

FAST-WAY

CEMENT SCREW-AUGER

OWNER'S MANUAL



2011 Harnish Blvd.
Billings, MT 59101

Phone: (406)656-4360/(800)523-3888

Fax: (406)656-4363

FAST-WAY LIMITED WARRANTY POLICY

Ideal Manufacturing, Inc., hereinafter referred to as "Manufacturer" warrants FAST-WAY equipment to be free from defect in material and workmanship, under normal use and service, for a period of one (1) year from the date of original purchase. Manufacturer will, at its option, replace or repair at factory in Billings, MT, any part or parts which shall appear, to the satisfaction of the Manufacturer, upon inspection at its factory, to have been defective in material or workmanship. This warranty does not obligate the Manufacturer to bear any transportation charges in connection with replacement or repair of defective parts. This warranty excludes electrical components and damage due to Acts of God, unauthorized modifications, misuse, abuse or negligence to this product.

In order to proceed with a warranty claim, Ideal Manufacturing must be notified of the problem. A new part will be shipped out prepaid (Ground UPS). If the customer requests that the part be expedited that shipping charge will be charged to the owner.

The part that is being warranted must be returned to Ideal Manufacturing postage prepaid. When the new part is shipped out, it will go out with an invoice and a warranty part return number. The defective part must be returned to Ideal Manufacturing, Inc freight prepaid, with the warranty part return number. At that time the invoice will be considered paid in full.

This warranty is exclusive and in lieu of all other obligation, liabilities or warranties. In no event shall Ideal Manufacturing be liable or responsible for incidental or consequential damage or for any other direct or indirect damage loss, cost, expense or fee.

This warranty shall not apply to any products or parts that have been altered or repaired without written consent of Ideal Manufacturing.

Labor to remove and reinstall defective product or parts will be paid from a labor rate and schedule only. Consult Ideal Manufacturing for that rate and schedule.

For further information on returning your product or questions concerning Ideal Manufacturing warranty, please contact Ideal Manufacturing.

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SAFETY RULES

1. Follow instructions, don't take chances. If you don't know, ask. When setting up, lowering or putting equipment into traveling position, follow all instructions in operator's manual.
2. Correct or report unsafe conditions. If not sure of how to correct a hazard, report it and get help.
3. Keep everything clean and orderly. Trips or falls can cause serious injuries.
4. Use the right tools and equipment for the job. Use them safely. Replace all machine guards after repairs.
5. Report all injuries and get first aid or medical treatment promptly.
6. Use, adjust, and repair equipment only when authorized.
7. Use prescribed protective equipment. Keep it in good condition. Wear your hardhat, safety climbing devices or belt. Wear safe clothing to protect you from material being handled, cold or hot. Wear a dust mask when conditions require them. Use gloves, eye protection/safety glasses, and earplugs for noise.
8. Don't horseplay: avoid distracting others.
9. When lifting, bend your knees and get help for heavy loads.
10. Don't repair or adjust equipment while in motion. Shut off power source, gasoline engines or electric motors.
11. Comply with safety rules and signs.
12. Gasoline, L.P. gas fumes are highly explosive.

SET UP PROCEDURE
(Refer to “Travel Position of Cement Screw”, Drawing A)

- Step 1** Select a level site for setting up and operating cement screw.
- Step 2** Locate Point A1 – Remove hairpin clip from Hole A of 45° position support pin. Pull support pin out of framework and reinstall hairpin clip in Hole B. Lay support pin aside for future use.
- Step 3** Locate Point A2 – Release cable tension from winch and spool out all cable.
- Step 4** Locate Diagonal Braces Point A3 – Swing diagonal braces forward and rest ends on hopper.
- Step 5** Locate Hinged Support Frame Point A4 – Manually stand up in vertical position. Swing diagonal braces into position and pin to hinged support frame.
(Refer to 33 ½° position drawing page 5, or 45° position drawing page 6)
- Step 6** Crank winch handle (Point A2) in clockwise rotation to raise main tube to desired position (33 ½° or 45°)
- 33 ½° Position** (Refer to 33 ½° degree position, side view, Drawing B)
Locate Point A5 – When main tube has been winched to appropriate height above Point A5. Install special 33 ½° position support pin, (Part #CSP113). (Refer to cement screw frame assembly, Drawing #4) across frame supports Point A5. Lower main tube so that it rests on support pin while keeping tension on winch line for additional support.
- 45° Position** (Refer to 45° position, side view, Drawing C)
Locate Point A6 – When main tube has been winched to appropriate height above Point A6. Install 45° position support pin (which was laid aside in Sept 2) across frame support Point A6. Lower main tube so that it rests on support pin while keeping tension on winch line for additional support.
- Step 7** Locate Point A7 – Check speed reducer oil level (Refer to page 32 “Lubrication Instruction for Speed Reducer Drawing and Worm Gear Speed Reducer Lubrication” Instruction Sheet)
- Step 8** Check oil in engine and add fuel Gasoline Powered Units Only.
NOTE: Fuel line may have shut off valve located below fuel tank. Electric powered units are lifetime factory lubricated.
- Step 9** Grease all grease-able bearings on drive shaft and conveyor screw.
- Step 10** Located Point A9 – Install discharge boot with clamp provided.

SPECIAL INSTRUCTION

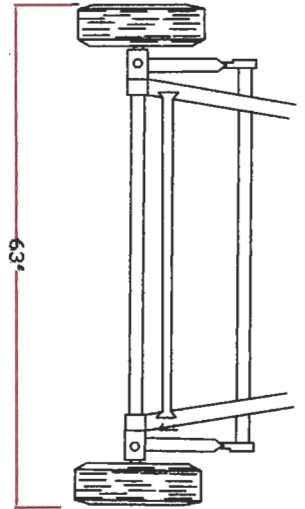
When using machine in 45° position it is recommended to either raise the hopper end approximately 1" or remove enough ground on the left side of the hopper to let cover hang free when in open position. Failure to do so may create damage to hinge area of hopper. Machine is now ready for operation. Electric powered units operate at a fixed speed. Gasoline powered units speed can be regulated by adjusting governor.

SAFETY FIRST

Keep belt guard installed during operation and hopper cover closed when not in use.

MOVING & TRAVEL PROCEDURE

Reverse set up procedure starting with Step 6 and working back to Step 1. Check tires pressure. Inflate to manufacturers specifications. Machine can be towed at highway speed depending on road conditions.

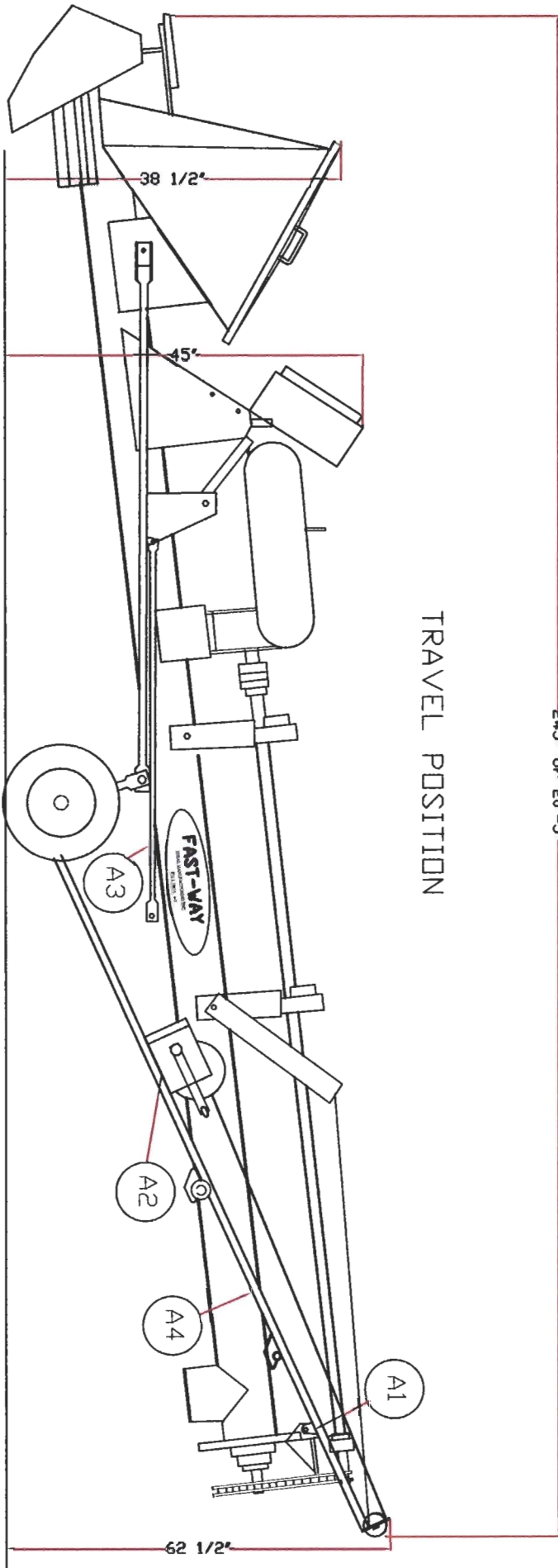


45° POSITION SUPPORT PIN



245" or 20'-5"

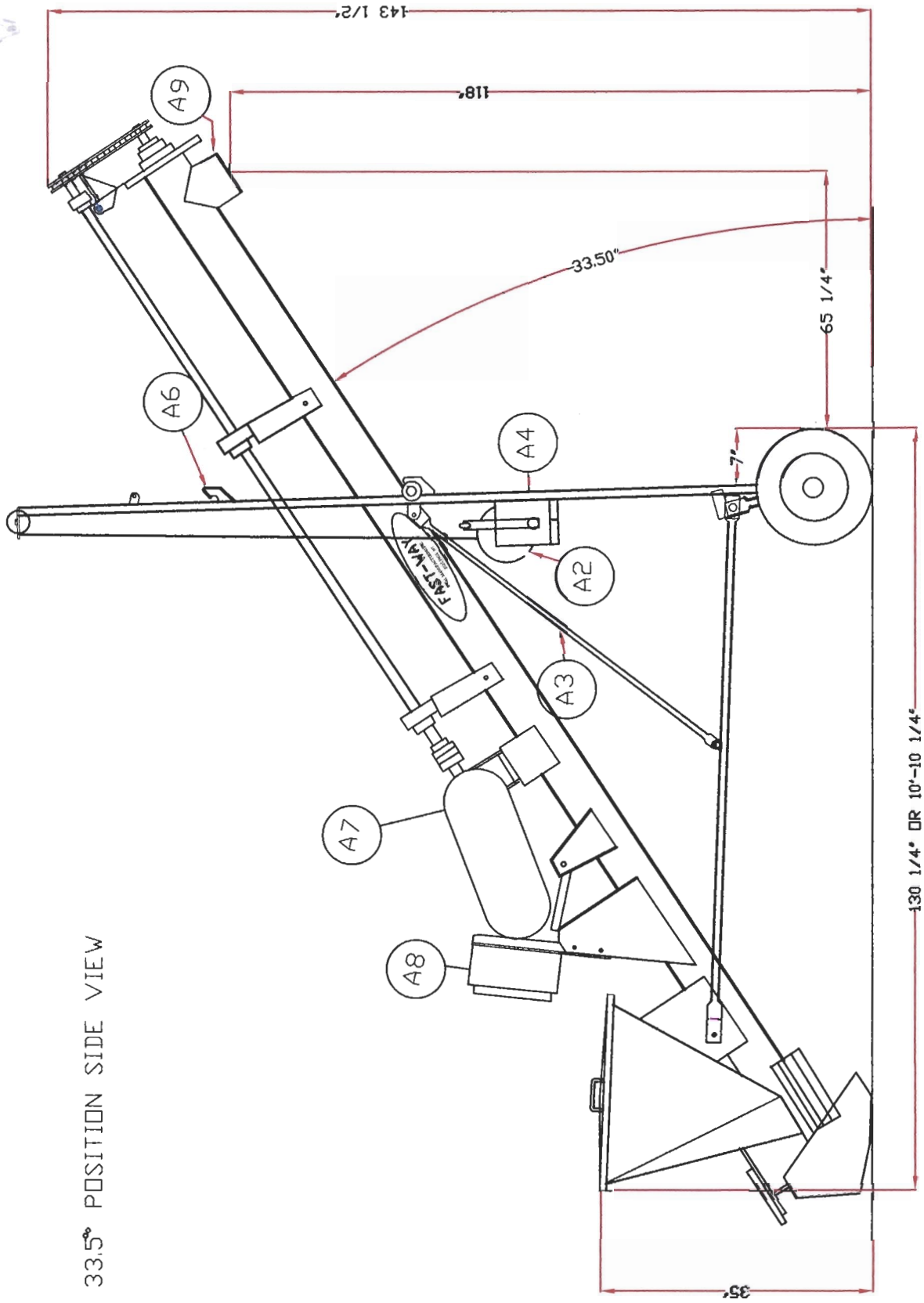
TRAVEL POSITION



DATE: 03-12-2004

IDEAL MANUFACTURING INC.	
2011 HAMBURG AVE. BILLINGS MT 59101	
PHONE: (406)556-4360 FAX: (406)556-4369	
AUGER/CEMENT SCREW	
TRAVEL POSITION	
DWG A	MCS 4003

33.5° POSITION SIDE VIEW



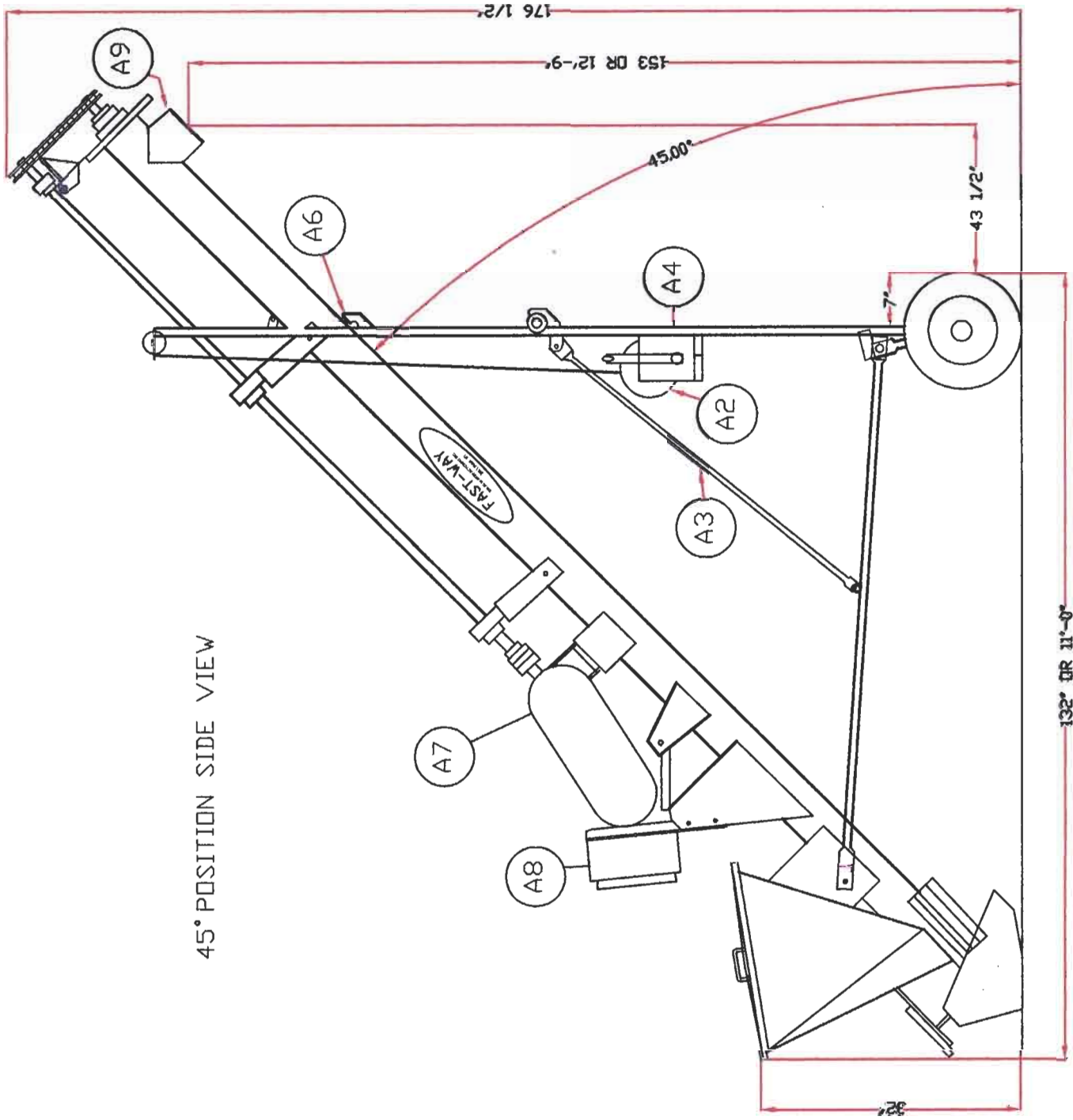
IDEAL MANUFACTURING INC.	
2011 WASHINGTON RD., WYOMING, WY. 82001	
PHONE: (307) 682-4388 FAX: (307) 682-4389	
AUGER/CEMENT SCREW	
33.5° POSITION SIDE VIEW	
INC	DWG B
ACB	

DATE: 03-12-2004

FEDERAL MANUFACTURING INC. 2811 HARRISBURG BLVD., BELLWAS, W.V. 26010 PHONE: 606/338-1300 FAX: 606/338-1443	
AUGER/CEMENT SCREW 45° POSITION SIDE VIEW	
DWG C	P&C P&AB

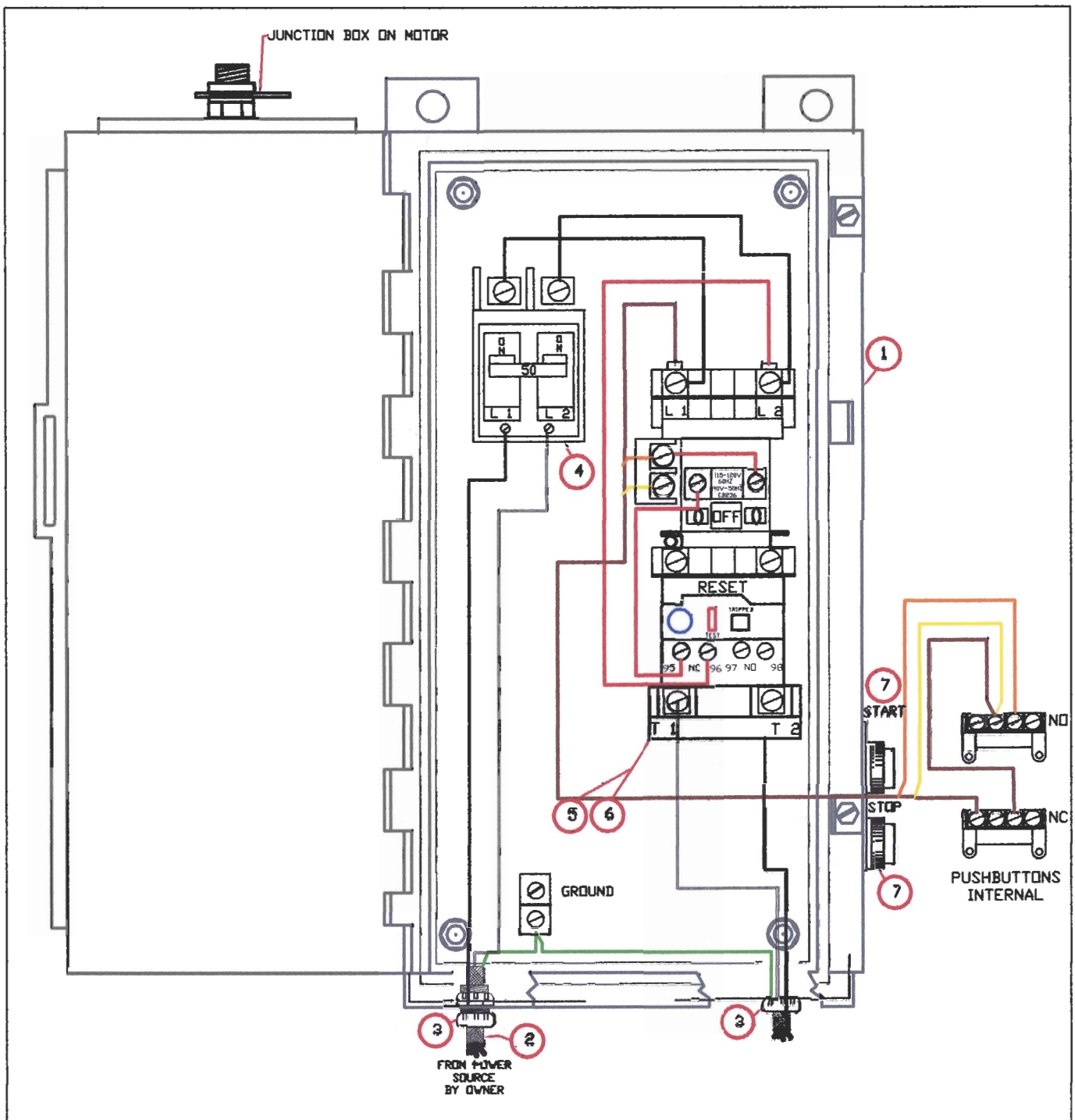
DATE: 03-12-2004

45° POSITION SIDE VIEW



**FAST-WAY CEMENT SCREW ELECTRICAL ENCLOSURE 220
VOLT SINGLE PHASE FOR 3 HP
DRAWING #E2**

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	POO558	Enclosure	1
2	N/A	Conductor Cord, 220 Volt, 12-3 S.O. (By Purchaser)	
3	N/A	Strain Relief Fitting (By Purchaser)	
4	POO565	Circuit Breaker	1
5	POO607	Contactator Starter	1
6	POO607A	Overload Relay	1
7	POO563	Pushbutton Unit	2



1. ENCLOSURE HOFFMAN C-SD16126 W/MOUNTING PANEL CP1612
2. CONDUCTOR CORD-220 VOLT 12-3 TYPE S, 0, BY PRUCHASER
3. STRAIN RELIEF ASSEMBLY BY PURCHASER
4. CIRCUIT BREAKER ITE #ED22B040 2 POLE 40 AMP
5. CONTACTOR ALLEN BRADLEY #509BDDXXX SIZE 0 COIL #CB254
6. OVERLOAD RELAY A/B S92 A 2HA
7. 2 EACH PUSH BUTTON SWITCH ALLEN BRADLEY #800-A1 WITH:
 - ONE EACH 800HN 5A- RED ONE EACH # 800T-XD1 CONTACT BLACK
 - ONE EACH #800HNSB - GREEN ONE EACH # 800T-XD2 CONTACT BLACK
 - ONE EACH LEGEND PLATE - #X547 - START
 - ONE EACH LEGEND PLATE - #X550 - STOP
8. GROUND LUG - BORDER STATES SIZE 2-14 #DAZ- CU9AL

REVISIONS			IDEAL MANUFACTURING INC.	
NO	DATE	DESCRIPTION	ONE HANDED SLUG, BELLOWS BY BORN PUSH BUTTONS-1000 PWS (10000-1000)	
			MUGER/CEMENT SCREW	
			ELECTRICAL	
			SINGLE PHASE POWER	
			A-300-E2	
			PAGE 10/20	

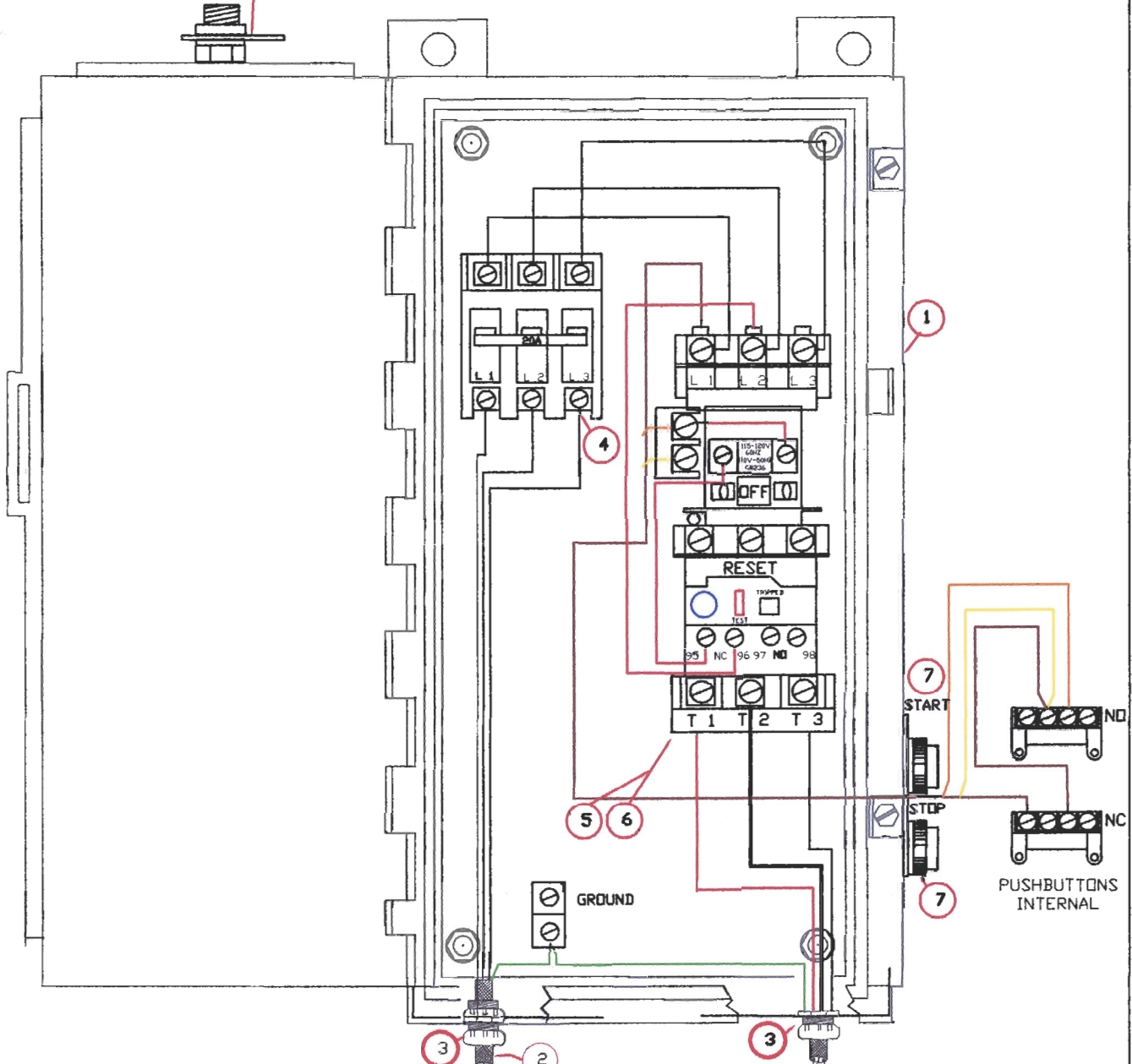
**FAST-WAY CEMENT SCREW ELECTRICAL ENCLOSURE 220
VOLT THREE PHASE FOR 3 HP
DRAWING #E-1**

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	POO558	Enclosure	1
2	N/A	Conductor Cord, 220 Volt, 8-4 S.O. (By Purchaser)	
3	N/A	Strain Relief Fitting (By Purchaser)	
4	POO559	Circuit Breaker	1
5	POO561	Contacto Starter	1
6	POO561C	Overload Relay	1
7	POO563	Pushbutton Unit	2

**FAST-WAY CEMENT SCREW ELECTRICAL ENCLOSURE 440
VOLT THREE PHASE FOR 3 HP**

NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	POO558	Enclosure	1
2	N/A	Conductor Cord, 440 Volt, 12-4 S.O. (By Purchaser)	1
3	N/A	Strain Relief Fitting (By Purchaser)	
4	POO560	Circuit Breaker	1
5	POO561	Contacto Starter	1
6	POO561C	Overload Relay	1
7	POO563	Pushbutton Unit	2

JUNCTION BOX ON MOTOR



220 VOLT 3 PHASE 3 HP MOTOR

FROM POWER SOURCE BY OWNER

12-4 WIRE 6' LONG TO MOTOR

1. ENCLOSURE HOFFMAN C-SD16126 LP WITH MOUNTING PANEL C-P1612
2. CONDUCTOR CORD-220 VOLT 8-4 TYPE S, O, OR EQUAL BY PURCHASER
3. STRAIN RELIEF ASSEMBLY BY PURCHASER
4. CIRCUIT BREAKER ITE #ED43B020 220 VOLT 3 POLE, 20 AMP WITH 3 WIRE GRIP #LNIE100 & BACK MOUNT #BR9570
5. CONTACTOR "STARTER" ALLEN BRADLEY 509-ADD-XXX CB254 220 VAC COIL
6. OVERLOAD RELAY A/B 592-A2FA (ADJUSTABLE)
7. 2 EACH PUSH BUTTON SWITCH ALLEN BRADLEY #800T-AJA WITH
 ONE EACH #800HN 3A RED ONE EACH #800T-X D-1 CONTACT BLACK N/O
 ONE EACH #800HN 5B GREEN ONE EACH #800T-X D-2 CONTACT BLACK N/C
 ONE EACH LEGEND PLATE - #X547 - START
 ONE EACH LEGEND PLATE - #X550 - STOP
8. STRAIGHT FITTING- BORDER STATES CAR #LT43D
 GROUND LUG -BORDER STATES SIZE 2-14 #DAZ-CU9AL

440 VOLT 3 PHASE 3 HP MOTOR

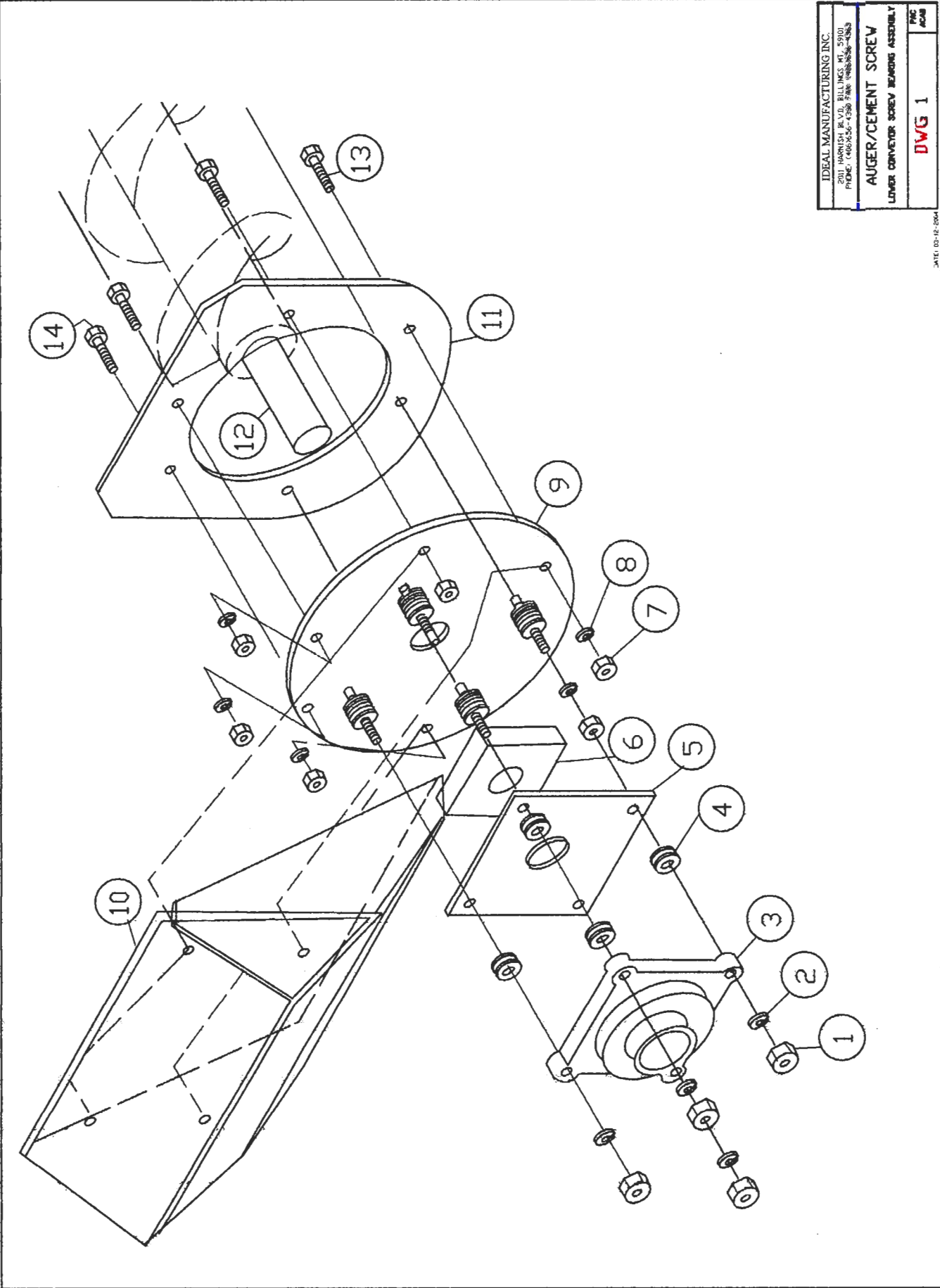
1. ENCLOSURE HOFFMAN #A-161206 LP WITH MOUNTING PANEL #C-P1612
2. CONDUCTOR CORD-440 VOLT 12-4 TYPE S, O, OR EQUAL BY PURCHASER
3. STRAIN RELIEF ASSEMBLY BY PURCHASER
4. CIRCUIT BREAKER ITE #ED43B020 440 VOLT 3 POLE, 20 AMP WITH 3 WIRE GRIP #LNIE100 & MOUNT SCREW KIT #MSE6
5. CONTACTOR "STARTER" ALLEN BRADLEY 509ADD XXX, CB273 440 VAC COIL
6. OVERLOAD RELAY A/B 592-A2FA
7. 2 EACH PUSH BUTTON SWITCH ALLEN BRADLEY #800T-AJA WITH
 ONE EACH #800HN 3A RED ONE EACH #800T-X D-1 CONTACT BLACK
 ONE EACH #800HN 5B GREEN ONE EACH #800T-X D-2 CONTACT BLACK
 ONE EACH LEGEND PLATE - #X547 - START
 ONE EACH LEGEND PLATE - #X550 - STOP
8. STRAIGHT FITTING- BORDER STATES CAR #LT43D SIZE 1/2"
 GROUND LUG -BORDER STATES SIZE 2-14 #DAZ-CU9AL

REVISIONS			IDEAL MANUFACTURING INC.	
NO.	DATE	DESCRIPTION	2017 WARRISH BLVD. BILLINGS MT. 59101	
			PHONE: (406)656-4360 FAX: (406)656-4363	
			AUGER/CENTRAL ELECTRICAL	
			THREE PHASE POWER	
			A-300-E1	
			DATE: 02-18-2018 PAGE: 01-00-01	

**PARTS LIST FOR DRAWING #1
LOWER CONVEYOR SCREW BEARING ASSEMBLY**

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	N/A	1/2"-13 Nuts	4
2	N/A	1/2" Lock washer	4
3	POO124	1 1/2" Bearing (Lower Conveyor Screw)	1
4	N/A	1/2" USS Flat Washer	16 Seal Spacer 8 Brg. Spacer
5	CSP101	Seal Retainer Plate	1
6	POO125	Seal	1
7	N/A	3/8" - 16" Nut	6
8	N/A	3/8" Lock washer	6
9	CSP102	Lower Bearing Holder Plate w/Bolts	1
10	CSP103	Skid Foot	1
11	CSP104	Main Tube & Hopper Assembly.	2
12	CSP105	Conveyor Screw Assembly.	1 (157#)
13	N/A	3/8"-16" x 1 1/4" Hex Head Bolt (Skid Foot & Plate) (Sides)	4
14	N/A	3/8"-16" x 1" Hex Head Bolt (Plate Only) (Top & Bottom Hole)	2

IDEAL MANUFACTURING INC.	
2011 HARRISH BLVD. BILLINGS, MT. 59102	
PHONE: (406)256-4380 FAX: (406)256-4383	
AUGER/CEMENT SCREW	
LOWER CONVEYOR SCREW BEARING ASSEMBLY	
PAGE	DWG 1
ACB	

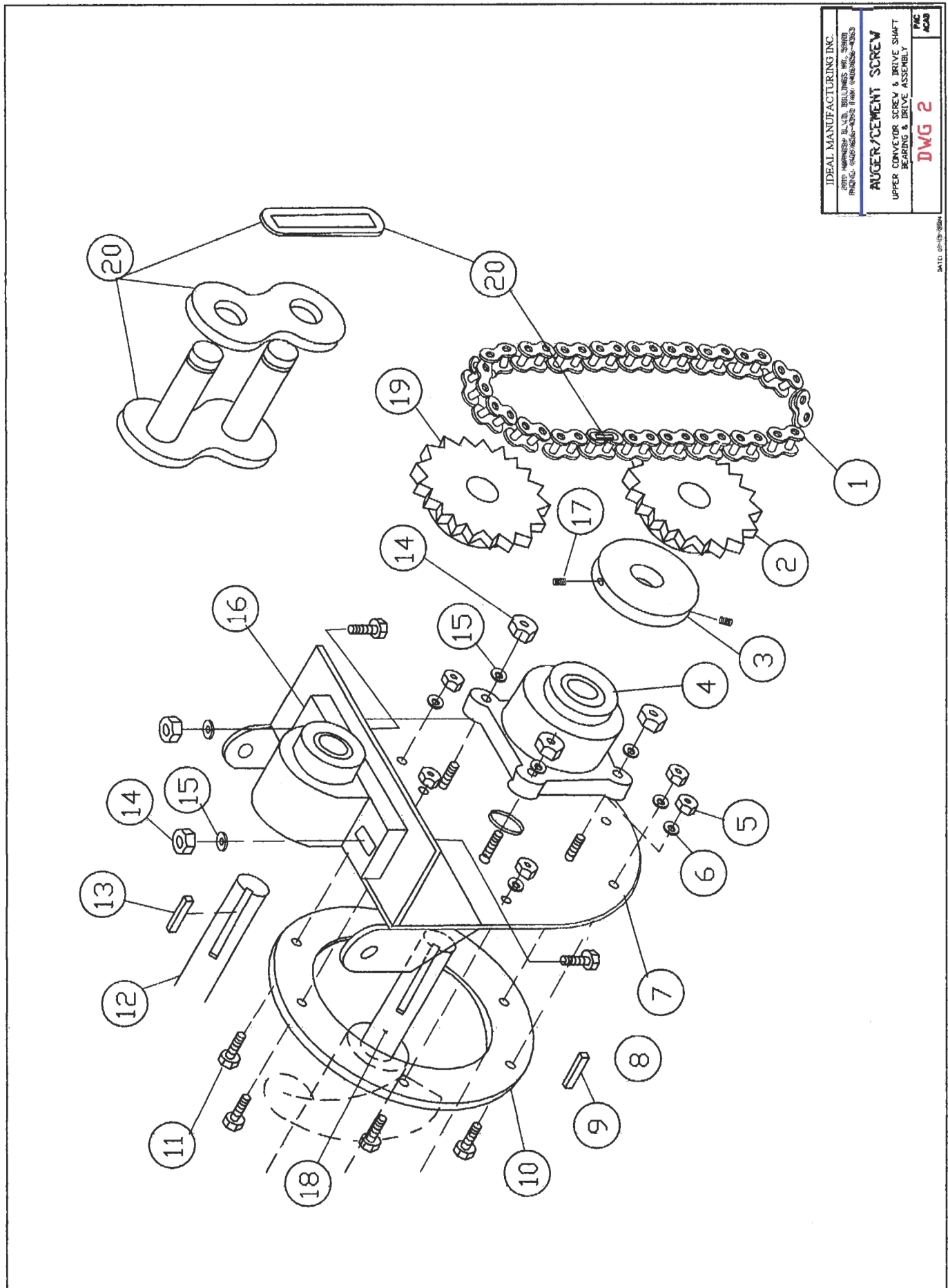


DATE: 02-12-2004

PARTS LIST FOR DRAWING #2

UPPER CONVEYOR SCREW, DRIVE SHAFT BEARING & DRIVE ASSEMBLY

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	POO127	Roller Chain (Drive)	1
2	POO128	Conveyor Screw Sprocket (Driven)	1
3	POO129B	Set Collar	1
4	POO129A	Bearing (Upper Conveyor Screw)	1
5	N/A	3/8-16 Nut	6
6	N/A	3/8 Lock washer	6
7	CSP107	Upper Bearing Holder Plate w/Bolts	1
8	N/A	1/2-13 X 1 3/4" Hex Head Bolt	2
9	CSP108	Key 3/8X 3/8 X 1 3/8" (Conveyor Screw)	1
10	CSP104	Main Tube & Hopper Assembly.	1
11	N/A	3/8-16 x 1" Hex Head Bolt	6
12	CSP109	1 1/4 Drive Shaft	1
13	CSP110	1/4 X 1/4 X 1 3/8" Drive Shaft Key	2 (1 ea. End)
14	N/A	1/2-13 Nut	2 (Drive Shaft Bearing) 4 (Conveyor Screw Bearing)
15	N/A	1/2 Lock washer	2 (Drive Shaft Bearing) 4 (Conveyor Screw Bearing)
16	POO132	1 1/4 Bearing (Upper Drive Shaft)	1
17	N/A	5/16 x 3/4 Set Screw	3
18	CSP105	Conveyor Screw Assembly.	1
19	POO135	1 1/4 Drive Shaft Sprocket (Driver)	1
20	POO136	#60 Master Link (Drive Roller Chain)	1



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2070 WARRIORS BLVD. BELLINGHAM, WA, 98201	
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AUGER/CEMENT SCREW	
UPPER CONVEYOR SCREW & DRIVE SHAFT	
BEARING & DRIVE ASSEMBLY	
DWG 2	INC ACB

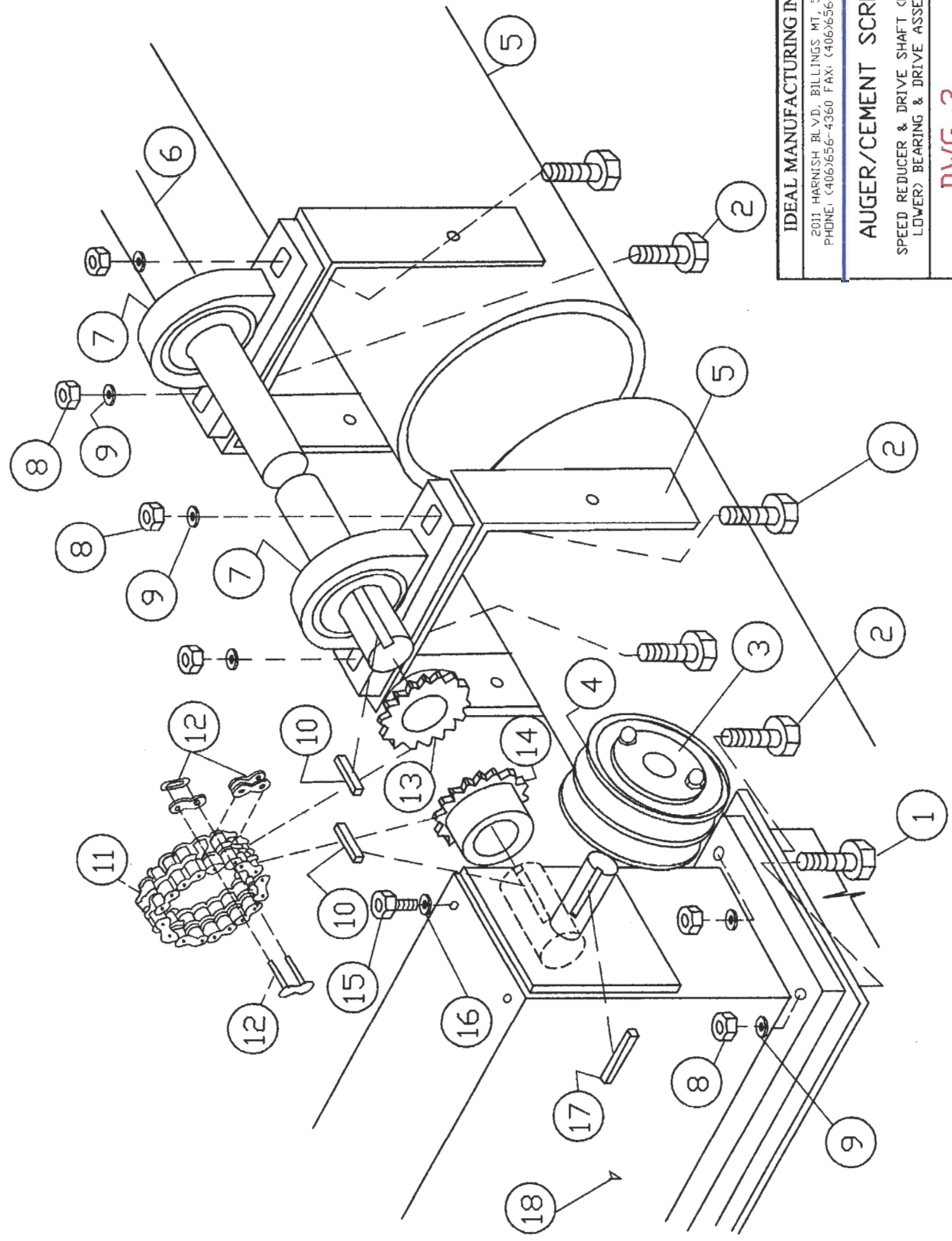
DATE: 01-20-2004

**PARTS LIST FOR DRAWING #3
SPEED REDUCER, DRIVE SHAFT (MID & LOWER) BEARING &
DRIVE ASSEMBLY**

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	N/A	½-13 X 2 Hex Head Bolt	1
2	N/A	½-13 x 1 ¾ Hex Head Bolt	3 (Speed Reducer) 4 (2 ea. Drive Shaft bearing)
3	POO137	H-3/4 Bushing w/Bolts	1
4	POO138	Sheave 2BK47H (For Speed Reducer Electric Setup)	1
	POO142	Sheave 2BK57H (For Speed Reducer Gas Setup)	1
5	CSP104	Main Tube & Hopper Assembly.	1
6	CSP109	Drive Shaft	1
7	POO143	Bearing (Drive Shaft Mid & Lower)	2
8	N/A	½-13 Nut	4 (Speed Reducer) 4 (2 ea. Drive Shaft Bearing)
9	N/A	½ Lock washer	4 (Speed Reducer) 4 (2 ea. Drive Shaft Bearing)
10	CSP110	¼ X ¼ X 1 3/8 Key	1 (Speed Reducer – Output) 2 (1 ea. End Drive Shaft)
11	POO144	Coupling Chain	1
12	POO144A	Master Link (Chain Coupling)	1
13	POO145	16T X 1 ¼ Coupler (Drive Shaft)	1
14	POO146	16T X 1 1/8 Coupler (Speed Reducer)	1
15	N/A	3/8–16 X 1 Hex Head Bolt (Belt Guard)	1
16	N/A	3/8 Lock washer (Belt Guard)	1
17	CSP111	Key – Speed Reducer (Input)	1
18	POO148	Speed Reducer	1

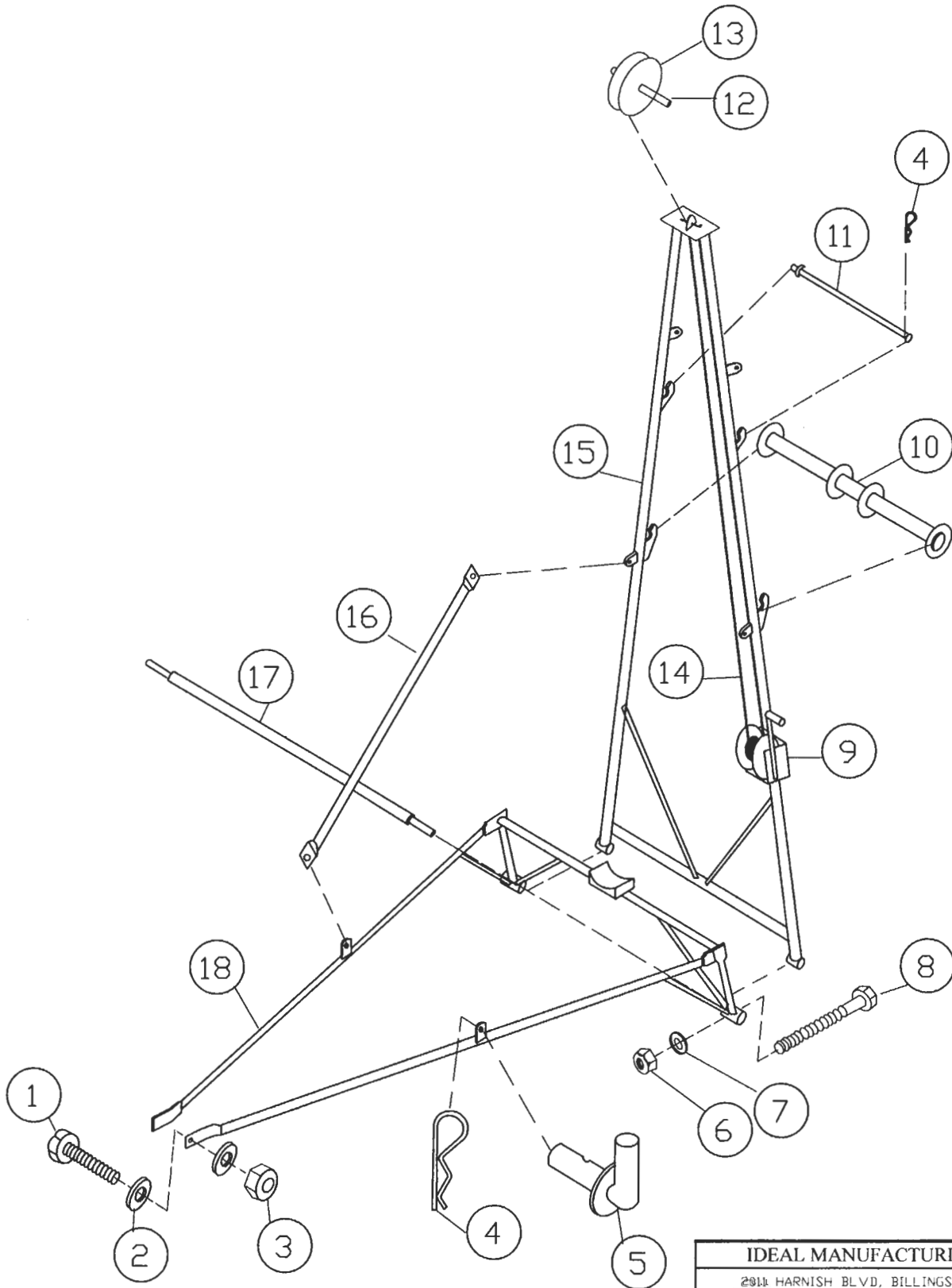
IDEAL MANUFACTURING INC. 2011 HARNISH BLVD., BILLINGS MT, 59101 PHONE: (406)656-4360 FAX: (406)656-4363	
AUGER/CEMENT SCREW SPEED REDUCER & DRIVE SHAFT (MID & LOWER) BEARING & DRIVE ASSEMBLY	
DWG 3	
PAC	ACAD

DATE: 03-15-2004



**PARTS LIST FOR DRAWING #4
CEMENT SCREW FRAME ASSEMBLY**

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	N/A	½-13 X 1 ¾ Hex Head Bolt	2
2	N/A	½ Flat Washer	4
3	N/A	½ Lock Nut	2
4	POO134	Hairpin Clip	4 (Diagonal Brace) 1 (45° Position Pin)
5	CSP112	Diagonal Brace Pin	4
6	N/A	3/8-16 Nut	2
7	N/A	3/8 Lock washer	2
8	N/A	3/8-16 X 3 Hex Head Bolts	2
9	POO103	Hand Winch (See Operating & Parts Manual, Drawing #5)	1
10	CSP113	33 1/2° Position Support Pin	1
11	CSP114	45° Position Support Pin	1
12	CSP115	Cable Sheave Axle	1
13	POO106	Cable Sheave	1
14	POO133	Winch Cable (See Operating & Parts Manual, Drawing #5)	1
15	CSP116	Hinged Support Frame (Upper) (Includes Ref. #12 & 13)	1
16	CSP117	Diagonal Brace	2
17	CSP118	Axle	1
18	CSP119	Stationary Frame (Lower)	1

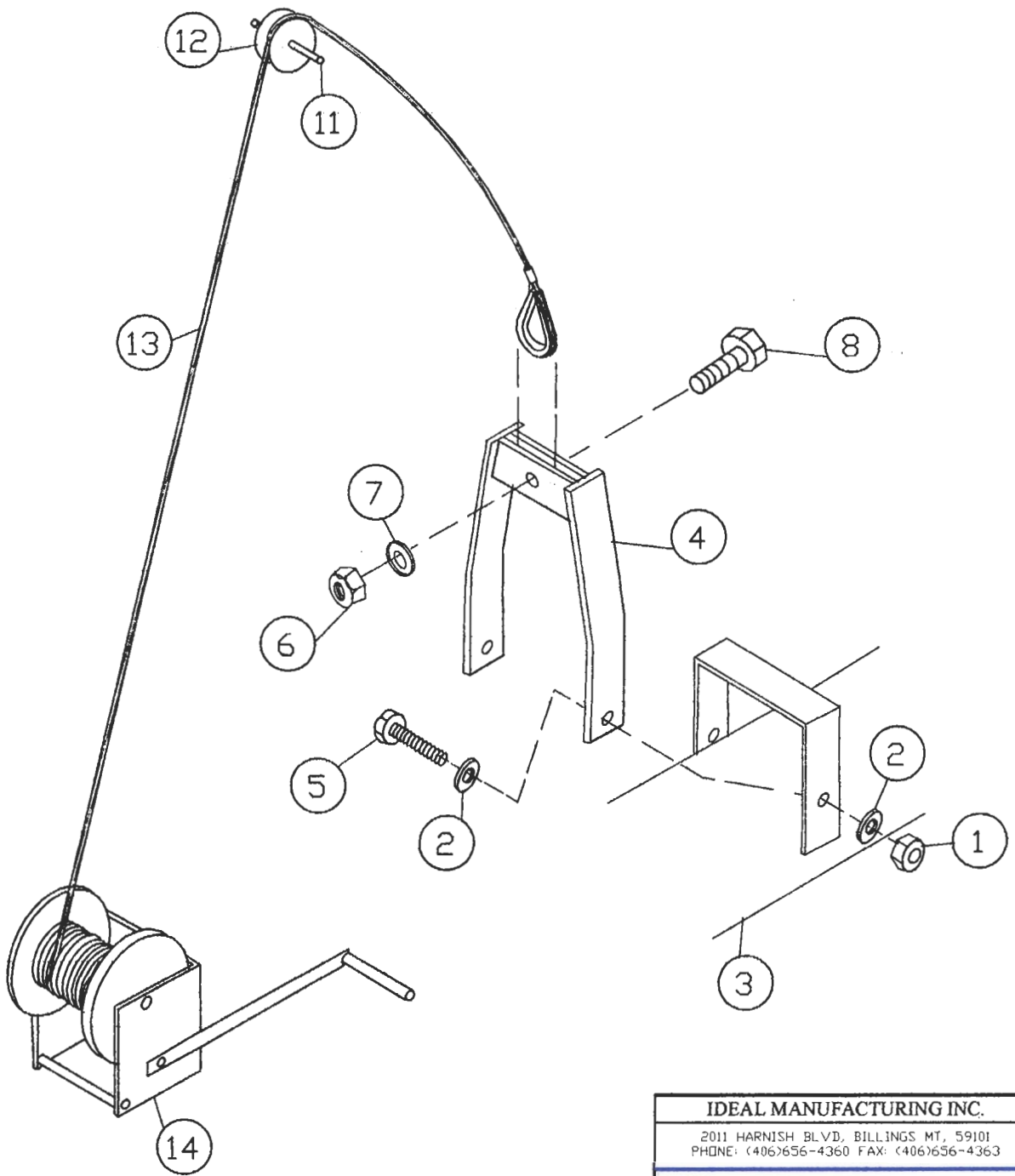


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AUGER/CEMENT SCREW CEMENT SCREW FRAME ASSEMBLY	
DWG 4	PAC ACAD

DATE: 03-16-2004

**PARTS LIST FOR DRAWING #5
CABLE, WINCH, LIFTING BAIL ASSEMBLY**

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	N/A	3/8-16 Lock Nut	2
2	N/A	3/8 Flat Washer	4
3	CSP104	Main Tube & Hopper Assembly. (See Operating & Parts Manual, Drawing #8)	1
4	CSP120	Lifting Bail	1
5	N/A	3/8-16 X 1 1/4 Hex Head Bolt	2
6	N/A	1/2-13 Nut	1
7	N/A	1/2 Lock washer	1
8	N/A	1/2-13 X 1 3/4 Hex Head Bolt	1
11	CSP115	Cable Sheave Axle	1
12	POO106	Cable Sheave	1
13	POO133	Winch Cable	1
14	POO103	Hand Winch (See Operating & Parts Manual (Back of Book)	1

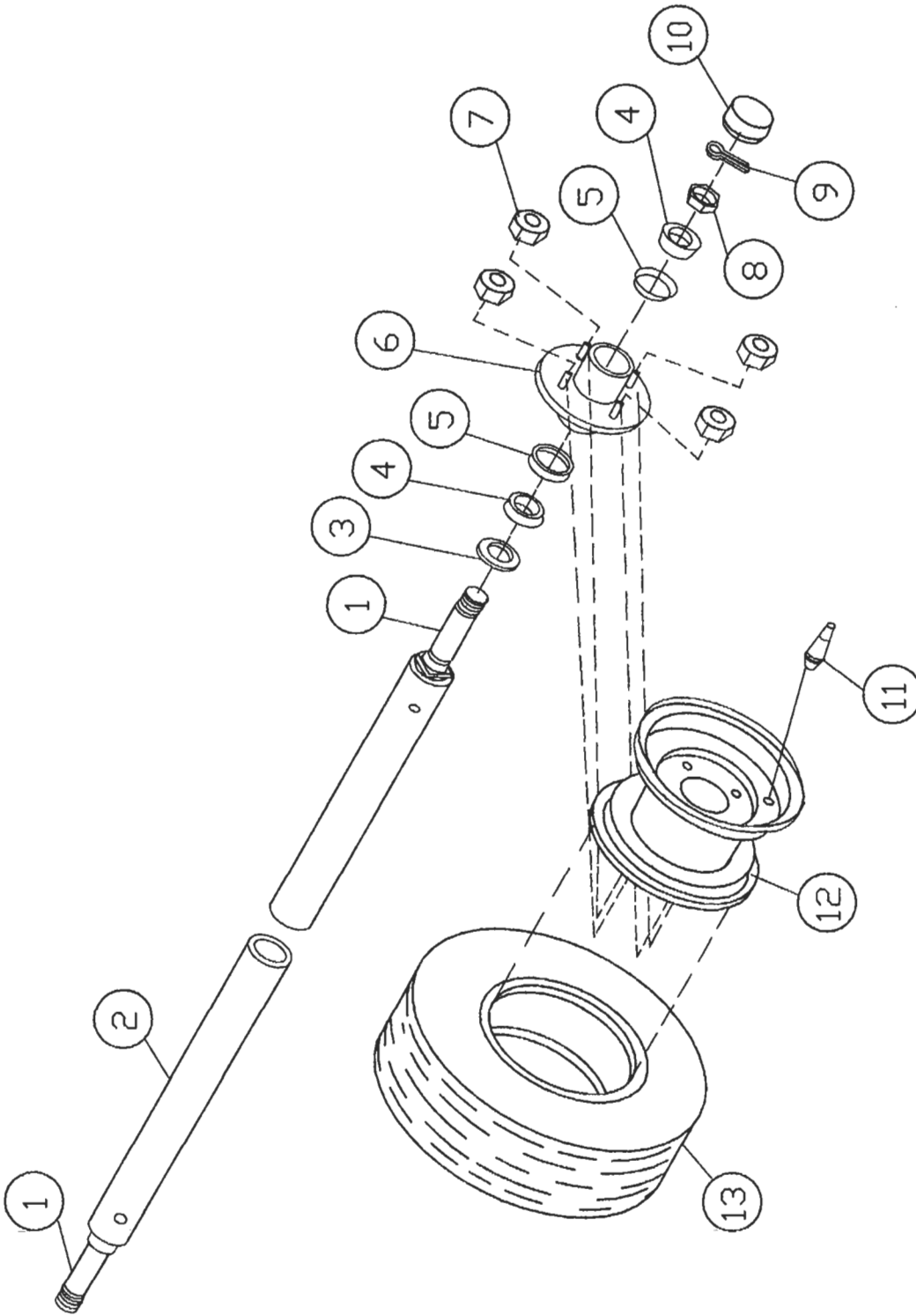


IDEAL MANUFACTURING INC.	
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AUGER/CEMENT SCREW CABLE, WINCH & LIFTING BAIL ASSY	
DWG 5	PAC ACAD

DATE: 03-17-2004

**PARTS LIST FOR DRAWING #7
AXLE, HUB & TIRE ASSEMBLY**

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	POO105	Spindle	2
2	CSP118	Axle (Includes Ref. #1)	1
3	POO120A	Grease Seal	2
4	POO120B	Bearing (Inner & Outer)	4
5	POO120C	Race (Inner & Outer)	4
6	POO120	Hub	2
7	POO120D	Lug Nut	8
8	POO171B	Spindle Nut	2
9	N/A	5/32 X 1 ½ Cotter Pin	2
10	POO120E	Dust Cap	2
11	POO155	Valve Stem	2
12	POO119	Wheel	2
13	POO248	Tire	2

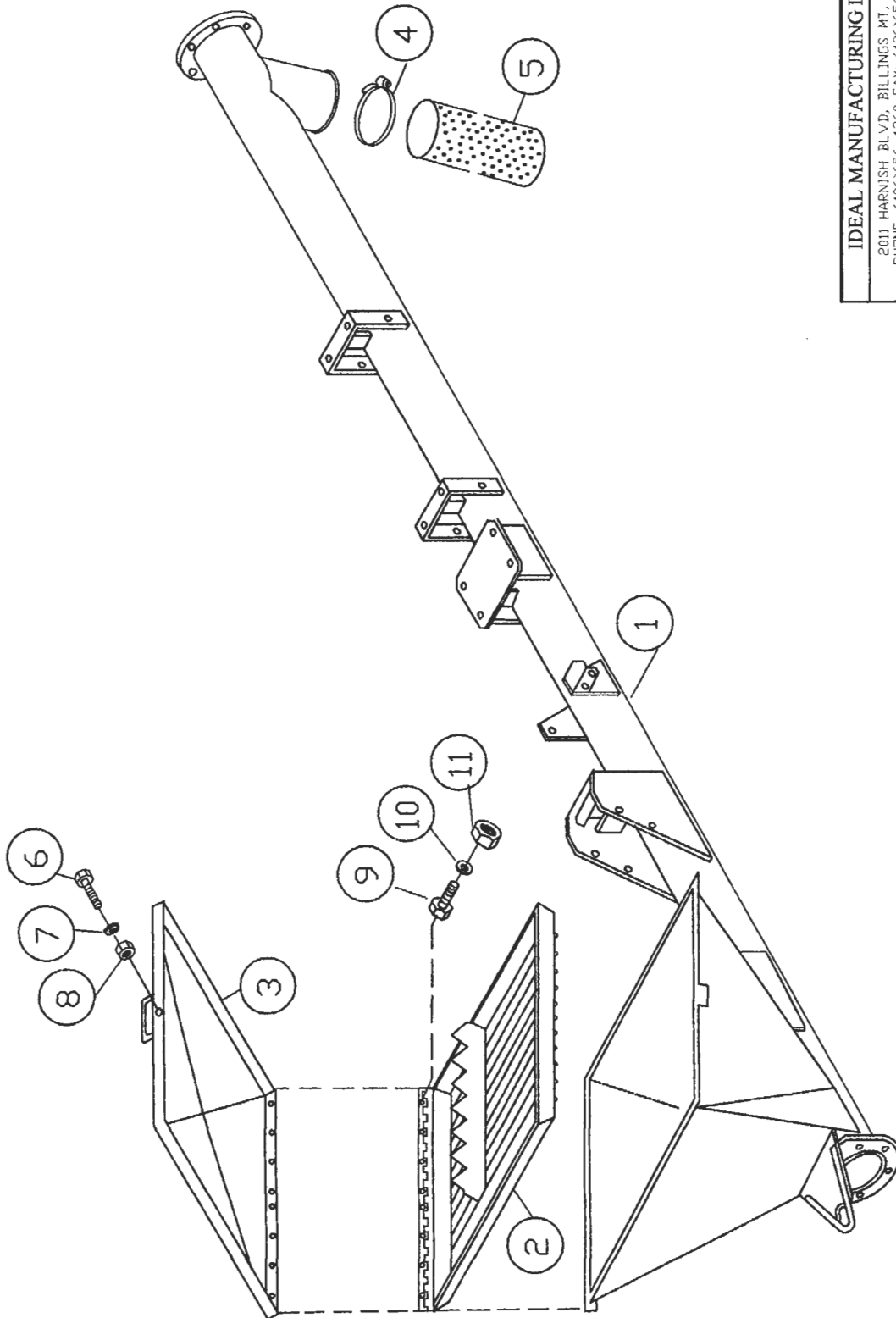


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AUGER/CEMENT SCREW	
AXLE, HUB & TIRE ASSEMBLY	
PAC	DWG 7
ACAD	

DATE: 03-17-2004

**FAST-WAY CEMENT SCREW MAIN TUBE & HOPPER
COMPONENTS
DRAWING #8**

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	CSP104	Main Tube Hopper Assembly.	1
2	CSP121	Hopper Grate & Bag Splitter	1
3	CSP122	Hopper Cover with Hinge	1
4	POO121	Boot Clamp	1
5	POO122	Flexible Discharge Boot	1
6	N/A	$\frac{3}{8}$ " x $\frac{3}{4}$ " Hex Head Bolt	1
7	N/A	$\frac{3}{8}$ " Lock washer	1
8	N/A	$\frac{3}{8}$ " Hex Nut	1
9	N/A	$\frac{1}{4}$ " x $\frac{1}{2}$ " Hex Head Bolt	8
10	N/A	$\frac{1}{4}$ " Lock washer	8
11	N/A	$\frac{1}{4}$ " Hex Nut	8

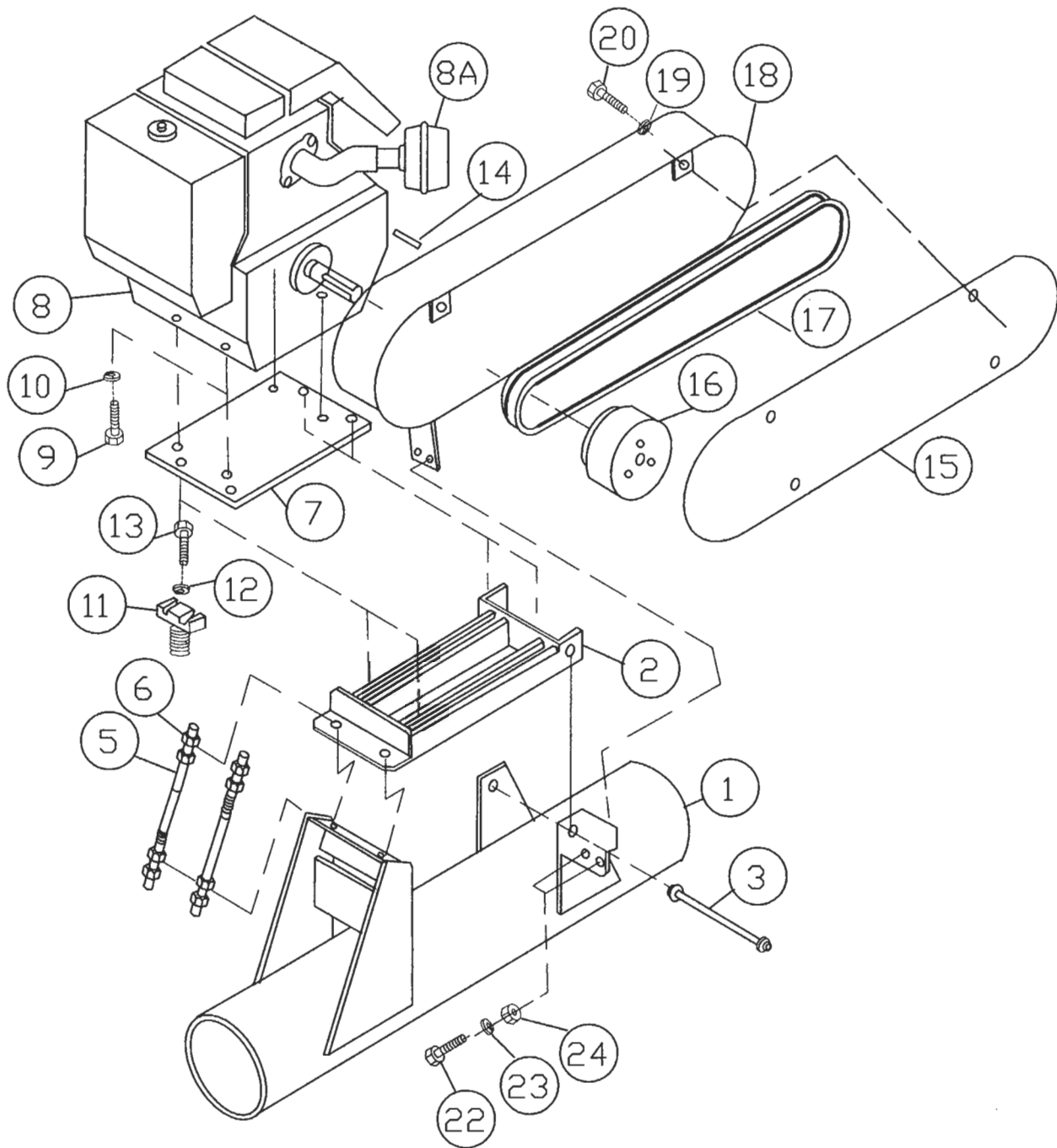


IDEAL MANUFACTURING INC. 2011 HARNISH BLVD., BILLINGS, MT, 59101 PHONE: (406)656-4360 FAX: (406)656-4363	
AUGER/CEMENT SCREW TUBE & HOPPER COMPONENTS	
DWG 8	PAC ACAD

DATE: 03-17-2004

**FAST-WAY CEMENT SCREW GASOLINE ENGINE DRIVE
DRAWING #10-A**

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	N/A	Cement Screw Tube (See Drawing #8)	1
2	CSP123	Engine Mount Frame	
3	CSP124	Pivot Pin for Adjusting Frame	1
4			
5	POO123	1/2" All Thread x 9" Adjusting Bolt	2
6	POO120D	1/2" Nut	8
7	CSP129	Engine Adapter Plate	1
8	POO165	Gasoline Engine	1
8A	POO150	Engine Special Exhaust Pipe & Muffler	1
9	N/A	3/8-16 X 1 1/4 Hex Head Bolt	4
10	N/A	3/8" Lock washer	4
11	POO153	Spring Nut	4
12	N/A	3/8" Lock washer	4
13	N/A	3/8-16" x 1 1/4" Hex Head Bolt	4
14	CSP130	Engine Shaft Key	1
15	CSP125	Safety Guard Cover	1
16	POO547	Engine Centrifugal Clutch	1
17	POO147	B-57 Drive Belt	2
18	CSP126	Safety Guard	1
19	N/A	1/4"x 1/2" Hex Head Bolt	4
20	N/A	1/4" Lock washer	4
22	N/A	3/8-16 x 1" Hex Head Bolt	2
23	N/A	3/8" Lock washer	2
24	N/A	3/8-16 Hex Nut	2



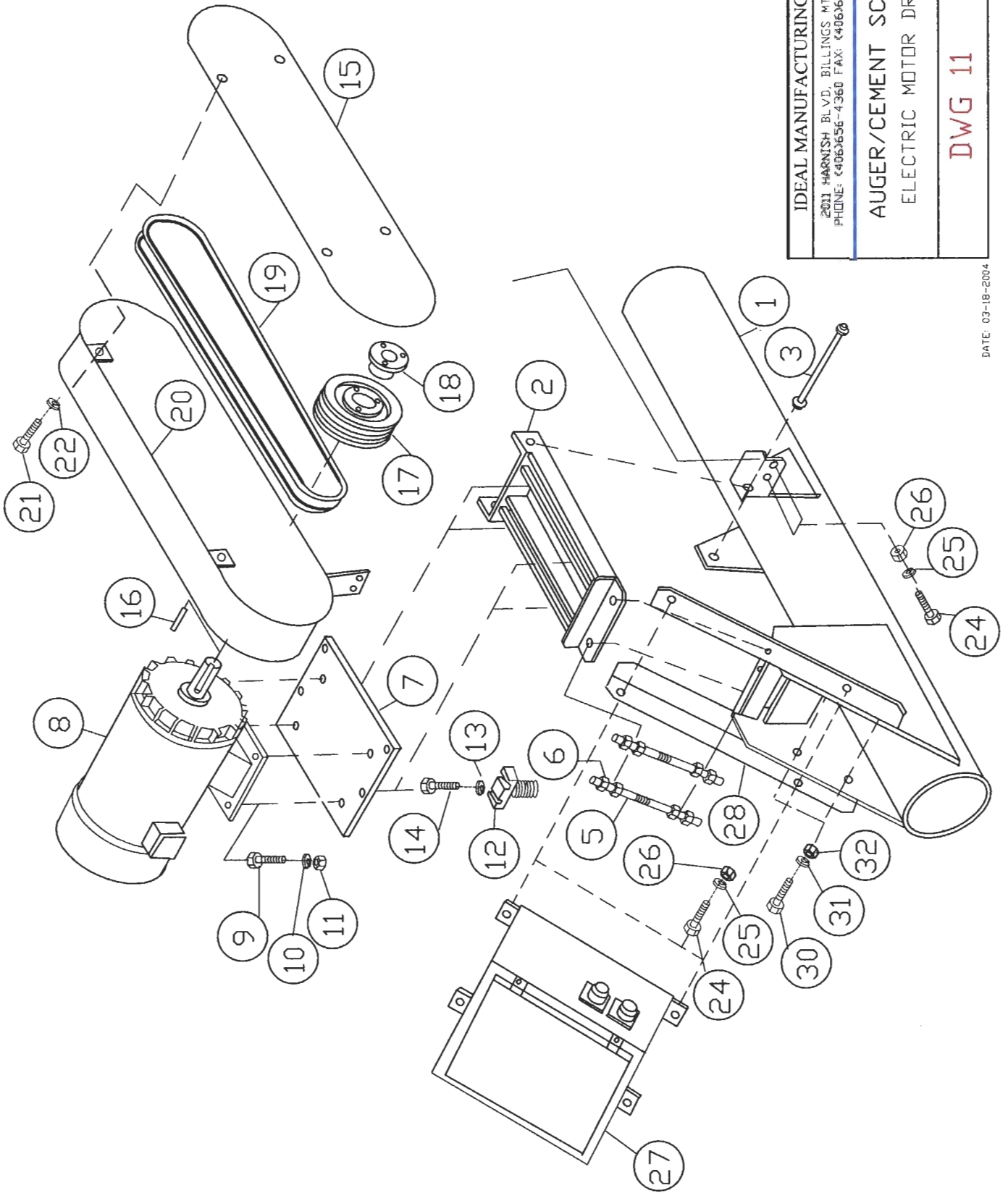
IDEAL MANUFACTURING INC. 2011 HARNISH BLVD, BILLINGS MT, 59101 PHONE: (406)656-4360 FAX: (406)656-4363	
AUGER/CEMENT SCREW GASOLINE ENGINE DRIVE	
DWG 10-A	PAC ACAD

DATE: 03-18-2004

**FAST-WAY CEMENT SCREW ELECTRIC MOTOR DRIVE
DRAWING #11**

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	N/A	Cement Screw Tube (See Drawing #8)	1
2	CSP123	Motor Mount Frame	1
3	CSP124	Pivot Pin for Mount Frame	1
4	N/A		
5	POO123	½" All Thread x 9" Adjusting Bolt	2
6	POO120D	½" Nut	8
7	CSP132	Motor Base Plate	1
8	POO140	Motor 3 HP 240/480 Volt 3 Phase	1
OR	POO141	Motor 3 hp 120/240 Volt Single Phase	1
9	N/A	¾" x 1" Hex Head Bolt	4
10	N/A	¾" Lock washer	4
11	N/A	¾" Hex Nut	4
12	POO153	¾" Spring Nut	4
13	N/A	¾" Lock washer	4
14	N/A	¾" x 1 ¼" Hex Head Bolt	4
15	CSP125	Safety Guard Cover	1
16	CSP110	Motor Shaft Key	1
17	POO142	Drive Sheave 2BK57H	1
18	POO234	H-1 1/8 Drive Sheave Bushing	1
19	POO147	B 57 Drive Belt	2
20	CSP126	Safety Guard	1
21	N/A	¼" x ½" Hex Head Bolt	4
22	N/A	¼" Lock washer	4
24	N/A	¾" x 1" Hex Head Bolt	6
25	N/A	¾" Lock washer	6
26	N/A	¾" Hex Nut	6
27	N/A	Electrical Enclosure (See Drawings E13 & E14)	1
28	CSP133	Enclosure Mount (1 Right Hand & 1 Left Hand)	2
30	N/A	½" x 1" Hex Head Bolt	4
31	N/A	½" Lock washer	4
32	N/A	½" Hex Nut	4

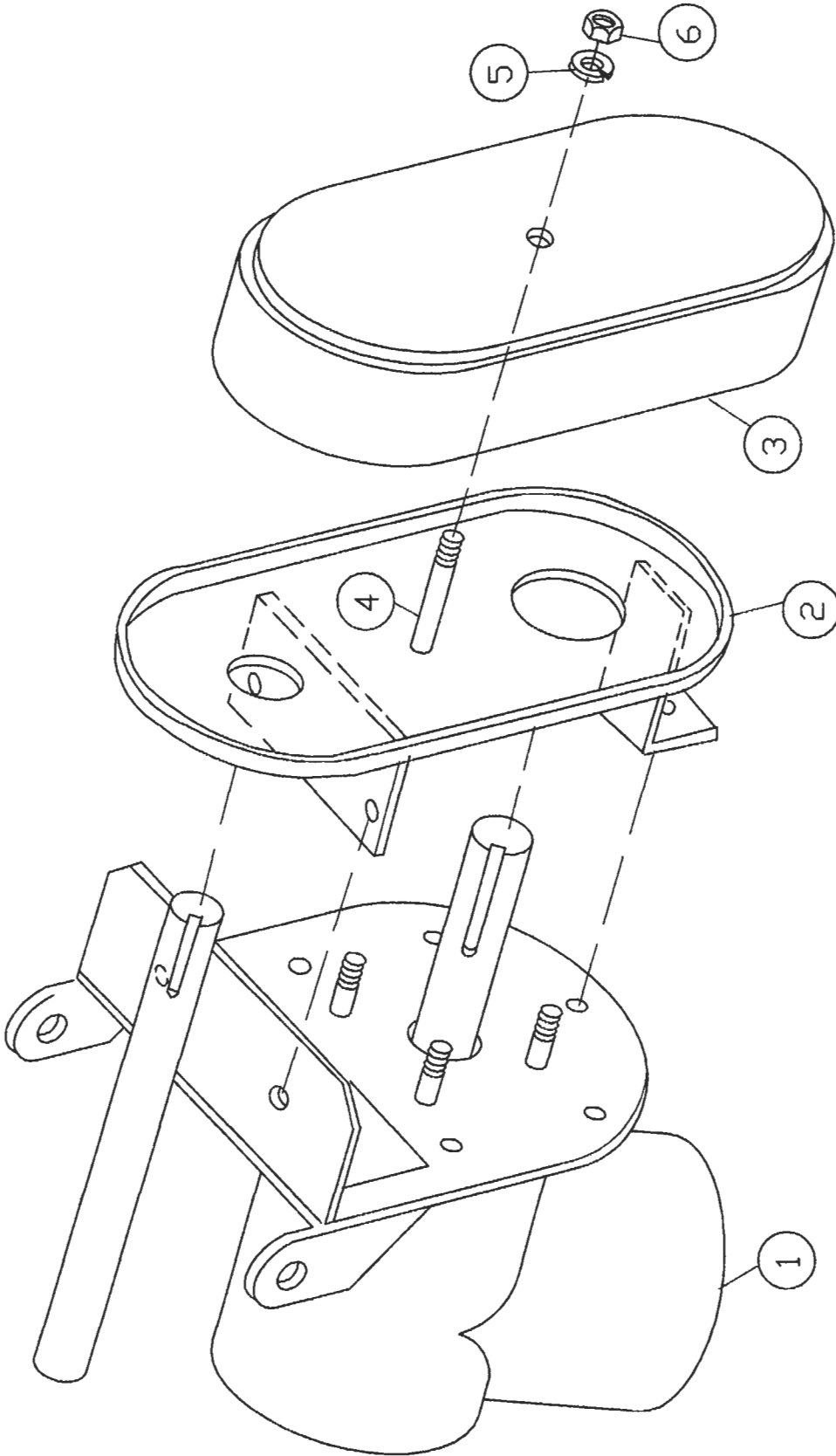
IDEAL MANUFACTURING INC. 2031 HARNISH BLVD, BILLINGS MT, 59101 PHONE: (406)656-4360 FAX: (406)656-4363	
AUGER/CEMENT SCREW ELECTRIC MOTOR DRIVE	
DWG 11	
PAC	ACAD



DATE: 03-18-2004

**CEMENT SCREW CHAIN DRIVE – SAFETY GUARD
DRAWING #12**

REF NO.	PART NO.	DESCRIPTION	REQ'D NO.
1	N/A	Screw Conv. Discharge End (See Drawing #2)	
2	CSP135	Guard Back Plate Assembly	1
3	CSP136	Guard Assembly. Cover	1
4	N/A	3/8-16 x 4" Hex Head Bolt	1
5	N/A	3/8" Lock washer	1
6	N/A	3/8" Hex nut	1



IDEAL MANUFACTURING INC.

2011 HARNISH BLVD. BILLINGS, MT. 59101
 PHONE: (406)656-4360 FAX: (406)656-4363

AUGER/CEMENT SCREW
 CHAIN SAFETY GUARD

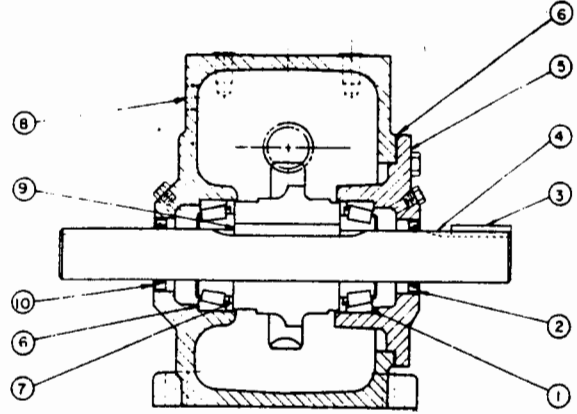
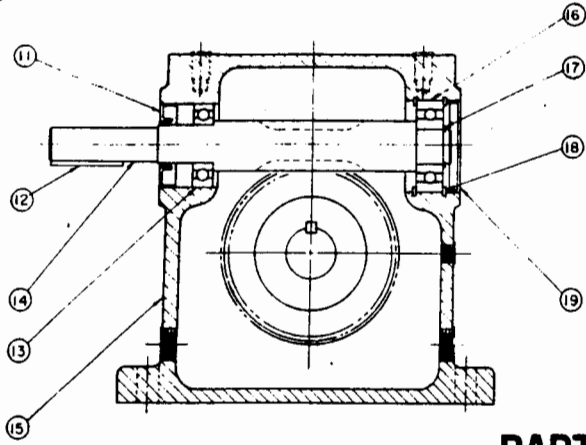
DWG 12

PAC
 ACAD

DATE: 03-19-2004

Browning

UNIVERSAL WORM GEAR SPEED REDUCER No. 262U1-E; LR, L and R



PARTS LIST

Item No.	Description	Number Required
1	Bearing - Output Shaft	2
2	Seal - Output Shaft - Output One Side	1
	- Output Both Sides	2
3	Key - Output Shaft	1
4	Output Shaft - Output One Side	1
	- Output Both Sides	1
5	Worm Gear Cover - Open - "LR" and "L" Reducers	1
	- Closed - "R" Reducer	1
6	Output Shim Package - Includes Shims for Right & Left Sides	As Req'd.
7	Worm Gear - 10:1 Ratio	1
	15:1 Ratio	1
	20:1 Ratio	1
	30:1 Ratio	1
	40:1 Ratio	1
	50:1 Ratio	1
	60:1 Ratio	1
8	Breather Assembly	1
9	Key - Worm Gear	1
10	Expansion Plug - "L" Reducer Only	1
11	Seal - Input	1
12	Key - Input Shaft	1
13	Bearing - Worm Shaft - Front	1
14	Worm Shaft - 10:1 Ratio	1
	15:1 Ratio	1
	20:1 Ratio	1
	30:1 Ratio	1
	40:1 Ratio	1
	50:1 Ratio	1
	60:1 Ratio	1
15	Housing	1
16	Bearing - Worm Shaft - Back	1
17	Snap Ring - Worm	1
18	Snap Rings - Bearing	2
19	Cup Plug	1
20	Support Washer - Not Shown - Goes between Bearing (16) and Snap Ring (17)	1

OTHER MISCELLANEOUS HARDWARE

Cap screws - with Lockwashers (Cover)	6
Pipe Plugs	3
Pipe Plug	1
Pipe Plugs	2
Plastic Plugs	8

Revised 8-6-79

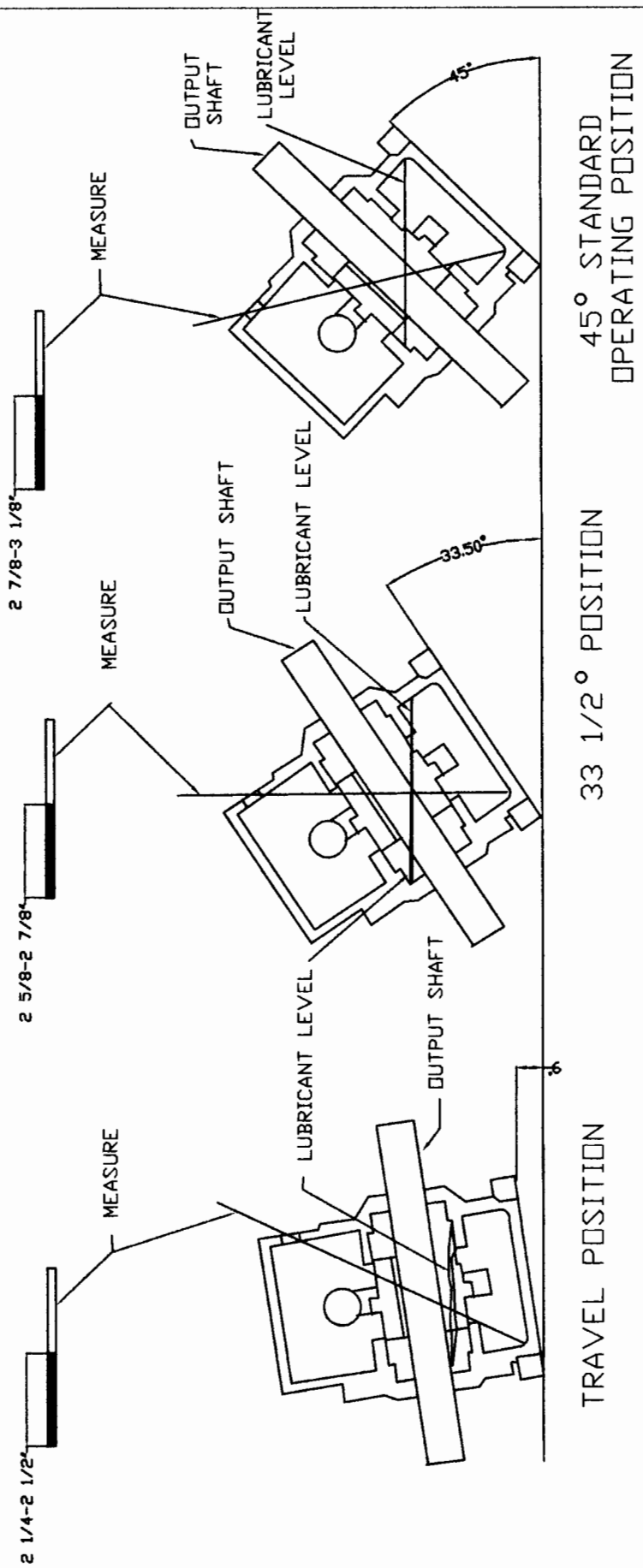
Form No. 8114-B
Printed in U.S.A.

BROWNING MANUFACTURING DIVISION
EMERSON ELECTRIC CO.
MAYSVILLE, KENTUCKY 41056



LUBRICANT REQUIRED - 1 QUART

LUBRICANT CAN BE MEASURED BY USING A SMALL DIAMETER WIRE



LUBRICATION INSTRUCTIONS FOR SPEED REDUCER

DATE: 03-19-2004

WORM GEAR SPEED REDUCER LUBRICATION INSTRUCTIONS

Using the correct amount of oil is important. Too little or too much oil can cause overheating and rapid wear of gears, bearings and seals. The approximate amount of oil required is given on the lubrication name plate attached to the reducer housing. To fill the gear reducer:

1. Place it in the desired operating position, and with the unit NOT RUNNING remove the breather plug and the oil level plug (see Sketches above for location of these plugs).
2. Fill slowly through the breather hole until oil begins to drain from the oil level hole. (See table which follows for recommended lubricant). If lubricant cannot be pumped into the unit, a street ell in the breather hole will be helpful in pouring in the oil.
3. Allow oil to settle for a few minutes, check again and replace oil level plug, remove street ell (if used) and replace breather plug.

RECOMMENDED LUBRICANTS AND OPERATING TEMPERATURES

When worm gears are operated, heat is generated. A maximum gear case temperature of 200°F. is not uncommon for units operating in normal ambient temperature. No damage will result from this temperature if the gear reducer is operated at rated capacity and the proper oil is used. Below is a table showing some recommended oils:

COMPANY	RECOMMENDED OILS FOR AMBIENT TEMPERATURES	
	-15 - 60°F (AGMA Comp #7)*	60 - 125°F (AGMA Comp #8)*
BROWNING American Gulf Humble Shell Socony Standard of California Standard of Indiana Standard of Kentucky Standard of Ohio Texaco, Inc.	GL32LT and GL128LT Amolite Worm Gear Comp #4 Acorn Cyl Oil "B" Cyclesso TK-140 Valvata J78 Mobile Cyl 600W Chevron Gear Compound #140 Standard Worm Gear Oil Chevron Gear Compound #140 Sohicyl C150 Honor Cyl Oil	GL32HT and GL128HT Amolite Worm Gear Comp #5 Senate Cyl Oil "C" Cyclesso TK-180 Valvata J82 Mobile Super Cyl 600W Chevron Gear Compound #160 Calumet SH Cyl Oil Chevron Gear Compound #160 Sohicyl 650 650T Cyl Oil

*For ambient temperatures lower than 15°F. and higher than 125°F., contact the factory.

Pouring point of the oil should not be less than the minimum ambient temperature in which it is used.

Recommended General Purpose Greases for Low Speed Bearings

Alvania #2	Sinclair Litholine Multi-Purpose
Texaco Multifak #2	Sun Prestigo #42
Humble Multi-Purpose Grease "H"	

RELUBRICATION

Service life and gear efficiency are affected by oxidation or contamination of the lubricating oil. Improved performance is obtained by periodic relubrication. After initial two week operating period, drain the oil while warm. Flush the gear case with a light weight (5 or 10W) mineral oil and refill to proper level with fresh recommended oil.

For normal operating conditions, relubricate again after one month and thereafter at four month intervals. If unit is operated in abnormally high ambient temperature or unusual contaminating atmosphere, or longer than eight hours per day, relubricate more frequently.

In vertical shaft operation, relubricate the top low speed bearing with each oil change. Clean fitting before greasing. Do not over lubricate. Use a general purpose grease recommended above or an equivalent.

MAINTENANCE

Browning Gear Reducers are accurately adjusted and tested at the factory. They will need no maintenance other than proper lubrication for good service life.

STORAGE

The inside of all Browning reducers have been completely coated with a rust preventive oil. If this housing is not going into service for some appreciable time, it should be filled completely with the recommended oil. Before operating, drain excess oil to the correct operating level. Reducers should be stored in a heated room which has a relatively even temperature and humidity.

SPARE PARTS

Separate Parts Lists are available on request.



**BROWNING MANUFACTURING DIVISION
EMERSON ELECTRIC CO.
MAYSVILLE, KENTUCKY 41056**



CAUTION:

1. Always be sure cable is strong enough to support the load to be lifted.
2. Always inspect cable and attachment hook before each use to insure they are not damaged.
3. Replace cable if worn, frayed or kinked. If cable or hook breaks, the cable can act like a whip and inflict serious injury to anyone in the path of its movement.
4. Never stand alongside winch cable, or guide the cable with your hands.
5. Never fully extend cable and ALWAYS keep three (3) complete wraps of cable around drum.
6. Always be sure cable is pulling straight off winch—not at an angle. This will prevent cable from rubbing against winch drum, avoiding cable damage.

IV. OPERATING PROCEDURE

- A. **TO REEL IN OR LIFT LOAD.** This winch is designed to lift a load (reel in) by turning the hand crank in a clockwise direction. This action will produce a clicking sound inside the winch mechanism. To LOCK the load at any desired position, release handle slowly.
- B. **TO REEL OUT OR LOWER LOAD.** To lower load (reel out), turn the hand crank in a counter-clockwise direction. To LOCK load in any desired position, turn handle crank clockwise until at least two (2) clicks (approximately 8" movement of handle) are heard inside the winch mechanism before releasing handle.

CAUTION: If hand slips off handle while turning counter-clockwise, the brake will prevent the handle from spinning rapidly backwards. NOTE: The brake is not fully locked until the handle is turned clockwise far enough to hear two (2) clicks of the ratchet.

WARNING: Sufficient load must be applied to the cable to overcome internal resistance and operate brake properly. NEVER CONTINUE TURNING THE HANDLE COUNTER-CLOCKWISE IF THE CABLE DOES NOT KEEP MOVING OUT. This will disengage the brake mechanism and can create an unsafe or hazardous condition. MINIMUM OPERATING LOAD REQUIREMENTS - Model 5352 - 100 lbs.

The brake mechanism under continuous long periods of lift and lower movement will get HOT. DO NOT TOUCH BRAKE MECHANISM UNDER THESE CONDITIONS.

V. MAINTENANCE INSTRUCTIONS

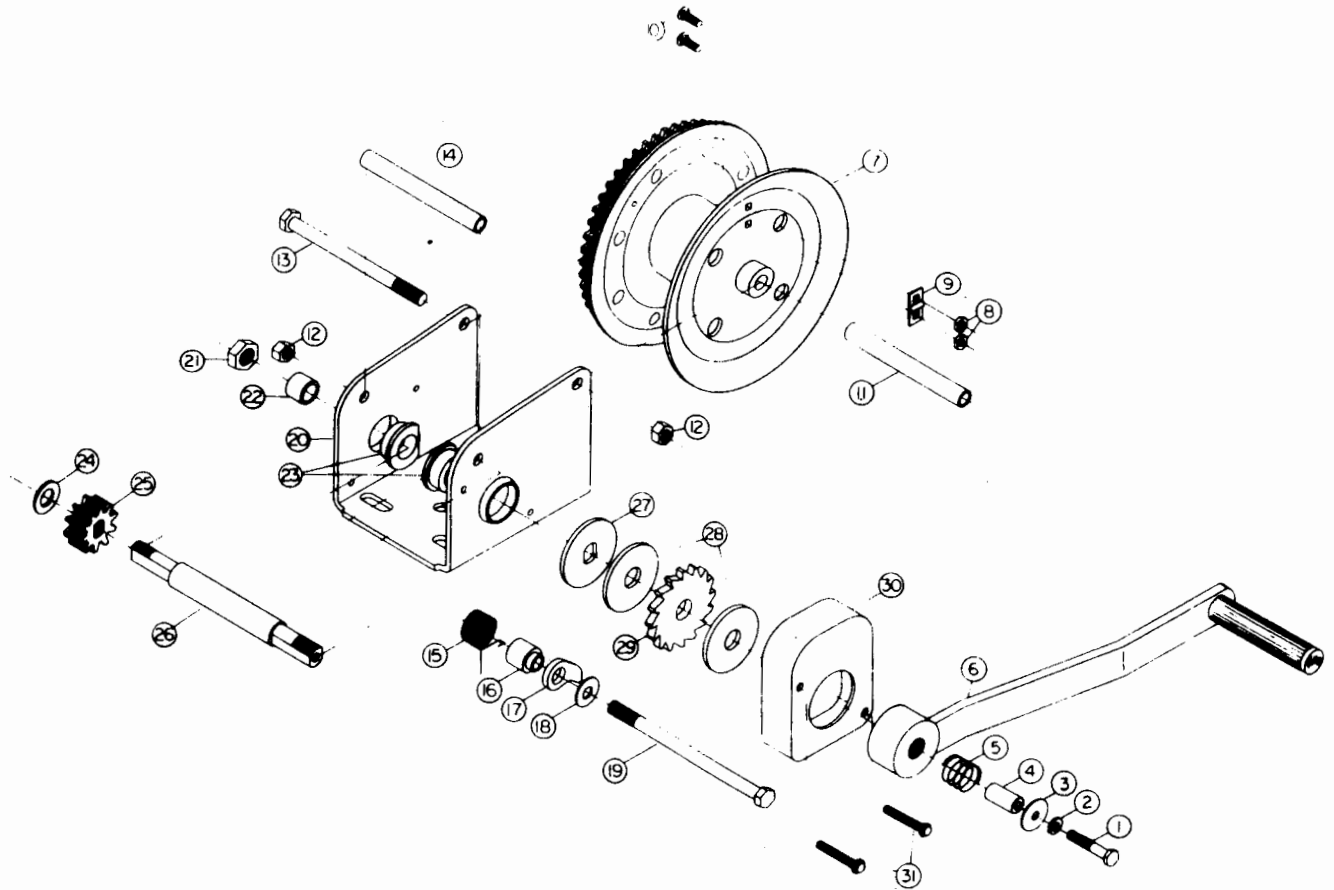
- A. **LUBRICATION.** All gears must be clean and lubricated (auto-type grease) to insure proper and safe operation.
All shafts, bushings and ratchet parts must be clean and wet with oil (auto-type 10W-30) to insure proper and safe operation.
- B. **BRAKE DISC.** Brake disc wear can be inspected by removing handle retainer assembly, handle and brake disc cover. Brake discs should be replaced if the thickness is less than 1/16", cracked or broken. DO NOT USE OIL OR GREASE ON FIBRE BRAKE FACES.

WARNING: If brake disc mechanism operates intermittently or erratically, brake disc inspection should be accomplished.

- C. **BRAKE RATCHET MECHANISM.** Check ratchet operation by listening for "clicking sound" when cable is reeled in (turn handle clockwise). Also, when the cable is reeled out, there will NOT be a clicking sound of the ratchet. Brake ratchet parts can be inspected for worn parts and unsafe conditions by removing handle retainer assembly, handle and disc cover.

CAUTION: CARE MUST BE TAKEN DURING REASSEMBLY TO INSURE THAT ALL PARTS ARE INSTALLED CORRECTLY FOR PROPER OPERATION.

VI. PARTS LIST



ITEM NO.	DESCRIPTION	PART NO.	KIT NO.
1	1/4-20x1 1/2 Hex Screw	0913-03	
2	1/4" Lockwasher	2524-03	
3	1/4" Wide Flatwasher	0917-07	5444-81
4	Handle Retainer Spacer	1907-02	
5	Spring	0940-00	
6	Handle	2089-04	
7	Reel Assembly	0560-05	
8	10-24 Hex Nut (2)	2708-03	
9	Cable Keeper	2704-03	5441-81
10	10-24x5/8 Carriage Bolt (2)	2705-03	
11	Front Frame Spacer	2610-02	
12	3/8 Locknut (2)	1873-03	
13	3/8x5 Reel Bolt	2625-03	
14	Back Frame Spacer	1867-04	
15	Pawl Spring	1909-05	
16	Pawl Spacer	1890-05	

ITEM NO.	DESCRIPTION	PART NO.	KIT NO.
17	Pawl	1891-07	
18	Washer	0904-03	
19	3/8x6 Pawl Bolt	0845-04	
20	Frame	0436-07	
21	9/16 Locknut	0673-03	
22	Bearing	2680-03	
23	Bushing (2)	2679-09	
24	Washer	0229-03	
25	Pinion Gear (5)	0776-03	
26	Pinion Shaft	1870-07	
27	Brake Backup Plate	1878-09	
28	Brake Pad (2)	0846-06	5442-81
29	Ratchet	1906-06	
30	Cover	1915-05	
31	10-32x1 1/2 Cover Screw (2)	2016-03	

Please order by specifying: Model Number
Name of Part or Kit
Part or Kit Number

Replacement parts are available from your dealer or the factory.

If kit number covers a combination of part numbers, parts are sold only by kit number.



CAUTION



THIS WINCH IS NOT DESIGNED TO BE USED FOR HOISTING OR TRANSFER OF PEOPLE OR HOISTING LOADS OVER PEOPLE-OCCUPIED AREAS.

1. NEVER leave a weight hanging by the winch while the winch is unattended, as unauthorized persons may attempt to operate the winch, thereby creating an unsafe condition.
2. NEVER exceed maximum rated line pull (stamped on winch). Exceeding this rating could cause failure of the winch, serious injury to the operator, bystanders and damage to equipment.

NOTE: Maximum rated line pull for Model 5352 is 1500 lbs. (680 kg) for the first layer (minimum of 3 wraps) of line on the drum, and 700 lbs. for full drum rating.

As more line is wrapped on the drum, the mechanical advantage of the winch is reduced and the rating will also be reduced.

3. ALWAYS keep winch maintained in accordance with this instruction sheet. REMEMBER: Worn parts cause unsafe conditions.
4. Winch components can be affected by chemicals, salts and rust and should be examined for unsafe conditions before operating.
5. NEVER alter the mechanics of the winch (Example: do not add to the handle length to make easier lifting.).
6. NEVER use two or more winch units to lift a load that is greater than the load rating of any single unit. A shifting load may place the entire load on one unit, causing sudden failure of equipment, property damage and serious injury.
7. Apply the load evenly. Do not jerk or bounce the load or allow the load to swing. Avoid violent motion and shock loads. This type of operation requires equipment with higher load ratings.
8. Each time a load is to be lifted, test winch for safe operation by lifting the load a few inches first.
9. ALWAYS keep hands away from load-bearing cables, ropes, sheaves, drums and pulleys while operating.

REMAIN CONSTANTLY AWARE THAT SAFE OPERATING IS YOUR RESPONSIBILITY.

LIMITED WARRANTY

Shelby Industries, Division of Prospect Boat Works, Incorporated, warrants its products described herein to be free from defects in material and workmanship to the original purchaser at the date of purchase at retail. If any of these products is found to be defective, it may be replaced or repaired, at the option of Shelby, when returned with proof of purchase to Shelby's manufacturing facility in Shelbyville, Kentucky. The owner shall pay all transportation and shipping charges associated with the return of said product and the returned product shall become the property of Shelby. Where Shelby determines that circumstances are such as to preclude the remedying of warranted defects by replacement or repair, Shelby shall, upon return of the products and proof of purchase, refund owner's purchase price.

In no instance shall Shelby be responsible to repair or replace a product under this limited warranty where said product was improperly installed, altered or misused, including using the product contrary to Shelby's printed instructions or instructions stamped on the product itself.

The foregoing states the sole and exclusive remedy for any breach of warranty or for any other claim based on any defect in or non-performance of, the products, whether sounding in contract, warranty or negligence, or strict liability. Shelby makes no other warranties express or implied, hereby excludes any implied warranties of mechanability or fitness.

Without limiting the generality of the foregoing, Shelby shall under no circumstances be liable for any incidental or consequential loss or damage whatsoever arising out of, or in any way relating to, any such breach of warranty or claimed defect in, or non-performance of, the products.

This limited warranty is designed to fully comply with the terms and provisions of the Magnuson-Moss Warranty Act. Some states may not allow the limitation or exclusion of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

For information or assistance regarding this product, contact your dealer or write to: Customer Service Manager, Shelby Industries, Division of Prospect Boat Works, P.O. Box 308, Shelbyville, Kentucky 40065.

NOTE: THIS PRODUCT COMPLIES WITH REGULATION V-5 AND C.S.A. STANDARD D-264.

NOTE: SOME STATES REQUIRE CLEAR VIEW OF LICENSE. REMOVE BALL WHEN NOT IN USE IF IT RESTRICTS VIEW.

NOTE: THIS PRODUCT COMPLIES WITH SAFETY SPECIFICATION & REQUIREMENTS FOR CONNECTING DEVICES & TOWING SYSTEMS OF THE STATE OF NEW YORK.

OWNER'S MANUAL & PARTS LIST

WINCH MODEL 5352

1500 Lb. (680 kg) Maximum Rated Line Pull

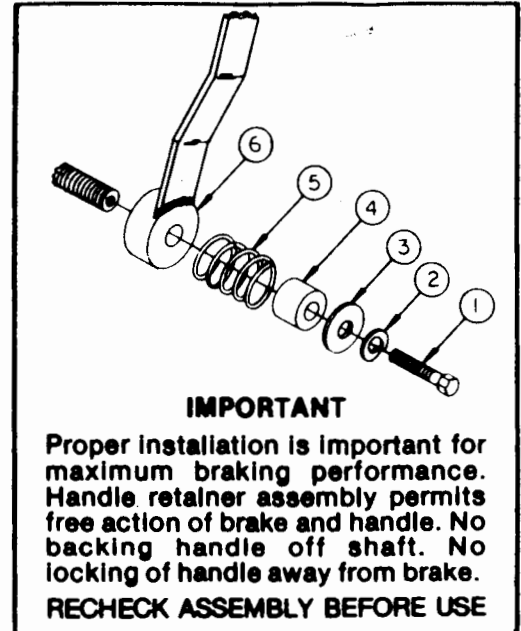
WARNING: THIS EQUIPMENT SHOULD NOT BE INSTALLED, OPERATED OR MAINTAINED BY ANY INDIVIDUAL WHO HAS NOT READ ALL THE CONTENTS OF THIS OWNER'S OPERATING MANUAL.



FAILURE TO READ AND APPLY THE INSTRUCTIONS AND WARNINGS CONTAINED HEREIN CAN RESULT IN SUDDEN FAILURE OF EQUIPMENT, PROPERTY DAMAGE AND SERIOUS INJURY.

I. ASSEMBLY INSTRUCTIONS

- A. **HANDLE.** Insert handle (Item 6, Fig. 1) on threaded brake assembly shaft. Thread handle to point of engagement (touching) of brake pad.
- B. **HANDLE RETAINER ASSEMBLY.** Insert bolt (Item 1, Fig. 1) through lockwasher (Item 2, Fig. 1), flatwasher (Item 3, Fig. 1), spacer (Item 4, Fig. 1) and spring (Item 5, Fig. 1—spring will fit over spacer). Recheck Fig. 1 to insure proper order of assembly. Install bolt containing assembled retainer parts (Fig. 1) into threaded end of brake shaft and tighten bolt securely.



IMPORTANT

Proper installation is important for maximum braking performance. Handle retainer assembly permits free action of brake and handle. No backing handle off shaft. No locking of handle away from brake. **RECHECK ASSEMBLY BEFORE USE**

Fig. 1: Handle Retainer Assembly

II. MOUNTING INSTRUCTIONS

- A. This winch is designed to be attached to a mounting plate or structure capable of supporting the load that it is intended to pull (lift).
- B. The winch should be mounted, using three 3/8" dia. S.A.E. Grade 5 bolts (not supplied). Two bolts should attach the winch to the mounting structure utilizing the outside rear holes or slots. The third bolt should be inserted through the winch frame and mounting structure in a manner to utilize the foremost remaining frame slot (hole) (Fig. 3).

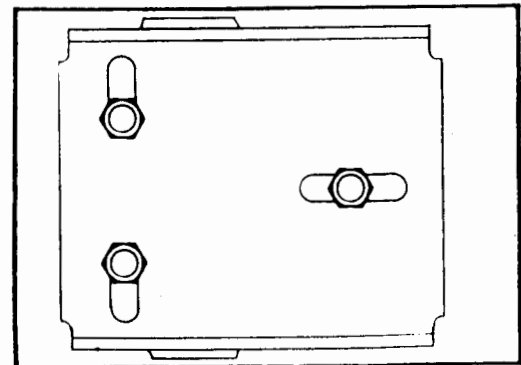


Fig. 3: Mounting Instruction

III. CABLE ASSEMBLY INSTRUCTIONS

- A. **CABLE ATTACHMENT.** Winch model 5352 is designed for up to 95 ft. of 1/4" dia., 7 x 19 galvanized aircraft-quality cable
1. Feed cable onto top of drum (Item 7, Fig. 2) From inside drum, thread the cable through one round hole in the drum side, until it extends 1-1/2" past the two square holes.
 2. Clamp the cable to the outside of the drum with keeper parts (Items 8,9,10, Fig. 2). Be sure that carriage bolt heads are on the inside of winch drum.

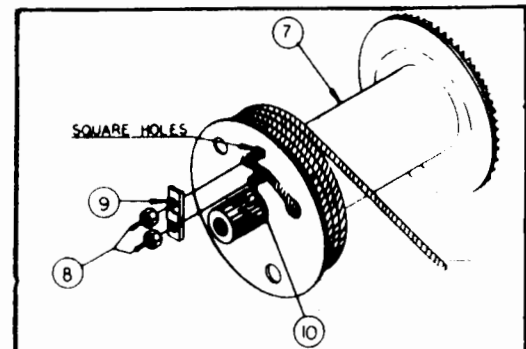
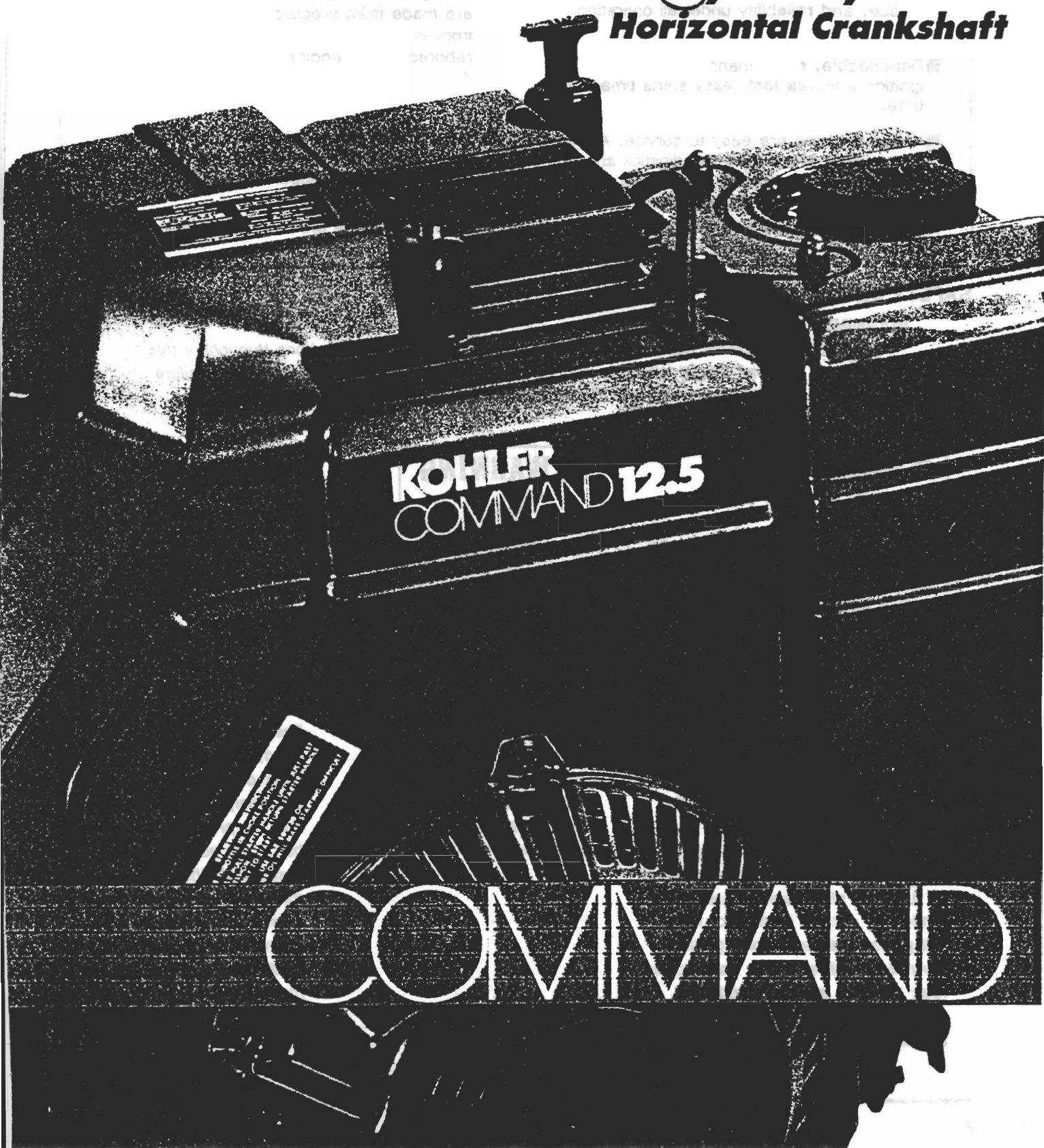


Fig. 2: Cable Installation

KOHLERengines

OWNER'S MANUAL COMMAND 11, 12.5, 14 HP Horizontal Crankshaft



COMMAND

CONGRATULATIONS- You have selected the finest four-cycle, single-cylinder, air-cooled engine that money can buy. Kohler designs long-life strength and on-the-job durability into each engine...making a Kohler engine the most dependable engine available...dependability you can count on. Here are some reasons why:

■ Efficient overhead valve design and full-pressure lubrication provide maximum power, torque, and reliability under all operating conditions.

■ Dependable, maintenance-free electronic ignition ensures fast, easy starts time after time.

■ Kohler engines are easy to service. All routine service areas (like the dipstick and oil fill, oil filter, air cleaner, spark plug, and carburetor) are easily and quickly accessible.

■ Parts subject to the most wear and tear (like the cylinder liner, crankshaft, and camshaft) are made from precision formulated cast iron. Because the cylinder liner can be rebored, these engines can last even longer.

■ Every Kohler engine is backed by a worldwide network of over 10,000 distributors and dealers. Service support is just a phone call away.

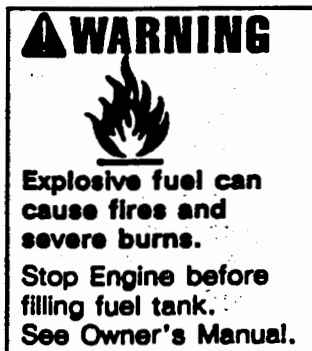
To keep your engine in top operating condition, follow the maintenance procedures in this manual.

SAFETY INFORMATION

WARNING: For Your Safety!



This symbol points out important safety Warnings and Cautions throughout this manual. These Warnings and Cautions should be followed at all times. Failure to follow Warnings and Cautions could result in injury to yourself and others nearby.



WARNING: Explosive fuel!
Gasoline is extremely flammable and its vapors can explode if ignited. Store gasoline only in approved containers, in well-ventilated, unoccupied buildings, away from sparks or flames. Do not fill the fuel tank while the engine is hot or running, since spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Do not start the engine near spilled fuel; wipe up spills immediately. Never use gasoline as a cleaning agent.



WARNING: Rotating Parts!
Keep hands, feet, hair, and clothing away from all moving parts to prevent injury. Never operate the engine with covers, shrouds, or guards removed.



WARNING: Hot Parts!
The crankcase, cylinder head, exhaust system, and other components can get extremely hot from operation. To prevent severe burns, do not touch these areas while the engine is running - or immediately after it is turned off. Never operate the engines with heat shields or guards removed.

CAUTION: Accidental Starts!



Before servicing the engine or equipment, always disconnect the spark plug lead to prevent the engine from starting accidentally. Ground the lead to prevent sparks that could cause fires.

On engines equipped with a 12-volt battery and/or electric start, disconnect the battery cables from the battery. Always disconnect the negative (-) cable first.

Before disconnecting the negative (-) ground cable, make sure all switches are OFF. If ON, a spark will occur at the ground cable terminal which could cause an explosion if hydrogen gas or gasoline vapors are present.

CAUTION: High Voltage!



Never touch electrical wires or components while the engine is running. They can be sources of electrical shock which could cause severe injury or burns.

WARNING: Lethal Exhaust Gases!



Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odorless, colorless, and can cause death if inhaled. Avoid inhaling exhaust fumes, and never run the engine in a closed building or confined area.

WARNING: Overspeed is Hazardous!



The maximum allowable high idle speed for these engines is 3750 rpm, no-load. Never tamper with the governor components or settings to increase the maximum speed. Severe personal injury and damage to the engine or equipment can result if operated at speeds above maximum.

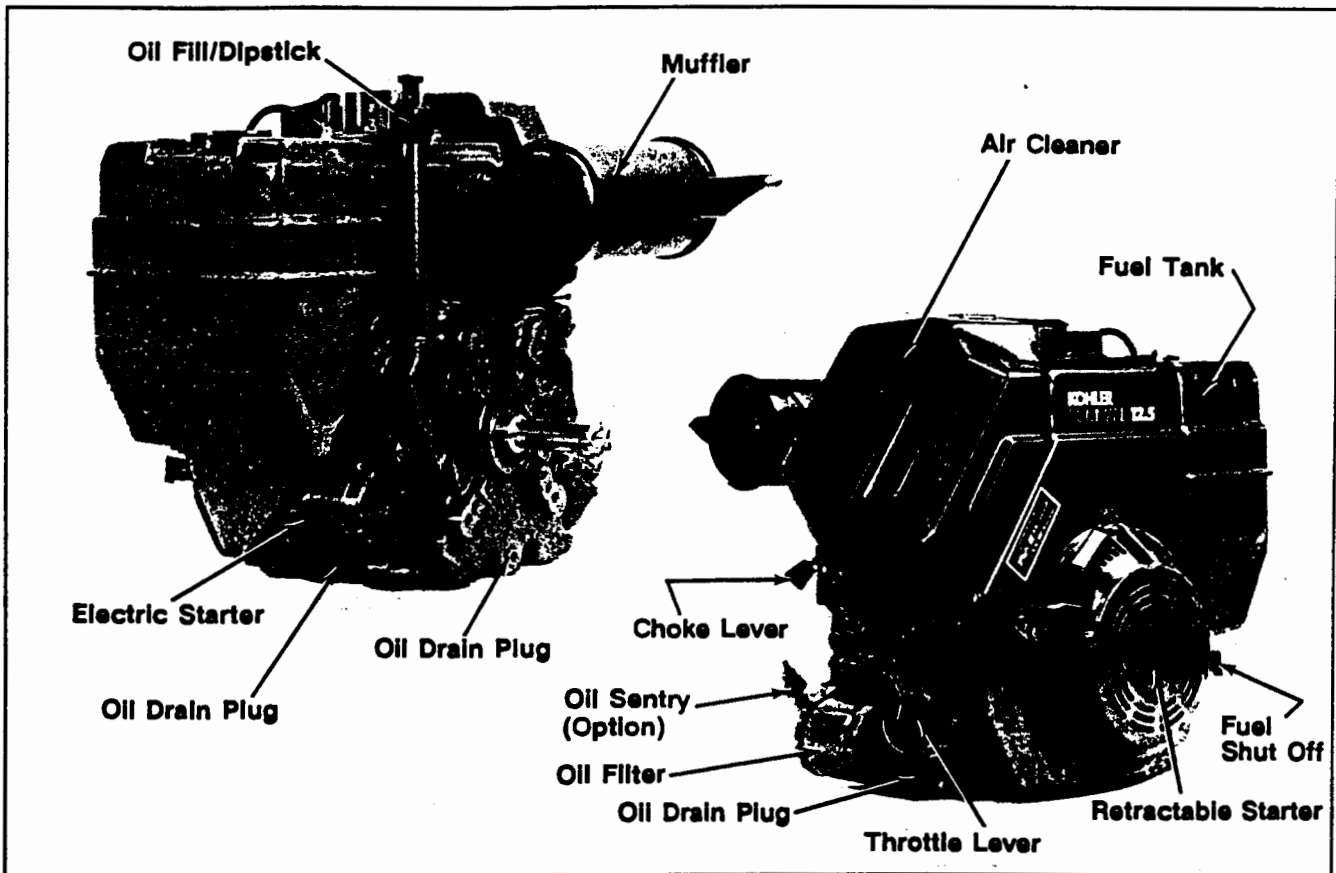


Figure 1. Typical Command Horizontal Shaft Engine.

ENGINE IDENTIFICATION NUMBERS

When ordering parts, or in any communication involving an engine, always give the **Model, Specification, and Serial Numbers** of the engine.

The engine identification numbers appear on decal (or decals) affixed to the engine shrouding. See Figure 1. Include letter suffixes, if there are any.



Figure 2. Engine Identification Plate.

Record your engine identification numbers on the identification plate illustration (Figure 2) for future reference.

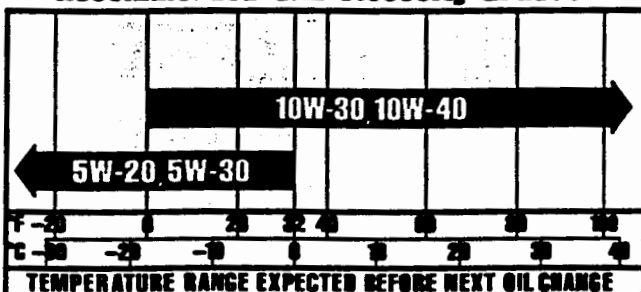
OIL RECOMMENDATIONS

Using the proper type and weight of oil in the crankcase is extremely important. So is checking oil daily and changing oil regularly. Failure to use the correct oil, or using dirty oil, causes premature engine wear and failure.

Oil Type

Use high-quality detergent oil of API (American Petroleum Institute) service class SF. Select the viscosity based on the air temperature at the time of operation as shown in the following table.

Recommended SAE Viscosity Grades



NOTE: Using other than service class SF oil or extending oil change intervals longer than recommended can cause engine damage.

A logo or symbol on oil containers identifies the API service class and SAE viscosity grade. See Figure 3.



Figure 3. Oil Container Logo.

Refer to "Maintenance Instructions" beginning on page 7 for detailed oil check, oil change, and oil filter change procedures.

FUEL RECOMMENDATIONS

Fuel Type

WARNING: Explosive Fuel!



Gasoline is extremely flammable and its vapors can explode if ignited. Store gasoline only in approved containers, in well-ventilated, unoccupied buildings, away from sparks or flames. Do not fill the fuel tank while the engine is hot or running, since spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Do not start the engine near spilled fuel; wipe up spills immediately. Never use gasoline as a cleaning agent.

For best results use only clean, fresh, regular grade, unleaded gasoline with the pump sticker octane rating of 87 or higher. In countries using the Research method, it should be 90 octane minimum.

Unleaded gasoline is recommended since it leaves less combustion chamber deposits. Regular grade, leaded gasoline can also be used; however, be aware that the combustion chamber and cylinder head may require cleaning.


Use fresh gasoline to ensure it is blended for the season and to reduce the possibility of gum deposits forming which could clog the fuel system. Do not use gasoline left over from the previous season. Do not add oil to the gasoline.

OPERATING INSTRUCTIONS

Also read the operating Instructions of the equipment this engine powers.

PRE-START CHECKLIST

- Check oil level. Add oil if low.
- Check fuel level. Add fuel if low.
- Check cooling air intake areas and external surfaces of engine. Make sure they are clean and unobstructed.
- Check that the air cleaner components and all shrouds, equipment covers, and guards are in place and securely fastened.
- Check that any clutches or transmissions are disengaged or placed in neutral. This is especially important on equipment with hydrostatic drive. The shift lever must be exactly in neutral to prevent resistance which could keep the engine from starting.

WARNING: Lethal Exhaust Gases!
 Engine exhaust gases contain poisonous carbon monoxide. Carbon monoxide is odorless, colorless, and can cause death if inhaled. Avoid inhaling exhaust fumes, and never run the engine in a closed building or confined area.

STARTING

1. For A Cold Engine - Place the throttle control midway between the "slow" and "fast" positions. Place the choke control into the "on" position.

For A Warm Engine (normal operating temperatures) - Place the throttle/choke control midway between the "slow" and "fast" positions. Place the choke control into the "off" position. See Figure 4.

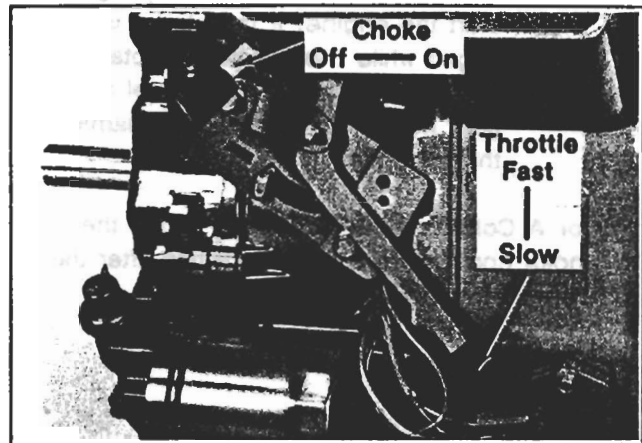



Figure 4. Throttle and Choke Positions For Starting Engine.

2. Start the engine as follows:

For A Retractable Start Engine - Pull the starter handle with a smooth, steady motion. Pull the handle straight out to avoid excessive rope wear from the starter rope guide.

Extend the starting rope periodically and check its condition. If the rope is frayed, replace it immediately.

CAUTION: Accidental Starts!
 Before extending and checking the retractable starter rope, remove the spark plug lead to prevent the engine from starting accidentally. Make sure the equipment is in neutral.

For An Electric Start Engine - Activate the starter switch. Release the switch as soon as the engine starts.

NOTE: Do not crank the engine continuously for more than 10 seconds at a time. If the engine does not start, allow a 60-second cool-down period between starting attempts. Failure to follow these guidelines can burn out the starter motor.

NOTE: If the engine develops sufficient speed to disengage the starter but does not

keep running (a false start), the engine rotation must be allowed to come to a complete stop before attempting to restart the engine. If the starter is engaged while the flywheel is rotating, the starter pinion and flywheel ring gear may clash, resulting in damage to the starter.

3. For A Cold Engine – Gradually return the choke control to the "off" position after the engine starts and warms up.

Battery

A 12-volt battery with a rating of approximately 32-amp hours/250 cold-cranking amps is normally used. Refer to the operating instructions of the equipment this engine powers for specific information.

If the battery charge is not sufficient to crank the engine, recharge the battery (see page 11).

NOTE: Do not attempt to jump start the engine with another battery. Starting with batteries larger than those recommended can burn out the starter motor.

OPERATING

Angle Of Operation

This engine will operate continuously at angles up to 25° in any direction.

Refer to the operating instructions of the equipment this engine powers. Because of equipment design or application, there may be more stringent restrictions regarding the angle of operation.

NOTE: Do not operate this engine continuously at angles exceeding 25° in any direction. Engine damage could result from insufficient lubrication.

Cooling

NOTE: If debris builds up on the grass screen or other cooling air intake areas, stop the engine immediately and clean. Operating the engine with blocked or dirty air intake and cooling areas can cause extensive damage due to overheating.

CAUTION: Hot Parts!



The crankcase, cylinder head, exhaust system, and other components can get extremely hot from operation. To prevent severe burns, do not touch these areas while the engine is running—or immediately after it is turned off. Never operate the engine with heat shields or guards removed.

Engine Speed

NOTE: Do not tamper with the governor setting to increase the maximum engine speed. Overspeed is hazardous and will void the engine warranty.

STOPPING

1. If possible, remove the load by disengaging all PTO attachments.
2. Move the throttle control to the "slow" or low idle position.
3. Move the throttle control or ignition switch to the "stop" or "off" position.

MAINTENANCE INSTRUCTIONS

CAUTION: Accidental Starts!



Before servicing the engine or equipment, always disconnect the spark plug lead to prevent the engine from starting accidentally. Ground the lead to prevent sparks that could cause fires.

On engines equipped with a 12-volt battery and/or electric start, disconnect the battery cables from the battery. Always disconnect the negative (-) cable first.

Before disconnecting the negative (-) ground cable, make sure all switches are OFF. If ON, a spark will occur at the ground cable terminal which could cause an explosion if hydrogen gas or gasoline vapors are present.

MAINTENANCE SCHEDULE

These required maintenance procedures should be performed at the frequency stated in the table. They should also be included as part of any seasonal tune-up.

FREQUENCY	MAINTENANCE REQUIRED
Daily Or Before Starting Engine	<ul style="list-style-type: none">● Fill fuel tank.● Check oil level.● Check air cleaner for dirty¹, loose, or damaged parts.● Check air intake and cooling areas, clean as necessary¹.
Every 25 Hours	<ul style="list-style-type: none">● Service precleaner element¹.
Every 100 Hours	<ul style="list-style-type: none">● Service air cleaner element¹.● Change oil.● Check spark plug condition and gap.● Remove cooling shrouds and clean cooling areas¹.
Every 200 Hours	<ul style="list-style-type: none">● Change oil filter.
Annually Or Every 500 Hours	<ul style="list-style-type: none">● Have starter motor drive serviced².

¹Perform these maintenance procedures more frequently under extremely dusty, dirty conditions.

²Have a Kohler Engine Service Dealer perform these services.

CHECK OIL LEVEL

The importance of checking and maintaining the proper oil level in the crankcase cannot be over-emphasized. Check oil **BEFORE EACH USE** as follows:

1. Make sure the engine is stopped, level, and is cool so the oil has had time to drain into the sump.

2. To keep dirt, grass clippings, etc., out of the engine, clean the area around the oil fill cap/dipstick before removing it.

3. Remove the oil fill cap/dipstick; wipe oil off. Reinsert the dipstick into the tube and press onto the tube.



Figure 5. Checking Oil Level.

4. Remove the dipstick and check the oil level.

The oil level should be up to, but not over, the "F" mark on the dipstick. See Figure 6.

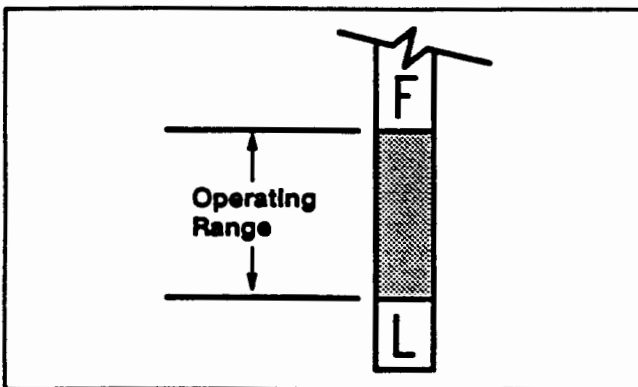


Figure 6. Oil Level Dipstick.

5. If the level is low, add oil of the proper type, up to the "F" mark on the dipstick. (Refer to "Oil Type" on page 4.) Always check the level with the dipstick before adding more oil.

NOTE: To prevent extensive engine wear or damage, always maintain the proper oil level in the crankcase. Never operate the engine with the oil level below the "L" mark or over the "F" mark on the dipstick.

Oil Sentry™

Some engines are equipped with an optional Oil Sentry oil pressure monitor. If the oil pressure gets low, Oil Sentry will either shut off the engine

or activate a warning signal, depending on the application.

NOTE: Make sure the oil level is checked BEFORE EACH USE and is maintained up to the "F" mark on the dipstick. This includes engines equipped with Oil Sentry.

CHANGE OIL AND OIL FILTER

Change Oil

For a new engine, change oil after the first 5 hours of operation. Thereafter, change oil after every 100 hours of operation.

For an overhauled engine or those rebuilt with a new short block, use 10W-30 weight service class SF oil for the first 5 hours of operation. Change the oil after this initial run-in period. Refill with service class SF oil as specified in the "Viscosity Grades" table on page 4.

Change the oil while the engine is still warm. The oil will flow freely and carry away more impurities. Make sure the engine is level when filling, checking, and changing the oil.

Change the oil as follows (see Figure 7):

1. Remove the oil drain plug and oil fill cap/dipstick. Be sure to allow ample time for complete drainage.
2. Reinstall the drain plug. Make sure it is tightened to 13.6 N·m (10 ft. lb.) torque.
3. Fill the crankcase, with new oil of the proper type, to the "F" mark on the dipstick. Refer to "Oil Type" on page 4. Always check the level with the dipstick before adding more oil.
4. Reinstall the oil fill cap/dipstick and tighten securely.

NOTE: To prevent extensive engine wear or damage, always maintain the proper oil level in the crankcase. Never operate the engine with the oil level below the "L" mark or over the "F" mark on the dipstick.

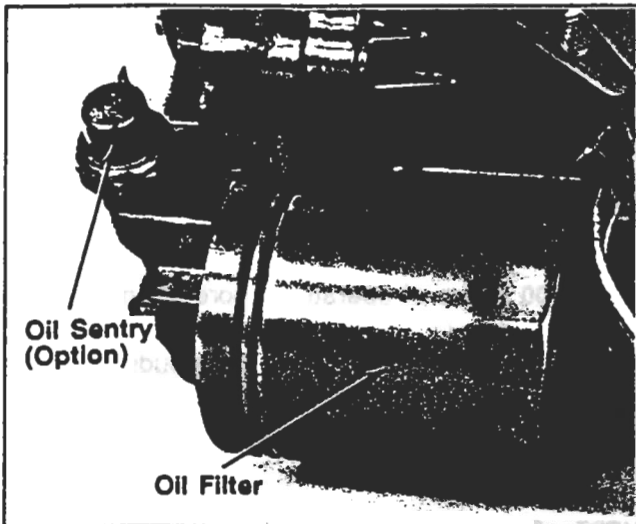


Figure 7. Oil Filter, and Optional Oil Sentry Switch.

Change Oil Filter

Replace the oil filter every other oil change (every 200 hours of operation). Always use a genuine Kohler oil filter, part 52 050 02.

Replace the oil filter as follows:

1. Drain the oil from the engine crankcase.
2. Allow the oil filter to drain.
3. Remove the old filter and wipe off the filter adapter.
4. Apply a thin coating of new oil to the rubber gasket on the replacement oil filter.
5. Install the replacement oil filter to the filter adapter. Turn the oil filter clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 1/2 turn.
6. Reinstall the drain plug.
7. Fill the crankcase with new oil as instructed under "Change Oil." Add an additional 0.24 L (1/2 pint) of oil for the filter capacity.
8. Start the engine and check for oil leaks. Correct any leaks before placing the engine into service.

SERVICE PRECLEANER AND AIR CLEANER ELEMENT

This engine is equipped with a replaceable, high-density paper air cleaner element. Some engines are also equipped with an oiled-foam precleaner which surrounds the paper element. See Figures 8 and 9.

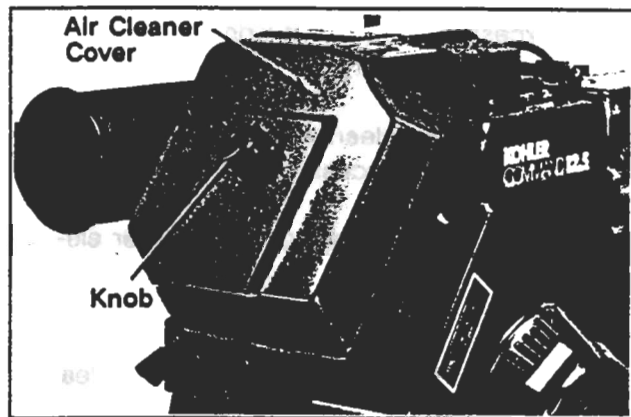


Figure 8. Air Cleaner Housing Components.

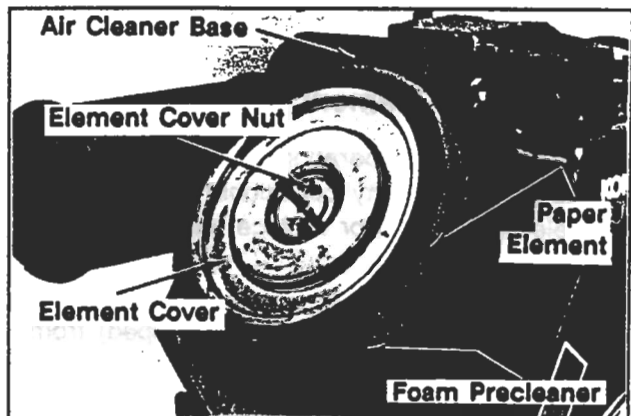


Figure 9. Air Cleaner Elements.

Check the air cleaner daily or before starting the engine. Check for and correct heavy buildup of dirt and debris, and loose or damaged components.

NOTE: Operating the engine with loose or damaged air cleaner components could allow unfiltered air into the engine causing premature wear and failure.

Service Precleaner

If so equipped, wash and reoil the precleaner every 25 hours of operation (more often under extremely dusty or dirty conditions).

1. Remove the air cleaner cover retaining knob, air cleaner cover, element cover nut, element cover, and paper element with precleaner.
2. Remove the precleaner from the paper element.
3. Wash the precleaner in warm water with detergent. Rinse the precleaner thoroughly until all traces of detergent are eliminated. Squeeze out excess water (do not wring). Allow the precleaner to air-dry.
4. Saturate the precleaner with new engine oil. Squeeze out all excess oil.
5. Reinstall the precleaner over the paper element.
6. Reinstall the paper element with precleaner, element cover, element cover nut, air cleaner cover, and air cleaner cover retaining knob.
7. When replacement is necessary order part no. 47 083 01.

Service Paper Element

Every 100 hours of operation (more often under extremely dusty or dirty conditions), check the paper element. Clean or replace the element as necessary.

1. Remove the precleaner (if so equipped) from the paper element.
2. Gently tap the flat side of the paper element to dislodge dirt. Do not wash the paper element or use pressurized air, as this will damage the element. Replace a dirty, bent, or damaged element with a genuine Kohler element. Handle new elements carefully; do not use if the sealing surfaces are bent or damaged.
3. When servicing the air cleaner, check the air cleaner base. Make sure it is secured and not bent or damaged. Also check the element cover for damage or improper fit. Replace all damaged air cleaner components.
4. Reinstall all components as described above.

5. When replacement is necessary order part no. 52 083 01.

CLEAN AIR INTAKE/COOLING AREAS

To ensure proper cooling, make sure the grass screen, cooling fins, and other external surfaces of the engine are kept clean at all times.

Every 100 hours of operation (more often under extremely dusty, dirty conditions), remove the blower housing and other cooling shrouds. Clean the cooling fins and external surfaces as necessary. Make sure the cooling shrouds are reinstalled.

NOTE: Operating the engine with a blocked grass screen, dirty or plugged cooling fins, and/or cooling shrouds removed, will cause engine damage due to overheating.

IGNITION SYSTEM

This engine is equipped with a dependable electronic magneto ignition system. Other than periodically checking/replacing the spark plug, no maintenance, timing, or adjustments are necessary or possible with this system.

In the event starting problems should occur which are not corrected by replacing the spark plug, see your Kohler Engine Service Dealer for trouble analysis.

CHECK SPARK PLUG

Every 100 hours of operation, remove the spark plug, check its condition, and reset the gap or replace with a new plug as necessary. Use a Champion® type RC12YC (or equivalent) spark plug.

1. Before removing the spark plug, clean the area around the base of the plug to keep dirt and debris out of the engine.
2. Remove the plug and check its condition. Replace the plug if worn or reuse is questionable.

NOTE: Do not clean the spark plug in a machine using abrasive grit. Some grit

could remain in the spark plug and enter the engine causing extensive wear and damage.

3. Check the gap using a wire feeler gauge. Adjust the gap to 1.02 mm (0.040 in) by carefully bending the ground electrode. See Figure 10.
4. Reinstall the spark plug into the cylinder head. Torque the spark plug to 38.0 / 43.4 N·m (28 / 32 ft. lb.).

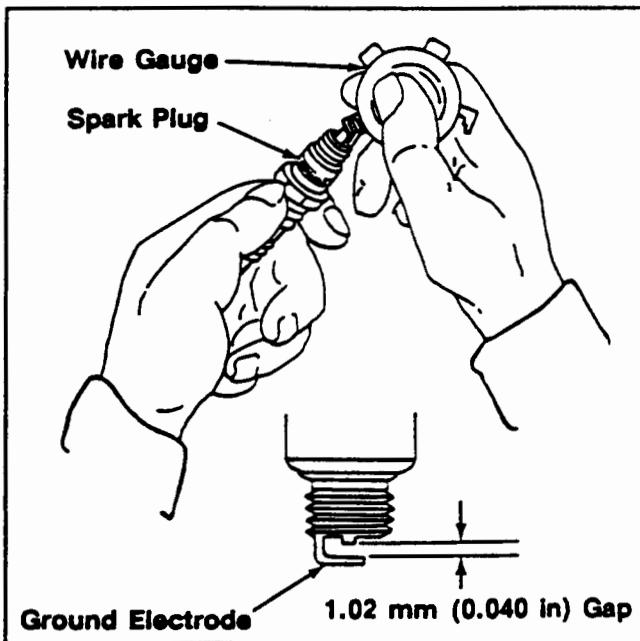


Figure 10. Servicing Spark Plug.

BATTERY

A 12-volt battery with a rating of approximately 32-amp hours/250 cold-cranking amps. is normally used. Refer to the operating instructions of the equipment this engine powers for specific information.

If the battery charge is not sufficient to crank the engine, recharge the battery.

WARNING: Dangerous Acid, Explosive Gases! Batteries contain sulfuric acid. To prevent acid burns, avoid contact with skin, eyes, and clothing. Batteries produce explosive hydrogen gas while being charged. To prevent a fire or explosion, charge batteries only in well ventilated areas. Keep sparks, open flames, and other sources of ignition away from the battery at all times. Keep batteries out of the reach of children. Remove all jewelry when servicing batteries.

FUEL FILTER

Some engines are equipped with an in-line fuel filter. Visually inspect the filter periodically, and replace when dirty with a genuine Kohler filter.

CARBURETOR TROUBLESHOOTING AND ADJUSTMENTS

NOTE: Carburetor adjustments should be made only after the engine has warmed up.

The carburetor is designed to deliver the correct fuel-to-air mixture to the engine under all operating conditions. The main fuel jet is calibrated at the factory and is adjustable. The low idle fuel adjusting needle is also set at the factory and also normally does not need adjustment.

If, the engine is hard-starting or runs roughly or stalls at low idle speed, it may be necessary to adjust or service the carburetor.

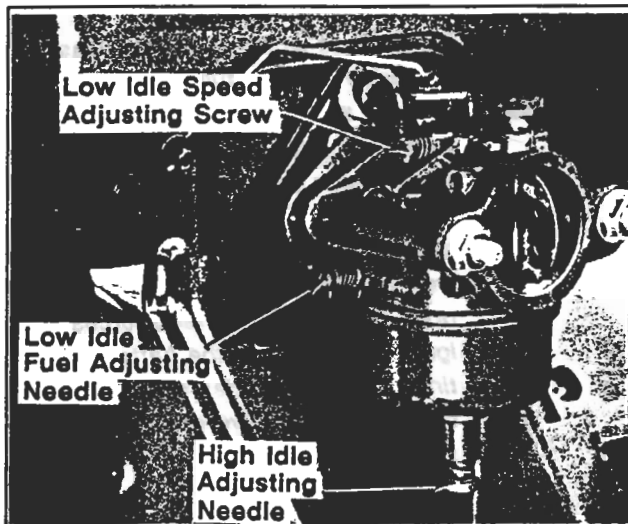


Figure 11. Carburetor.

Troubleshooting

If engine troubles are experienced that appear to be fuel system related, check the following areas before adjusting the carburetor.

- Make sure the fuel tank is filled with clean, fresh gasoline.
- Make sure the fuel tank cap vent is not blocked and that it is operating properly.
- If the fuel tank is equipped with a shutoff valve, make sure it is open.
- If the engine is equipped with an in-line fuel filter, make sure it is clean and unobstructed. Replace the filter if necessary.
- Make sure the air cleaner element is clean and all air cleaner element components are fastened securely.

If, after checking the items listed above, the engine is hard-starting or runs roughly or stalls at low idle speed, it may be necessary to adjust or service the carburetor.

Adjust Carburetor

1. With the engine stopped, turn the low and high idle fuel adjusting needles in (clockwise) until they bottom lightly.

NOTE: The tip of the idle fuel and high idle fuel adjusting needles are tapered to critical dimensions. Damage to the

needles and the seats in carburetor body will result if the needles are forced.

2. **Preliminary Settings:** Turn the adjusting needles out (counterclockwise) from lightly bottomed to the positions shown in the chart.

	TURNS		
	CH11	CH12.5	CH14
IDLE -	1-1/4	1-1/4	1-3/4
HIGH - SPEED	1-1/2	1-1/2	1-1/4

3. Start the engine and run at half-throttle for 5 to 10 minutes to warm up. The engine must be warm before making final settings.
4. **High Idle Fuel Needle Setting:** Place the throttle into the "fast" position. If possible place the engine under load. Turn the high idle fuel adjusting needle in (slowly) until engine speed decreases and then back out approximately 1/4 turn for best high-speed performance.
5. **Low Idle Speed Setting:** Place the throttle control into the "idle" or "slow" position. Set the low idle speed to 1200 rpm* (+ or - 75 rpm) by turning the low idle speed adjusting screw in or out. Check the speed using a tachometer.

*NOTE: The actual low idle speed depends on the application—refer to equipment manufacturer's recommendations. The recommended low idle speed for basic engines is 1200 rpm. To ensure best results when setting the low idle fuel needle, the low idle speed must not exceed 1500 rpm.

6. **Low Idle Fuel Needle Setting:** Place the throttle into the "idle" or "slow" position. Turn the low idle fuel adjusting needle in (slowly) until engine speed decreases and then back out approximately 1/8 to 1/4 turn to obtain the best low speed performance.
7. Recheck the idle speed using a tachometer. Readjust the speed as necessary.

TROUBLESHOOTING

When troubles occur, be sure to check the simple causes which, at first, may seem to obvious to be considered. For example, a starting problem could be caused by an empty fuel tank. Some common causes of engine troubles are listed in the following table.

Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. Have your Kohler Engine Service Dealer do this work.

Possible Cause ↗ Problem ↘	No Fuel	Improper Fuel	Dirt In Fuel Line	Dirty Grass Screen	Incorrect Oil Level	Engine Overloaded	Dirty Air Cleaner	Faulty Spark Plug
Will Not Start	•		•			•	•	•
Hard Starting	•	•	•			•	•	•
Stops Suddenly	•		•	•	•	•	•	
Lacks Power		•	•	•	•	•	•	•
Operates Erratically		•	•	•		•	•	•
Knocks Or Pings		•		•		•		•
Skips Or Misfires		•	•	•		•	•	•
Backfires			•			•	•	•
Overheats			•	•	•	•	•	
High Fuel Consumption							•	•

STORAGE

If the engine will be out of service for two months or more, use the following storage procedure:

1. Change the oil and filter while the engine is still warm from operation. See "Change Oil And Oil Filter" on page 8.
2. Drain the fuel tank and fuel system (or run the engine until the fuel tank and fuel system are empty).
3. Remove the spark plug. Add one tablespoon of engine oil into the spark plug hole. Install the plug, but do not connect the plug lead. Crank the engine two or three revolutions.
4. Remove the spark plug. Cover the spark plug hole with your thumb, and turn the engine over until the piston is at the top of its stroke. (Pressure against thumb is greatest.) Reinstall the plug, but do not connect the plug lead.
5. Clean the exterior surfaces of the engine.
6. Store the engine in a clean, dry place.

PARTS ORDERING

The engine Specification, Model, and Serial numbers are required when ordering replacement parts from your Kohler Engine Service Dealer. These numbers are found on the identification plate which is affixed to the engine shrouding. Include letter suffixes if there are any. See "Engine Identification Numbers" on page 4.

Always insist on genuine Kohler parts. All genuine Kohler parts meet strict standards for fit, reliability, and performance.

MAJOR REPAIR

Major repair information is available in Kohler Engine Service Manuals. However, major repair generally requires the attention of a trained mechanic and the use of special tools and equipment. Your Kohler Engine Service Dealer has the facilities, training, and genuine Kohler replacement parts necessary to perform this service. Check the Yellow Pages under "Engines-Gasoline" for the Kohler Engine Service Dealer nearest you.

SPECIFICATIONS

MODEL:		CH11	CH12.5	CH14
BORE:	Inches (millimetres)	3.43 (87)	3.43 (87)	3.43 (87)
STROKE:	Inches (millimetres)	2.64 (67)	2.64 (67)	2.64 (67)
DISPLACEMENT:	cubic Inches (cubic centimetres)	24.3 (398)	24.3 (398)	24.3 (398)
POWER: (@3600 RPM):	horsepower (kilowatts)	11* (8.2)	12.5* (9.33)	14* (10.50)
MAX. TORQUE:	(Ft. Lbs. @ RPM)	20.2 @2000	20.5 @2000	21.3 @2500
COMPRESSION RATIO:		8.5:1	8.5:1	8.5:1
WEIGHT:	Lbs. (kilograms)	92 (41.73)	92 (41.73)	92 (41.73)
OIL CAPACITY (w/filter)	U.S. pints (litres)	4 (1.9)	4 (1.9)	4 (1.9)
LUBRICATION:		Full Pressure w/full Flow Filter	Full Pressure w/full Flow Filter	Full Pressure w/full Flow Filter

*Horsepower ratings are established in accordance with Society of Automotive Engineers -- Small Engine Test Code -- J1349 GROSS. Kohler Co. reserves the right to change product specifications, design, and standard equipment without notice and without incurring obligation.

LIMITED 2 YEAR COMMAND ENGINE WARRANTY

We warrant to the original consumer that each new COMMAND engine sold by us will be free from manufacturing defects in materials or workmanship in normal service for a period of two (2) years from date of purchase, provided it is operated and maintained in accordance with Kohler Co.'s instructions and manuals.

Our obligation under this warranty is expressly limited, at our option, to the replacement or repair at Kohler Co., Kohler, Wisconsin 53044, or at a service facility designated by us of such parts as inspection shall disclose to have been defective.

EXCLUSIONS:

This warranty does not apply to defects caused by casualty or unreasonable use, including faulty repairs by others and failure to provide reasonable and necessary maintenance.

The following items are not covered by this warranty:

Engine accessories such as fuel tanks, clutches, transmissions, power-drive assemblies, and batteries, unless supplied or installed by Kohler Co. These are subject to the warranties, if any, of their manufacturers.

WE SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OF ANY KIND, including but not limited to labor costs or transportation charges in connection with the repair or replacement of defective parts.

ANY IMPLIED OR STATUTORY WARRANTIES, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY LIMITED TO THE DURATION OF THIS WRITTEN WARRANTY. We make no other express warranty, nor is any one authorized to make any in our behalf.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

TO OBTAIN WARRANTY SERVICE:

Purchaser must bring the engine to an authorized Kohler service facility. For the facility nearest you, consult your Yellow Pages or write Kohler Co., Attn: Engine Warranty Service Dept., Kohler, Wisconsin 53044.

ENGINE DIVISION, KOHLER CO., KOHLER, WISCONSIN 53044