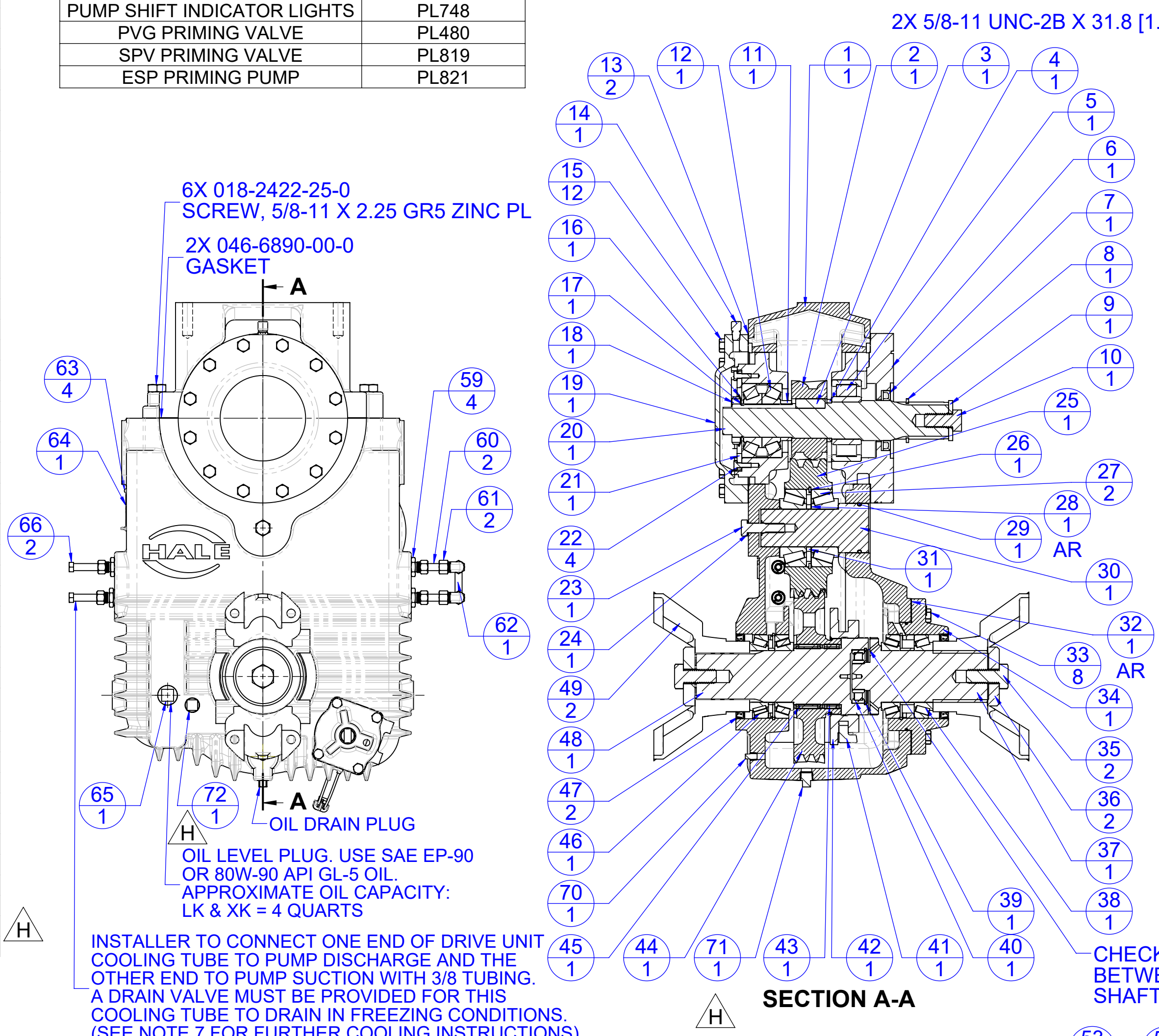


1			2		3		4	
ITEM NO.	PART NO.		DESCRIPTION			QTY.		
A	1	GEARBOX	SEE GEARBOX TABLE			1		
	2	GEAR	SEE GEAR TABLE			1		
	3	017-0650-02-0	KEY, J SERIES GEARBOX			1		
	4	159-2020-00-0	K PUMP SHAFT BEARING SPACER			1		
	5	250-8240-00-0	NU2310ECP ROLLER BEARING			1		
B	6	HOUSING	SEE REAR BEARING HSG TABLE			1		
	7	296-2090-01-0	RGA OIL SEAL			1		
	8	077-1930-05-0	RETAINING RING			1		
	9	097-0940-00-0	2-1/8 DIA. WASHER			1		
	10	018-2614-25-0	SCREW 3/4-10 X 1.50 GR8 ZINC PL			1		
	11	159-1730-00-0	SPACER, BEARING, K PUMP SHAFT			1		
	12	250-8340-00-0	31309 J2/QLC7CDF ROLLER BEARING			1		
C	13	046-6800-00-0	GASKET, LK REAR BRG HSG			2		
	14	044-0260-00-0	VENT, AIR 1/8 MPT			1		
	15	018-1820-25-0	CSW HH 7/16-14 X 2.00 G8 ZINC			12		
	16	097-3170-09-0	WASHER, BEARING LOCK (W-09)			1		
	17	097-2400-00-0	WASHER, CAFSPRO SUPPORT			1		
	18	110-6110-09-0	NUT, BEARING LOCK (N-09)			1		
	19	044-1820-00-0	BEARING COVER			1		
	20	037-2680-00-0	OUTPUT SHAFT			1		
	21	097-2570-00-0	BEARING RETAINING WASHER			1		
D	22	018-1206-25-0	CSW HH 1/4-20 X 0.75 Z G8			4		
	23	018-2020-25-0	SCREW, HHCS, 1/2-13 X 2, GRADE 8			1		
	24	097-0100-00-0	WASHER			1		
	25	031-1740-00-0	LK IDLER GEAR (43T RH)			1		
	031-1750-00-0	XK IDLER GEAR (57T RH)						
E	26	077-9133-01-0	RING, RETAINING			1		
	27	250-8310-00-0	LK IDLER GEAR BEARING			2		
	28	SHIM	SEE 048-1550-XX-0 SHIM TABLE			1		
	29	040-2280-00-0	SHAFT SEAL RING			1		
	30	037-2290-00-0	SHAFT, INTERMEDIATE			1		
	31	159-1710-10-0	SPACER, SHAFT, IDLER			1		
	32	SHIM	SEE 048-1470-XX-0 SHIM TABLE			1		
	33	018-1814-25-0	SCRW, 7/16-14x1.5,GR8,ZINC PL			20		
	34	008-0840-00-0	BEARING CARRIER			1		
F	35	018-2616-25-0	3/4-10 x 1-3/4 BOLT GR8			2		
	36	097-2050-00-0	WASHER (SEE NOTE 6)			2		
	37	037-2280-00-0	OUTPUT SHAFT			1		
	38	250-8140-53-0	4DK TAILSHAFT BEARING ASSEMBLY			1		
	39	077-2810-00-0	RETAINING RING			1		
	40	250-8300-00-0	NU207ECJ BEARING			1		
	41	028-0420-00-0	SHIFT FORK			1		
	42	048-1430-00-0	SHIFT COLLAR			1		
	43	250-8110-00-0	NEEDLE BEARING			1		
	44	031-1720-00-0	DRIVE GEAR (53 TEETH)			1		
G	45	250-8120-00-0	NEEDLE BEARING			1		
	46	250-8140-52-0	4DK INPUT BEARING ASSEMBLY			1		
	47	296-2680-00-0	OIL SEAL			2		
	48	037-2270-00-0	INPUT SHAFT			1		
	49	YOKE	SEE YOKE TABLE			2		
	50	018-1810-08-0	SCREW 7/16-14 X 1.00 SOC HD CAP			4		
	51	250-9550-00-0	GEARBOX BEARING			2		
	52	018-8350-00-0	4DK SHIFTING FORK SCREW			1		
	53	046-5060-00-0	GASKET QL-W429			2		
	54	018-2104-61-0	SCREW-1/2-20 X 1/2 PLATED SET			1		
H	55	042-0060-00-0	SHAFT LOCK SPRING			1		
	56	039-0050-00-0	GEARSHIFT SHAFT LOCK BALL			1		
	57	008-0990-00-0	CAP, DUST, K			1		
	58	200-2450-00-0	SWITCH GEARSHIFT			2		
	59	082-0422-03-0	1/2 MALE NPT x 3/8 TUBE COMP			4		
	60	007-3610-00-0	LK COOLING TUBE			2		
J	61	082-0318-02-0	ELBOW, 3/8 COMP X 3/8 COMP, 90 DEG			2		
	62	604-0033-00-0	TUBE, COPPER			1		
	63	018-5002-00-0	SCREW #4 X 1/4 UNC PLATED			4		
	64	101-0082-00-0	SERIAL NUMBER PLATE			1		
	65	217-0501-00-0	PLUG-3/4 NPT M.I.			1		
K	66	018-1422-25-0	5/16-18 X 2 1/4			2		
	67	040-8210-00-0	SEAL RING			2		
	68	028-0050-03-0	ROD END, EYE .406, THREAD 3/8-24			1		
	69	018-1410-25-0	SCREW, 5/16-18 X 1, ZINC			4		
	70	217-0101-00-0	PLUG - 1/8 NPT M.I. SQ			1		
	71	217-0301-08-0	3/8 NPT MAGNETIC DRAIN PLUG			1		
	72	217-0401-00-0	PLUG-1/2" NPT BLACK IRON			1		
	048-1470-XX-0 BEARING CARRIER SHIM TABLE (SEE NOTE 4)							
	ITEM NO.	PART NO.	DESCRIPTION			QTY.		
32	048-1470-05-0	SHIM, BRG CARRIER, .005 THICK			AS REQUIRED			
32	048-1470-07-0	SHIM, BRG CARRIER, .007 THICK			AS REQUIRED			
32	048-1470-20-0	SHIM, BRG CARRIER, .020 THICK			AS REQUIRED			
048-1550-XX-0 IDLER GEAR BEARING SHIM TABLE (SEE NOTE 5)								
ITEM NO.	PART NO.	DESCRIPTION			QTY.			
28	048-1550-03-0	SHIM, BEARING, .003 THICK			AS REQUIRED			
28	048-1550-05-0	SHIM, BEARING, .005 THICK			AS REQUIRED			
28	048-1550-07-0	SHIM, BEARING .007 THICK			AS REQUIRED			
REVISIONS								
ECN	REV	ZONE	CHANGED FROM		BY	DATE	APVD	
4099	F	-	SEE ECN 4099 FULL FORM		CMB	16JUN2017	JLS	
5102	G	-	REMOVED 2.5 RATIO OPTION		DMB	07APR2020	JS2	
5625	H	-	SEE ECN 5625 FULL FORM		KTN	01DEC2021	JS2	

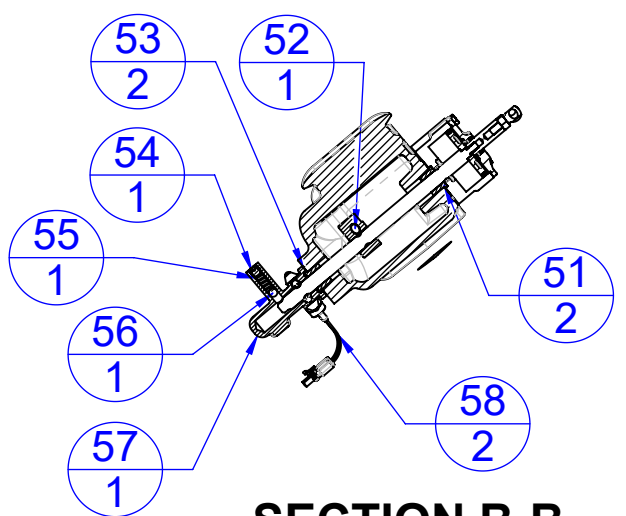
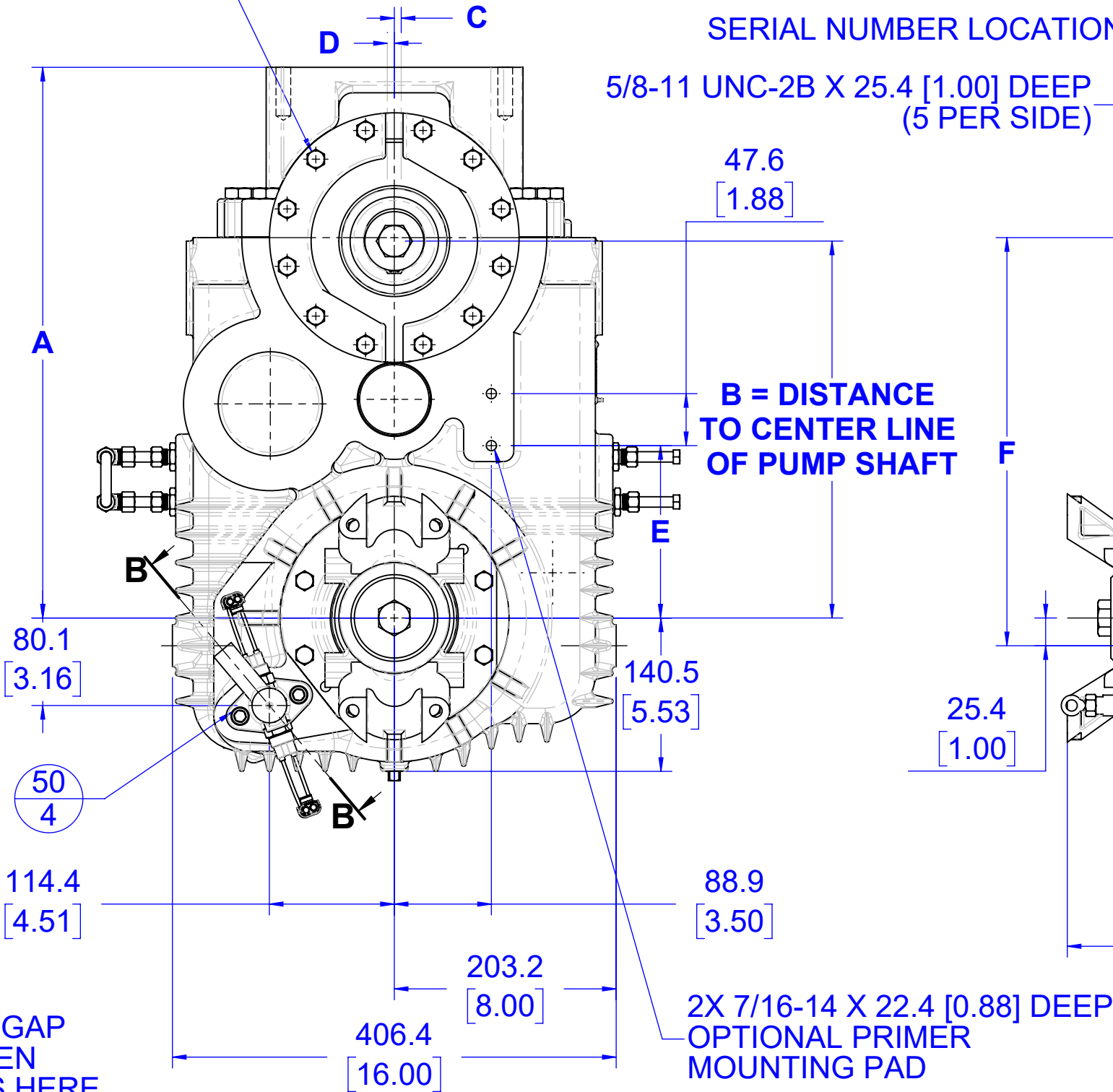
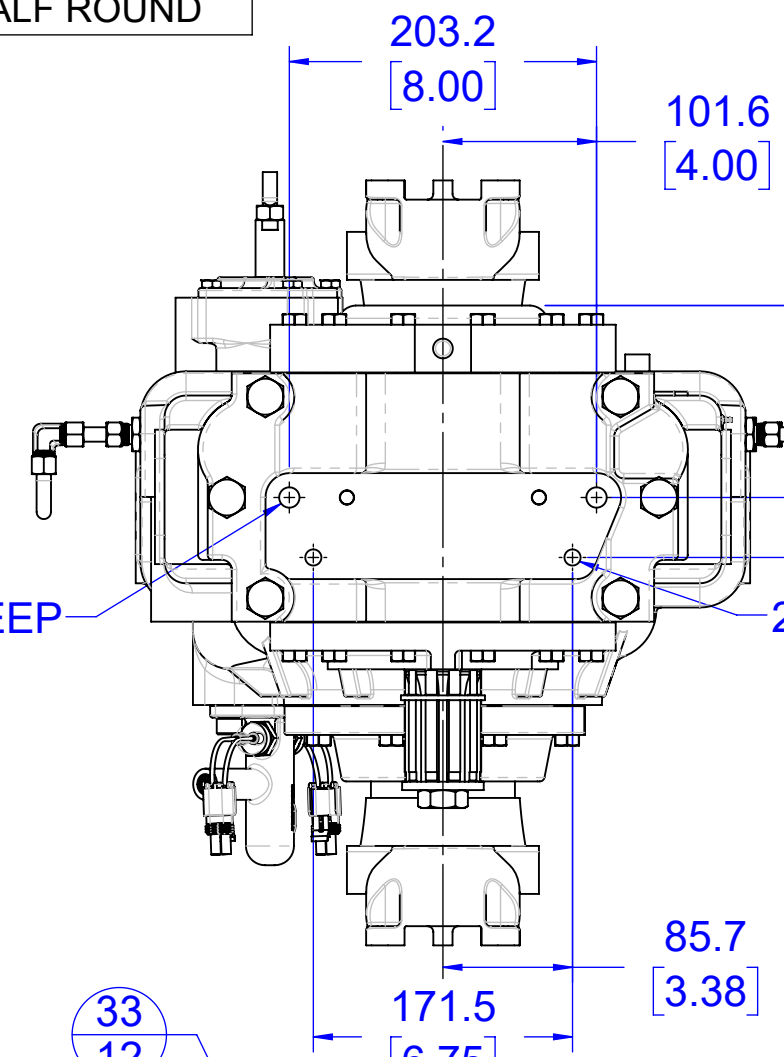
5		6		7		8			9		
GEARBOX MODEL	GEAR RATIO	GEARBOX PART NO.	BRG HOUSING PART NO.	GEAR PART NO.	A	B	C	D	E	F	
LKA	2.30	504-0670-00-0	062-0860-01-0	031-1670-00-0 (23T)	503.9 [19.84]	337.3 [13.28]	6.4 [0.25]	-	158.0 [6.22]	373.9 [14.72]	
	2.04		062-0850-01-0	031-1680-00-0 (26T)		345.2 [13.59]	-	-			
	1.89		062-0850-01-0	031-1690-00-0 (28T)		350.0 [13.78]	-	2.8 [0.11]			
	1.71		062-0860-01-0	031-1700-00-0 (31T)		354.8 [13.97]	-	10.9 [0.43]			
	1.60		062-0860-01-0	031-1710-00-0 (33T)		359.4 [14.15]	-	6.4 [0.25]			
XKA	2.30	504-0680-00-0	062-0860-01-0	031-1670-00-0 (23T)	562.4 [22.14]	395.7 [15.58]	6.4 [0.25]	-	186.9 [7.36]	432.1 [17.01]	
	2.04		062-0850-01-0	031-1680-00-0 (26T)		403.6 [15.89]	-	-			
	1.89		062-0850-01-0	031-1690-00-0 (28T)		408.4 [16.08]	-	2.8 [0.11]			
	1.71		062-0860-01-0	031-1700-00-0 (21T)		413.3 [16.27]	-	10.9 [0.43]			
	1.60		062-0860-01-0	031-1710-00-0 (33T)		418.1 [16.45]	-	6.4 [0.25]			

FOR ADDITIONAL OPTIONS AND ACCESSORIES REFER TO THE FOLLOWING DRAWINGS	
OPTION	DRAWING
PUMP SHIFT INDICATOR LIGHTS	PL748
PVG PRIMING VALVE	PL480
SPV PRIMING VALVE	PL819
ESP PRIMING PUMP	PL821



- NOTES:
1. APPLY LOCTITE #246 HIGH TEMPERATURE THREAD LOCKER OR EQUIVALENT TO SCREW THREADS AND TORQUE SCREWS PER HALE ENGINEERING STANDARD ES018-002.
 2. UNLESS OTHERWISE INDICATED, ALL FASTENERS TO BE GRADE 5 ZINC PLATED STEEL.
 3. XK GEARBOX REQUIRES (1) ADDITIONAL 007-3610-10-0 COOLING TUBE, (2) ADDITIONAL 082-0422-03-0 FITTINGS, (2) ADDITIONAL 082-0318-02-0 FITTINGS AND (1) ADDITIONAL 604-0033-00-0 COPPER TUBE.
 4. INSTALL 048-1470-XX-0 SERIES SHIMS AS REQUIRED TO PRODUCE A 0.060 +/- 0.010 INCH GAP BETWEEN 037-2270-00-0 INPUT SHAFT AND 037-2280-00-0 OUTPUT SHAFT. REFER TO 029-0020-63-0 MAINTENANCE MANUAL SECTION 9.3 FOR DETAILS.
 5. INSTALL 048-1550-XX-0 SERIES SHIMS AS REQUIRED UNTIL INTERMEDIATE GEAR CAN BE FREELY SPUN BY HAND AFTER 018-2025-25-0 INTERMEDIATE SHAFT SCREW HAS BEEN FULLY TORQUED.
 6. APPLY THIN COATING OF LOCTITE #290 OR EQUIVALENT TO INSIDE FACE OF WASHER PRIOR TO INSTALLATION TO PREVENT OIL LEAKS THROUGH DRIVE SHAFT SPLINES.
 7. SEE PL1145 FOR KPS POWER SHIFT COMPONENTS. SEE PL1086 FOR KPS CONTROL VALVE ASSEMBLY.
 8. SEE PL1157 FOR REAR BEARING HOUSING ORIENTATION.

10		11	
YOKE DIMENSIONS			
G	YOKES		
538.5 [21.2]	115-1450-03-0 17T HALF ROUND		
	115-1450-04-0 17N FULL ROUND		
555.5 [21.9]	115-1450-01-0 18T HALF ROUND		
	115-1450-06-0 18N FULL ROUND		
550.7 [21.7]	115-1450-02-0 176T HALF ROUND		
	115-1450-05-0 176N FULL ROUND		
525.3 [20.7]	115-1450-00-0 RPL25 HALF ROUND		



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS
[INCHES ARE FOR REFERENCE ONLY]
TOLERANCE FOR MILLIMETER DIMENSIONS:
X: ±1
X.X: ±0.5
X.XX: ±0.25
X.XXX: ±0.125
ANGLES: ±0.25°
SURFACE TEXTURE IN µm Ra
REMOVE ALL SHARP EDGES, 0.25MAX

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FSG OF  IDEX CORPORATION	
MATERIAL	
MADE FROM	
FINISH	
PROJECT	

  	
TITLE	
HALE TYPE "LKA/XKA" SERIES GEARBOX	

HALE TYPE "LKA/XKA" SERIES GEARBOX

⚠ WARNING ⚠

EXCEEDING THESE LIMITS OR FAILURE TO FOLLOW THE RECOMMENDATIONS OUTLINED ON THIS DRAWING COULD DAMAGE THE GEARBOX AND RESULT IN PERSONAL INJURY.

MAX. TORQUE ON AUXILIARY OUTPUT SHAFT: 2300 LBS-FT (3118 N-m)
MAX. GEARBOX SHAFT TORQUE (ROAD): 18,500 LBS-FT (25,083 N-m)
SEE HALE TORQUE LIMIT CHART F-72 FOR ADDITIONAL DATA

DRIVE LINE RECOMMENDATIONS

APPARATUS BUILDER SUPPLIED DRIVE LINES SHALL BE OF APPROPRIATE SIZE TO MATCH THE CHASSIS AND PUMP REQUIREMENTS WITH INDIVIDUAL JOINT CANCELLATION AND PHASING BEFORE AND AFTER THE PUMP. DRIVE SHAFT BALANCE (INCLUDING YOKES) SHALL NOT EXCEED THE RECOMMENDED LIMIT OF EITHER THE DRIVE SHAFT OR CHASSIS TRANSMISSION MANUFACTURER'S SPECIFICATIONS. DRIVE SHAFT FULL RANGE OPERATING SPEEDS SHALL NOT EXCEED 42% OF ITS CRITICAL SPEED.

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

PROJECTION:

ITEM NO.

PART NO.

DESCRIPTION

QTY.

1

018-2412-02-0

SCREW-5/8-11 X 1-1/4

1

2

097-0890-03-0

IMPELLER WASHER

1

3

037-2580-00-0

KA AUX. OUTPUT SHAFT

1

4

077-1500-25-0

RETAINING RING

1

5

296-2610-00-0

OIL SEAL

1

6

BEARING COVER

SEE BEARING COVER TABLE

1

7

044-0260-00-0

VENT, AIR 1/8 MPT

1

8

159-1730-00-0

SPACER, BEARING, K PUMP SHAFT

1

9

GEAR

SEE GEAR TABLE

1

10

017-0650-02-0

KEY, J SERIES GEARBOX

1

11

046-6800-00-0

GASKET, LK REAR BRG HSG

2

12

HOUSING

SEE BEARING HOUSING TABLE

1

13

097-0940-00-0

2-1/8 DIA. WASHER

1

14

018-2614-25-0

SCREW 3/4-10 X 1.50 GR8 ZINC PL

1

15

296-2090-01-0

RGA OIL SEAL

1

16

250-8240-00-0

NU2310ECP ROLLER BEARING

1

17

159-2020-00-0

K PUMP SHAFT BEARING SPACER

1

18

250-8340-00-0

31309 J2/QLC7CDF ROLLER BEARING

1

19

097-2570-00-0

BEARING RETAINING WASHER

1

20

018-1206-25-0

CSW HH 1/4-20 X 0.75 Z G8

4

21

018-1822-25-0

SCRW,7/16-14x2.25,GR8,ZINC PL

12

22

097-2400-00-0

WASHER, CAFSPRO SUPPORT

1

23

097-3170-09-0

WASHER, BEARING LOCK (W-09)

1

24

110-6110-09-0

NUT, BEARING LOCK (N-09)

1

25

077-1930-05-0

RETAINING RING

1

OPTIONAL AUXILIARY OUTPUT

LKA & XKA PTO

GEARBOX MODEL

GEAR RATIO

GEAR

BEARING COVER

BEARING HOUSING

LKA-23 & XKA-23

2.30

031-1670-00-0

044-2050-00-0

062-0860-01-0

LKA-21 & XKA-21

2.04

031-1680-00-0

044-2050-01-0

062-0850-01-0

LKA-19 & XKA-19

1.89

031-1690-00-0

044-2050-01-0

062-0850-01-0

LKA-17 & XKA-17

1.71

031-1700-00-0

044-2050-00-0

062-0860-01-0

LKA-16 & XKA-16

1.60

031-1710-00-0

044-2050-00-0

062-0860-01-0

ITEM NO.

PART NUMBER

DESCRIPTION

QTY.

1

018-1814-25-0

SCRW,7/16-14x1.5,GR8,ZINC PL

8

2

048-1470-05-0

SHIM BEARING CARRIER (.005 THICK)

1

3

048-1430-00-0

SHIFT COLLAR

1

4

040-1610-00-0

SEAL RING

1

5

008-0840-00-0

BEARING CARRIER

1

6

250-8140-10-0

K DRIVETHRU BEARING ASSY

1

7

250-8140-52-0

4DK INPUT BEARING ASSEMBLY

1

8

296-2680-00-0

OIL SEAL

2

9

031-1720-00-0

DRIVE GEAR (53 TEETH)

1

10

250-8110-00-0

NEEDLE BEARING

1

11

250-8120-00-0

NEEDLE BEARING

1

12

018-2616-25-0

3/4-10 x 1-3/4 BOLT GR8

2

13

097-2050-00-0

WASHER

2

14

115-1450-00-0

RPL25 HALF ROUND YOKE (MOCK VERSION)

2

15

037-2700-00-0

SHAFT - INPUT/OUTPUT

1

16

028-0420-00-0

SHIFT FORK

1

17

077-1930-05-0

RETAINING RING

1

LKA & XKA DRIVETHRU

ITEM NO.

PART NO.

DESCRIPTION

QTY.

1

018-2616-25-0

3/4-10 x 1-3/4 BOLT GR8

1

2

097-2050-00-0

WASHER

1

3

YOKE

SEE YOKE TABLE (SHEET 1 OF 2)

1

4

296-2680-00-0

OIL SEAL

1

5

250-8140-52-0

4DK INPUT BEARING ASSEMBLY

1

6

031-1720-00-0

DRIVE GEAR (53 TEETH)

1

7

037-2270-00-0

INPUT SHAFT

1

8

250-8300-00-0

NU207ECJ BEARING

1

9

077-2810-00-0

RETAINING RING

1

10

SHIM

SEE 048-1470-XX-0 SHIM TABLE (SHEET 1 OF 2)

1

11

008-0890-00-0

BEARING COVER

1

12

040-1610-00-0

SEAL RING

1

13

048-1430-00-0

SHIFT COLLAR

1

14

028-0420-00-0

SHIFT FORK

1

15

250-8110-00-0

NEEDLE BEARING

1

16

250-8120-00-0

NEEDLE BEARING

1

17

115-0091-02-0

GEARSHIFT SHAFT FLANGE

2

18

018-1810-02-0

SCREW, 7/16-14 X 1, GR8

4

19

046-5060-00-0

GASKET QL-W429

2

20

250-9550-00-0

GEARBOX BEARING

2

21

037-1600-00-0

GEARSHIFT SHAFT

1

22

018-1814-25-0

SCRW,7/16-14x1.5,GR8,ZINC PL

8

23

077-1930-05-0

RETAINING RING

1

SHIM NOTE:

PRIOR TO INSTALLING END YOKEs, CHECK CLEARANCE BETWEEN GEARBOX HOUSING AND 008-0840-00-0 BEARING CARRIER USING FEELER GAUGE. INSTALL 048-1470-XX-0 SHIMS BASED ON GAP BETWEEN GEARBOX HOUSING AND BEARING CARRIER.

REVISIONS

ECN

REV.

ZONE

CHANGED FROM

BY

DATE

APVD

4099

F

-

SEE ECN 4099 FULL FORM

CMB

16JUN2017

JLS

5102

G

-

SEE SHEET 1

DMB

07APR2020

JS2

5625

H

-

SEE ECN 5625 FULL FORM

KTN

01DEC2021

JS2

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN MILLIMETERS
[INCHES ARE FOR REFERENCE, ONLY]
TOLERANCE FOR MILLIMETER DIMENSIONS:
X: ±1
X.X: ±0.5
X.XX: ±0.25
X.XXX: ±0.125
ANGLES: ±0.25°
SURFACE TEXTURE IN µm Ra
REMOVE ALL SHARP EDGES, 0.25MAX

FSG OF
IDEX CORPORATION

MATERIAL

MADE FROM

FINISH

PROJECT

HALE

GODIVA

Class1

TITLE

HALE TYPE "LKA/XKA" SERIES GEARBOX

DRAWN

RJT

DATE

01OCT2008

APPROVED

MAL

SCALE

1:3

SIZE

D

DRAWING NUMBER

PL1177

REV

H

SHEET

2 OF 2

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HALE TYPE "LKA/XKA" SERES GEARBOX