FINE HEADWORKS SCREEN AND WASHING COMPACTOR

Operation and Maintenance Manual
Manatee County Juvenile Detention Center

Model# STR-11-209-25mm & WC-6-86-6mm

by

HYDRO-DYNE Engineering, Inc.

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FINE HEADWORKS SCREEN AND WASHING COMPACTOR

OPERATIONS AND MAINTENANCE MANUAL INDEX

Job #13810
File Name: Manatee County Juvenile Detention Facility

1) Fine Headworks Screen and Washing Compactor
   Model# **STR-11-209-25mm and WC-6-86-6mm**
   Channel Depth: **135"**
   Channel Width: **12.75"**
   Opening Size: **25 mm**
   Material of Construction: **304 stainless steel**

2) Fine Headworks Screen Drawings
   a. Plan View
   b. Section AA
   c. Section BB

3) 3-Dimensional Breakout Drawings
   a. Fine Headworks Screen
      i. Entire Screen
      ii. Static Assembly
      iii. Dynamic Assembly
   b. Fine Headworks Screen Bill of Materials
   c. Washing Compactor
   d. Washing Compactor Bill of Materials

4) Control Panel
   a. Panel Layout
   b. Wiring Diagram
   c. Panel Bill of Materials
   d. Adjustment of Timers

5) Installation Instructions

6) Maintenance

7) Shutdown and Storage

8) Screen Electric Motor Specifications

9) Screen Gear Reducer Specifications and Lubrication

10) Washing Compactor Gear Motor Specifications and Lubrication

11) Warranty

12) Literature

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Technical Specifications for
Fine Headworks Screen and Washing Compactor

Part I – General

1.1 Work Included

1.1.1 The Contractor shall provide all labor, tools, equipment and supervision as required to furnish, install, test and place into satisfactory operation, one (1) Fine Headworks Screen, Washing Compactor and appurtenances as indicated on the drawings and as specified herein.

1.1.2 Equipment in this section shall be furnished by Hydro-Dyne Engineering, Inc. Manufacturer shall be responsible for the design coordination and proper operation of this equipment. The equipment shall be fabricated, assembled, erected and placed in proper operating condition in conformity with the drawings, specifications, engineering data, instructions and recommendations of the equipment manufacturer unless exceptions are noted by the Engineer.

1.2 References

1.2.1 The properties of all materials, design, fabrication and performance of the equipment to be furnished under this section shall be in accordance with the latest issue of applicable Standard Specifications. Authorities that are recognized by the Mechanical Trades have prepared these Standard Specifications. The applicable authorities include, but are not necessarily limited to, the following:

A. American National Standards Institute (ANSI)
B. American Water Works Association (AWWA)
C. American Society for Testing and Materials (ASTM)
D. National Electrical Manufacturers Association (NEMA)
E. American Society of Civil Engineers (ASCE)
F. Water Environment Federation (WEF)

1.3 Submittals

1.3.1 Copies of all materials required to establish compliance with the Specifications shall be in accordance with the requirements of the Contract Documents. As a minimum the submittal package shall include the following:

A. Literature and drawings describing the proposed screening equipment in sufficient detail to provide assurance of compliance with the Contract Documents. The details required shall include a minimum of performance and headlosses specific to the proposed equipment and details of the installation and equipment.
B. Dimensional drawings of all ancillary and control equipment.
C. Control schematics and other data as required for completion of the installation.
D. Sizing and headloss calculations.
E. List of Manufacturer's recommended spare parts.

Part II – Products

2.1 Manufacturers

2.1.1 The screening equipment described in this section shall be provided by or through a single manufacturer who shall be responsible for the design, coordination and proper operation of the screening system. Acceptable manufacturer of the self-cleaning Fine Headworks Screening equipment shall be Hydro-Dyne Engineering, Inc., Clearwater, Florida.

2.2 Design Criteria

2.2.1 The Fine Headworks Screen shall be suitable for installation and operation in a flow channel measuring 12.75" wide by 135" deep. The Fine Headworks Screen shall be capable of passing a peak hydraulic flow rate equivalent of 0.8 MGD of wastewater at an approach velocity of approximately 2 ft./sec. Headloss through the Fine Headworks Screen shall not exceed 4" of water at the peak hydraulic flow rate with the grid 30% blocked.

2.2.2 The Fine Headworks Screen shall provide filtration and remove materials and particles larger than 25-mm (1") in size. In addition to the fine materials, materials up to 3.875" (100mm) in diameter shall be removed and transported by the Fine Headworks Screen for disposal. The Fine Headworks Screen and Washing Compactor discharge height shall be 48" above the top of the operating floor (183" above channel invert).

2.3 Fine Headworks Screen Description

2.3.1 The self-cleaning Fine Headworks Screen shall consist of a continuous filtration "belt" that shall present a clean filtration surface to the influent liquid stream at all times. The filtration belt shall be designed for maximum hydraulic capacity and shall be mounted in a support frame with integral guides for the belt. 1/2 hp electric motor and appropriate gear reducer shall power the belt. No submerged bearings or sprockets shall be allowed in order to eliminate submerged component failures and additional maintenance. The area of the Fine Headworks Screen that extends above the channel and all moving parts shall be fully enclosed to protect the Operator from possible harm or injury, to control odors, and to present a clean and neat appearance.

2.3.2 The Fine Headworks Screen shall stand at a 75-degree angle in the channel between guide angles mounted to the channel walls. The Fine Headworks Screen shall not be physically attached to the channel walls or bottom to pivot out of the channel or facilitate easy removal without removing the channel from service. Routine maintenance and service of the Fine Headworks Screen must be possible without removing the screen from the channel.

2.3.3 The Fine Headworks Screen shall be cleaned of screenings by means of an easily accessible static brush and/or spray wash, or low-pressure deluge, utilizing either plant effluent or pretreated wastewater that has been passed through the self-cleaning To increase functional life of grid, screens relying on plastic or metal elements indexing through grid to remove screenings will not be allowed. Rotating brushes, mechanical rakes or mechanisms that contact screen grid will not be acceptable for the removal of screenings and debris. Screens that require submerged chains,

sprockets, or rollers shall not be allowed. Operational maintenance shall include lubrication of drive and inspection of wash water. Any additional maintenance of screen or unloading mechanism shall be detailed in written maintenance schedule and submitted for engineering approval.

2.4 Fine Headworks Screen Construction

2.4.1 All moving wetted parts or all wetted parts on which moving parts ride shall be fully resistant to corrosion. The Fine Headworks Screen's components shall be as follows:

A. The Fine Headworks Screen's frame, which is stationary, shall be constructed of heavy gauge T304 stainless steel with integral T304 stainless steel guide tracks. The frame spreaders and flanges shall be of T304 stainless steel.

B. The Fine Headworks Screen's grid shall be comprised of heavy gauge T304 stainless steel filter elements, heavy-duty T304 stainless steel axles, composite plastic element spacers and UHMWPE guide links. Plastic grid elements or perforated plates shall not be allowed.

C. Wear track for fine screen shall be heavy duty T304 stainless steel.

D. The drive shaft and drive sprockets components shall be T304 stainless steel. The drive system adjustment plates and blocks shall be T304 stainless steel and the adjustment slides shall be of UHMWPE material.

E. The Fine Headworks Screen's protective covers shall be of heavy gauge T316 stainless steel.

F. All hardware used in the construction of the Fine Headworks Screen shall be of T316 stainless steel.

G. The replaceable front lower seal brush shall have a T304 stainless steel holder with polypropylene bristles.

2.5 Fine Headworks Screen Drive System

2.5.1 The Fine Headworks Screen shall be powered by 1/2 hp electric motor and appropriate gear reducer. No part of the drive mechanism shall come in direct contact with the screen's grid. Drive shaft shall be machined from T304 stainless steel bar, minimum 2" in diameter. Stainless steel chain and sprockets shall be covered for operator safety, but easily accessible for maintenance, adjustment, or exchange for screen speed adjustment.

2.6 Washing Compactor

2.6.1 Washing Compactor shall be provided to reduce the organic content and water in the screenings. Spray wash or a low-pressure deluge shall remove the screenings from the screen and deposit them into a T304 stainless steel washing trough. Water from the wash, along with additional spray headers on the Washing Compactor, will wash screenings while a stainless steel auger will agitate and separate organics. The auger will convey screenings for compaction, while wash water will return organics to channel through slots in the trough of the Washing Compactor.

2.6.2 After the screenings have been removed from the washing trough, the flight shall convey the screenings to be compacted. After the water in the screenings has been reduced, in the compaction zone, screenings are squeezed out the end of the unit into a receptacle, by others. The Washing Compactor shall lift washed and dewatered screening 48" above the operating floor.

2.6.3 The Washing Compactor shall fit under rear discharge of screen and accept screening via T304 stainless steel discharge chute. Materials of construction shall be heavy gauge T304 stainless steel and other high-density composites for maximum corrosion resistance. The covers shall be T316 stainless steel. The T304 stainless steel flight shall have a 6" outside diameter flight with a 2.00" OD T304 torque shaft. Flight shall be 1/4" thick and have a 6" nominal pitch. The screw-type compactor housing shall consist of a trough having a 6-3/8" inside diameter and constructed from 12 ga. T304 stainless steel. The bearings and thrust washers shall be of UHMWPE on drive end to eliminate leakage. Flight must be supported by adjustable bearings at both ends to reduce wear and increase efficiency. Flight shall be easily replaceable.

2.7 Washing Compactor Drive System

2.7.1 The Washing Compactor shall be powered by a 1/2 hp electric gearmotor. Controls for the Washing Compactor shall be located in control panel with the screen controls.

2.8 Controls

2.8.1 The Fine Headworks Screen and Washing Compactor shall be supplied with a basic control system. The equipment manufacturer shall be responsible for proper sizing and function of the controls. The control enclosure shall be constructed of T316 stainless steel and shall be mounted near the Fine Headworks Screen for operator safety and convenience. Remote location and additional controls must be available as an option.

2.8.2 Each control system shall consist of:

A. Stainless Steel NEMA 4X, control panel enclosure
B. Hand/ Off/ Auto switch to control screen and Washing Compactor
C. Fused Disconnect/Circuit Breaker
D. Recycle Timer
E. Float Switch
F. Control Transformer
G. Additional Terminal Blocks
H. Fuses and Breakers
I. Motor Starters
J. Motor Overload Sensors
K. Screen Run Light
L. Washing Compactor Run Light
M. Emergency stop

2.9 Spare Parts and Accessories

2.9.1 One (1) lot of manufacturer recommended spares for the Fine Headworks Screen and Washing Compactor.

Part III – Execution

3.1 Warranty

3.1.1 The Manufacturer of the equipment supplied under this specification shall provide a warranty for a period of twelve months commencing on acceptance and/or beneficial occupancy by the Owner, but no later than 90 days from the date of shipment by the Manufacturer. The Manufacturer shall guarantee that the equipment furnished is

suitable for the purpose intended and free from defects in design, materials and workmanship. In the event that the equipment fails to perform as specified the Manufacturer shall, at his option, promptly repair, modify or replace the defective equipment.

3.2 Factory Testing

3.2.1 The screening system and all components shall be factory assembled and tested for a minimum of 24 hours prior to shipment. The Fine Headworks Screen shall be shipped fully assembled. The Fine Headworks Screen, Washing Compactor and ancillary equipment shall be capable of being set in place and field erected by the Contractor with minimal field assembly.

3.2.2 During the factory test period the screening system shall be adjusted as required to assure proper operation on completion of the field installation. The Manufacturer shall supply a certification of the completion of the factory testing of the assembled screening system and appurtenances and shall certify as to the equipment being in satisfactory operating condition at time of shipment. The Engineer and/or Owner may, at their own option and expense, witness the factory test.

3.3 Delivery and Storage

3.3.1 The Fine Headworks Screen, Washing Compactor and appurtenances shall be appropriately crated and delivered to protect against damage during shipment.

3.3.2 An authorized representative of the Contractor shall inspect the Fine Headworks Screen, Washing Compactor and accompanying equipment on delivery to the jobsite and shall report any damage or missing components to the Manufacturer and the Engineer within 72 hours of receipt of the shipment.

3.4 Installation

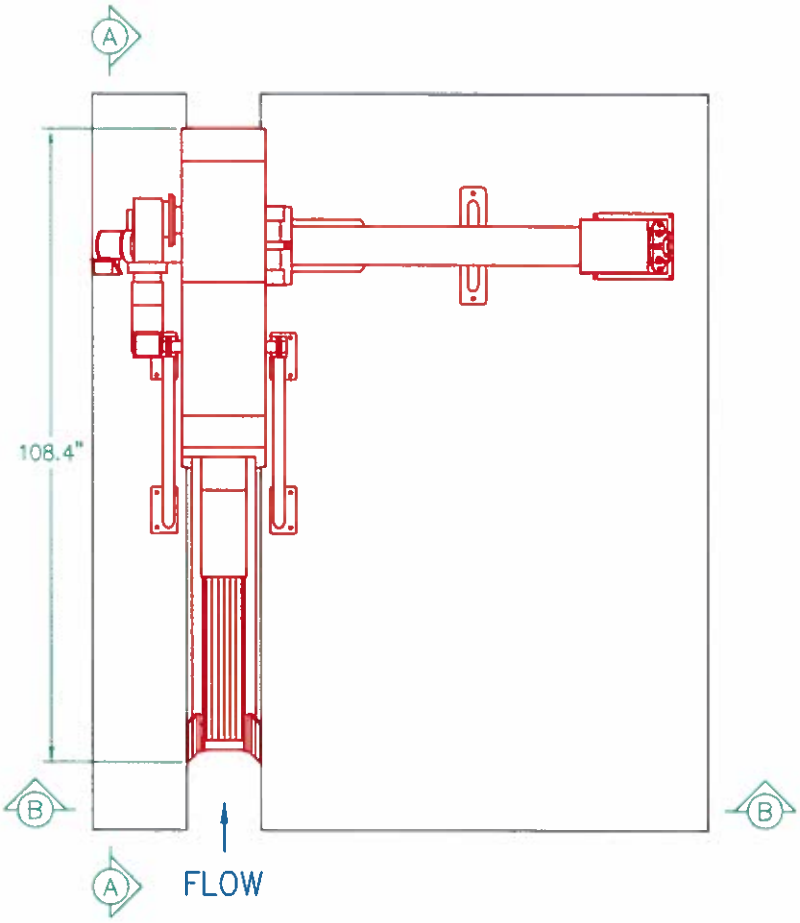
3.4.1 Installation of the Fine Headworks Screen, Washing Compactor and appurtenances shall be as indicated on the drawings and in strict accordance with the Manufacturer's instructions and recommendations.

3.5 Field Tests, Adjustment and Startup

3.5.1 After completion of the installation, the equipment shall be inspected and certified by an authorized representative of the Manufacturer as being in compliance with the Manufacturer's recommendations and requirements. At such time as the Manufacturer has deemed the installation to be acceptable, the Manufacturer's authorized service representative shall make any required adjustments and shall start the equipment to assure proper operation.

3.5.2 The Manufacturer's authorized representative shall provide instruction to the plant personnel as to the operation and maintenance of the equipment including startup, shut down, on-line operations, lubrication and preventative maintenance.

3.5.3 The Contractor shall include in his bid, the cost of the above referenced authorized service representative for a minimum of one (1) eight hour day onsite to complete the certifications and training described in this specification section.



PLAN VIEW

UNLESS NOTED			
TOLERANCE			
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.XX	± .015		
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.XXXX	± .0005		

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STR WITH WASHING COMPACTOR LAYOUT O&M		
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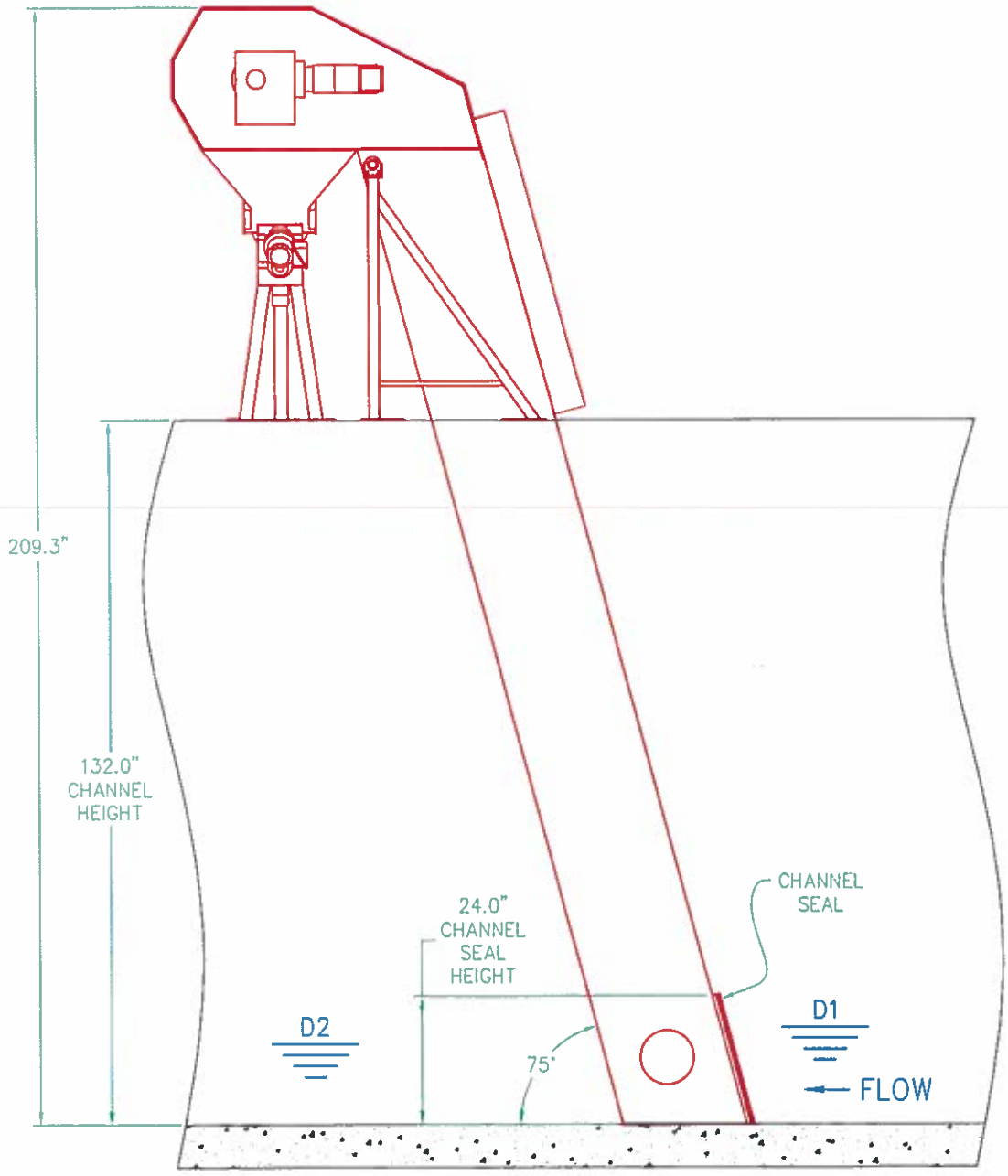

SECTION A-A

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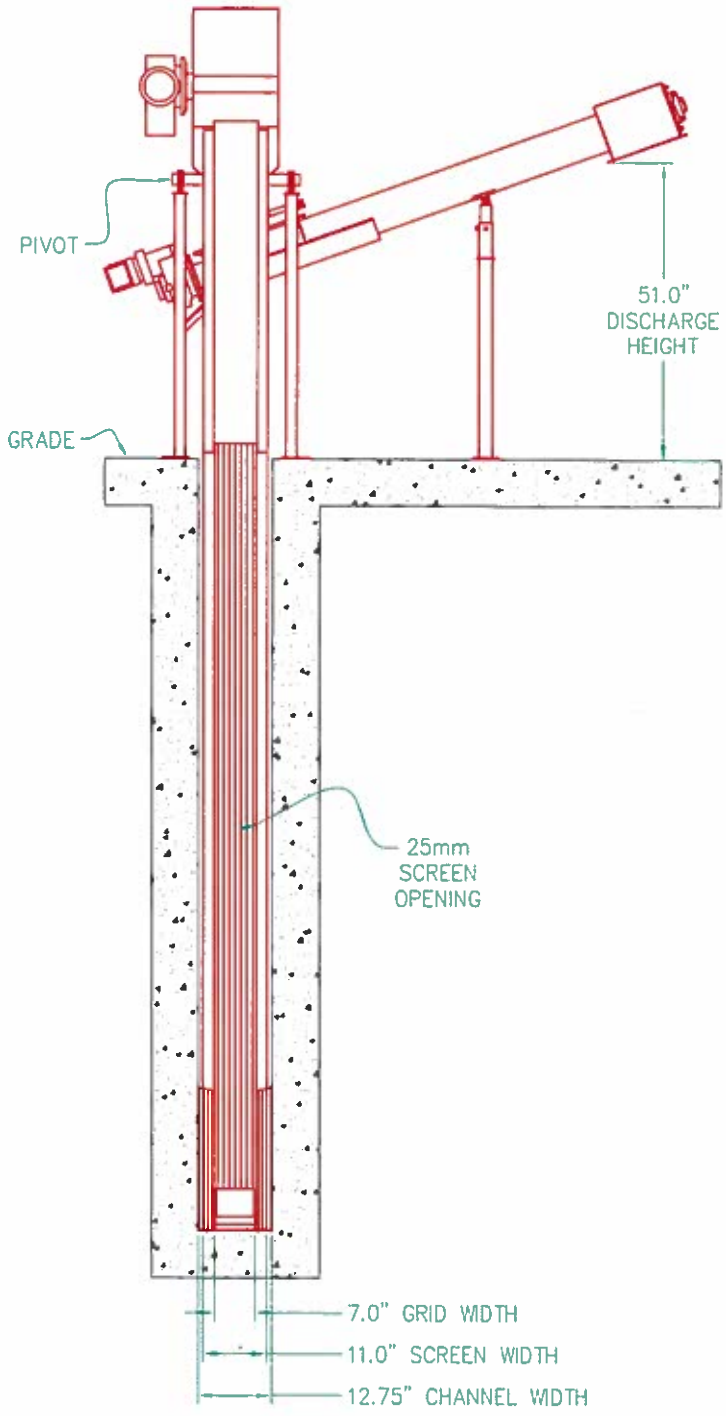

SECTION B-B

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STR WITH WASHING COMPACTOR LAYOUT O&M		
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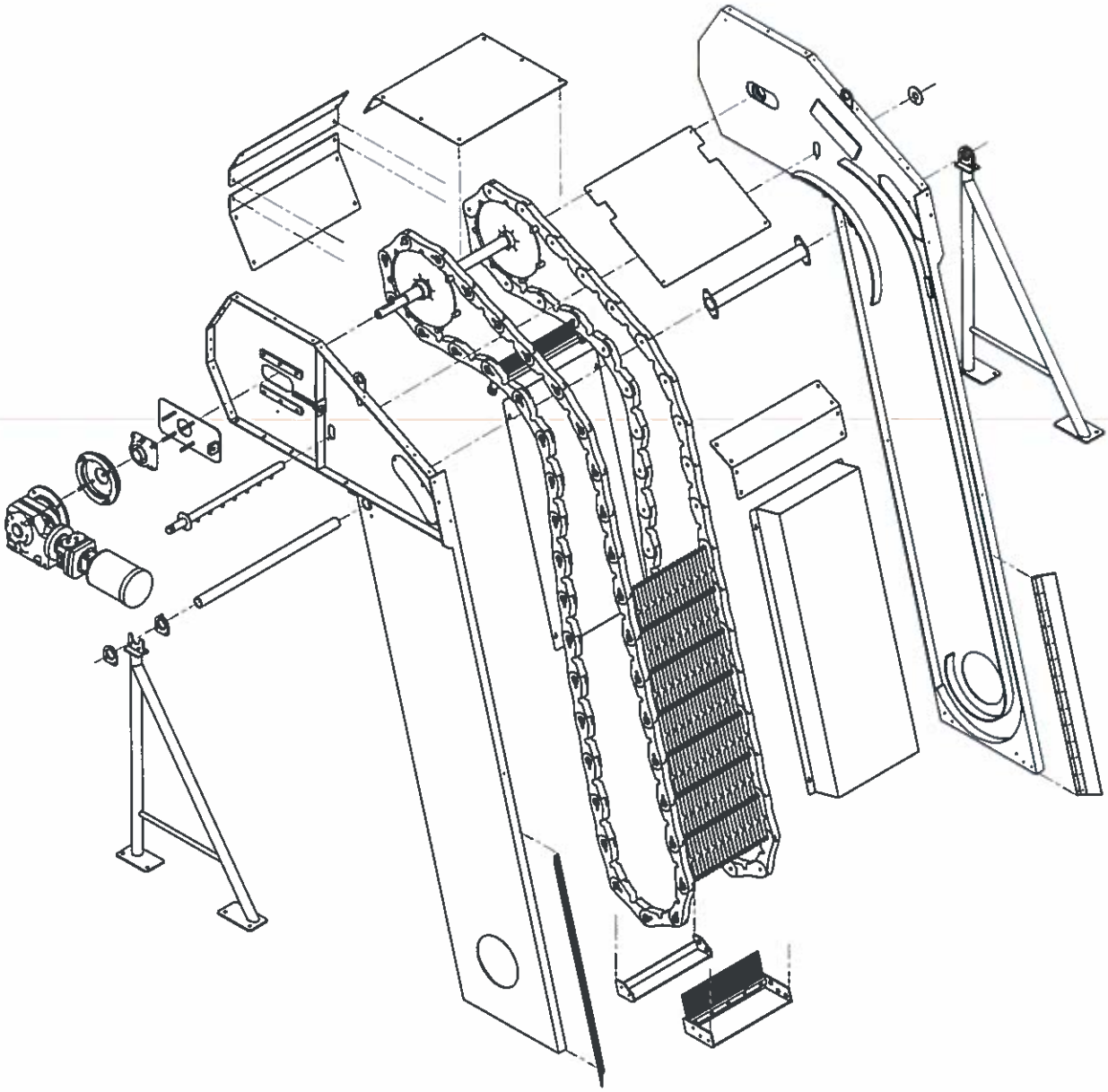

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STR BREAKOUT – COMPLETE ASSEMBLY

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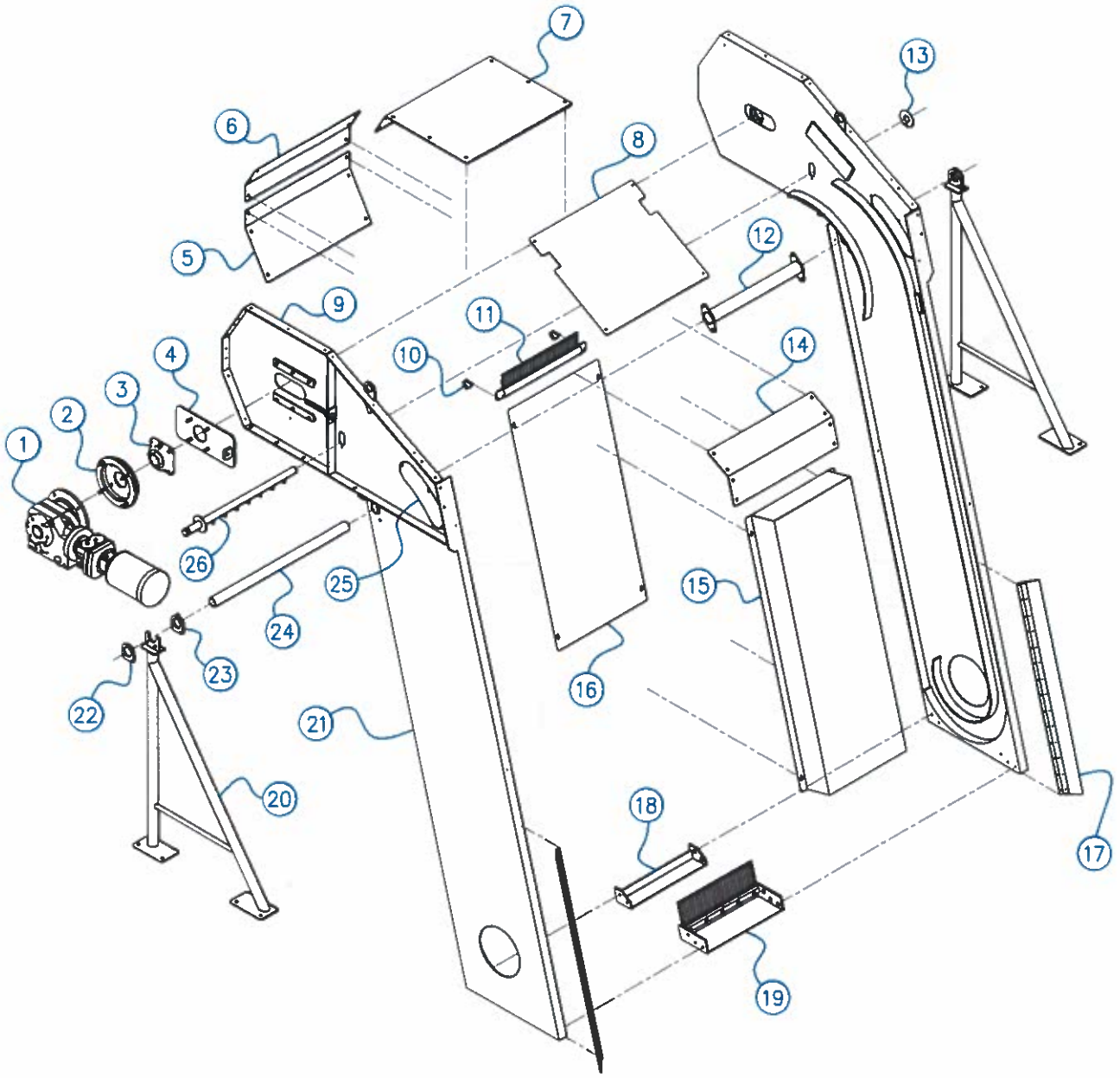

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STR BREAKOUT – STATIC ASSEMBLY

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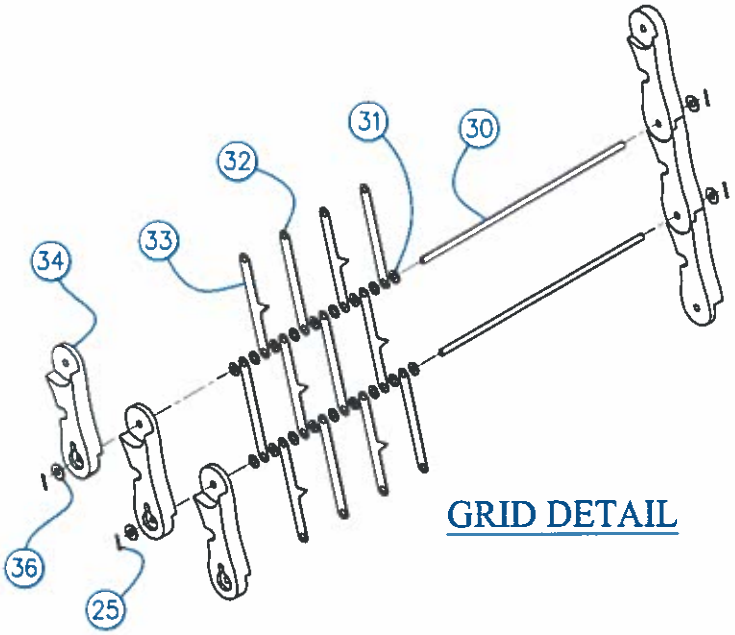

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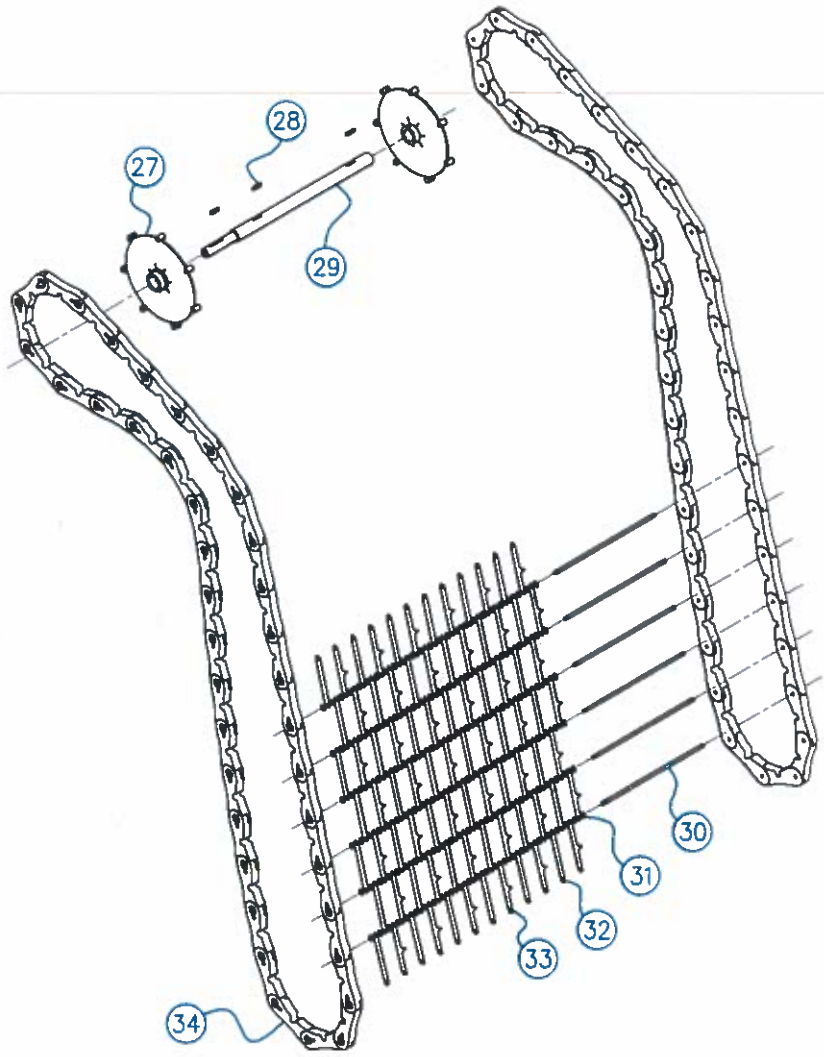

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STR BREAKOUT – DYNAMIC ASSEMBLY

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CHECKED BY/DATE: JAY CONROY – 07/15/05	SIZE: A	

DETAIL #	PART NAME	PART NUMBER	QUANTITY
1	GEAR MOTOR ASSEMBLY	6M-99	1
2	GEARMOTOR CONNECTION FLANGE	6D-13	1
3	FLANGE BEARING	6D-08	2
4	GRID ADJUSTMENT PLATE	6H-30	2
5	LOWER REAR HEAD SECTION SUPPORT	6S-13	1
6	UPPER REAR HEAD SECTION SUPPORT	6S-14	1
7	TOP HEAD SECTION SUPPORT	6S-15	1
8	TOP HEAD SECTION COVER	6C-21	1
9	HEAD SECTION ASSEMBLY	6H-00	2
10	UNDER BRUSH SNAP PIN	6H-26	2
11	UNDER BRUSH ASSEMBLY	6H-25	1
12	SPREADER BAR ASSEMBLY	6S-11	1
13	SPRAY BAR LOCK RING	6X-14	1
14	FRONT HEAD SECTION SUPPORT	6S-16	1
15	FRONT COVER	6C-02	1
16	REAR COVER	6C-03	1
17	CHANNEL SEAL ASSEMBLY	6X-03	2
18	REAR LOWER SUPPORT ASSEMBLY	6S-09	1
19	FRONT BRUSH AND SUPPORT ASSEMBLY	6S-08	1
20	PIVOT STAND ASSEMBLY	6P-00	2
21	LOWER FRAME ASSEMBLY	6L-00	2
22	PIVOT STAND LOCK RING	6P-05	2
23	PIVOT BAR LOCK RING	6P-04	2
24	PIVOT BAR	6P-09	1
25	DOG BONE ACCESS COVER	6C-04	2
26	SPRAY BAR ASSEMBLY	6X-11	1
27	GRID DRIVE SPROCKET ASSEMBLY	6D-03	VARIES
28	KEY	6D-06	VARIES
29	MAIN DRIVE SHAFT	6D-05	1
30	GRID AXLE	6G-04	VARIES
31	GRID SPACER	6G-05	VARIES
32	GRID LINK - STRAIGHT	6G-03	VARIES
33	GRID LINK - HOOK	6G-10	VARIES
34	DOG BONE	6G-01	VARIES
35	DOG BONE COTTER PIN	6G-06	VARIES
36	DOG BONE WASHER	6G-11	VARIES

UNLESS NOTED

TOLERANCE
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.XX ± .015
.XXX ± .005
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STR BREAKOUT - PARTS LIST

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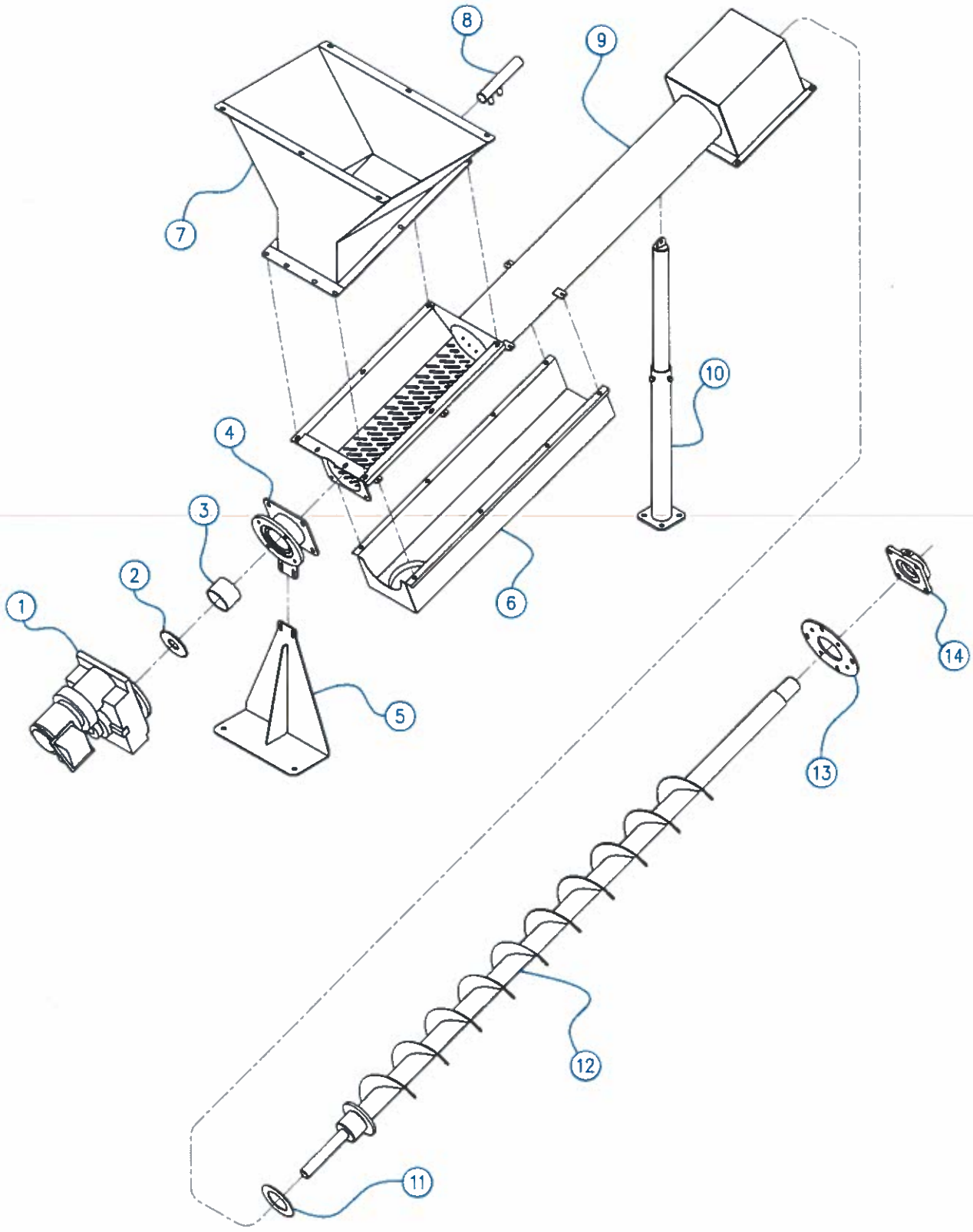

PROJECT #:			
UNLESS NOTED TOLERANCE .X ± .030 .XX ± .015 .XXX ± .005 .XXXX ± .0005	HYDRO-DYNE Engineering, Inc. www.hydro-dyne.com	WASHING COMPACTOR BREAKOUT – ASSEMBLY	
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		DRAWN BY/DATE: COONEY – 02/26/04	SCALE: N.T.S.
		CHECKED BY/DATE: JAY CONROY – 02/26/04	SIZE: A

DETAIL #	PART NAME	PART NUMBER	QUANTITY
1	GEAR MOTOR	78M-99	1
2	THRUST PLATE	78S-05	1
3	FLIGHT BEARING	78S-08	1
4	DRIVE SIDE ADJUSTABLE FLIGHT ASSEMBLY	78S-00	1
5	ADJUSTABLE MOTOR SUPPORT	78C-22	1
6	CATCH TROUGH	8T-00	1
7	COLLECTION HOPPER ASSEMBLY	8H-00	1
8	WASH MODULE	8H-05	1
9	COMPACTOR ASSEMBLY	8C-00	1
10	ADJUSTABLE DISCHARGE SUPPORT	78C-18	1
11	FLIGHT THRUST WASHER	78S-09	1
12	FLIGHT	78F-00	1
13	ADJUSTABLE DISCHARGE MOUNTING PLATE	78D-06	1
14	DISCHARGE BEARING	78D-13	1

PROJECT #:

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TOLERANCE
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WASHING COMPACTOR BREAKOUT - PARTS LIST

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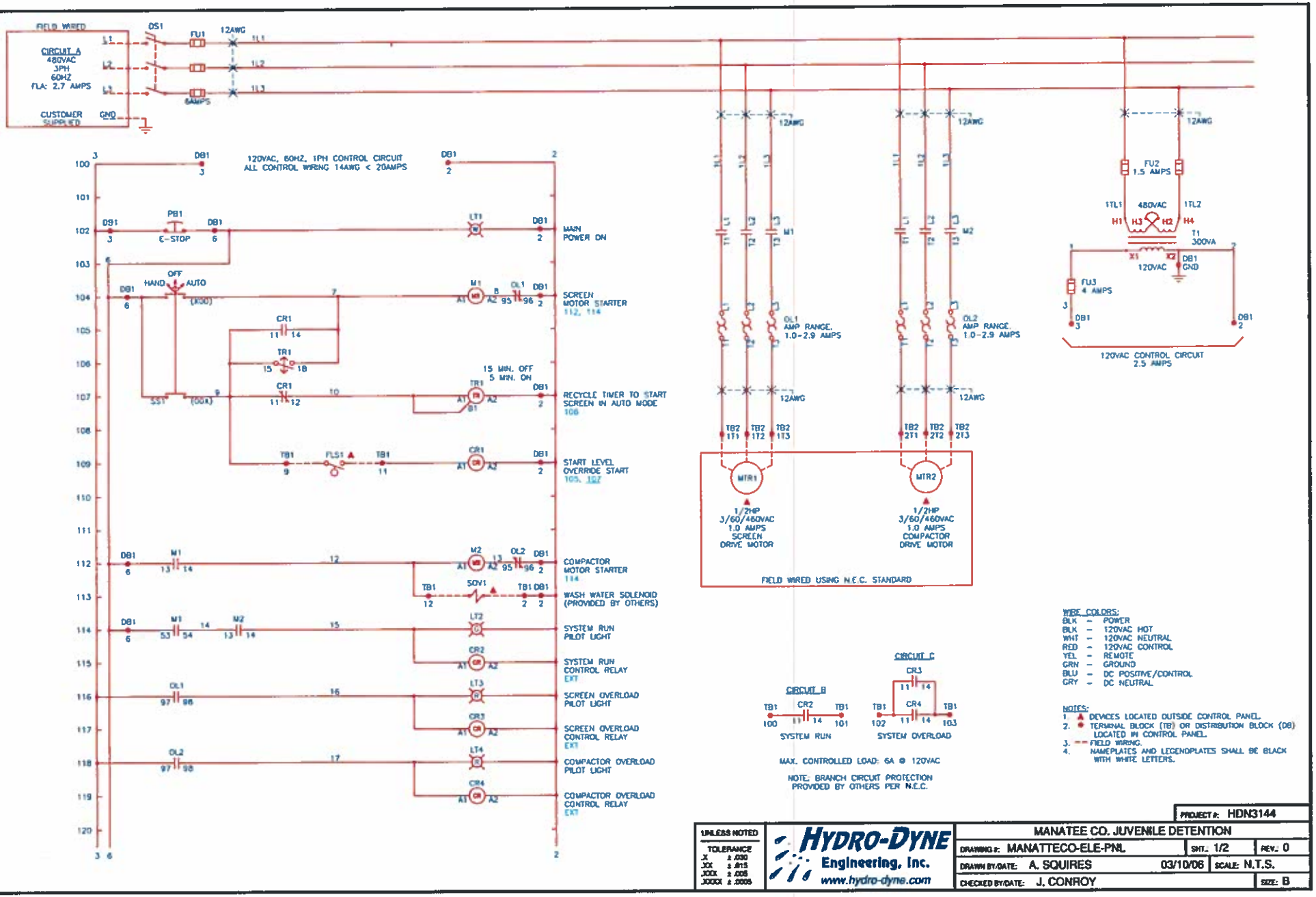

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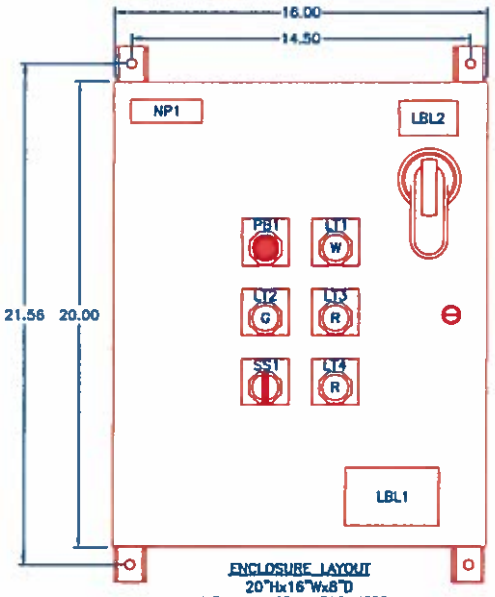
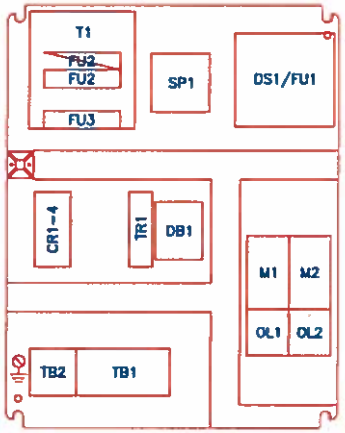
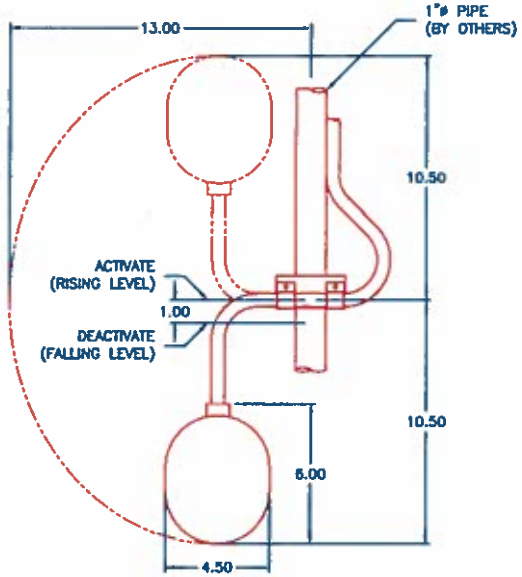


ENCLOSURE LAYOUT
20"Hx16"Wx8"D
NEMA 4X STAINLESS STEEL

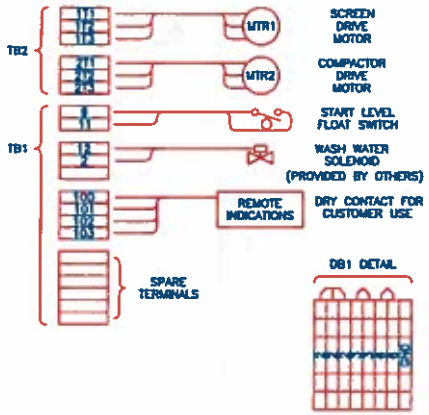


SUB-PANEL LAYOUT
18.2"Hx14.2"W



FLOAT SWITCH AND PIPE MOUNT CLAMP
POLYPROPYLENE CASING
N.O. HERMETICALLY SEALED MERCURY SWITCH
W/20' PVC TYPE STD CABLE

FIELD WIRING DIAGRAM



DEVICE SETTINGS

TR1

OFF TIME FIRST	MODE	DIAL SETTING
t2	10 MINUTES	0.5
t1	1 HR	0.25

TR1 IS A RECYCLE TIMER. SET SWITCH TO OFF TIME FIRST. SET t1 TO THE OFF TIME BY FIRST SETTING THE MODE AND THEN THE DIAL SETTING. SET t2 TO THE ON TIME FOLLOWING THE SAME PROCEDURE.

SEQUENCE OF OPERATION

SCREEN MODE OF OPERATION:
HAND: WHEN SYSTEM SELECTOR IS IN THE HAND POSITION THE SCREEN WILL RUN CONTINUOUSLY.
AUTO: WHEN THE SYSTEM SELECTOR IS IN THE AUTO POSITION THE SCREEN WILL RUN WHEN THE LEVEL REACHES THE START LEVEL FLOAT SWITCH (FLS1). THE SCREEN WILL CONTINUE TO RUN UNTIL THE LEVEL DROPS BELOW THE START LEVEL FLOAT SWITCH. THE SCREEN WILL ALSO RUN BASED ON THE SETTINGS OF THE RECYCLE TIMER (TR1) UNTIL THE LEVEL REACHES THE START LEVEL FLOAT SWITCH (FLS1) AGAIN. THE RECYCLE TIMER HAS INDEPENDENT ON/OFF CYCLES TO START THE SCREEN IN AUTO.

COMPACTOR MODE OF OPERATION:
THE COMPACTOR WILL RUN WHEN THE SCREEN IS RUNNING. REFER TO THE SCREEN MODE OF OPERATION FOR MORE INFORMATION.

WASH WATER SOLENOID MODE OF OPERATION:
THE WASH WATER SOLENOID WILL OPEN WHEN THE SCREEN AND COMPACTOR ARE RUNNING IN EITHER HAND OR AUTO MODE.

SYSTEM RUN:
THE SYSTEM IN RUN PILOT LIGHT WILL ILLUMINATE WHEN THE SCREEN AND COMPACTOR MOTORS ARE RUNNING.

EMERGENCY STOP:
THE SCREEN, COMPACTOR AND THE WASH WATER SOLENOID WILL STOP IMMEDIATELY IF THE E-STOP PUSHBUTTON (PB1) IS PRESSED. WHEN PB1 IS RESET, THE UNIT MAY CYCLE IMMEDIATELY. TURN THE SCREEN H-O-A SELECTOR SWITCH (SS1) TO THE OFF POSITION AND THEN RESET PB1 BY TWISTING THE KNOB.

FAULTS:
1. A SCREEN OVERLOAD OCCURS WHEN THE SCREEN MOTOR THERMAL OVERLOAD IS TRIPPED.
2. A COMPACTOR OVERLOAD OCCURS WHEN THE COMPACTOR MOTOR THERMAL OVERLOAD IS TRIPPED.

- WHEN THE ABOVE FAULT OCCURS, THE RESPECTIVE MOTOR WILL STOP IMMEDIATELY AND ITS MOTOR FAILURE LIGHT WILL BE ILLUMINATED.
- FAULTS 1 AND 2 MUST BE MANUALLY RESET AT THE THERMAL OVERLOAD (OL1 OR OL2) INSIDE THE ENCLOSURE.

PILOT DEVICE ENGRAVED LEGEND PLATES:
LT1 - MAIN POWER ON
LT2 - SYSTEM RUN
LT3 - SCREEN OVERLOAD
LT4 - COMPACTOR OVERLOAD
PB1 - EMERGENCY STOP
SS1 - SYSTEM HAND-OFF-AUTO

PHENOLIC NAMEPLATES:
NP1 - SCREEN/COMPACTOR CONTROL PANEL

LABEL DESCRIPTION:
LBL1 - DANGER HIGH VOLTAGE
ENTRY BY QUALIFIED PERSON ONLY
LBL2 - WARNING: MULTIPLE SUPPLY SOURCES
OPEN ALL DISCONNECTS BEFORE SERVICING EQUIPMENT OR OTHER UNIT WIRING.

UNLESS NOTED	
TOLERANCE	
.X	±.030
.XX	±.015
.XXX	±.005
.XXXX	±.0005

HYDRO-DYNE Engineering, Inc.
www.hydro-dyne.com

PROJECT #: HDN3144
MANATEE CO. JUVENILE DETENTION
DRAWING #: MANATTECO-ELE-PNL | SHT.: 2/2 | REV.: 0
DRAWN BY/DATE: A. SQUIRES 03/10/06 | SCALE: N.T.S.
CHECKED BY/DATE: J. CONROY | SIZE: B

Hydro-Dyne
Screen / Washing Compactor Control Panel
Manatee Co. Juvenile Detention Facility

Item No	Component	Description	Manufacturer Part Number	QTY	Device
Screen / Washing Compactor Control Panel (Quantity: 1)					
1	00-000-000	Wire, Hardware, Wire labels, etc.	EleMech: Miscellaneous	1	
2	25-000-A000	Legendplate Assembly, Black, White Core, Standard Encl.	EleMech: 25-000-A000 Assembly	5	
3	25-000-A001	Legendplate Assembly, Yellow E-Stop, Standard Encl.	EleMech: 25-000-A001 Assembly	1	
4	25-000-A019	Nameplate Assembly, White: Power Supply - 3/60/480VAC	EleMech: 25-000-A019 Assembly	1	
5	06-005-027	Control Relay, High Density, SPDT,120VAC, LED Indicator	Allen-Bradley: 700-HLT1U1	4	CR1-4
6	07-063-000	Distribution Block, End Cover, 4 Pole, 300V,10A, w/WK4E\V\VB	Wieland: 07.311.4053.1	1	DB1
7	07-063-001	Distribution Block, Jumper, 4 Pole, 300V,10A, w/WK4E\V\VB	Wieland: Z7.210.3427	2	DB1
8	07-063-002	Distribution Block, Single Pole, 10A, 300V, WK4E\V\VB	Wieland: 57.404.6955.1	7	DB1
9	42-063-004	Terminal Block, Ground, 30A, 600V, 6MM Wide, w/WK4/U	Wieland: 57.504.9053.0	1	DB1
10	09-001-A001	Disconnect Assembly, Fused, 30 Amp, Nema 4X, 8" Depth	ABB: OS30AJ12 Assembly	1	DS1
11	11-035-078	Enclosure, Nema 4X, 304SS, 20"Hx16"Wx8"D, Concept	Hoffman: C-SD20168SS	1	EN1
12	11-035-149	Sub-Panel, Painted Steel, w/20"Hx16"W Concept	Hoffman: C-P2016	1	EN1
13	11-035-179	Enclosure Mounting Feet, Nema 4X, 304SS, Set of 4, Concept	Hoffman: C-MFKSS	1	EN1
14	13-030-010	Fuse, Class J, Time Delay, 600VAC, 6 Amp	Ferraz-Shawmut: AJT-6	3	FU1
15	15-011-000	Ground Lug	Blackburn: L70	1	GND
16	52-137-000	Label, High Voltage, Danger, 2.25"Wx4.0"H, White/Black/Red	Nameplate Tech: 52-137-000	1	LBL1
17	52-137-002	Label, Multiple Supply Sources, Warning, 2.5"Wx1.5"H, Yellow	Nameplate Tech: 52-137-002	1	LBL2
18	32-005-046	Lens, Pilot Light, White, Nema 4X, Standard, w/A-B 800H	Allen-Bradley: 800T-N26W	1	LT1
19	32-005-048	Pilot light, Nema 4X, 120VAC, Transformer, No Lens	Allen-Bradley: 800H-PR16	4	LT1-4
20	32-005-044	Lens, Pilot Light, Green, Nema 4X, Standard, w/A-B 800H	Allen-Bradley: 800T-N26G	1	LT2
21	32-005-045	Lens, Pilot Light, Red, Nema 4X, Standard, w/A-B 800H	Allen-Bradley: 800T-N26R	2	LT3,4
22	22-005-008	Aux. Contact, Top mounted, 2NO, w/A-B 100C/104C	Allen-Bradley: 100-FA20	1	M1
23	22-005-000	Contactor, 3PH, Non-Rev., 9 Amp, 1NO Aux., 120VAC Coil	Allen-Bradley: 100-C09D10	2	M1,2
24	25-000-A009	Nameplate Assembly, Black, White Core, 1"Hx3"W	EleMech: 25-000-A009 Assembly	1	NP1
25	28-005-001	Overload Relay, 3PH, Class 20, 1NO/1NC, 1.0-2.9A, w/100C	Allen-Bradley: 193-EA5DB	2	OL1,2
26	29-005-010	Pushbutton E-Stop, Nema 4X, Oper+1NCLB, Twist Rel. Red Head	Allen-Bradley: 800H-FRXT6D4	1	PB1
27	13-000-A000	Spare Parts Box Assembly, Din Rail Mount	EleMech: 13-000-A000 Assembly	1	SP1
28	39-005-009	Selector Switch, Nema 4X, 3 Pos. Maintained, 1NO-1NC	Allen-Bradley: 800H-JR2A	1	SS1
29	41-018-A000	Control Transformer Assembly, 480-120VAC, 300VA, w/Fuses	Cutler-Hammer: C0300E2AFB Assem	1	T1
30	42-063-008	Terminal Block, Labels, Blank, w/WK4/U	Wieland: Z4.242.6353	14	TB1
31	42-063-001	Terminal Block, End Plate, Beige, w/WK4/U	Wieland: 07.311.0555.0	2	TB1,2
32	42-063-003	Terminal Block, Single Pole, 30A, 600V, 6MM Wide, WK4/U	Wieland: 57.504.0055.0	21	TB1,2
33	42-063-000	Terminal Block, Labels, Custom Printed, w/WK4/U	Wieland: 04.242.6353-CUSTOM	44	TB1,2,DB1
34	42-063-007	Terminal Block, Din Rail, 35MM Wide, 15 High, 2 Meters Long	Wieland: 98.370.1000	1	TB1,2,DB1
35	42-063-009	Terminal Block, End Clamp, w/WKN10/U	Wieland: Z5.522.8553	5	TB1,2,DB1
36	45-005-000	Timer, Repeat Cycle, .1S-60H, SPDT, On/Off Time Select	Allen-Bradley: 700-FSH3VU23	1	TR1
37	52-000-000	Label, Underwriters Laboratories 508A, w/Decal Set	EleMech: 508A	1	UL

On time first = switch in lower position

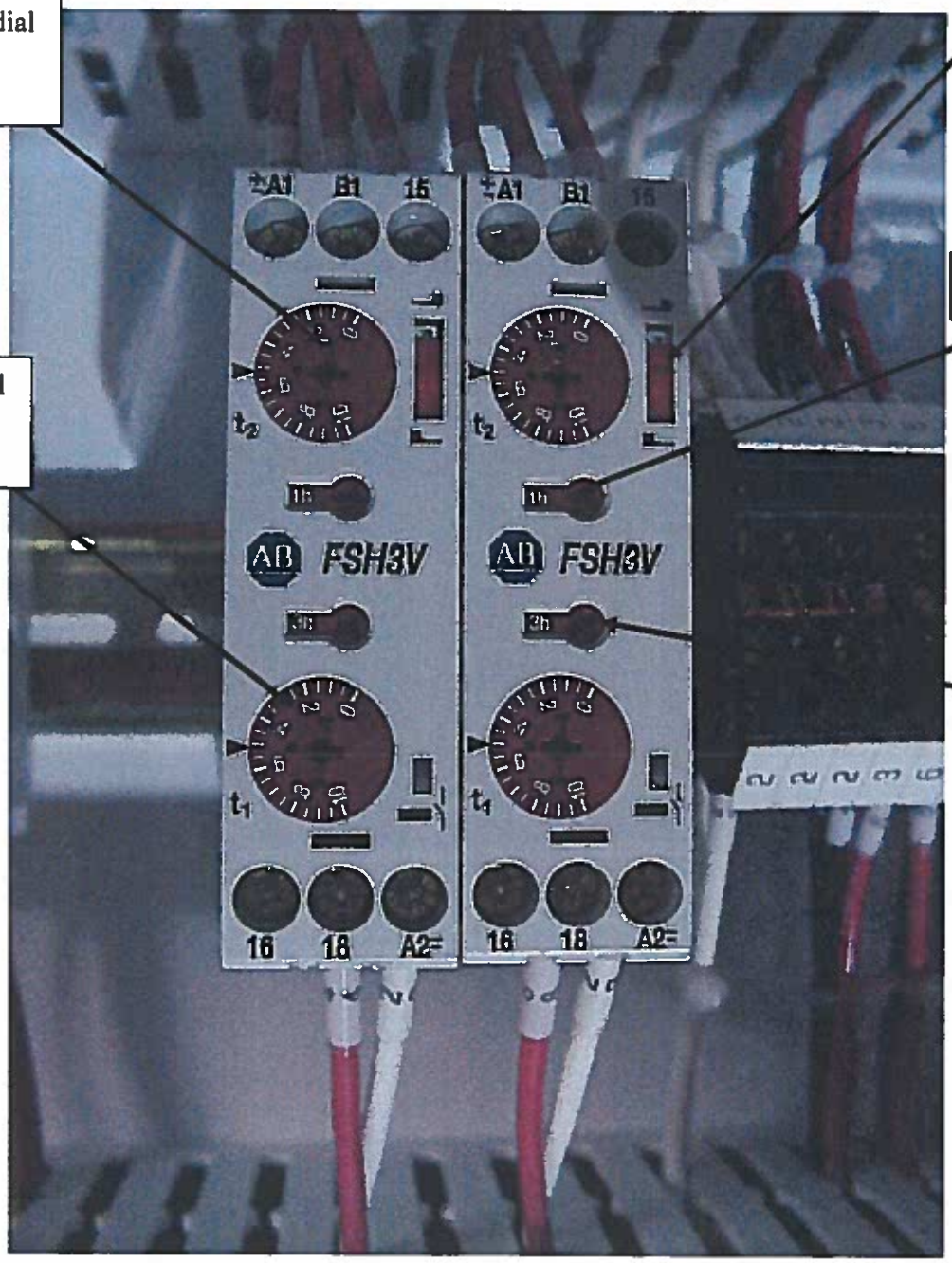
Off time first = switch in high position

Secondary dial for t2.

Master dial for t2:

Secondary dial for t1.

Master dial for t1:



To set the Repeat Cycle Timer:

1. Choose "On-Time" first or "Off-Time" First. Switch is located on the top right side. Example: If "On-Time" first is chosen, t1 represents "On Time" and t2 represents "Off Time" If "Off-Time" first is chosen, t1 represents "Off-Time" and t2 represents "On-Time"
2. Set Master dial for t1 and t2, then set the secondary dial. Secondary dial is used to set a proportion of the master dial setting. Example: Shown on the master dial

setting for t1 above is 3 hours. By setting the secondary dial to .5, t1 represents .5 of 3 hours, which equals 1.5 hours.

Recommended Installation Procedures for
Fine Headworks Screen and Washing Compactor

1.0 Installation of Bi-Pod Pivot Assembly

Install Bi-Pod pivot assembly on the top of the channel walls (see layout drawings, and 3-diminsional breakout drawings in the drawing section). Grout under the footpads if required. Use ½" dia. torque setting anchors if anchors have not been specified.

2.0 Installation of Fine Headworks Screen

2.1 Use lifting eyes for setting the unit upright. Lifting eyes are designed for vertical lifts only.
2.2 Care should be taken to protect lubrication fittings.
2.3 Lower screen assembly into channel using the pad eyes welded to the top of the head section.
2.4 Mount the pivot shaft in the pivot brackets and install the setscrews to hold in place.
2.5 The gearbox may be shipped with a hex-head metal plug in the vent hole. This metal pipe plug must be removed and the attached pressure relief vent plug must be inserted into the filler/vent hole of the gearbox before the unit is operated.
2.6 The vent plug is designed to prevent dirt and water from entering the gearbox and also release air without proper air venting the increase in air pressure may force lubricant through the oil seals. Resulting in oil seal leakage and damage. Do not restrict the operation of the vent with paint or other obstruction.

3.0 Installation of Washing Compactor

3.1 Secure Washing Compactor with lifting straps.
3.2 Care should be taken to protect lubrication fittings and drive.
3.3 Align under screen and above waste receptacle.
3.4 Attach hoppers.
3.5 Anchor equipment securely.

4.0 Safety Precautions

Danger: This equipment should be installed, adjusted and serviced by qualified electrical and mechanical personnel. The personnel must be familiar with the construction and operation of this equipment and the hazards involved. Fatal injury could occur in this precaution is not observed.

4.1 Be sure to wear safety glasses at all times.
4.2 Be sure the power input disconnect is in the correct position. Power (either on or off depending on the work to be performed).
4.3 Have a backup Technician who is always in sight and ready to assist in the case of and emergency.
4.4 Be sure the motor frame is connected to earth ground.

5.0 Wiring Size

It is the user's responsibility to see that all interconnected wiring is sized and installed in conformance with the National Electrical Code (NEC) published by the National Fire Protection Association or the Canadian Electrical Code (CEC) and other applicable local codes. Refer to the controller and motor nameplates for electrical data.

MAINTANENCE

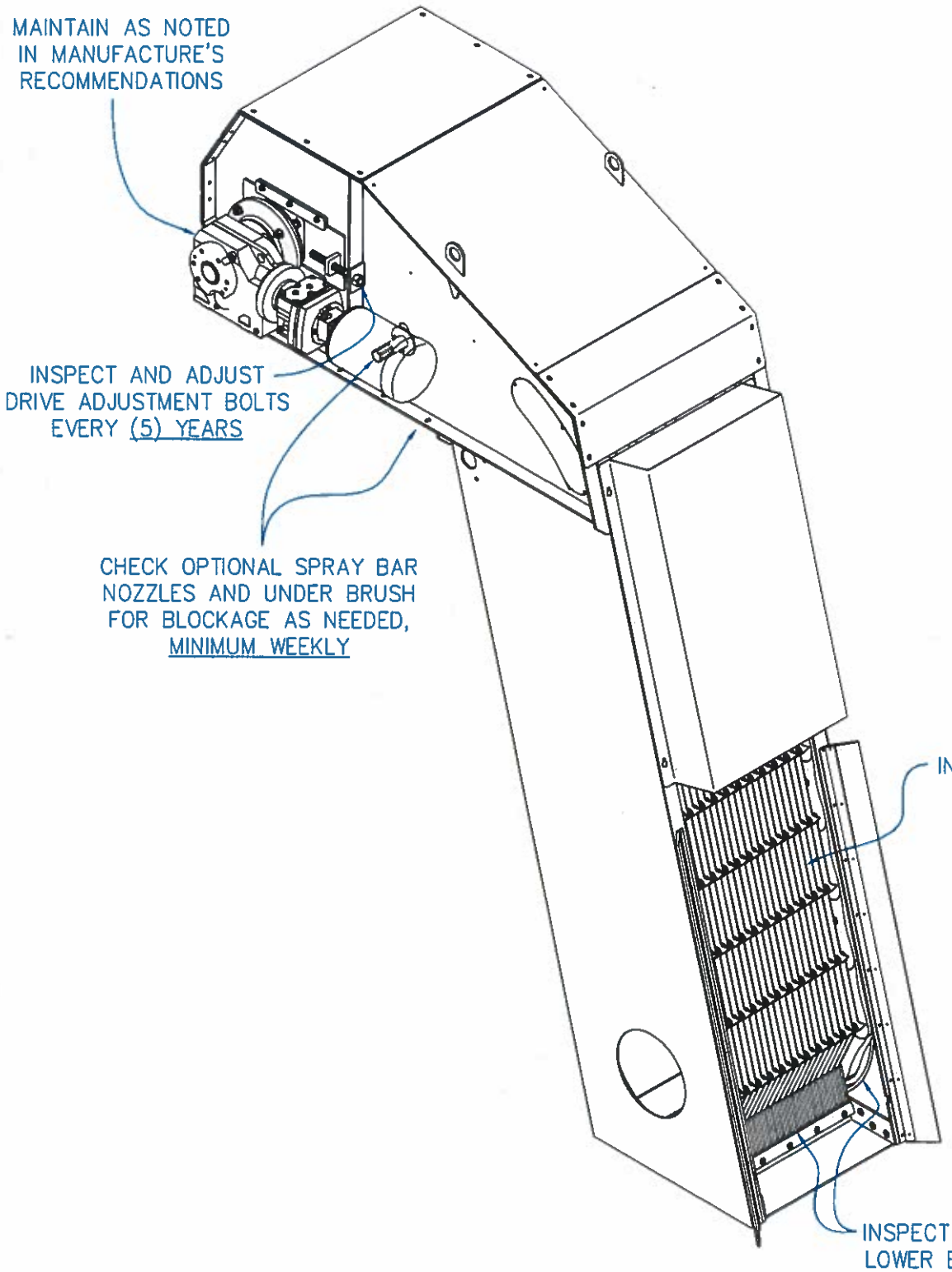
The Fine Headworks Screen and Washing Compactor are designed for ease of use and infrequent maintenance. Only a few points require periodic maintenance for years of trouble free operation.

Weekly:
Periodic inspection of the Fine Headworks Screen is necessary with attention to the damaged or bent screen elements. While a damaged element will not affect the function of the screen it may allow larger solids than intended to pass through the screen. Spray headers should be checked for blockage or reduced flow and cleared if necessary. If supplied, screen brush should be checked for wear and screening buildup. Clean and replace as necessary. Brush can be reversed for additional wear.

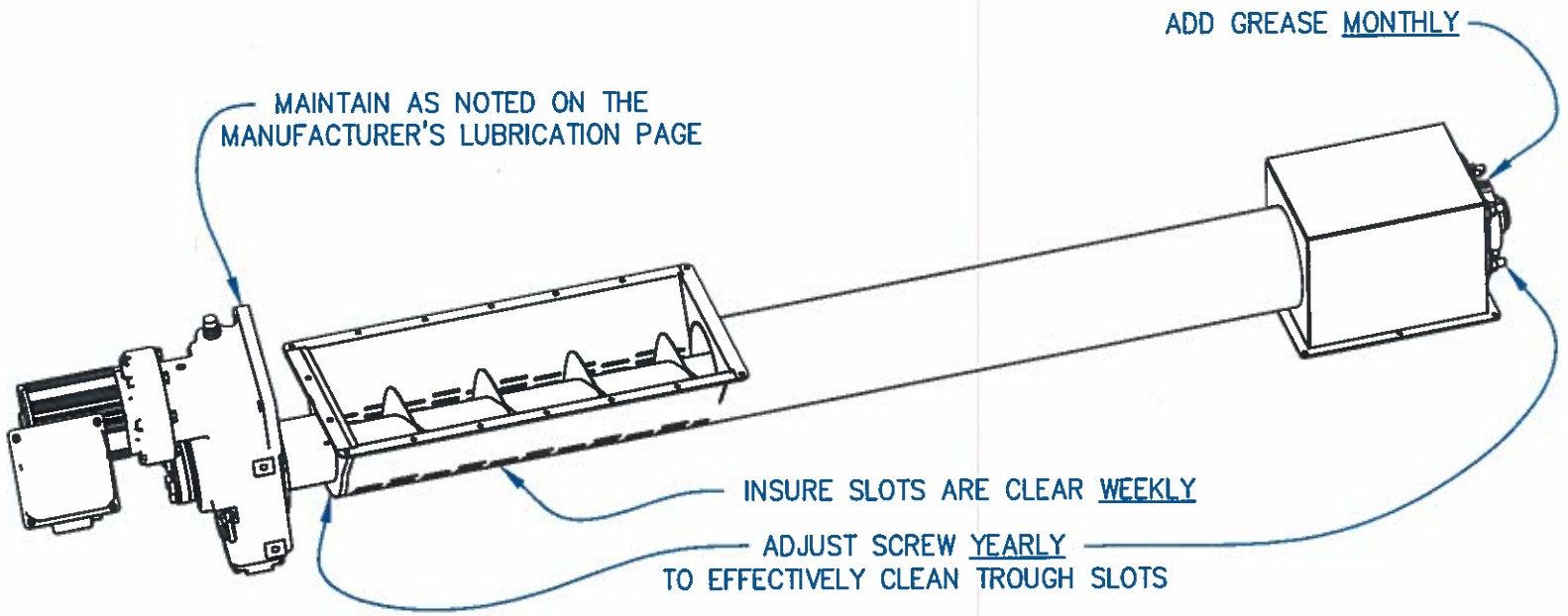
Monthly:
Every month the bearings on the screen and Washing Compactor should be greased. These bearings are located on either side of the drive shaft in the head section of the screen and on the drive end of the compactor. Gulf Oil "Gulfcrown Polygrease EP-2" is recommended lubricant.
Caution: Equipment should not be operated when performing maintenance. Be sure to disconnect the motor power and tag-out/ lock out disconnect so the equipment is not accidentally started during maintenance.

Yearly:
Brush at bottom of screen should be checked for wear. When brush is worn enough to permit and unacceptable amount of screenings to bypass under screen it should be replaced.

Every 5 years:
Every five years screen should be pivoted out of channel and thoroughly inspected for damage and wear. Close attention should be placed on the bottom wear tracks. As the screen wears in, the screen's belt will stretch and wear the bottom tracks. If the bottom is getting worn the grid needs to be tightened. This is easily done with the adjustment bolts located next to the bearings on the drive shaft.
Washing compactor trough and flight should be adjusted to ensure holes are cleared effectively. Fastening bolts end of flight can be loosened to adjust flight so that screenings are sheared through drainage holes.



		PROJECT #:	
UNLESS NOTED TOLERANCE .X ± .030 .XX ± .015 .XXX ± .005 .XXXX ± .0005	HYDRO-DYNE Engineering, Inc. www.hydro-dyne.com	STR MAINTENANCE SCHEDULE	
		DRAWING #: SUBOM-STR-MAINT	SHT.: 1/1 REV.: A
		DRAWN BY/DATE: COONEY – 06/10/05	SCALE: N.T.S.
		CHECKED BY/DATE: JAY CONROY – 06/10/05	SIZE: A



UNLESS NOTED		
TOLERANCE		
.X	±	.030
.XX	±	.015
.XXX	±	.005
.XXXX	±	.0005

HYDRO-DYNE Engineering, Inc.
www.hydro-dyne.com

WC MAINTENANCE SCHEDULE

DRAWING #: SUBOM–WC–MAINT	SHT.: 1/1	REV.: B
DRAWN BY/DATE: JOSH COONEY – 04/14/03	SCALE: 1"=1"	
CHECKED BY/DATE: JAY CONROY – 04/14/03		SIZE: A

SHUTDOWN AND STORAGE

Short Term Shutdown

A. While the Fine Headworks Screen is operating, flush the screen, drive sprocket, and drive with clean water to remove waste materials.
B. Machine shall be shut off and the power disconnect locked in the off position.
C. Pump grease through each drive shaft bearing grease fittings until full.

Long Term Storage

A. While the Fine Headworks Screen is operating, flush the screen, drive sprocket, and drive with clean water to remove waste materials.
B. Machine shall be shut off and the power disconnect locked in the off position.
C. Pump grease through each drive shaft bearing grease fitting until full.
D. Operate the screen for at lest 10 minutes every six weeks. This will ensure grease travel and prevent freeze-up.
E. Change the gearbox lubricant, if oil, before placing the unit back in to full-time service.

Emergency Shutdown Procedures

Turn off equipment with optional emergency stop mechanism on panel. Shut off power to the screen, stopping the electric motor.

Continuous Duty - 40°C Ambient - up to 3300 ft Elevation **Synchronous speed 1800 rpm @ 60Hz**

Frame Size	P_n hp	P_n kW	n_n rpm	I_n Amp 230V	I_n Amp 460V	I_n Amp 575V	I_a/I_n %	T_n lb-in.	T_a/T_n %	T_k/T_n %	Cos φ	η %	Code Letter	J_m lb-ft² *	J_m lb-ft² **	Z_o Starts/hr. BG[2]	Z_o Starts/hr. BGE[3]	T_B lb-in.	Weight lbs. *	Weight lbs. **
DT71K4	0.25	0.18	1700	1.10	0.55	0.40	338	9.3	185	225	0.67	62	G	.0062	.0084	9000	9000	22	13	19
DT71C4	0.33	0.25	1720	1.32	0.66	0.50	489	12.1	265	280	0.66	72	J	.0104	.0125	7800	9000	44	15	22
DT71D4	0.5	0.37	1700	2.00	1.00	0.80	400	18.5	215	225	0.71	68	H	.0104	.0125	5200	9000	44	15	22
DT80K4	0.75	0.55	1700	2.90	1.45	1.20	445	27.8	245	270	0.67	74	H	.0156	.0177	3700	8000	88	22	28
DT80N4	1	0.75	1700	3.70	1.85	1.50	486	37.1	300	270	0.69	75.5	J	.0207	.0228	2800	7500	88	25	32
DT90S4	1.5	1.1	1740	5.20	2.60	2.10	612	54.3	300	340	0.69	77	K	.0594	.0722	2000	5000	177	35	57
DT90L4	2	1.5	1720	6.2	3.10	2.50	694	73.3	325	340	0.76	80	K	.0789	.0936	1500	3800	177	40	62
DT100LS4	3	2.2	1720	8.6	4.30	3.4	651	110	300	305	0.80	81.5	J	.101	.114	1000	2700	354	51	73
DT100L4	5	3.7	1680	13.6	6.8	5.4	574	188	260	250	0.84	81.5	G	.126	.139	800	2000	354	60	82
DV112M4	5.4	4.0	1730	14.0	7.0	5.6	703	197	280	285	0.82	85.5	J	.233	.262	—	1400	487	84	110
DV132S4	7.5	5.5	1720	18.8	9.4	7.5	670	275	275	275	0.85	86.5	H	.416	.445	—	1200	664	106	139
DV132M4	10	7.5	1740	27.4	13.7	11.0	545	362	255	225	0.78	87.5	G	.655	.769	—	1000	885	146	198
DV132ML4	12.5	9.2	1740	32.8	16.4	13.1	583	453	280	230	0.80	88.5	G	.783	.887	—	900	1328	165	220
DV160M4	15	11	1740	40	20	16.0	530	534	280	215	0.79	88.5	G	.945	1.049	—	700	1328	185	240
DV160L4	20	15	1760	54	27	21.6	537	716	300	190	0.79	89.5	G	2.197	2.449	—	560	1770	326	419
DV180M4	25	18.5	1760	63	31.5	25.2	533	895	260	165	0.82	88.5	F	2.660	2.912 3.164[1]	—	450	2655 2655[1]	386	476 485[1]
DV180L4	30	22	1760	80	40	32.0	528	1074	290	175	0.79	88.5	G	3.064	3.316 3.567[1]	—	400	2655 2655[1]	410	503 512[1]
DV200L4	40	30	1760	95	47.5	38.0	581	1432	280	190	0.89	90.2	F	5.558	5.809 6.061[1]	—	330	2655 5310[1]	538	650 659[1]
DV225S4	50	37	1760	118	59	47.2	559	1790	310	180	0.89	90.2	F	7.149	7.400 7.652[1]	—	250	2655 5310[1]	653	765 774[1]
DV225M4	60	45	1760	140	70	56.0	620	2149	310	200	0.88	91.7	G	8.479	8.730 8.982[1]	—	200	2655 5310[1]	717	831 840[1]

* Without Brake
** With Brake
1) Double Disc Brake
2) Values with BG rectifier (standard for frame size 100L and smaller)
3) Values with BGE rectifier (standard for frame size 112M and larger)

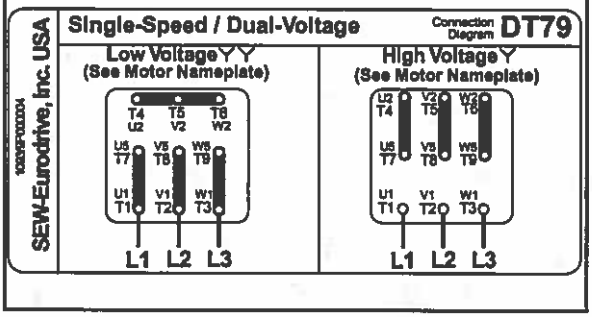
Abbreviations

P_n	Rated Power
n_n	Full Load Speed
I_n	Full Load Current
I_a/I_n	Starting Current Ratio (Locked Rotor)
T_n	Full Load Torque
T_a/T_n	Starting Torque Ratio
T_k/T_n	Breakdown Torque Ratio
Cos φ	Power Factor
η	Motor Efficiency
J_m	Motor Inertia
Z_o	Permissible no-load starting frequency at 50% ED
T_B	Maximum Brake Torque

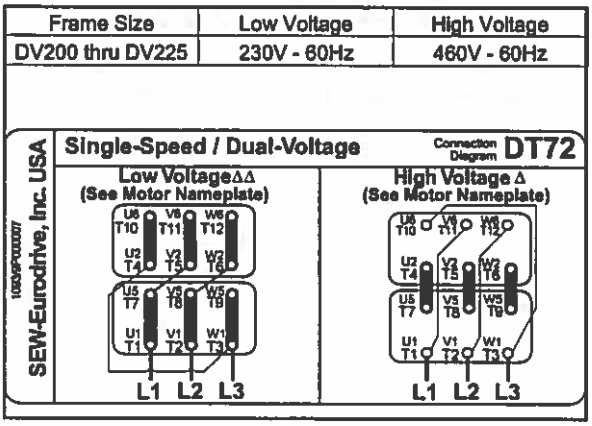
Motor Connection Diagrams

Dual-Voltage Motors
(single-speed)

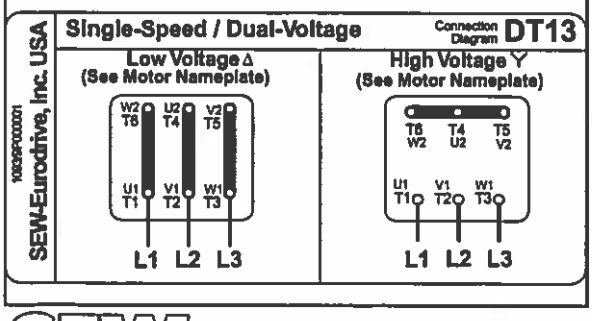
Frame Size	Low Voltage	High Voltage
DT71 thru DV180	230V - 60Hz	460V - 60Hz
	200V - 50Hz	400V - 50Hz



Frame Size	Low Voltage	High Voltage
DV200 thru DV225	230V - 60Hz	460V - 60Hz

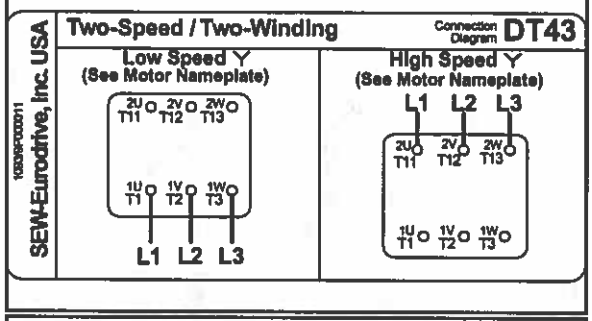


Frame Size	Low Voltage	High Voltage
DT71 thru DV225	200V - 50Hz	346V - 50Hz
	208V - 60Hz	360V - 60Hz
	220V - 50Hz	380V - 50Hz
	230V - 50Hz	400V - 50Hz
	240V - 50Hz	415V - 50Hz
	330V - 60Hz	575V - 60Hz

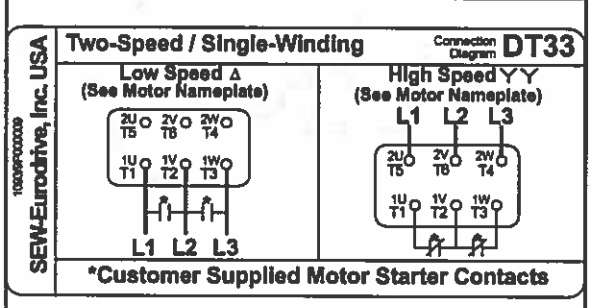


Single-Voltage Motors
(two-speed)

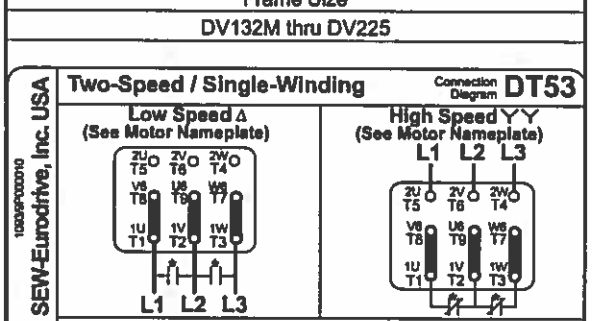
Frame Size
DT71 thru DV225

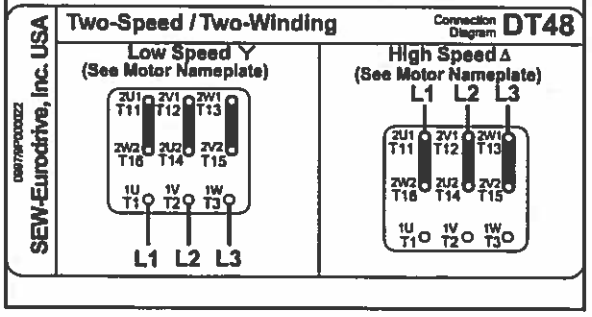


Frame Size
DT71 thru DV132S



Frame Size
DV132M thru DV225





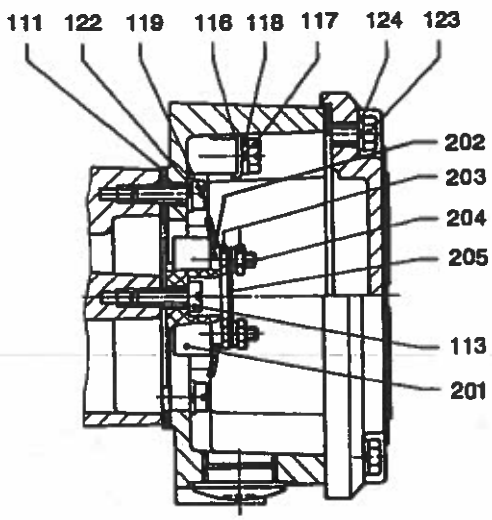
SEW EURODRIVE

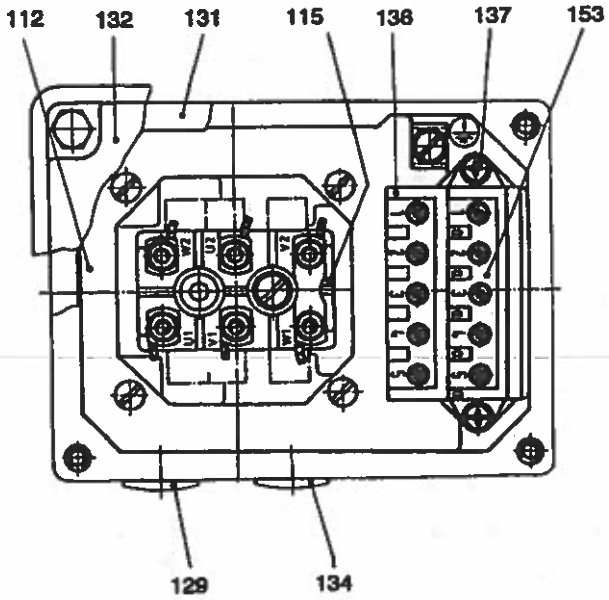
Terminal Box
For 6 Lead Motors and Brakemotors
DT71-90 and BM(G)

PARTS LIST

08 673 787A US

CSA/NEMA Box with NPT Cable Entry



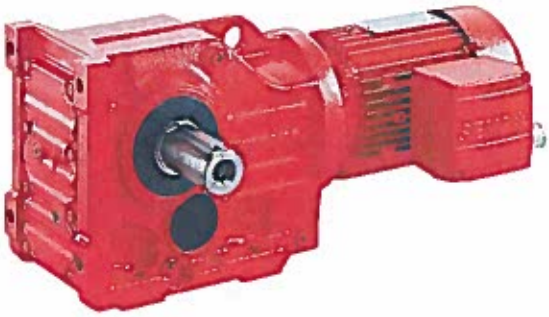


When ordering parts, please supply nameplate data with serial number or S.O. number, model number, description of part and part number.

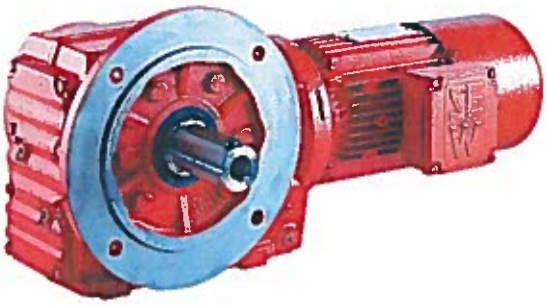
Ⓐ - Mounting hardware for item #136 or #153 as stand alone.
Ⓑ - Mounting hardware for item #136 with #153 as integral unit.
Ⓒ - For use with brakemotor.
Ⓓ - For use as option.
Ⓔ - Includes items #201 through #205.

Item	Part Name	Description	Part No	Qty
111	Gasket	For item # 112	183 678 1	1
112	Terminal Box Lower Part	2x1/2 in. NPT	182 796 0	1
113	Socket Head Screw	AM5x16mm	012 962 3	1
115	Terminal Block Ⓔ	KTM4	011 759 5	1
116	Terminal Cap		010 442 6	1
117	Hex Head Screw	M5x12mm	011 217 8	1
118	Lockwasher	5mm	011 820 6	1
119	Hex Head Screw	M5x16mm	011 852 4	4
122	Lockwasher	5mm	011 820 6	4
123	Hex Head Screw	BM6x25x8mm A2	011 860 5	4
124	Lockwasher	6mm	011 830 3	4
129	Closing Plug	18.5mm	011 375 1	1
131	Gasket	For item # 132	184 355 9	1
132	Terminal Box Cover		184 333 8	1
134	Closing Plug	18.5mm	011 375 1	1
134	Threaded Closing Plug	1/2 in. NPT	90000150	1

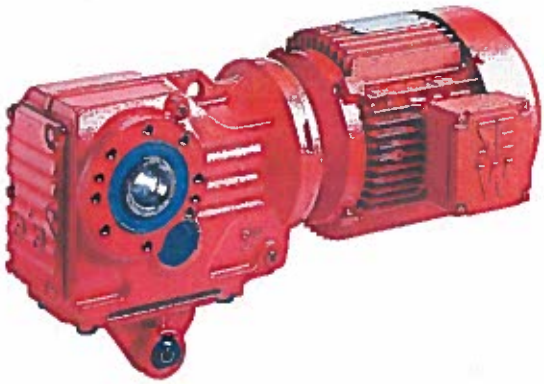
Item	Part Name	Description	Part No	Qty
136	Rectifier Ⓒ	BG 1.5A 150-500VAC	825 384 6	1
136	Rectifier Ⓒ	BG 3.0A 42-150VAC	825 386 2	1
136	Rectifier Ⓒ	BGE 1.5A 150-500VAC	825 385 4	1
136	Rectifier Ⓒ	BGE 3.0A 42-150VAC	825 387 0	1
136	Brake Control Ⓒ	BSG 5.0ADC 20-30VDC	825 459 1	1
136	Rectifier Ⓒ	BGH 1.5A 150-500VAC	825 480 X	1
136	Rectifier Ⓒ	BGH 3.0A 42-150VAC	825 479 6	1
137	Conduit Box Screw Ⓐ	CM4x20mm	013 107 5	2
137	Socket Head Screw Ⓑ	M4x35mm	013 104 0	2
153	Auxiliary Terminal Strip Ⓓ		183 060 0	1
201	Terminal Block	K1M4	010 796 4	1
202	Wire Clamp	A4mm	011 755 2	6
203	Hex Nut	M4mm	012 853 8	6
204	Washer	B4.3mm	012 906 2	1
205	Terminal Bridge	4.5x20mm	010 834 0	3



K..DT../DV..



KF..DT../DV..BM(G)



KA..TDT../DV..

KAF..DT../DV..BM(G)

Gearmotors and Gear Reducers

OPERATING INSTRUCTIONS

01 805 52 US

GENERAL
These operationg instructions are intended to help you install and operate the drive. For trouble free service, proper installation and operation are essential. Additionally, these instructions contain important recommendations on maintenance.

Before shipment, every SEW-Eurodrive gear unit is tested, checked and properly packed. However, please inspect the drive immediately upon arrival for shortage or transit damage. Note the damage or shortage on the freight bill of lading and file a claim with the carrier. Also, notify SEW-Eurodrive of the shortage or damage.

LUBRICANTS
All gearmotors and gear reducers are supplied with the correct grade and quantity of lubricating oil for the specified mounting position. Exceptions include reducers shipped without input assemblies. The recommended lubricants are found on page 2.

LONG TERM STORAGE
If the drive is not installed immediately, it should be stored in a dry, protected area. If the drive is to be stored for an extended period of time and was not ordered from SEW for long term storage, contact your nearest SEW assembly plant for information on Long Term Storage or request **Document #2115.**

Drives which are used for standby service should be stored as a sealed gearcase.

INSTALLATION OF COMPONENTS ON DRIVE SHAFTS
Do not hammer on the shafts. Hammering can cause brinelling of the reducer's bearings shortening the bearing life. We recommend heating the components to approximately 175°F (when possible) and sliding them on the shaft. This will reduce possible damage to the reducer's bearings. **Document #2116.**

For both standard and metric SEW shaft tolerances, refer to the SEW Catalog or request **Document #2154.**

Shaft couplings should be properly aligned to prevent vibration, coupling wear, and premature failure of the shaft bearings.

To prevent the output shaft and bearings from being subjected to excessive loads, the maximum overhung load, as shown in SEW-Eurodrive catalogs, should not be exceeded. Please consult our engineering department if the load may exceed the recommended figure given or where there are combined radial and axial loads. In such cases, the exact operating conditions must be stated including speed, direction of rotation, position, magnitude and direction of the external radial and axial loads being applied.

SHAFT MOUNTED REDUCERS
SEW-Eurodrive supplies the recommended hollowshaft mounting paste with every hollowshaft reducer. The mounting paste is to be applied on the keyed output shaft. The mounting paste is to aid in the prevention of rusting and fretting corrosion between the reducer hollowshaft and the shaft of the driven machine. The mounting paste will aid in shaft removal when necessary.

Warning! Always ensure exposed, rotating parts are properly covered to ensure safety.

For additional information on shaft mounted reducers, drive shaft configuration and tolerances, refer to the SEW-Eurodrive Catalog or request **Documents #2201 and #2202.**

INSTALLATION AND OPERATION
The drive installation site should be selected to ensure:

- Ambient temperatures below 40°C (104°F).
- Unimpeded flow of air to the motor and variable speed units.
- Accessibility to the drain, level and breather plugs.
- Adequate space for the removal of brakemotor fanguard for brake adjustment and maintenance.

The drive unit should be mounted on a flat, vibration damping, and torsionally rigid structure. Careful alignment is critical. Mounting to an uneven surface will cause housing distortion. The flatness tolerance of the supporting surface should not exceed:

- For gear units size 80 and smaller — 0.004 inch.
- For gear units above size 80 — 0.008 inch.

For transportation, the units are supplied with the breather plug already mounted. After the unit is installed, the black rubber seal located on the breather MUST BE REMOVED (Fig. 1). In addition, the oil level should be checked. Remove the plated (non-painted) oil level plug. The oil level is correct when the surface of the oil is level with the lowest point of that tapped hole, the exception is S37. Units W20 and W30 are sealed in any position.

Fig. 1

After installation, the actual mounting position should be confirmed against the mounting postion shown on the gear reducer nameplate. Adequate lubrication is only guaranteed if the unit is mounted in the specific nameplated mounting position.

Refer to the SEW Catalog or request **Document #2111, #2112, #2113, or #2114 (R, F, K, or S, respectively)** if a specific mounting position diagram is needed.

MAINTENANCE
Warning! Always ensure equipment is secure and electrical power is off before removing or performing maintenance on the drive assembly. Oil levels and oil quality should be checked at regular intervals, determined by usage and the environment. Grease and oil should be changed per the recommendations on page 2. Check coupling alignment, chain or belt tension, and mounting bolt torque periodically. Keep the drive relatively free of dust and dirt.

For additional information, call the SEW FAXline, 1-800-601-6195, and request document number shown.

SEW EURODRIVE

SOUTHEAST MANUFACTURING & ASSEMBLY CENTER
1295 Old Spartanburg Hwy, Lyman, SC 29365
(864) 439-7537 Fax: (864) 439-7830

SOUTHWEST ASSEMBLY CENTER
3950 Platinum Way, Dallas, TX 75237
(214) 330-4824 Fax: (214) 330-4724

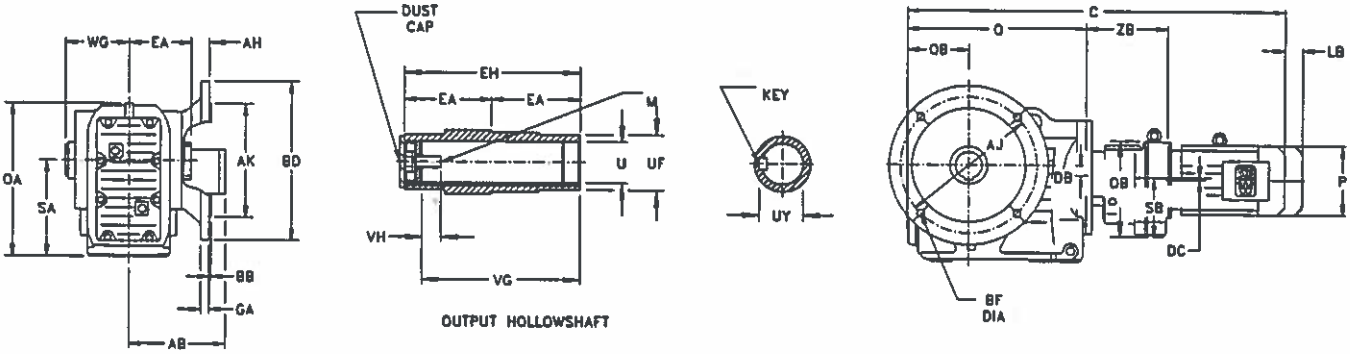
MIDWEST ASSEMBLY CENTER
2001 West Main Street, Troy, OH 45373
(937) 335-0036 Fax: (937) 222-4104

EAST COAST ASSEMBLY CENTER
200 High Hill Road, Bridgeport, NJ 08014
(856) 467-2277 Fax: (856) 330-4724

WEST COAST ASSEMBLY CENTER
30599 San Antonio Road, Hayward, CA 94544
(510) 487-3560 Fax: (510) 487-6381

ISO 9002

Dimensions
Type KAF Gearmotors - Flange Mounted with Hollowshaft



Drawing Notes:

Dimension AB is to conduit box.

Dimension LB is for motor brake option.

Eyebolts are supplied for motor sizes ≥ DV112 and reducer sizes ≥ R67 and are removable.

Gearcase

Model	DB	DC	EA	OA	OB	Q	QB	SA	SB	WG	ZB
KAF37R17	0.33 8.5	0.00 0	2.36 60	6.46 164	5.31 135	8.27 210	2.80 71	3.94 100	2.99 76	2.48 63	6.89 175
KAF47R37	0.28 7.2	0.40 10.1	2.95 75	7.28 185	6.10 155	9.57 243	3.03 77	4.41 112	3.70 94	3.07 78	6.50 165
KAF57R37	0.52 13.1	0.40 10.1	3.27 83	8.46 215	6.10 155	10.59 269	3.78 96	5.20 132	3.70 94	3.39 86	6.50 165
KAF67R37	0.79 20	0.40 10.1	3.54 90	8.90 226	6.10 155	10.75 273	3.70 94	5.51 140	3.70 94	3.70 94	6.50 165

Flange

AH	AJ	AK *	BB	BD	BF	GA
0.94 24	5.12 130	4.331 110	0.14 3.5	6.30 160	0.35 9	0.39 10
0.98 25	6.50 165	5.118 130	0.14 3.5	7.87 200	0.43 11	0.47 12
0.93 23.5	8.46 215	7.087 180	0.16 4	9.84 250	0.53 13.5	0.59 15
0.91 23	8.46 215	7.087 180	0.16 4	9.84 250	0.53 13.5	0.59 15

*** Note: See page 33 for applicable tolerances.**

Output Shaft Inch Series/*Optional Metric Series* **For solid shaft design see page 410.**

Model	EH	U *	UF	UY	VG	VH	Key	M
KAF37R17	4.72 *120*	1.250 *30*	1.77 *45*	1.37 *33.3*	4.13 *105*	0.67 *17*	1/4 x 1/4 x 1 11/16 *8 x 7 x 40*	7/16-14 x 1 *M10 x 25*
KAF47R37	5.91 *150*	1.375 *35*	1.97 *50*	1.52 *38.3*	5.20 *132*	0.65 *22*	5/16 x 5/16 x 1 13/16 *10 x 8 x 45*	1/2-13 x 1 *M12 x 30*
KAF57R37	6.54 *166*	1.500 *40*	2.17 *55*	1.67 *43.3*	5.59 *142*	1.36 *29*	3/8 x 3/8 x 2 1/4 *12 x 8 x 50*	5/8-11 x 1 3/4 *M16 x 40*
KAF67R37	7.09 *180*	1.500 *40*	2.17 *55*	1.67 *43.3*	6.14 *156*	1.36 *29*	3/8 x 3/8 x 2 1/4 *12 x 8 x 50*	5/8-11 x 1 3/4 *M16 x 40*

*** Note: See page 33 for applicable tolerances.**

Motor

Model		DT			
		71	80	90	100
	AB	5.43 138	5.43 138	6.73 171	6.89 175
	LB	2.52 64	2.52 64	3.35 85	3.35 85
	P	5.71 145	5.71 145	7.76 197	7.76 197
KAF37R17	C	21.61 549	23.58 599	— —	— —
KAF47R37	C	24.13 613	26.10 663	26.89 683	28.98 736
KAF57R37	C	25.16 639	27.13 689	27.91 709	30.00 762
KAF67R37	C	25.31 643	27.28 693	28.07 713	30.16 766

Dimensions are $\frac{\text{Inch}}{\text{mm}}$

See page 409 for available output shaft sizes.

Technical Data
Weights

Listed below are weights for complete units less oil. Reducer weights less input cover are shown in the **Gear Unit** chart and combined reducer and motor weights are shown in the **Gearmotor** chart. For flanged and/or hollowshaft reducers as well as gearmotors add the flange and/or hollowshaft weight shown in the **Gear Unit** chart (a negative value must be subtracted). For brakemotors add the brake weight listed at the bottom of the **Gearmotor** chart.

Note: Oil weighs approximately 7.5 lbs/gallon (2 lb/liter). Reference Lubrication Sheet for volume of oil required. All weights in lbs.

Note: All weights listed are approximations based on the heaviest unit of the type listed.

Model	Reducer	Add for KF	Add for KA	Add for KAF
K37	26	5	-1	3
K37R17	—	5	-1	3
K47	40	7	-2	4
K47R37	64	7	-2	4
K57	53	10	-6	8
K57R37	77	10	-6	8
K67	64	13	-5	7
K67R37	90	13	-5	7
K77	117	18	-15	1
K77R37	143	18	-15	1
K87	194	22	-26	2
K87R57	254	22	-26	2
K97	320	45	-43	12
K97R57	386	45	-43	12
K107	562	24	-64	-11
K107R77	673	24	-64	-11
K127	893	92	-64	18
K127R77	1025	92	-64	18
K127R87	1058	92	-64	18
K157	1389	176	-72	54
K157R97	1720	176	-72	54
K157R107	1808	176	-72	54
K167	2271	—	-88	—
K167R97	2580	—	-88	—
K167R107	2668	—	-88	—
K187	3550	—	-150	—
K187R97	3859	—	-150	—
K187R107	3947	—	-150	—

Model	DT 71	DT 80	DT 90	DT 100	DV 112M	DV 132S	DV 132M	DV 132ML
K37	40	46	60	84	—	—	—	—
K37R17	46	—	—	—	—	—	—	—
K47	55	62	77	101	—	—	—	—
K47R37	77	82	—	—	—	—	—	—
K57	68	73	90	115	130	—	—	—
K57R37	90	97	108	—	—	—	—	—
K67	79	86	101	126	141	152	—	—
K67R37	104	110	—	—	—	—	—	—
K77	135	143	157	181	194	209	254	276
K77R37	157	163	174	—	—	—	—	—
K87	—	221	232	265	276	287	331	353
K87R57	265	276	287	298	—	—	—	—
K97	—	—	364	386	408	419	463	485
K97R57	397	408	419	441	463	—	—	—
K107	—	—	—	650	662	673	717	739
K107R77	684	695	706	728	739	761	—	—
K127	—	—	—	—	—	—	1058	1080
K127R77	1036	1047	1058	1080	1091	1103	—	—
K127R87	—	—	1103	1125	1147	1147	1213	1213
K157	—	—	—	—	—	—	—	—
K157R97	—	1742	1764	1786	1786	1808	1852	1874
K157R107	—	—	—	—	—	—	—	1962
K167	—	—	—	—	—	—	—	—
K167R97	—	2602	2624	2646	2668	2668	2712	2734
K167R107	—	—	—	—	—	—	—	2844
K187	—	—	—	—	—	—	—	—
K187R97	—	3903	3903	3925	3947	3947	3991	4013
K187R107	—	—	—	—	—	—	4101	4123
Add for Brake	6	6	22	22	26	33	53	55
Add for Double Disc Brake	—	—	—	—	—	—	—	—

Technical Data
Lubrication

Each gear unit is supplied from the factory with the correct grade and quantity of lubricant for the specified mounting position. The following lubricants are supplied from our North American Facilities. Under special circumstances such as high or low ambient temperatures optional oils should be used.

Standard Oil

Gear Units	Type	Manufacturer	Ambient Temperature °C
USA			
K..37 - 157 K/KH167 - 187	Mobilgear 630 [M]	Mobil Oil Corp.	0 to +40
CANADA			
K..37 - 157 K/KH167 - 187	Omala 220 [M]	Shell Oil Co.	0 to +40

[M] Mineral Oil

Optional Oil

Gear Units	Type	Manufacturer	Ambient Temperature °C
USA			
K..37 - 157 K/KH167 - 187	Mobilgear 629 [M]	Mobil Oil Corp.	-15 to +25
	Mobil SHC630 [S]		-40 to +40
	Mobil SHC629 [S]		-30 to +50
CANADA			
K..37 - 157 K/KH167 - 187	Omala RL220 [S]	Shell Oil Co.	-30 to +80

[M] Mineral Oil
[S] Synthetic Oil

For ball and roller bearings of gear units the following greases are recommended:

Mineral Grease

Type	Manufacturer	Ambient Temperature °C
Mobilux EP2	Mobil Oil Corp.	-20 to +40
Alvania Grease R3	Shell Oil Co.	-30 to +60

Synthetic Grease

Type	Manufacturer	Ambient Temperature °C
Mobiltemp SHC 32	Mobil Oil Corp.	-45 to +60

The approximate lubricant in US gallons and liters per mounting position is as follows:

Gear Unit	Mounting Position											
	M1		M2		M3		M4		M5		M6	
	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters
K37	0.13	0.5	0.26	1	0.26	1	0.34	1.3	0.26	1	0.26	1
K47	0.21	0.8	0.34	1.3	0.40	1.5	0.53	2	0.42	1.6	0.42	1.6
K57	0.32	1.2	0.61	2.3	0.66	2.5	0.79	3	0.69	2.6	0.63	2.4
K67	0.29	1.1	0.63	2.4	0.69	2.6	0.90	3.4	0.69	2.6	0.69	2.6
K77	0.58	2.2	1.08	4.1	1.16	4.4	1.56	5.9	1.11	4.2	1.16	4.4
K87	0.98	3.7	2.11	8	2.30	8.7	2.88	10.9	2.06	7.8	2.11	8
K97	1.85	7	3.70	14	4.15	15.7	5.28	20	4.15	15.7	4.10	15.5
K107	2.64	10	5.55	21	6.74	25.5	8.85	33.5	6.34	24	6.34	24
K127	5.55	21	10.96	41.5	11.62	44	14.27	54	10.57	40	10.83	41
K157	8.19	31	16.38	62	17.17	65	23.78	90	15.32	58	16.38	62
K/KH167	9.25	35	26.42	100	26.42	100	33.03	125	22.46	85	22.46	85
K/KH187	15.85	60	44.91	170	44.91	170	54.16	205	34.35	130	34.35	130
KF37	0.13	0.5	0.29	1.1	0.29	1.1	0.40	1.5	0.26	1	0.26	1
KF47	0.21	0.8	0.34	1.3	0.45	1.7	0.58	2.2	0.42	1.6	0.42	1.6
KF57	0.34	1.3	0.61	2.3	0.71	2.7	0.79	3	0.77	2.9	0.71	2.7
KF67	0.29	1.1	0.63	2.4	0.74	2.8	0.95	3.6	0.71	2.7	0.71	2.7
KF77	0.55	2.1	1.08	4.1	1.16	4.4	1.59	6	1.19	4.5	1.19	4.5
KF87	0.98	3.7	2.17	8.2	2.38	9	3.14	11.9	2.22	8.4	2.22	8.4
KF97	1.85	7	3.86	14.7	4.57	17.3	5.68	21.5	4.15	15.7	4.36	16.5
KF107	2.64	10	5.81	22	6.87	26	9.25	35	6.61	25	6.61	25
KF127	5.55	21	10.96	41.5	12.15	46	14.53	55	10.83	41	10.83	41
KF157	8.19	31	17.44	66	18.23	69	24.31	92	16.38	62	16.38	62
KA/KH/KV37 KAF/KHF/KVF37 KAZ/KHZ/KVZ37	0.13	0.5	0.26	1	0.26	1	0.37	1.4	0.26	1	0.26	1
KA/KH/KV47 KAF/KHF/KVF47 KAZ/KHZ/KVZ47	0.21	0.8	0.34	1.3	0.42	1.6	0.55	2.1	0.42	1.6	0.42	1.6
KA/KH/KV57 KAF/KHF/KVF57 KAZ/KHZ/KVZ57	0.34	1.3	0.61	2.3	0.71	2.7	0.79	3	0.77	2.9	0.71	2.7
KA/KH/KV67 KAF/KHF/KVF67 KAZ/KHZ/KVZ67	0.29	1.1	0.63	2.4	0.71	2.7	0.95	3.6	0.69	2.6	0.69	2.6
KA/KH/KV77 KAF/KHF/KVF77 KAZ/KHZ/KVZ77	0.55	2.1	1.08	4.1	1.22	4.6	1.59	6	1.16	4.4	1.16	4.4
KA/KH/KV87 KAF/KHF/KVF87 KAZ/KHZ/KVZ87	0.98	3.7	2.17	8.2	2.32	8.8	2.93	11.1	2.11	8	2.11	8
KA/KH/KV97 KAF/KHF/KVF97 KAZ/KHZ/KVZ97	1.85	7	3.88	14.7	4.15	15.7	5.28	20	4.15	15.7	4.15	15.7
KA/KH/KV107 KAF/KHF/KVF107 KAZ/KHZ/KVZ107	2.64	10	5.42	20.5	6.34	24	8.45	32	6.34	24	6.34	24
KA/KH/KV127 KAF/KHF/KVF127 KAZ/KHZ/KVZ127	5.55	21	10.96	41.5	11.36	43	13.74	52	10.57	40	10.57	40
KA/KH/KV157 KAF/KHF/KVF157 KAZ/KHZ/KVZ157	8.19	31	17.44	66	17.70	67	22.99	87	16.38	62	16.38	62

For compound drives the R reducer requires its own oil filling as shown in the chart:

Gear Unit	Mounting Position					
	M1/M3/M5/M6		M2		M4	
	Gallons	Liters	Gallons	Liters	Gallons	Liters
R17	0.07	0.25	0.16	0.6	0.16	0.6
R37	0.11	0.4	0.24	0.9	0.29	1.1
R57	0.21	0.8	0.48	1.8	0.53	2
R77	0.32	1.2	1.00	3.8	1.08	4.1
R87	0.63	2.4	1.8	6.8	2.03	7.7
R97	1.35	5.1	3.14	11.9	3.70	14
R107	1.66	6.3	4.20	15.9	5.07	19.2

Continuous Duty - 40°C Ambient - up to 3300 ft Elevation **Synchronous speed 1800 rpm @ 60Hz**

Frame Size	P_n hp	P_n kW	n_n rpm	I_n Amp 230V	I_n Amp 460V	I_n Amp 575V	I_a/I_n %	T_n lb-in.	T_a/T_n %	T_K/T_n %	Cos φ	η %	Code Letter	J_m lb-ft² *	J_m lb-ft² **	Z_o Starts/hr. BG[2]	Z_o Starts/hr. BGE[3]	T_B lb-in.	Weight lbs. *	Weight lbs. **
DT71K4	0.25	0.18	1700	1.10	0.55	0.40	338	9.3	185	225	0.67	62	G	.0062	.0084	9000	9000	22	13	19
DT71C4	0.33	0.25	1720	1.32	0.66	0.50	489	12.1	265	280	0.66	72	J	.0104	.0125	7800	9000	44	15	22
DT71D4	0.5	0.37	1700	2.00	1.00	0.80	400	18.5	215	225	0.71	68	H	.0104	.0125	5200	9000	44	15	22
DT80K4	0.75	0.55	1700	2.90	1.45	1.20	445	27.8	245	270	0.67	74	H	.0156	.0177	3700	8000	88	22	28
DT80N4	1	0.75	1700	3.70	1.85	1.50	486	37.1	300	270	0.69	75.5	J	.0207	.0228	2800	7500	88	25	32
DT90S4	1.5	1.1	1740	5.20	2.60	2.10	612	54.3	300	340	0.69	77	K	.0594	.0722	2000	5000	177	35	57
DT90L4	2	1.5	1720	6.2	3.10	2.50	694	73.3	325	340	0.76	80	K	.0789	.0936	1500	3800	177	40	62
DT100LS4	3	2.2	1720	8.6	4.30	3.4	651	110	300	305	0.80	81.5	J	.101	.114	1000	2700	354	51	73
DT100L4	5	3.7	1680	13.6	6.8	5.4	574	188	260	250	0.84	81.5	G	.126	.139	800	2000	354	60	82
DV112M4	5.4	4.0	1730	14.0	7.0	5.6	703	197	280	285	0.82	85.5	J	.233	.262	—	1400	487	84	110
DV132S4	7.5	5.5	1720	18.8	9.4	7.5	670	275	275	275	0.85	86.5	H	.416	.445	—	1200	664	106	139
DV132M4	10	7.5	1740	27.4	13.7	11.0	545	362	255	225	0.78	87.5	G	.655	.769	—	1000	885	146	198
DV132ML4	12.5	9.2	1740	32.8	16.4	13.1	583	453	280	230	0.80	88.5	G	.783	.887	—	900	1328	165	220
DV160M4	15	11	1740	40	20	16.0	530	534	280	215	0.79	88.5	G	.945	1.049	—	700	1328	185	240
DV160L4	20	15	1760	54	27	21.6	537	716	300	190	0.79	89.5	G	2.197	2.449	—	560	1770	326	419
DV180M4	25	18.5	1760	63	31.5	25.2	533	895	260	165	0.82	88.5	F	2.660	2.912 3.164[1]	—	450	2655 2655[1]	386	476 485[1]
DV180L4	30	22	1760	80	40	32.0	528	1074	290	175	0.79	88.5	G	3.064	3.316 3.567[1]	—	400	2655 2655[1]	410	503 512[1]
DV200L4	40	30	1760	95	47.5	38.0	581	1432	280	190	0.89	90.2	F	5.558	5.809 6.061[1]	—	330	2655 5310[1]	538	650 659[1]
DV225S4	50	37	1760	118	59	47.2	559	1790	310	180	0.89	90.2	F	7.149	7.400 7.652[1]	—	250	2655 5310[1]	653	765 774[1]
DV225M4	60	45	1760	140	70	56.0	620	2149	310	200	0.88	91.7	G	8.479	8.730 8.982[1]	—	200	2655 5310[1]	717	831 840[1]

* Without Brake
** With Brake
1) Double Disc Brake
2) Values with BG rectifier (standard for frame size 100L and smaller)
3) Values with BGE rectifier (standard for frame size 112M and larger)

Abbreviations

P_n	Rated Power
n_n	Full Load Speed
I_n	Full Load Current
I_a/I_n	Starting Current Ratio (Locked Rotor)
T_n	Full Load Torque
T_a/T_n	Starting Torque Ratio
T_K/T_n	Breakdown Torque Ratio
Cos φ	Power Factor
η	Motor Efficiency
J_m	Motor Inertia
Z_o	Permissible no-load starting frequency at 50% ED
T_B	Maximum Brake Torque

Gearmotors and Gear Reducers

OPERATING INSTRUCTIONS

01 805 52 US

GENERAL

These operationg instructions are intended to help you install and operate the drive. For trouble free service, proper installation and operation are essential. Additionally, these instructions contain important recommendations on maintenance.

Before shipment, every SEW-Eurodrive gear unit is tested, checked and properly packed. However, please inspect the drive immediately upon arrival for shortage or transit damage. Note the damage or shortage on the freight bill of lading and file a claim with the carrier. Also, notify SEW-Eurodrive of the shortage or damage.

LUBRICANTS

All gearmotors and gear reducers are supplied with the correct grade and quantity of lubricating oil for the specified mounting position. Exceptions include reducers shipped without input assemblies. The recommended lubricants are found on page 2.

LONG TERM STORAGE

If the drive is not installed immediately, it should be stored in a dry, protected area. If the drive is to be stored for an extended period of time and was not ordered from SEW for long term storage, contact your nearest SEW assembly plant for information on Long Term Storage or request **Document #2115.**

Drives which are used for standby service should be stored as a sealed gearcase.

INSTALLATION OF COMPONENTS ON DRIVE SHAFTS

Do not hammer on the shafts. Hammering can cause brinelling of the reducer's bearings shortening the bearing life. We recommend heating the components to approximately 175°F (when possible) and sliding them on the shaft. This will reduce possible damage to the reducer's bearings. **Document #2116.**

For both standard and metric SEW shaft tolerances, refer to the SEW Catalog or request **Document #2154.**

Shaft couplings should be properly aligned to prevent vibration, coupling wear, and premature failure of the shaft bearings.

To prevent the output shaft and bearings from being subjected to excessive loads, the maximum overhung load, as shown in SEW-Eurodrive catalogs, should not be exceeded. Please consult our engineering department if the load may exceed the recommended figure given or where there are combined radial and axial loads. In such cases, the exact operating conditions must be stated including speed, direction of rotation, position, magnitude and direction of the external radial and axial loads being applied.

SHAFT MOUNTED REDUCERS

SEW-Eurodrive supplies the recommended hollowshaft mounting paste with every hollowshaft reducer. The mounting paste is to be applied on the keyed output shaft. The mounting paste is to aid in the prevention of rusting and fretting corrosion between the reducer hollowshaft and the shaft of the driven machine. The mounting paste will aid in shaft removal when necessary.

Warning! **Always ensure exposed, rotating parts are properly covered to ensure safety.**

For additional information on shaft mounted reducers, drive shaft configuration and tolerances, refer to the SEW-Eurodrive Catalog or request **Documents #2201 and #2202.**

INSTALLATION AND OPERATION

The drive installation site should be selected to ensure:

- Ambient temperatures below 40°C (104°F).
- Unimpeded flow of air to the motor and variable speed units.
- Accessibility to the drain, level and breather plugs.
- Adequate space for the removal of brakemotor fanguard for brake adjustment and maintenance.

The drive unit should be mounted on a flat, vibration damping, and torsionally rigid structure. Careful alignment is critical. Mounting to an uneven surface will cause housing distortion. The flatness tolerance of the supporting surface should not exceed:

- For gear units size 80 and smaller — 0.004 inch.
- For gear units above size 80 — 0.008 inch.

For transportation, the units are supplied with the breather plug already mounted. **After the unit is installed, the black rubber seal located on the breather MUST BE REMOVED (Fig. 1).** In addition, the oil level should be checked. Remove the plated (non-painted) oil level plug. The oil level is correct when the surface of the oil is level with the lowest point of that tapped hole, the exception is S37. Units W20 and W30 are sealed in any position.

Fig. 1

After installation, the actual mounting position should be confirmed against the mounting postion shown on the gear reducer nameplate. Adequate lubrication is only guaranteed if the unit is mounted in the specific nameplated mounting position.

Refer to the SEW Catalog or request **Document #2111, #2112, #2113, or #2114 (R, F, K, or S, respectively)** if a specific mounting position diagram is needed.

MAINTENANCE

Warning! **Always ensure equipment is secure and electrical power is off before removing or performing maintenance on the drive assembly.** Oil levels and oil quality should be checked at regular intervals, determined by usage and the environment. Grease and oil should be changed per the recommendations on page 2. Check coupling alignment, chain or belt tension, and mounting bolt torque periodically. Keep the drive relatively free of dust and dirt.

For additional information, call the SEW FAXline, 1-800-601-6195, and request document number shown.

SEW EURODRIVE

SOUTHEAST MANUFACTURING & ASSEMBLY CENTER
1295 Old Spartanburg Hwy, Lyman, SC 29365
(864) 439-7537 Fax: (864) 439-7830

SOUTHWEST ASSEMBLY CENTER
3950 Platinum Way, Dallas, TX 75237
(214) 330-4824 Fax: (214) 330-4724

MIDWEST ASSEMBLY CENTER
2001 West Main Street, Troy, OH 45373
(937) 335-0036 Fax: (937) 222-4104

EAST COAST ASSEMBLY CENTER
200 High Hill Road, Bridgeport, NJ 08014
(856) 467-2277 Fax: (856) 330-4724

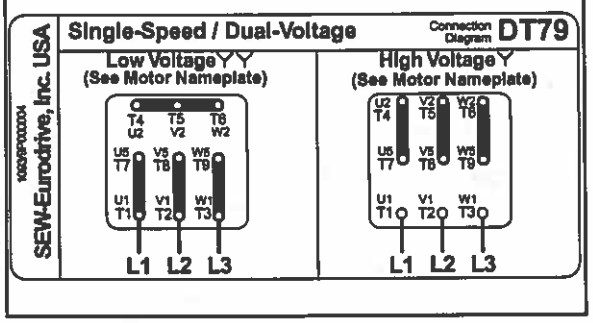
WEST COAST ASSEMBLY CENTER
30599 San Antonio Road, Hayward, CA 94544
(510) 487-3560 Fax: (510) 487-6381

ISO 9002

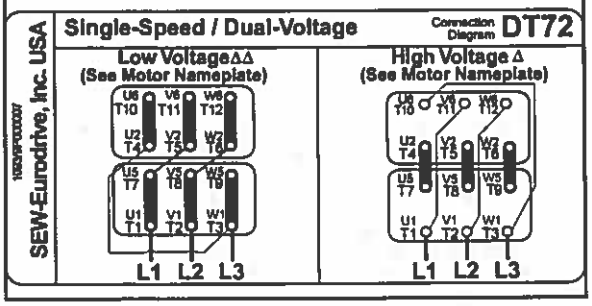
Motor Connection Diagrams

Dual-Voltage Motors
(single-speed)

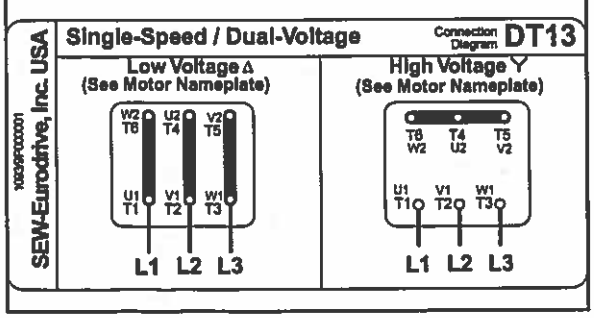
Frame Size	Low Voltage	High Voltage
DT71 thru DV180	230V - 60Hz	460V - 60Hz
	200V - 50Hz	400V - 50Hz



Frame Size	Low Voltage	High Voltage
DV200 thru DV225	230V - 60Hz	460V - 60Hz

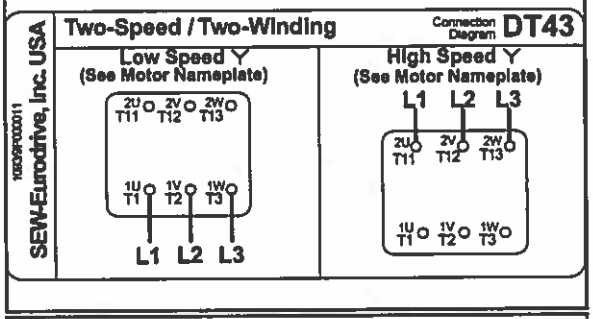


Frame Size	Low Voltage	High Voltage
DT71 thru DV225	200V - 50Hz	346V - 50Hz
	208V - 60Hz	360V - 60Hz
	220V - 50Hz	380V - 50Hz
	230V - 50Hz	400V - 50Hz
	240V - 50Hz	415V - 50Hz
	330V - 60Hz	575V - 60Hz

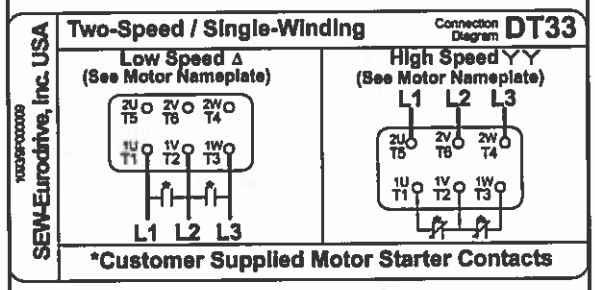


Single-Voltage Motors
(two-speed)

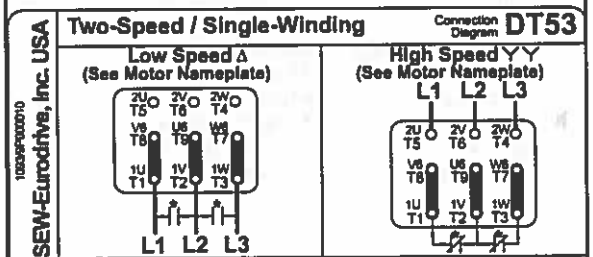
Frame Size
DT71 thru DV225

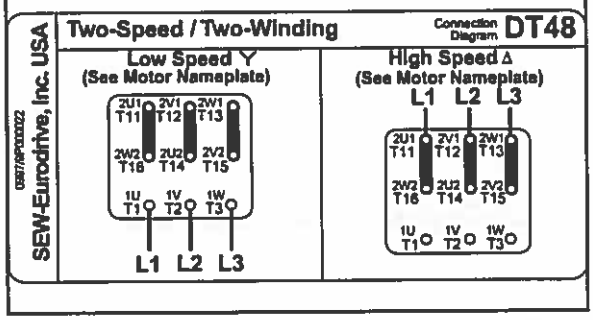


Frame Size
DT71 thru DV132S



Frame Size
DV132M thru DV225





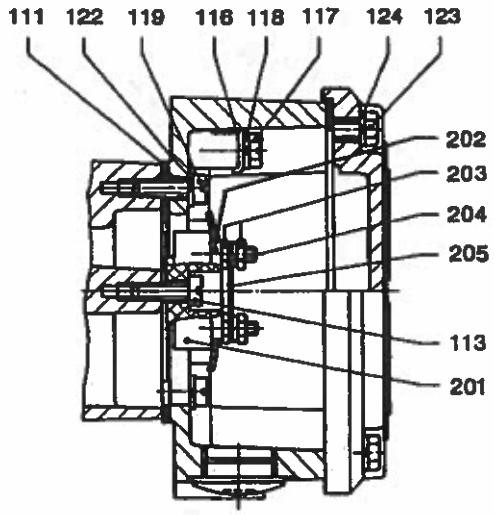
SEW EURODRIVE

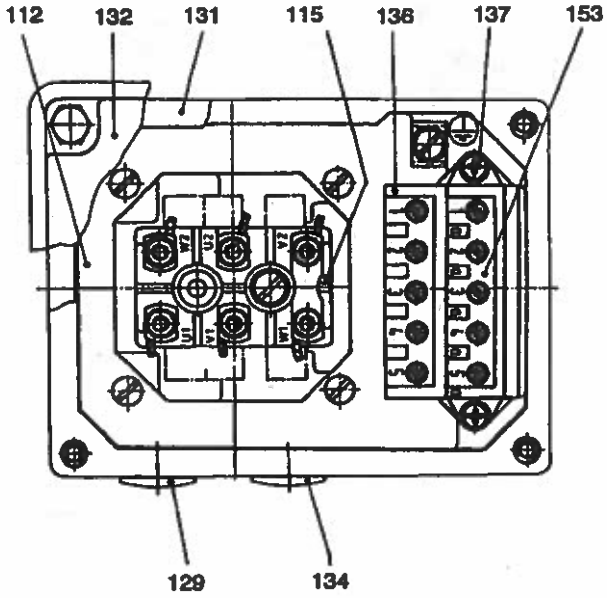
Terminal Box
For 6 Lead Motors and Brakemotors
DT71-90 and BM(G)

PARTS LIST

08 673 787A US

CSA/NEMA Box with NPT Cable Entry



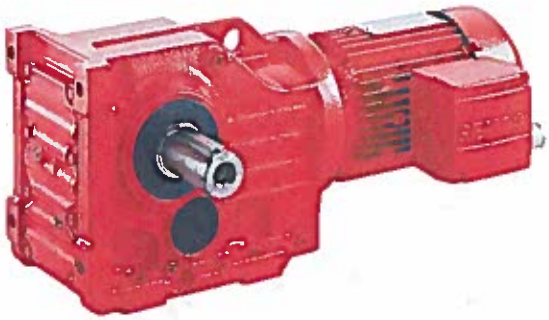


When ordering parts, please supply nameplate data with serial number or S.O. number, model number, description of part and part number.

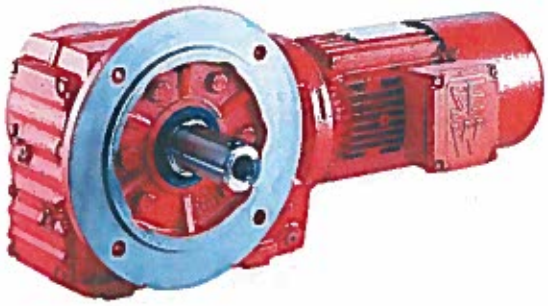
Ⓐ - Mounting hardware for item #136 or #153 as stand alone.
Ⓑ - Mounting hardware for item #136 with #153 as integral unit.
Ⓒ - For use with brakemotor.
Ⓓ - For use as option.
Ⓔ - Includes items #201 through #205.

Item	Part Name	Description	Part No	Qty
111	Gasket	For item # 112	183 678 1	1
112	Terminal Box Lower Part	2x1/2 in. NPT	182 796 0	1
113	Socket Head Screw	AM5x16mm	012 962 3	1
115	Terminal Block Ⓔ	KTM4	011 759 5	1
116	Terminal Cap		010 442 6	1
117	Hex Head Screw	M5x12mm	011 217 8	1
118	Lockwasher	5mm	011 820 6	1
119	Hex Head Screw	M5x16mm	011 852 4	4
122	Lockwasher	5mm	011 820 6	4
123	Hex Head Screw	BM6x25x8mm A2	011 860 5	4
124	Lockwasher	6mm	011 830 3	4
129	Closing Plug	18.5mm	011 375 1	1
131	Gasket	For item # 132	184 355 9	1
132	Terminal Box Cover		184 333 8	1
134	Closing Plug	18.5mm	011 375 1	1
134	Threaded Closing Plug	1/2 in. NPT	90000150	1

Item	Part Name	Description	Part No	Qty
136	Rectifier Ⓒ	BG 1.5A 150-500VAC	825 384 6	1
136	Rectifier Ⓒ	BG 3.0A 42-150VAC	825 386 2	1
136	Rectifier Ⓒ	BGE 1.5A 150-500VAC	825 385 4	1
136	Rectifier Ⓒ	BGE 3.0A 42-150VAC	825 387 0	1
136	Brake Control Ⓒ	BSG 5.0ADC 20-30VDC	825 459 1	1
136	Rectifier Ⓒ	BGH 1.5A 150-500VAC	825 480 X	1
136	Rectifier Ⓒ	BGH 3.0A 42-150VAC	825 479 6	1
137	Conduit Box Screw Ⓐ	CM4x20mm	013 107 5	2
137	Socket Head Screw Ⓑ	M4x35mm	013 104 0	2
153	Auxiliary Terminal Strip Ⓓ		183 060 0	1
201	Terminal Block	K1M4	010 796 4	1
202	Wire Clamp	A4mm	011 755 2	6
203	Hex Nut	M4mm	012 853 8	6
204	Washer	B4.3mm	012 906 2	1
205	Terminal Bridge	4.5x20mm	010 834 0	3



K..DT../DV..

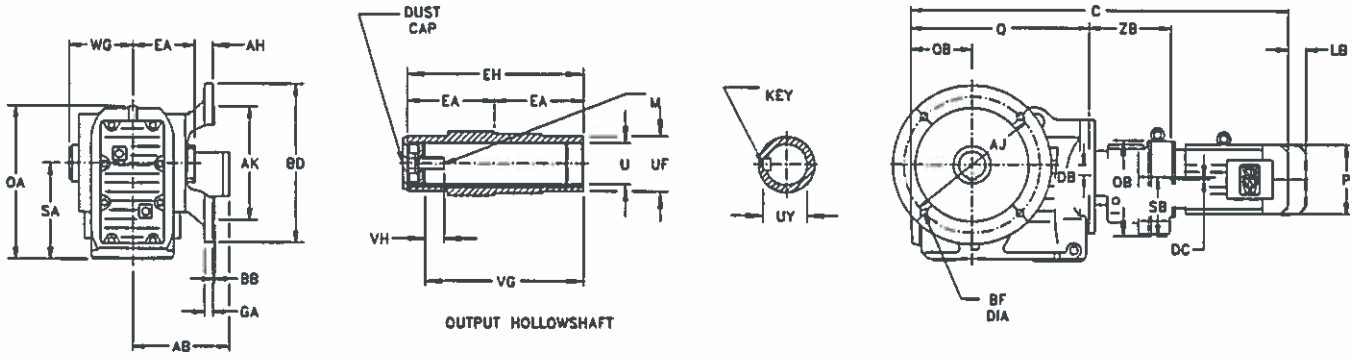


KF..DT../DV..BM(G)

KA..TDT../DV..

KAF..DT../DV..BM(G)

Dimensions
Type KAF Gearmotors - Flange Mounted with Hollowshaft



Drawing Notes:

Dimension AB is to conduit box.

Dimension LB is for motor brake option.

Eyebolts are supplied for motor sizes ≥ DV112 and reducer sizes ≥ R67 and are removable.

Gearcase

Model	DB	DC	EA	OA	OB	Q	QB	SA	SB	WG	ZB
KAF37R17	0.33 8.5	0.00 0	2.36 60	6.46 164	5.31 135	8.27 210	2.80 71	3.94 100	2.99 76	2.48 63	6.89 175
KAF47R37	0.28 7.2	0.40 10.1	2.95 75	7.28 185	6.10 155	9.57 243	3.03 77	4.41 112	3.70 94	3.07 78	6.50 165
KAF57R37	0.52 13.1	0.40 10.1	3.27 83	8.46 215	6.10 155	10.59 269	3.78 96	5.20 132	3.70 94	3.39 86	6.50 165
KAF67R37	0.79 20	0.40 10.1	3.54 90	8.90 226	6.10 155	10.75 273	3.70 94	5.51 140	3.70 94	3.70 94	6.50 165

Flange

AH	AJ	AK *	BB	BD	BF	GA
0.94 24	5.12 130	4.331 110	0.14 3.5	6.30 160	0.35 9	0.39 10
0.98 25	6.50 165	5.118 130	0.14 3.5	7.87 200	0.43 11	0.47 12
0.93 23.5	8.46 215	7.087 180	0.16 4	9.84 250	0.53 13.5	0.59 15
0.91 23	8.46 215	7.087 180	0.16 4	9.84 250	0.53 13.5	0.59 15

*** Note: See page 33 for applicable tolerances.**

Output Shaft Inch Series/*Optional Metric Series* **For solid shaft design see page 410.**

Model	EH	U *	UF	UY	VG	VH	Key	M
KAF37R17	4.72 *120*	1.250 *30*	1.77 *45*	1.37 *33.3*	4.13 *105*	0.67 *17*	1/4 x 1/4 x 1 11/16 *8 x 7 x 40*	7/16-14 x 1 *M10 x 25*
KAF47R37	5.91 *150*	1.375 *35*	1.97 *50*	1.52 *38.3*	5.20 *132*	0.65 *22*	5/16 x 5/16 x 1 13/16 *10 x 8 x 45*	1/2-13 x 1 *M12 x 30*
KAF57R37	6.54 *166*	1.500 *40*	2.17 *55*	1.67 *43.3*	5.59 *142*	1.36 *29*	3/8 x 3/8 x 2 1/4 *12 x 8 x 50*	5/8-11 x 1 3/4 *M16 x 40*
KAF67R37	7.09 *180*	1.500 *40*	2.17 *55*	1.67 *43.3*	6.14 *156*	1.36 *29*	3/8 x 3/8 x 2 1/4 *12 x 8 x 50*	5/8-11 x 1 3/4 *M16 x 40*

*** Note: See page 33 for applicable tolerances.**

Motor

Model		DT			
		71	80	90	100
	AB	5.43 138	5.43 138	6.73 171	6.89 175
	LB	2.52 64	2.52 64	3.35 85	3.35 85
	P	5.71 145	5.71 145	7.76 197	7.76 197
KAF37R17	C	21.61 549	23.58 599	— —	— —
KAF47R37	C	24.13 613	26.10 663	26.89 683	28.98 736
KAF57R37	C	25.16 639	27.13 689	27.91 709	30.00 762
KAF67R37	C	25.31 643	27.28 693	28.07 713	30.16 766

Dimensions are inch / mm

See page 409 for available output shaft sizes.

Technical Data
Weights

Listed below are weights for complete units less oil. Reducer weights less input cover are shown in the **Gear Unit** chart and combined reducer and motor weights are shown in the **Gearmotor** chart. For flanged and/or hollowshaft reducers as well as gearmotors add the flange and/or hollowshaft weight shown in the **Gear Unit** chart (a negative value must be subtracted). For brakemotors add the brake weight listed at the bottom of the **Gearmotor** chart.

Note: Oil weighs approximately 7.5 lbs/gallon (2 lb/liter). Reference Lubrication Sheet for volume of oil required. All weights in lbs.

Note: All weights listed are approximations based on the heaviest unit of the type listed.

Model	Reducer	Add for KF	Add for KA	Add for KAF
K37	26	5	-1	3
K37R17	—	5	-1	3
K47	40	7	-2	4
K47R37	64	7	-2	4
K57	53	10	-6	8
K57R37	77	10	-6	8
K67	64	13	-5	7
K67R37	90	13	-5	7
K77	117	18	-15	1
K77R37	143	18	-15	1
K87	194	22	-26	2
K87R57	254	22	-26	2
K97	320	45	-43	12
K97R57	386	45	-43	12
K107	562	24	-64	-11
K107R77	673	24	-64	-11
K127	893	92	-64	18
K127R77	1025	92	-64	18
K127R87	1058	92	-64	18
K157	1389	176	-72	54
K157R97	1720	176	-72	54
K157R107	1808	176	-72	54
K167	2271	—	-88	—
K167R97	2580	—	-88	—
K167R107	2668	—	-88	—
K187	3550	—	-150	—
K187R97	3859	—	-150	—
K187R107	3947	—	-150	—

Model	DT 71	DT 80	DT 90	DT 100	DV 112M	DV 132S	DV 132M	DV 132ML
K37	40	46	60	84	—	—	—	—
K37R17	46	—	—	—	—	—	—	—
K47	55	62	77	101	—	—	—	—
K47R37	77	82	—	—	—	—	—	—
K57	66	73	90	115	130	—	—	—
K57R37	90	97	108	—	—	—	—	—
K67	79	86	101	126	141	152	—	—
K67R37	104	110	—	—	—	—	—	—
K77	135	143	157	181	194	209	254	276
K77R37	157	163	174	—	—	—	—	—
K87	—	221	232	265	276	287	331	353
K87R57	265	276	287	298	—	—	—	—
K97	—	—	364	386	408	419	463	485
K97R57	397	408	419	441	463	—	—	—
K107	—	—	—	650	662	673	717	739
K107R77	684	695	706	728	739	761	—	—
K127	—	—	—	—	—	—	1058	1080
K127R77	1036	1047	1058	1080	1091	1103	—	—
K127R87	—	—	1103	1125	1147	1147	1213	1213
K157	—	—	—	—	—	—	—	—
K157R97	—	1742	1764	1786	1786	1808	1852	1874
K157R107	—	—	—	—	—	—	—	1962
K167	—	—	—	—	—	—	—	—
K167R97	—	2602	2624	2646	2668	2668	2712	2734
K167R107	—	—	—	—	—	—	—	2844
K187	—	—	—	—	—	—	—	—
K187R97	—	3903	3903	3925	3947	3947	3991	4013
K187R107	—	—	—	—	—	—	4101	4123
Add for Brake	6	6	22	22	26	33	53	55
Add for Double Disc Brake	—	—	—	—	—	—	—	—

For compound drives the R reducer requires its own oil filling as shown in the chart:

Gear Unit	Mounting Position					
	M1/M3/M5/M6		M2		M4	
	Gallons	Liters	Gallons	Liters	Gallons	Liters
R17	0.07	0.25	0.16	0.6	0.16	0.6
R37	0.11	0.4	0.24	0.9	0.29	1.1
R57	0.21	0.8	0.48	1.8	0.53	2
R77	0.32	1.2	1.00	3.8	1.08	4.1
R87	0.63	2.4	1.8	6.8	2.03	7.7
R97	1.35	5.1	3.14	11.9	3.70	14
R107	1.66	6.3	4.20	15.9	5.07	19.2

WARRANTY

Hydro-Dyne Engineering, Inc. warrants the Fine Headworks Screen and optional Washing Compactor to be free of defects due to workmanship or materials of construction if operated according to design conditions and maintenance instructions. The system is warranted for a period of one year against defects and workmanship. To effect the warranty customers/user shall submit a written purchase order requesting replacement of suspected failed part(s). Replacement part(s) will be sent out and credit will be issued after inspection and testing of returned part(s) yields defects. Upon written notification of a possible defective unit Hydro-Dyne Engineering, Inc. will, at our option, repair or replace at our expense F.O.B. Clearwater, Florida. Unless stated otherwise, the equipment or parts manufactured by others, but furnished by Hydro-Dyne, will be repaired or replaced to the full extent of the original manufacturer's guarantee.

Hydro-Dyne Engineering, Inc. values each of our customers/users and will continue to devise better ways of maintaining excellence in our products and services.

Technical Data
Lubrication

Each gear unit is supplied from the factory with the correct grade and quantity of lubricant for the specified mounting position. The following lubricants are supplied from our North American Facilities. Under special circumstances such as high or low ambient temperatures optional oils should be used.

Standard Oil

USA			
Gear Units	**Type**	**Manufacturer**	**Ambient Temperature °C**
K..37 - 157 K/KH167 - 187	Mobilgear 630 [M]	Mobil Oil Corp.	0 to +40
CANADA			
K..37 - 157 K/KH167 - 187	Omala 220 [M]	Shell Oil Co.	0 to +40

[M] Mineral Oil

Optional Oil

USA			
Gear Units	**Type**	**Manufacturer**	**Ambient Temperature °C**
K..37 - 157 K/KH167 - 187	Mobilgear 629 [M]	Mobil Oil Corp.	-15 to +25
	Mobil SHC630 [S]		-40 to +40
	Mobil SHC629 [S]		-30 to +50
CANADA			
K..37 - 157 K/KH167 - 187	Omala RL220 [S]	Shell Oil Co.	-30 to +80

[M] Mineral Oil
[S] Synthetic Oil

For ball and roller bearings of gear units the following greases are recommended:

Mineral Grease

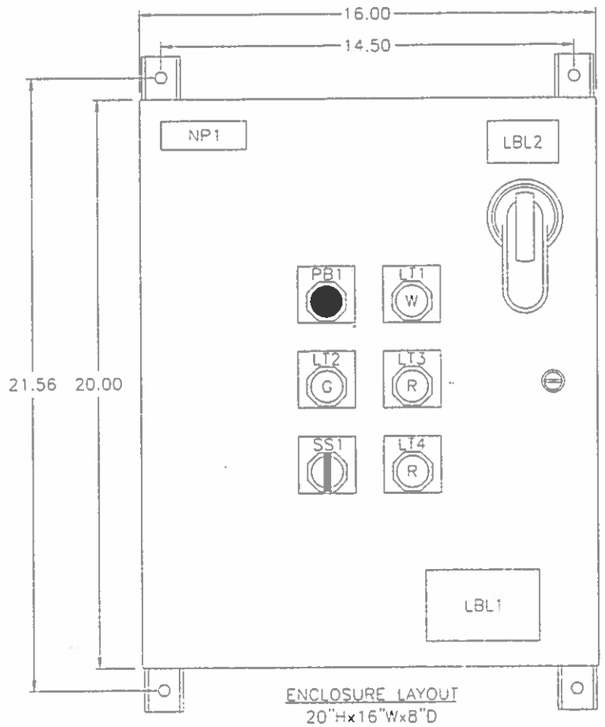
Type	Manufacturer	Ambient Temperature °C
Mobilux EP2	Mobil Oil Corp.	-20 to +40
Alvania Grease R3	Shell Oil Co.	-30 to +60

Synthetic Grease

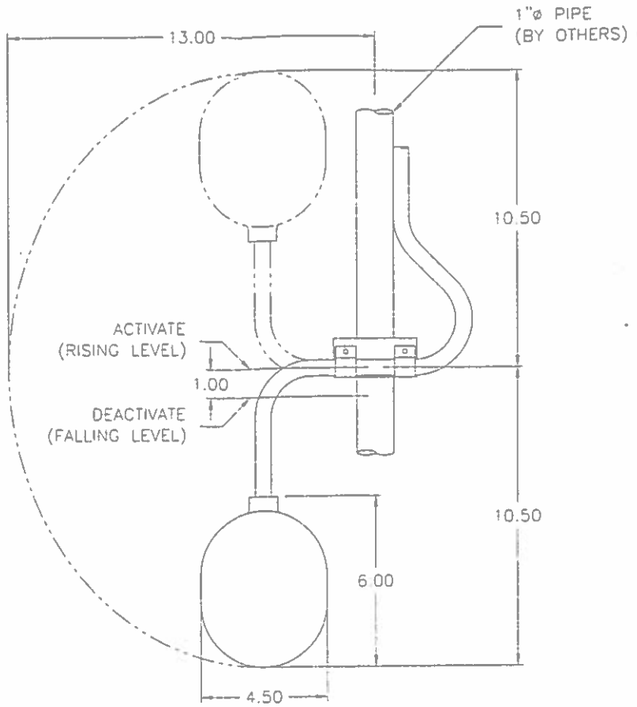
Type	Manufacturer	Ambient Temperature °C
Mobiltemp SHC 32	Mobil Oil Corp.	-45 to +60

The approximate lubricant in US gallons and liters per mounting position is as follows:

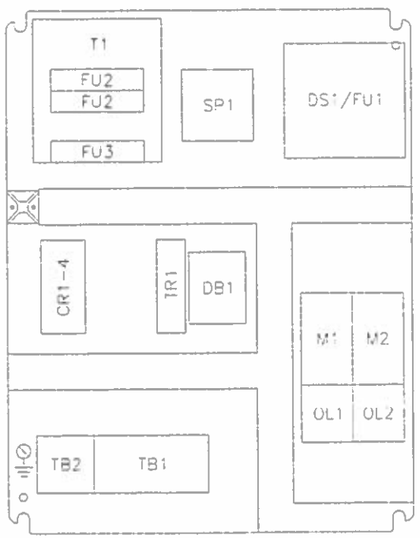
Gear Unit	Mounting Position											
	M1		M2		M3		M4		M5		M6	
	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters	Gallons	Liters
K37	0.13	0.5	0.26	1	0.26	1	0.34	1.3	0.26	1	0.26	1
K47	0.21	0.8	0.34	1.3	0.40	1.5	0.53	2	0.42	1.6	0.42	1.6
K57	0.32	1.2	0.61	2.3	0.66	2.5	0.79	3	0.69	2.6	0.63	2.4
K67	0.29	1.1	0.63	2.4	0.69	2.6	0.90	3.4	0.69	2.6	0.69	2.6
K77	0.58	2.2	1.08	4.1	1.16	4.4	1.56	5.9	1.11	4.2	1.16	4.4
K87	0.98	3.7	2.11	8	2.30	8.7	2.88	10.9	2.06	7.8	2.11	8
K97	1.85	7	3.70	14	4.15	15.7	5.28	20	4.15	15.7	4.10	15.5
K107	2.64	10	5.55	21	6.74	25.5	8.85	33.5	6.34	24	6.34	24
K127	5.55	21	10.96	41.5	11.62	44	14.27	54	10.57	40	10.83	41
K157	8.19	31	16.38	62	17.17	65	23.78	90	15.32	58	16.38	62
K/KH167	9.25	35	26.42	100	26.42	100	33.03	125	22.46	85	22.46	85
K/KH187	15.85	60	44.91	170	44.91	170	54.16	205	34.35	130	34.35	130
KF37	0.13	0.5	0.29	1.1	0.29	1.1	0.40	1.5	0.26	1	0.26	1
KF47	0.21	0.8	0.34	1.3	0.45	1.7	0.58	2.2	0.42	1.6	0.42	1.6
KF57	0.34	1.3	0.61	2.3	0.71	2.7	0.79	3	0.77	2.9	0.71	2.7
KF67	0.29	1.1	0.63	2.4	0.74	2.8	0.95	3.6	0.71	2.7	0.71	2.7
KF77	0.55	2.1	1.08	4.1	1.16	4.4	1.59	6	1.19	4.5	1.19	4.5
KF87	0.98	3.7	2.17	8.2	2.38	9	3.14	11.9	2.22	8.4	2.22	8.4
KF97	1.85	7	3.88	14.7	4.57	17.3	5.68	21.5	4.15	15.7	4.36	16.5
KF107	2.64	10	5.81	22	6.87	26	9.25	35	6.61	25	6.61	25
KF127	5.55	21	10.96	41.5	12.15	46	14.53	55	10.83	41	10.83	41
KF157	8.19	31	17.44	66	18.23	69	24.31	92	16.38	62	16.38	62
KA/KH/KV37 KAF/KHF/KVF37 KAZ/KHZ/KVZ37	0.13	0.5	0.26	1	0.26	1	0.37	1.4	0.26	1	0.26	1
KA/KH/KV47 KAF/KHF/KVF47 KAZ/KHZ/KVZ47	0.21	0.8	0.34	1.3	0.42	1.6	0.55	2.1	0.42	1.6	0.42	1.6
KA/KH/KV57 KAF/KHF/KVF57 KAZ/KHZ/KVZ57	0.34	1.3	0.61	2.3	0.71	2.7	0.79	3	0.77	2.9	0.71	2.7
KA/KH/KV67 KAF/KHF/KVF67 KAZ/KHZ/KVZ67	0.29	1.1	0.63	2.4	0.71	2.7	0.95	3.6	0.69	2.6	0.69	2.6
KA/KH/KV77 KAF/KHF/KVF77 KAZ/KHZ/KVZ77	0.55	2.1	1.08	4.1	1.22	4.6	1.59	6	1.16	4.4	1.16	4.4
KA/KH/KV87 KAF/KHF/KVF87 KAZ/KHZ/KVZ87	0.98	3.7	2.17	8.2	2.32	8.8	2.93	11.1	2.11	8	2.11	8
KA/KH/KV97 KAF/KHF/KVF97 KAZ/KHZ/KVZ97	1.85	7	3.88	14.7	4.15	15.7	5.28	20	4.15	15.7	4.15	15.7
KA/KH/KV107 KAF/KHF/KVF107 KAZ/KHZ/KVZ107	2.64	10	5.42	20.5	6.34	24	8.45	32	6.34	24	6.34	24
KA/KH/KV127 KAF/KHF/KVF127 KAZ/KHZ/KVZ127	5.55	21	10.96	41.5	11.36	43	13.74	52	10.57	40	10.57	40
KA/KH/KV157 KAF/KHF/KVF157 KAZ/KHZ/KVZ157	8.19	31	17.44	66	17.70	67	22.99	87	16.38	62	16.38	62



ENCLOSURE LAYOUT
20"Hx16"Wx8"D
NEMA 4X STAINLESS STEEL

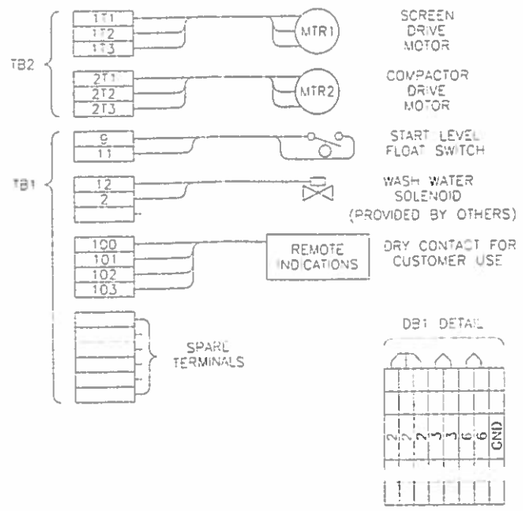


FLOAT SWITCH AND PIPE MOUNT CLAMP
POLYPROPYLENE CASING
N.O. HERMETICALLY SEALED MERCURY SWITCH
W/20' PVC TYPE STO CABLE



SUB-PANEL LAYOUT
18.2"Hx14.2"W

FIELD WIRING DIAGRAM



DEVICE SETTINGS

TR1
OFF TIME FIRST

	MODE	DIAL SETTING
t2	10 MINUTES	0.5
t1	1 HR	0.25

TR1 IS A RECYCLE TIMER. SET SWITCH TO OFF TIME FIRST. SET t1 TO THE OFF TIME BY FIRST SETTING THE MODE AND THEN THE DIAL SETTING. SET t2 TO THE ON TIME FOLLOWING THE SAME PROCEDURE.

SEQUENCE OF OPERATION

SCREEN MODE OF OPERATION:
HAND: WHEN SYSTEM SELECTOR IS IN THE HAND POSITION THE SCREEN WILL RUN CONTINUOUSLY.
AUTO: WHEN THE SYSTEM SELECTOR IS IN THE AUTO POSITION THE SCREEN WILL RUN WHEN THE LEVEL REACHES THE START LEVEL FLOAT SWITCH (FLS1). THE SCREEN WILL CONTINUE TO RUN UNTIL THE LEVEL DROPS BELOW THE START LEVEL FLOAT SWITCH. THE SCREEN WILL ALSO RUN BASED ON THE SETTINGS OF THE RECYCLE TIMER (TR1) UNTIL THE LEVEL REACHES THE START LEVEL FLOAT SWITCH (FLS1) AGAIN. THE RECYCLE TIMER HAS INDEPENDENT ON/OFF CYCLES TO START THE SCREEN IN AUTO.

COMPACTOR MODE OF OPERATION:
THE COMPACTOR WILL RUN WHEN THE SCREEN IS RUNNING. REFER TO THE SCREEN MODE OF OPERATION FOR MORE INFORMATION.

WASH WATER SOLENOID MODE OF OPERATION:
THE WASH WATER SOLENOID WILL OPEN WHEN THE SCREEN AND COMPACTOR ARE RUNNING IN EITHER HAND OR AUTO MODE.

SYSTEM RUN:
THE SYSTEM IN RUN PILOT LIGHT WILL ILLUMINATE WHEN THE SCREEN AND COMPACTOR MOTORS ARE RUNNING.

EMERGENCY STOP:
THE SCREEN, COMPACTOR AND THE WASH WATER SOLENOID WILL STOP IMMEDIATELY IF THE E-STOP PUSHBUTTON (PB1) IS PRESSED. WHEN PB1 IS RESET, THE UNIT MAY CYCLE IMMEDIATELY. TURN THE SCREEN H-O-A SELECTOR SWITCH (SS1) TO THE OFF POSITION AND THEN RESET PB1 BY TWISTING THE KNOB

FAULTS:
1. A SCREEN OVERLOAD OCCURS WHEN THE SCREEN MOTOR THERMAL OVERLOAD IS TRIPPED.
2. A COMPACTOR OVERLOAD OCCURS WHEN THE COMPACTOR MOTOR THERMAL OVERLOAD IS TRIPPED.

- WHEN THE ABOVE FAULT OCCURS, THE RESPECTIVE MOTOR WILL STOP IMMEDIATELY AND ITS MOTOR FAILURE LIGHT WILL BE ILLUMINATED.
- FAULTS 1 AND 2 MUST BE MANUALLY RESET AT THE THERMAL OVERLOAD (OL1 OR OL2) INSIDE THE ENCLOSURE.

PILOT DEVICE ENGRAVED LEGEND PLATES:
LT1 - MAIN POWER ON
LT2 - SYSTEM RUN
LT3 - SCREEN OVERLOAD
LT4 - COMPACTOR OVERLOAD
PB1 - EMERGENCY STOP
SS1 - SYSTEM HAND-OFF-AUTO

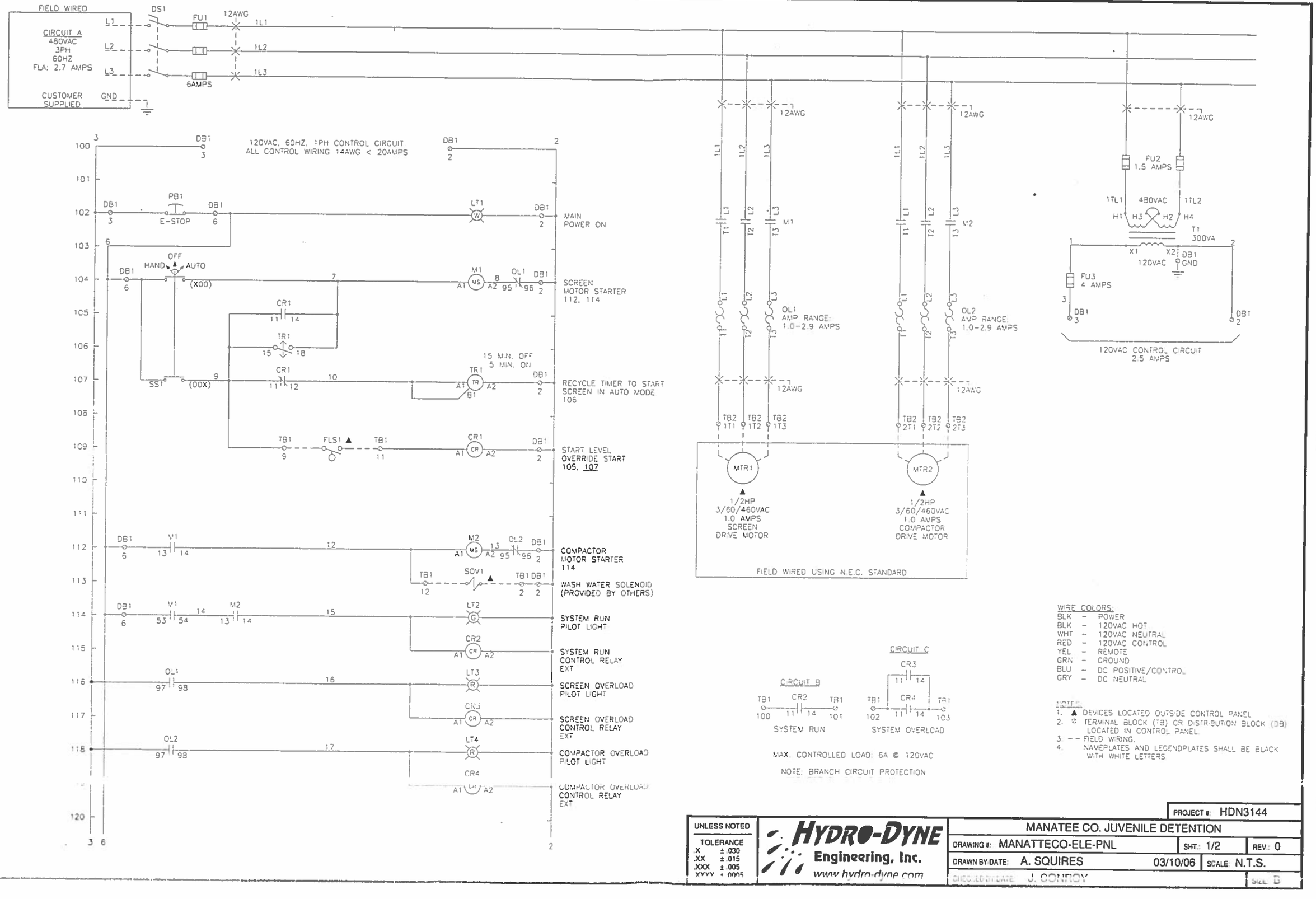
PHENOLIC NAMEPLATES:
NP1 - SCREEN/COMPACTOR CONTROL PANEL

LABEL DESCRIPTION:
LBL1 - DANGER HIGH VOLTAGE
ENTRY BY QUALIFIED PERSON ONLY
LBL2 - WARNING: MULTIPLE SUPPLY SOURCES
OPEN ALL DISCONNECTS BEFORE SERVICING EQUIPMENT OR OTHER UNIT WIRING.

UNLESS NOTED
TOLERANCE
.X ±.030
.XX ±.015
.XXX ±.005
.XXXX ±.0025

HYDRO-DYNE Engineering, Inc.
www.hydro-dyne.com

PROJECT #: HDN3144
MANATEE CO. JUVENILE DETENTION
DRAWING #: MANATTECO-ELE-PNL | SHT.: 2/2 | REV.: 0
DRAWN BY/DATE: A. SQUIRES 03/10/06 | SCALE: N.T.S.
CHECKED BY/DATE: J. CONROY | SIZE: D



WIRE COLORS:

BLK	–	POWER
BLK	–	120VAC HOT
WHT	–	120VAC NEUTRAL
RED	–	120VAC CONTROL
YEL	–	REMOTE
GRN	–	GROUND
BLU	–	DC POSITIVE/CONTROL
GRY	–	DC NEUTRAL

NOTES:
1. ▲ DEVICES LOCATED OUTSIDE CONTROL PANEL
2. ⊘ TERMINAL BLOCK (TB) OR DISTRIBUTION BLOCK (DB) LOCATED IN CONTROL PANEL
3. – – FIELD WIRING.
4. NAMEPLATES AND LEGENDPLATES SHALL BE BLACK WITH WHITE LETTERS

UNLESS NOTED
TOLERANCE
.X ±.030
.XX ±.015
.XXX ±.005
.XXXX ±.0005

HYDRO-DYNE Engineering, Inc.
www.hydro-dyne.com

PROJECT #: HDN3144

MANATEE CO. JUVENILE DETENTION

DRAWING #: MANATTECO-ELE-PNL		SHT.: 1/2	REV.: 0
DRAWN BY/DATE: A. SQUIRES	03/10/06	SCALE: N.T.S.	
CHECKED BY/DATE: J. CONROY		SIZE: B	