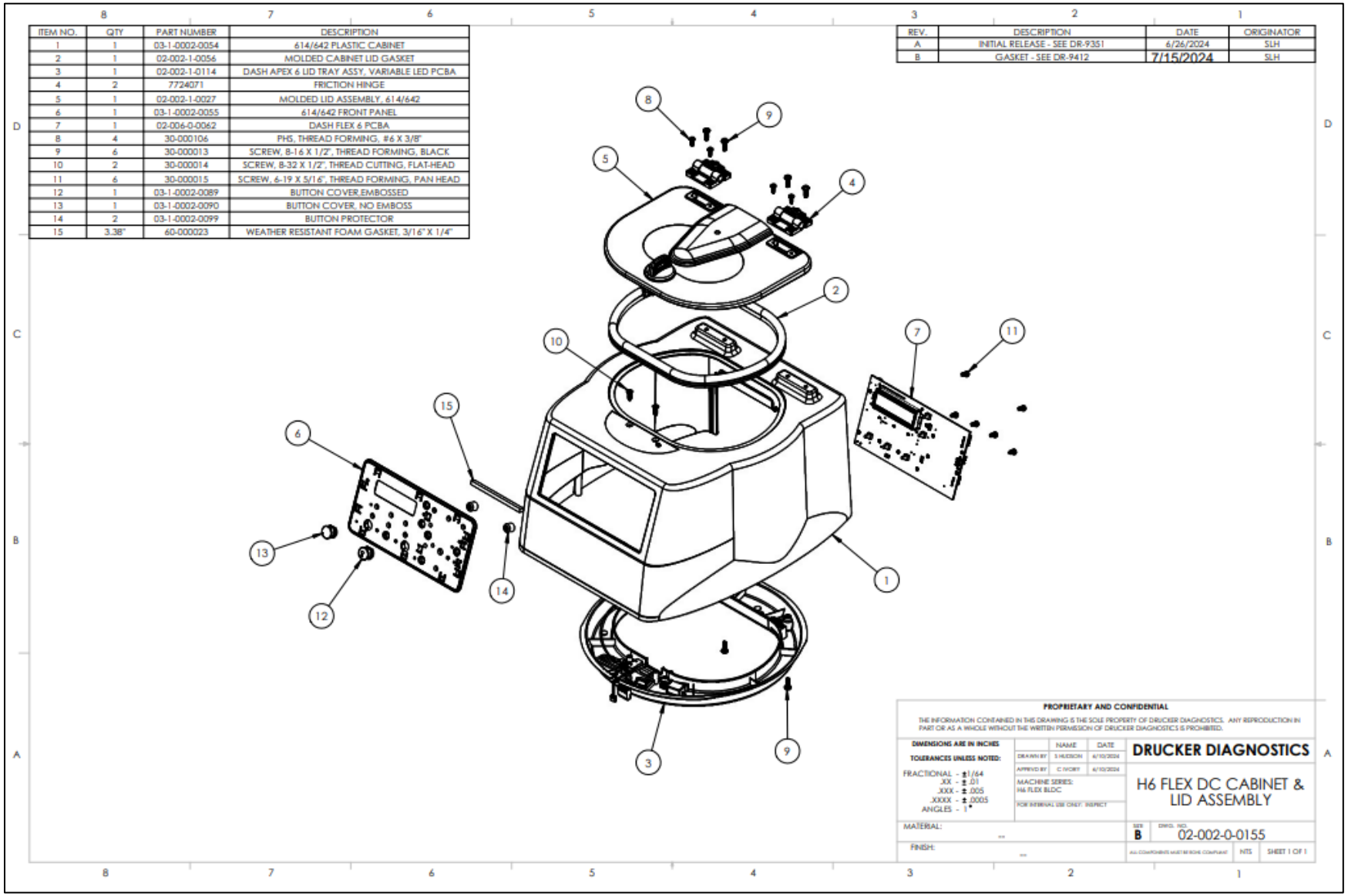
MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

H6 FLEX FA DC FINAL ASSEMBLY

SIZE B | DWG. NO. 01-376-109-016
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

10.2 CABINET ASSEMBLY (Reference drawing 02-002-0-0155)



ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	03-1-0002-0054	614/642 PLASTIC CABINET
2	1	02-002-1-0056	MOLDED CABINET LID GASKET
3	1	02-002-1-0114	DASH APEX 6 LID TRAY ASSY, VARIABLE LED PCBA
4	2	7724071	FRICTION HINGE
5	1	02-002-1-0027	MOLDED LID ASSEMBLY, 614/642
6	1	03-1-0002-0055	614/642 FRONT PANEL
7	1	02-006-0-0062	DASH FLEX 6 PCBA
8	4	30-000106	PHS, THREAD FORMING, #6 X 3/8"
9	6	30-000013	SCREW, B-16 X 1/2", THREAD FORMING, BLACK
10	2	30-000014	SCREW, B-32 X 1/2", THREAD CUTTING, FLAT-HEAD
11	6	30-000015	SCREW, 6-19 X 5/16", THREAD FORMING, PAN HEAD
12	1	03-1-0002-0089	BUTTON COVER,EMBOSSED
13	1	03-1-0002-0090	BUTTON COVER, NO EMBOSS
14	2	03-1-0002-0099	BUTTON PROTECTOR
15	3.38"	60-000023	WEATHER RESISTANT FOAM GASKET, 3/16" X 1/4"

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9351	6/26/2024	SLH
B	GASKET - SEE DR-9412	7/15/2024	SLH

PROPRIETARY AND CONFIDENTIAL

THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF DRUCKER DIAGNOSTICS. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF DRUCKER DIAGNOSTICS IS PROHIBITED.

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL - ±1/64
.XX - ± .01
.XXX - ± .005
.XXXX - ± .0005
ANGLES - 1°

	NAME	DATE
DRAWN BY	S HUDSON	6/10/2024
APPROVED BY	C IVORY	6/10/2024

MACHINE SERIES: H6 FLEX BLDC
FOR INTERNAL USE ONLY: INSPECT

MATERIAL: ---
FINISH: ---

DRUCKER DIAGNOSTICS

H6 FLEX DC CABINET & LID ASSEMBLY

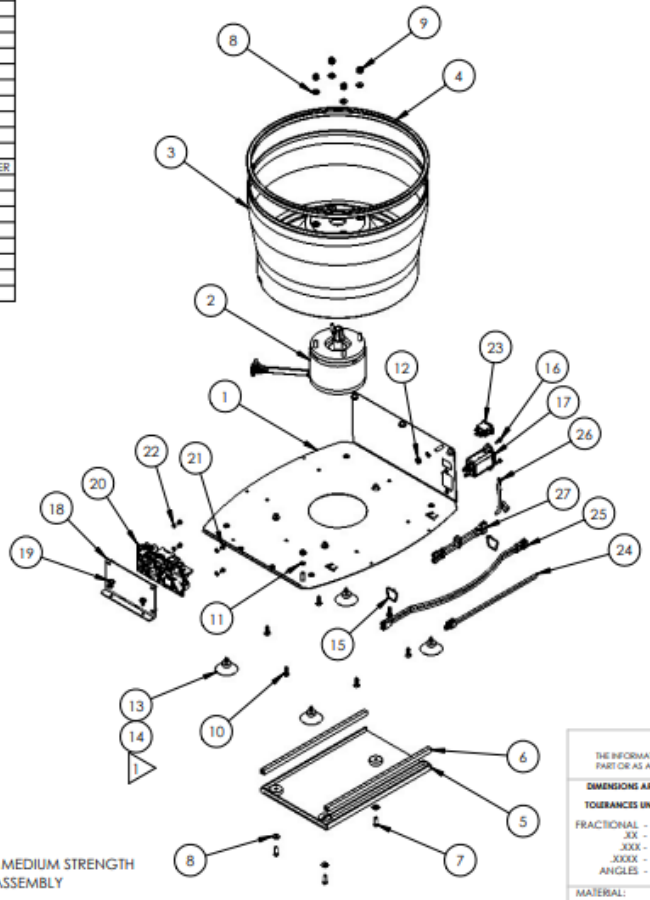
SIZE B | DWG. NO. 02-002-0-0155

ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

10.3 BASE ASSEMBLY (Reference drawing 02-003-0-0138)

ITEM NO.	QTY	PART NUMBER	DESCRIPTION
1	1	02-003-1-0039	DASH APEX 6 BASE ASSEMBLY
2	1	02-005-1-0010	MOTOR ASSEMBLY, DASH APEX 6
3	1	03-1-0004-0037	GUARD BOWL, MOLDED, 600 SERIES
4	34.75"	03-1-0004-0036	GASKET, MOLDED GB
5	1	7713027	EXHAUST AIR DEFLECTOR
6	2	7732009	EXHAUST GASKET
7	3	3012007	SCREW, PHILLIPS, 8-32, 0.50 LONG
8	7	3033003	WASHER #8, FLAT, SILVER
9	4	3022003	8/32 NYLOCK NUT
10	6	30-000013	SCREW, 8-16 X 1/2", THREAD FORMING, BLACK
11	2	3033012	#8 INTERNAL TOOTH WASHER
12	2	3022001	NUT, HEX, 8-32
13	4	7724037	614/642 #8-32 SUCTION FOOT
14	A/R	0000-099-172	LOCTITE 242
15	2	3094002	TIES, PLASTIC, SELF LOCKING, 4.0"
16	2	30-000110	PHMS, 4-40 X 5/16", SS, BLACK
17	1	03-1-0005-0194	AC LINE FILTER, 250V, 3A
18	1	03-1-0002-0095	BRACKET, IPS, W/ INSERTS
19	2	30-000089	SCREW, SEMS, 8-32 X 3/8, PH, SQUARE CONE WASHER
20	1	03-1-0005-0192	INTERNAL POWER SUPPLY, 225W, 48V
21	4	30-000127	PHMS, SS, W/SPRING WASHER, 4-40 X 1/4"
22	4	30-000128	NYLON PLASTIC WASHER, #4, .250 OD
23	1	03-1-0005-0118	POWER SWITCH
24	1	03-1-0005-0321	H6 DC POWER HARNESS IPS TO PCBA
25	1	03-1-0005-0227	POWER HARNESS, AC INLET TO IPS
26	1	03-1-0005-0228	GROUND WIRE ASSEMBLY
27	1	03-1-0005-0220	POWER HARNESS, AC INLET TO SWITCH

REV.	DESCRIPTION	DATE	ORIGINATOR
A	INITIAL RELEASE - SEE DR-9129	2/26/2024	SLH
B	GB MOUNT HARDWARE - SEE DR-	5/30/2024	SLH



NOTES:

1. FOLLOWING THE MANUFACTURER'S INSTRUCTIONS FOR USE, APPLY A MEDIUM STRENGTH THREAD LOCKER TO THE THREADS OF EACH SUCTION FOOT BEFORE ASSEMBLY

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL - ±1/64
.XX - ± .01
.XXX - ± .005
.XXXX - ± .0005
ANGLES - 1°

	NAME	DATE
DRAWN BY	S HUDSON	2/9/2024
APPROVED BY	C IVORY	2/9/2024

MACHINE SERIES: H6 BLDC
FOR INTERNAL USE ONLY: INSPECT

MATERIAL: ---
FINISH: ---

DRUCKER DIAGNOSTICS

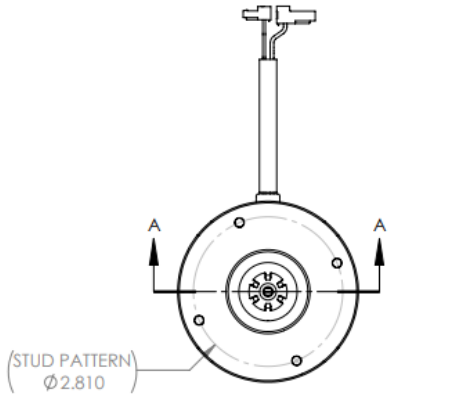
H6 BLDC BASE ASSEMBLY

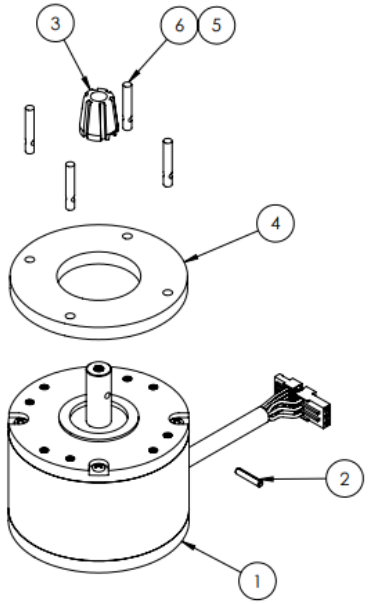
SIZE B | DWG. NO. 02-003-0-0138
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

10.4 MOTOR ASSEMBLY (Reference drawing 02-005-1-0010)

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	03-1-0006-0008	BLDC MOTOR
2	1	3062003	1/8 x 5/8 ROLL PIN
3	1	7786006	653V ROTOR CONE
4	1	03-1-0006-0005	842E MOTOR MOUNT SEAL
5	A/R	0000-099-172	LOCTITE 242
6	4	30-000074	CRIMPED THREADED STUD, 8-32 X 1 X .23 CRIMP, SST

REV.	DESCRIPTION	DATE	ORIGINATOR
A	FIRST RELEASE - SEE DR-4271	10/28/2015	DDR
B	DR-4369	12/15/2015	DDR
C	DR-5662	1/23/2018	SLH
D	DR-5971	7/2/2018	MDD
E	UPDATE MOTOR - SEE DR-7093	1/30/2020	SLH





NOTES:

1. APPLY MINIMAL AMOUNT OF ITEM (5) TO CRIMPED END OF ITEM (6)
2. INSERT CRIMPED END OF ITEM (5) INTO BODY OF ITEM (1)

DIMENSIONS ARE IN INCHES
TOLERANCES UNLESS NOTED:
FRACTIONAL ± 1/64
.XX ± .01
.XXX ± .005
.XXXX ± .0005
ANGLES ± 1°

	NAME	DATE
DRAWN BY	D ROBINSON	9/1/2015
APPRVD BY	C IVORY	10/29/2015

MACHINE SERIES: DASH APEX 6
FOR INTERNAL USE ONLY: INSPECT D
MATERIAL: --
FINISH: --

DRUCKER DIAGNOSTICS

MOTOR ASSEMBLY, DASH APEX 6

SIZE B | DWG. NO. 02-005-1-0010
ALL COMPONENTS MUST BE ROHS COMPLIANT | NTS | SHEET 1 OF 1

11 REVISION HISTORY

Revision #	Date	Details of Change
A	04/19/2024	DR 9239 Original Issue
B		DR-9499 Added Horizon 6 FA (DC), Horizon 6 Flex (DC), and Horizon 6 Flex FA (DC) to scope of manual. Minor formatting and corrections to Sections 1, 2, and 7. Added Sections 8, 9, and 10.