

T-Zero Trimmer	Engineering Specification ES 1202 – Rev1.1
Date: Sept 15 - 2018	Author: Josh Evans, P.Eng.

Introduction:

The T-Zero is the world’s largest cannabis trimming system, capable of throughput speeds over 500 lbs/hr. The system has multiple components and composed of the following:

- T-Zero Trimmer
- T-Zero Filter Stacks
- T-Zero Cyclone
- T-Zero Conveyors

System Features

Throughput	550lbs/hr (fully hydrated)
Power Requirements	600 VAC, 60 A, 3-Phase
Reel Motor	20HP, 460VAC 3-Phase 1750rpm
Tumbler Motor	3/4 HP, 460VAC 3-Phase 1750rpm
Vac Motor	25 HP 460VAC 3-Phase
Infeed Conveyor Motor	1/4 HP 460VAC 3-Phase
Outfeed Conveyor Motor	1/4 HP 460VAC 3-Phase
Cutting System	Belt Drive Quad Blade System
Tumbler ID	13.5 inch
Effective Cut Length	64 inch
Vacuum Airflow	5000 CFM
Trim Separation	Horizontal Cyclone Separator
Primary Filtration	99.99% particles to 0.5 micron
Secondary Filtration	HEPA, 99.7% particles to 0.3 micron
Variable Speed	All motors
Lifting Mechanism	Electrically actuated, up to 8°
Food Grade	Yes
Washdown rating	IP65
RoHS compliant	Yes
Automation	Siemens Automation Components
Primary Material	Stainless Steel
Mechanical Safety	CSA Z432
Electrical Safety	CSA

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Material Specs

Machined Parts	304 Stainless steel
Frame	304 Stainless steel
Motors	Stainless steel, IP65
Tumbler Screen	304 Stainless steel
Tumbler End Caps	304 Stainless steel
Welding Filler Rod	308L Stainless steel
Blade Pivot Screws	316 Stainless steel, nitride
Fasteners	18-8 Stainless steel
Blades	Nitrided carbon steel
Bearings	Steel
Bearing Cap O-ring lubrication	Dow Corning, Molykote 111 food grade grease – Meets NSF Standard 61
Bearing Grease	NSF – Dow Corning, Molykote G-0052FM – Meets FDA 21
Fastener Grease	NSF – LOGIX Thread smart anti-seize – Meets FDA 21
Tumbler Lid Bushings	Food-grade oil-embedded flanged sleeve bearing
Brush	CNN 6.12 nylon and 304 stainless steel
Sheet metal body	304 Stainless steel
Tumbler Rollers	Food grade stainless steel
Filter Stacks	Powder coated carbon steel
Filters	Polyester
Rigid Ducting	304 Stainless steel
Flexible Ducting	Interior: FDA compliant polyurethane Exterior: FDA compliant corrugated polyurethane wall with copper wire helix
Trim Collection	304 Stainless steel drum
Cyclone	304 Stainless steel
Cyclone Frame	304 Stainless steel
Cyclone Gaskets	FDA compliant silicone
Conveyor Frame	304 Stainless steel
Conveyor Belt	Food grade urethane

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Power Requirements – Blade Motor

Make	Sterling
Model	XH0204PHA-1
Features	All stainless steel construction Class F Insulation, 1.15 Service Factor C-Face Supplied with Internally Locked Drive End Bearing Suitable for Inverter Use Per NEMA MG1-Part 31.4.4.2
HP	20 HP
RPM (Full Load)	1800 (1765) RPM
Voltage	460 VAC
Phase	3-Ph
Frequency	60 HZ
Frame Size	256TC
Mounting	Footed
Enclosure	TEFC
Full Load Running Current	23.7 A
Locked Rotor Current	144 A
Motor Efficiency (@ 100%)	93%
Motor Efficiency (@ 75%)	92.5%
Motor Efficiency (@ 50%)	92.3%
Power Factor (@100%)	0.85
Power Factor (@75%)	0.82
Power Factor (@50%)	0.812
Full Load Torque	59.5 ft-lb
Locked Rotor Torque (% of Full Load)	180%
Breakdown Torque (% of Full Load)	220%
Brake Torque	0 ft-lb
Efficiency Type	Premium
Construction Materials	Stainless Steel
Washdown	Yes (IP65)

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Power Requirements – Tumbler Motor

Make	Sterling
Model	SBY074MCA
Features	All stainless steel construction Class F Insulation, 1.15 Service Factor Suitable for Inverter Use Per NEMA MG1-Part 31.4.4.2
HP	.75 HP
RPM (Full Load)	1800 (1750) RPM
Voltage	460 VAC
Phase	3-Ph
Frequency	60 HZ
Frame Size	56C
Mounting	C-Face Footless
Enclosure	TENV
Full Load Running Current	1.13 A
Locked Rotor Current	8.5 A
Motor Efficiency (@ 100%)	80.5%
Motor Efficiency (@ 75%)	79.6%
Motor Efficiency (@ 50%)	76.2%
Power Factor (@100%)	0.775
Power Factor (@75%)	0.69
Power Factor (@50%)	0.559
Full Load Torque	2.24 ft-lb
Locked Rotor Torque (% of Full Load)	230%
Breakdown Torque (% of Full Load)	360%
Brake Torque	0 ft-lb
Efficiency Type	EISA2007
Construction Materials	Stainless Steel
Washdown	Yes (IP65)

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Conveyors

- 304 Stainless steel
- Adjustable height
- Adjustable belt tension
- Flip up bed for easy cleaning
- FDA polyurethane belt
- ¼ HP, 460V, 3-Phase motor, IP 55
- Removable sidewalls
- 12" wide feed bed
- 18" wide exit bed

Water Sprayers

- Filtered water required minimum, RO preferred
- Valve max operating pressure 90 bar
- Input ¼" male NPT
- Hose max operating pressure 10 bar (30° C)
- Hose max operating pressure 8 bar (50° C)
- Spray nozzles 2.75 bar
- Additional options
 - 90 bar hardline installation

Trim Collection - Cyclone

- 5000 CFM horizontal cyclone separator
- 304 Stainless Steel Construction
- Easy open door for access and cleaning
- Clamp together stainless steel construction
- 304 Stainless Steel collection drum
- Additional options
 - Rotary Airlock
 - Clean-in-place

Trim Collection – Filter Stacks

- Powder coated steel construction
- Automatic pulse jet air cleaning system
- Two Stage Filtration Down Stream of cyclone
- Primary stage filters have separation efficiency of 99.99% down to 0.5 micron
- Secondary stage filters have separation efficiency of 99.97% down to 0.3 micron
- Quick change filters
- Air-to-cloth ratio 3.85:1

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- 25 HP, 460V, 3-Phase Motor
- Filter health gauges
- Additional options
 - Optional silencer (reduces by 10 dBA)
 - Optional explosion venting
 - Other filter options available (washable, PTFE treated, oleophobic)