



INJECTION PUMP SPECIFICATION ©

FULL LOAD RPM: 3000
 GOV. REGULATION: %
 ENGINE: 7.3L 185 HP 1992 1/2 MY
 APPLICATION: FORD PICKUP MANUAL

CUSTOMER PART #: 1816523C91
 CUSTOMER'S NAME:
 NAVISTAR

MODEL NO.: DB2831-5028
 SUPERSEDES:
 EDITION NO.: 8
 DATED: 11/04/2021

NOTE: ALL SPEEDS ARE (± 5 RPM) IN ENGINE RPM UNLESS OTHERWISE NOTED. PUMP OPERATING SPEED IS HALF ENGINE SPEED. USE LATEST REVISION FOR ALL REFERENCED DOCUMENTS.

TEST STAND: ISO 4008:

- CALIBRATING HIGH PRESSURE PIPES...SAE J1418/ISO 4093:
.078" (1.98mm) I.D. X 25" (635 mm) LONG.
 - CALIBRATING INJECTORS... S.A.E. J968/ISO 7440:
0.5 mm ORIFICE PLATE NOP: 1700 PSI (116 BAR).
- NOTE: INJECTORS SPECIFIED AT 1700 PSI OPENING PRESSURE MUST USE SPRING P/N 780104 OR EQUIVALENT.
- CALIBRATING FLUID...SAE J967/ISO 4113 (REF. S.B. 201):
a. TEMPERATURE AT INLET: **110°-115°F** (43°-46°C)
b. SUPPLY PRESSURE (S.B. 334): 5.0 ± 0.5 PSI (34 ± 3 kPa) AT PUMP INLET.
 - ELECTRONIC ADVANCE INDICATOR: 39938.

PUMP INSTALLATION: IT-031

ROTATION-C:*	LEVER ANGLES (REF.)
NAME PLATE-R-SIDE**	THOT MIN.(∠B) 32°
#1 CYL.-8-O'CLOCK**	THOT MAX.(∠C) 30°
THROTTLE-R-SIDE**	S.O. (∠ E) N/A
TIMING MARK N/A	S.O. (∠ F) N/A

* VIEWED FROM DRIVE END ** VIEWED FROM TRANSFER PUMP END

AIR TIMED TO HOUSING (PER S.B. 177)

PUMP CALIBRATION CHECKS: AS RECEIVED FOR SERVICE (REF. SL-222)

- 1000 RPM (WOT):** OPERATE PUMP FOR 10 MINUTES TO BRING TO OPERATING TEMPERATURE AND CLEAR AIR FROM SYSTEM.
- 400 RPM:** (L.I.) CHECK E.S.O. FOR PULL-IN WITH **10.0-10.2** VOLTS. FUEL SHOULD BE **15** mm³/STROKE, MIN.
- CHECK POINTS:** (SEQUENCE MUST BE FOLLOWED AS LISTED).

RPM	THROTTLE POSITION	mm ³ /STROKE	CAM MOVEMENT
a. 2800	WOT	58.5-65.5	2.0°-5.0°
b. 3000	WOT	57.0-65.0	---
c. 3100	WOT	55.0-64.0	---
d. 3300	WOT	34.5-56.5	---
e. 3300	WOT*	4 MAX.	---
f. 3300	L.I.	---	10.5°-11.5°
g. 3650	WOT	16 MAX.	---
h. 2500	WOT	---	****
i. 2000	ADJ.	13-15	5.5°-8.5°
j. 1400	WOT	61.5-70.5	---
k. 700	L.I.	8-16***	4.2°-7.2°
l. 700	L.I.	---	**
m. 150	WOT	32 MIN.	---

- * E.S.O. DE-ENERGIZED
 ** READING TO BE **1.0°-2.75°** GREATER THAN READING OBTAINED IN STEP 3J W/HPCA ENERGIZED.
 *** MAY BE RESET USING LOW IDLE SCREW
 **** READING TO BE **0.25°-2.75°** LESS THAN READING OBTAINED IN 3A.
- TOTAL TRAVEL FROM LOW IDLE TO WIDE OPEN SHOULD BE **57°-67°**.

PUMP SETTINGS: (FOLLOWING PUMP SERVICE)

- ROLLER-TO-ROLLER DIMENSION: **1.973" ± .001"** (50.08 ± .025 mm) (OVERSIZE CAM RING REF. S.B. 338) MAXIMUM ECCENTRICITY: .004" (T.I.R.)
- LINKAGE GAP: **.145" TO .165"** (3.7 TO 4.2 mm). (USE KIT #23093 S.B. 95).
- SET GUIDE STUD BOTTOMED TO ONE TURN OUT OF HOUSING.
- SET THROTTLE AT **32°** AS MEASURED BETWEEN THROTTLE LEVER BALL STUD CENTERLINE AND VERTICAL CENTERLINE OF THROTTLE SHAFT WITH GAGE #24135.
 - ADJUST LOW IDLE SCREW UNTIL CONTACT IS MADE WITH IDLE STOP BOSS.
 - ADJUST MAX. TRAVEL SCREW TO OBTAIN **62°** TOTAL THROTTLE TRAVEL.
- 1000 RPM (WOT):** OPERATE PUMP FOR 10 MINUTES TO BRING TO OPERATING TEMPERATURE AND CLEAR AIR FROM SYSTEM.

PUMP SETTINGS: (CONT'D.)

- 700 RPM (L.I.):**
 - ADJUST TRANSFER PUMP PRESSURE TO **58-60** PSI.
 - WITH GOVERNOR COVER REMOVED, ADJUST MIN.- MAX. GOV. ASSEMBLY FOR **12-14** mm³/STROKE. (FUEL READING WITH COVER INSTALLED.) CHECK HOUSING FOR **8-12** PSI.
 - WITH HPCA ENERGIZED, CHECK HOUSING PRESSURE FOR **1** PSI MAX.
- 400 RPM (WOT):**
 - DE-ENERGIZE E.S.O. CHECK FUEL FOR **4** mm³/STROKE MAX.
 - (L.I.) CHECK E.S.O. FOR PULL-IN WITH **10.0-10.2** VOLTS. FUEL SHOULD BE **15** mm³/STROKE, MIN.
 - CHECK FOR MIN. T.P. LIFT OF 18" Hg.
- 1400 RPM** ADJUST RETURN OIL TO **200-500** cc/min.
NOTE: FOR REMAINDER OF THE SETTINGS AND CHECKING PROCEDURES CONTROL FACE CAM AND THROTTLE SHAFT END PLAY TO **.004"-.006"** AS MEASURED BETWEEN SPACER #22900 AND THE HOUSING.
- 2800 RPM (WOT):** (ROLLER-ROLLER SET POINT)
 - SET TRANSFER PUMP PRESSURE TO **91-93** PSI.
 - ROTATE FACE CAM TO ITS MAXIMUM LIFT POSITION IN CONTACT WITH THE CAM ROLLER.
 - SET TRIMMER SCREW FOR **3.5°** ADVANCE.
 - SET FUEL DELIVERY TO **62.0-63.0** mm³/STROKE.
 - DE-ENERGIZE E.S.O. CHECK FUEL FOR **4** mm³/STROKE MAX. RE-ENERGIZE E.S.O.
- 3300 RPM (WOT):**
 - SET GUIDE STUD FOR **49.5-50.5** mm³/STROKE AND TORQUE NUT TO **80-90** IN LBS.
 - CHECK DIMENSION FROM TOP OF NUT TO TOP OF GUIDE STUD FOR **.425"** MAX.
- 3100 RPM (WOT):** SET TORQUE SCREW FOR **.75-1.25** mm³/STROKE LESS THEN FUEL READING OBTAINED IN 9C AND TORQUE NUT TO **25-30** IN-LBS.
- 2000 RPM:** ADJUST THROTTLE TO **13-15** mm³/STROKE AND SET FACE CAM ROTATION TO OBTAIN **7.0°** ADVANCE AND TORQUE SCREW TO **28-30** IN-LBS.
- 1400 RPM:** WITH THROTTLE AT **27** mm³/STROKE, ALIGN **0°** ON LEVER PROTRACTOR #22089 WITH CENTER OF RIB ON ROCKER LEVER. RELEASE THROTTLE LEVER AND SET TO **44°** TOWARD WOT POSITION.
NOTE: ANY CHANGES AFTER THIS POINT WILL REQUIRE RE-TESTING OF PUMP, STARTING WITH STEP 7.
- CHECK POINTS:**

RPM	THROTTLE POSITION	mm ³ /STROKE	CAM MOVEMENT	T.P. PRESSURE	HOUSING PRES
a. 2800	WOT	62.0-63.0	3.25°-3.75°	---	---
b. 3000	WOT	59.5-62.5	---	---	---
c. 3100	WOT	58.0-62.0	---	---	---
d. 3300	WOT	48.5-51.5	---	---	---
e. 3300	L.I.	---	10.5°-11.5°	---	---
f. 3650	WOT	15 MAX.	---	130 MAX	---
g. 2500	WOT	---	*	---	---
h. 2000	ADJ.	13-15	6.75°-7.25°	---	---
i. 1400	WOT	62.5-69.5	---	---	---
j. 700	L.I.	12-14***	5.0°-6.5°	---	8-12
k. 700	L.I.	---	**	---	0-1
l. 150	WOT	34.1 MIN.	---	---	---

- * READING TO BE **0.25°-2.25°** LESS THAN READING OBTAINED IN STEP 14A.
 ** READING TO BE **1.25°-2.50°** GREATER THAN READING OBTAINED IN STEP 13I W/HPCA ENERGIZED.
 *** MAY BE RESET USING LOW IDLE SCREW
 15. CHECK TOTAL TRAVEL: **57°-67°**.
 16. AIR TIME PUMP USING GAGE #24205 (S.B. 375) SET TO **-6.0°**.
 17. **SPECIAL NOTES:**
 - TORQUE ALL FASTENERS PER S.B. 106.
 - SEAL PUMP FASTENERS PER S.B. 365.
 - INSTALL TAMPER PROOFING CAP # 26961 (FIELD SERVICE P/N) ON GUIDE STUD (REF. S.B. 365a).
 - INSTALL TAMPER PROOFING CAP 29672 (FIELD SERVICE P/N) ON TORQUE SCREW.

Description	QTY	P/N	HOUSING & DRIVE GROUP (60244)	P/N	QTY	Description
DRIVESHAFT	1	26179		11331	2	SCREW, HEX HEAD
BEARING, NEEDLE	1	23101		23107	1	COVER, TIMING WINDOW
SCREW ASSY, VENT OR 21661-21665	1	21660		21194	2	SCREW, HEX HEAD
SEAL, DRIVE SHAFT	2	10453		27603	1	GASKET, TIMING WINDOW COVER
SEAL, DRIVESHAFT RED	1	21860		24419	2	SCREW, RIVET
SEAL, O-RING	1	23367		10394	1	PLATE, NAME
HOUSING ASSY, PUMP	1	29674		29677	1	CAP, TORQUE SCREW
BEARING, THRUST	1	26180		29671	1	NUT, TORQUE SCREW
WASHER, THRUST	1	21521		17438	1	SEAL, O-RING
				33922	1	SCREW, TORQUE
				10443	1	RING, RETAINING
				21522	1	WASHER, DRSFT SPRING

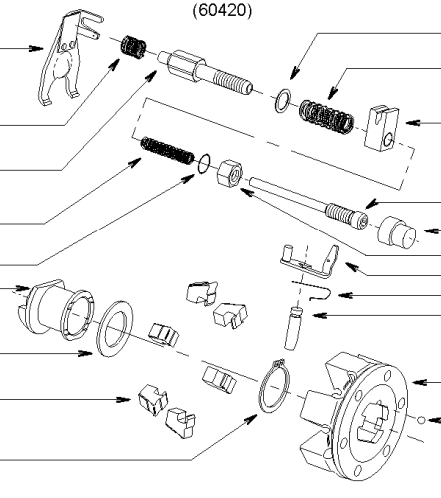
Note: APPLY SYN-KUT P/N 22204 TO DRIVE SHAFT SEALS BEFORE ASSEMBLING TO SHAFT AND SHAFT TO PUMP

Description	QTY	P/N	HEAD & ROTOR GROUP (60002)	P/N	QTY	Description
ROLLER, CAM	2	11141		28369	1	H&R ASSY, HYD 8 CYL
SHOE, CAM ROLLER	2	24569		11066	2	PLUNGER, ROTOR USE 11067-11070 (STD) OR 11072-11075 (O/S) AS IND. ON ROTOR SB 60R
RING, CAM OR 23120 O.S.:INCREASE SPECIFIED R-R BY .006 "	1	27833		12216	1	SCREW, SOCKET SET
SEAL, O-RING	1	27245		11438	1	SCREW, SET
SPRING, LEAF	1	23752		20727	8	CONNECTOR, FUEL LINE
SCREW, LEAF SPR ADJ	1	11175		29710	1	SCREW, SKT HEAD CAP
				29384	1	PLATE, SINTERED LOCK
				27601	1	SEAL, O-RING
				23124	1	SCREW, DELIVERY VALVE RET
				23125	1	STOP, DELIVERY VALVE
				23949	1	SPRING, DEL VALVE
				28947	1	VALVE, DELIVERY OR 28948 (O/S) AS REQ'D REF. S.B. 143B
				17049	2	PISTON, ACCUMULATOR
				17050	2	SCREW, ACC PSTN RET
				17188	2	SPRING, ACCUMULATOR

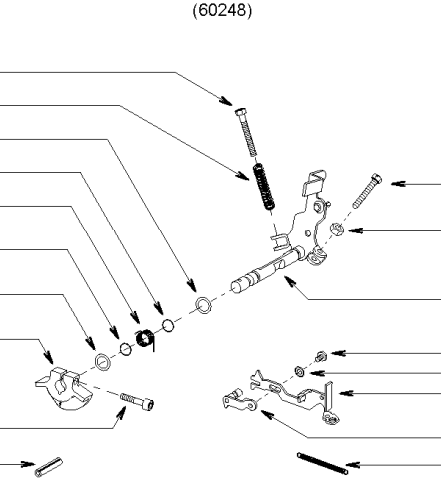
Note:

Description	QTY	P/N	TRANSFER PUMP GROUP (64133)	P/N	QTY	Description
SEAL, TRANSFER PUMP	1	27608		20530	2	RETAINER, ROTOR
SPRING, TP BLADE	2	15699		21232	1	LINER, TRANSFER PUMP
ROLL PIN	1	19837		20511	4	BLADE, TRANSFER PUMP OR 20512 REF. S.B. 304
PISTON, REGULATING	1	19895		20528	1	RING, ROTOR RETAINER
PLUG ASSY, END PL ADJ	1	15228		46771	1	REGULATOR, TRANSFER PUMP
FILTER, INLET	1	28986		24882	1	SPRING, REGULATING
				28980	1	CAP, TP END

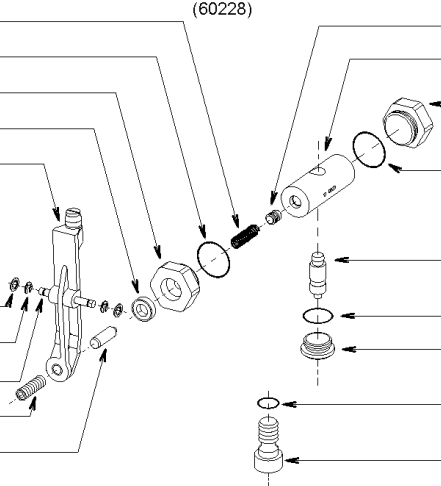
Note: REF. S.B.444

Description	QTY	P/N	GOVERNOR GROUP (60420)	P/N	QTY	Description
ARM ASSY, TEMP COMPEN	1	23461		22325	1	WASHER, MAX SPEED SPR
				30504	1	SPRING, MIN MAX GOV
SPRING, IDLE BLUE	1	22125		24880	1	BLOCK ASSY, GOVERNOR
ROD&SLV ASSY, MM GOV	1	23610		26495	1	STUD, GUIDE
SPRING, GOV INNER RED	1	23744		26923	1	CAP, TAMPER PROOF
SEAL, O-RING	1	11507		23585	1	NUT, GUIDE STUD
SLEEVE, GOV THRUST	1	21312		21895	1	ARM ASSY, MTR VALVE
				21917	1	SPRING, MTR VALVE
WASHER, THRUST	1	23272		11563	1	VALVE, METERING * SEE NOTE
WEIGHT, GOVERNOR	6	21201		28370	1	RETAINER ASSY, GOV WT
RING, RETAINING	1	12285	30251	1	BALL, PRECISION STEEL OR 11430 OR 30322 REF. S.B. 426	

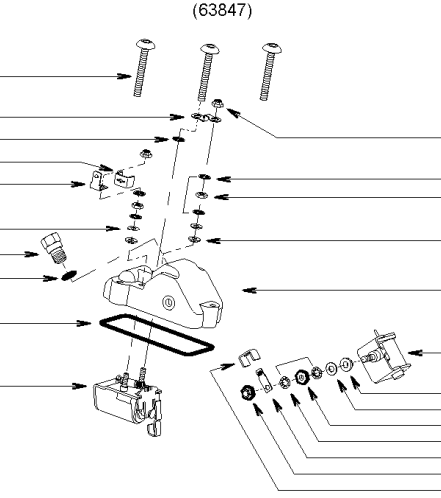
Note: * O.S. METERING VALVE AND ARM ASSEMBLY 24441 REFERENCE S.B.336

Description	QTY	P/N	LINKAGE GROUP (60248)	P/N	QTY	Description
SCREW, HEX HEAD	1	21646		21646	1	SCREW, HEX HEAD
SPRING, IDLE SCREW	1	21358		12173	1	NUT, HEX
WASHER, THROT SHAFT	1	22900		23588	1	SHAFT ASSY, THROTTLE
SEAL, O-RING	1	17438		18021	1	HOOK ASSY, GOV LKGE
SPRING, GOV THRUST	1	26181		12360	1	SCREW, HEX HEAD
SEAL, O-RING	1	17438		12362	1	LOCK WASHER, SHPRF
WASHER, SPACER	1	14408		18020	1	HOOK, GOVERNOR LINKAGE
CAM, RKR LEVER FACE	1	28465		12358	1	LINK ASSY, ADJUSTING
SCREW, SKT HD CAP TX	1	22398		11919	1	SPRING, GOVERNOR LINK
PIN, GROOVED	1	21284				

Note: LUBRICATE PER S.B. 387

Description	QTY	P/N	AUTOMATIC ADVANCE GROUP (60228)	P/N	QTY	Description
SPRING, MECH LLA	1	24885		22367	1	VALVE, SERVO ADVANCE
SEAL, O-RING	1	27609		29043	1	PISTON, SERVO ADVANCE
PLUG ASSY, SPR SIDE	1	24931		23721	1	PLUG, POWER SIDE
SEAL, ADV PLUNGER	1	27163		27609	1	SEAL, O-RING
LEVER ASSY, ROCKER	1	28196		23925	1	PIN, ADVANCE CAM
ROLLER, ROCKER LEVER	1	22720		27610	1	SEAL, O-RING
SCREW, RCR LEVER RLR	1	22396		23056	1	PLUG, HEX SOCKET
WASHER, PLAIN	1	28197		27602	1	SEAL, O-RING
RING, RETAINING	2	30844		26787	1	SCREW ASSY, HEAD LOCATING
RING, RETAINING	2	23566				
PIN, RKR LEVER PIVOT	1	22397				
SCREW, SERVO ADV ADJ	1	26087				
PLUNGER, SERVO ADV	1	22917				

Note: LUBRICATE PER S.B. 387

Description	QTY	P/N	COVER GROUP (63847)	P/N	QTY	Description
SCREW, BUTTON HD CAP	3	22351				
STRAP, TERM GROUNDING	1	20951				
WASHER, INTERNAL TOOTH	1	18493		14760	2	NUT, HEX LOCK
INSULATOR, TERMINAL	1	21618		12049	4	WASHER, INTERNAL TOOTH
TERMINAL, BLADE	1	22985		12519	2	NUT, HEX
WASHER, PLAIN	2	18501		12500	2	WASHER, FIBER
RGLTR ASSY, HSG PRESS	1	23645				
SEAL, O-RING	1	27607		43920	1	COVER, GOVERNOR CONTROL
GASKET ASSY, GOV COVER	1	42696		39607	1	SOLENOID ASSY, COLD ADVANCE
SOLENOID, 12V ETR 2-23190 TUBE, INSULATE	1	26214		12500	1	WASHER, FIBER
				18501	1	WASHER, PLAIN
				12519	1	NUT, HEX
				12049	2	WASHER, INTERNAL TOOTH
				21518	1	TERMINAL
				14760	1	NUT, HEX LOCK
				21618	1	INSULATOR, TERMINAL

Note: INSTALL GROUNDING STRAP ON RIGHT SIDE VIEWING TRANSFER PUMP REF. S.B. 108

FOR SERVICE USE ONLY

APPLICABLE SERVICE ASSEMBLIES

Assembly	Description
15093	THROTTLE SHAFT BUSHING REPLACEMENT
24370	GASKET KIT
26178	PILOT TUBE REPLACEMENT
26431	ESO MOUNTING AND GROUNDING KIT
29042	.002 OVERSIZE ADVANCE PISTON

FOR ENGINEERING USE ONLY

DATE	ECN NO	EDITION
02/03/1992	21322	1
09/03/1992	21736	2
10/06/1992	21928-M	3
06/06/2008	31422	4
01/19/2009	31861	5
12/05/2016	39554	6
11/21/2017	39745	7
11/04/2021	20051	8