

FULL LOAD RPM: 3300
 GOV. REGULATION:
 ENGINE: 7.3L 185 HP 1990-1991 MY
 APPLICATION: FORD PICK-UP AUTO. TRANS. 1.2CS FUEL MIN.

CUSTOMER PART #: 1813265C92
 CUSTOMER'S NAME: NAVISTAR

MODEL NO.: DB2831-4826
 SUPERSEDES:
 EDITION NO.: 4
 DATED: 06-08-05

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

TEST STAND:

- 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):
 - TEMPERATURE AT INLET: **110°-115°F** (43°-46°C)
 - SUPPLY PRESSURE (S.B. 334): **5.0 \pm 0.5 PSI** (34 \pm 3 kPa) AT PUMP INLET.
 - CAM MOVEMENT READOUT DEVICE: #23745.

PUMP INSTALLATION:

ROTATION-C*	LEVER ANGLES (REF.)
NAME PLATE-R-SIDE**	THOT MIN.(ZB) N/A
#1 CYL-8-O'CLOCK**	THOT TOTAL(LC) N/A
THROTTLE-R-SIDE**	S.O. (Z E) N/A
TIMING MARK N/A	S.O. (Z F) N/A
E.S.O. (12V E.T.R.)	

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

AIR TIMED TO HOUSING (PER S.B. 177)
 PUMP OPERATING SPEED...HALF...ENGINE SPEED

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 **10.0-0+0.2 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. 3300	WOT	52.5-59.5	3.25°-6.25°
b. 3300	WOT *	4 MAX.	---
c. 3300	L.I.	---	7.5°-8.5°
d. 3650	WOT	16 MAX.	---
e. 2500	WOT	---	****
f. 2000	ADJ.	13-15	4.25°-7.25°
g. 1400	WOT	57-68	---
h. 700	L.I.	8-16 ***	3.5°-6.5°
i. 700	L.I.	---	**
j. 150	WOT	28 MIN.	---

- * E.S.O. DE-ENERGIZED
 - ** READING TO BE **1.0°-2.75°** GREATER THAN READING OBTAINED IN STEP 3H W/HPCA ENERGIZED.
 - *** MAY BE RESET USING LOW IDLE SCREW.
 - **** READING TO BE **1.25°-3.75°** 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: **1.966" \pm .001"** (49.90 \pm .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).
- 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 FOR **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.
 - 3300 RPM (WOT):**
 - SET TRANSFER PUMP PRESSURE FOR **99-101 PSI**. (SUPPLY SET PER TEST STAND NOTE 3B).
 - REDUCE SPEED TO **1400 RPM** ADJUST RETURN OIL TO **200-500 cc/min.**
 - 400 RPM (WOT):**
 - DE-ENERGIZE E.S.O. CHECK FUEL FOR **4 mm³/STROKE** MAX. MOVE THROTTLE TO (L.I.). CHECK E.S.O. FOR PULL-IN WITH **10.0-0+0.2 VOLTS**. FUEL SHOULD BE **15 mm³/STROKE**, MIN.
 - CHECK FOR MIN. T.P. LIFT OF 18" Hg.
- NOTE:** FOR REMAINDER OF THE SETTINGS AND CHECKING PROCEDURES CONTROL FACE CAM AND THROTTLE SHAFT END PLAY TO **.004"-.006"** AS MEASURED BETWEEN SPACER #14408 AND THE HOUSING.
- 3300 RPM (WOT):** (ROLLER-ROLLER SET POINT)
 - ROTATE FACE CAM TO ITS MAXIMUM LIFT POSITION IN CONTACT WITH THE CAM ROLLER.
 - SET TRIMMER SCREW FOR **4.75°** ADVANCE.
 - SET FUEL DELIVERY TO **57.0-58.0 mm³/STROKE**.
 - DE-ENERGIZE E.S.O. CHECK FUEL FOR **4 mm³/STROKE** MAX. RE-ENERGIZE E.S.O.
 - 3425 RPM (WOT):**
 - SET GUIDE STUD FOR **52.5-53.5 mm³/STROKE** AND TORQUE NUT #23585 TO **80-90 IN-LBS**.
 - CHECK DIMENSION FROM TOP OF NUT TO TOP OF GUIDE STUD FOR **.425"** MAX.
 - 2000 RPM:**
 - ADJUST THROTTLE TO **13-15 mm³/STROKE** AND ROTATE FACE CAM TO OBTAIN **5.5°** ADVANCE.
 - TORQUE SCREW #22398 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 ROTATE TO **44°** TOWARD WOT POSITION. ADJUST MAX. TRAVEL SCREW TO **44°**.
 - CHECK FACE CAM TORQUE RETENTION PER S.B. 361.
- 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	HOUS PRES
a. 3300	WOT	57.0-58.0	4.5°-5.5°	---	---
b. 3300	L.I.	---	7.5°-8.5°	---	---
c. 3425	WOT	51.5-54.5	---	---	---
d. 3650	WOT	15 MAX.	---	130 MAX.	---
e. 2500	WOT	---	*	---	---
f. 2000	ADJ.	13-15	5.25°-5.75°	---	---
g. 1400	WOT	60-67	---	---	---
h. 700	L.I.	12-14 ***	4.5°-6.0°	---	8-12
i. 700	L.I.	---	**	---	0-1
j. 150	WOT	31.5 MIN.	---	12 MIN.	---

 - * READING TO BE **1.5°-3.5°** LESS THAN READING OBTAINED IN STEP 13A.
 - ** READING TO BE **1.25°-2.50°** GREATER THAN READING OBTAINED IN STEP 13H W/HPCA ENERGIZED.
 - *** IF ADJUSTMENT IS REQUIRED, USE L.I. SCREW MAX. ADJUSTMENT IS ± 1 TURN FROM POINT SET IN STEP 4a.
 - CHECK TOTAL TRAVEL: **57°-67°**.
 - AIR TIME PUMP USING GAGE #24205 (S.B. 375) SET TO **- 6.0°**.
 - SPECIAL NOTES:**
 - TORQUE ALL FASTENERS PER S.B. 106.
 - SEAL PUMP FASTENERS PER S.B. 365.
 - INSTALL GUIDE STUD TAMPER PROOFING CAP # 26961 (FIELD SERVICE P/N) ON GUIDE STUD # 26495. (REF. S.B. 365a).

DESCRIPTION	QTY	P/N	HOUSING & DRIVE GROUP	P/N	QTY	DESCRIPTION
			(62902)			
DRIVESHAFT	1	26238		22775	1	SCREW, VAC MDL LCTING
BEARING, NEEDLE	1	23101		11331	2	SCREW, HEX HEAD
SCREW ASSY, VENT OR 21661-21665	1	21660		23107	1	COVER, TIMING WINDOW
SEAL, DRIVESHAFT	2	10453		21194	2	SCREW, HEX HEAD
SEAL, DRIVESHAFT RED	1	21860		27603	1	GASKET, TIMING WINDOW CVR
SEAL, O-RING	1	23367		24419	2	SCREW, RIVET
HOUSING ASSY, PUMP	1	29674		10394	1	NAMEPLATE
BEARING, THRUST	1	26180		12259	1	SCREW, PAN HEAD
WASHER, THRUST	1	21521		10464	1	WASHER, SEALING
				10443	1	RING, RETAINING
				24691	1	WASHER, DRSFT SPRING

NOTES: 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	P/N	QTY	DESCRIPTION
			(62932)			
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, HEAD PLUG
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, RETAINING
				26070	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

NOTES:

DESCRIPTION	QTY	P/N	TRANSFER PUMP GROUP	P/N	QTY	DESCRIPTION
			(63870)			
SEAL, TRANSFER PUMP	1	27608		20530	2	RETAINER, ROTOR
				37447	1	LINER, TRANSFER PUMP
				37268	4	BLADE, TRANSFER PUMP OR 37449 REF. S.B. 304
				20528	1	RING, ROTOR RETAINER
SPRING, TP BLADE	2	15699		28988	1	REGULATOR ASSY, TP
ROLL PIN	1	19837		24882	1	SPRING, REGULATING
PISTON, REGULATING	1	19895				
PLUG ASSY, END PL ADJ	1	15228				
FILTER, INLET	1	28986		28980	1	CAP, TP END

NOTES: REF. S.B.444

DESCRIPTION	QTY	P/N	GOVERNOR GROUP (62904)	P/N	QTY	DESCRIPTION
ARM ASSY, TEMP COMPEN	1	23461		22325	1	WASHER, MAX SPEED SPR
				28137	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
WASHER, THRUST	1	20222		21917	1	SPRING, MTR VALVE
WEIGHT, GOVERNOR	6	21201		11563	1	VALVE, METERING * SEE NOTE
RING, RETAINING	1	12285		28370	1	RETAINER ASSY, GOV WT
			30251	1	BALL, PRECISION STEEL OR 11430 OR 30322 REF. S.B. 426	

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

DESCRIPTION	QTY	P/N	LINKAGE GROUP (60281)	P/N	QTY	DESCRIPTION
SCREW, LEVER ADJUST	1	21646		34402	1	SCREW, MAX TRAVEL
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, GOV LINKAGE
CAM, RKR LEVER FACE	1	28465		12358	1	LINK ASSY, ADJUSTING
SCREW, SKT HD CAP TX	1	22398		11919	1	SPRING, GOVERNOR LINK
SCREW, DOG POINT SET	1	28534				
SCREW, FLAT POINT SET	1	28535				
ADAPTER, SHAFT TPS	1	28538				

NOTES:

DESCRIPTION	QTY	P/N	AUTOMATIC ADVANCE GROUP (60006)	P/N	QTY	DESCRIPTION
SPRING, MECH LLA	1	24885		22367	1	VALVE, SERVO ADVANCE
SEAL, O-RING	1	27609		26382	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, HD LCTING
RING, RETAINING	2	23566				
PIN, RKR LEVER PIVOT	1	22397				
SCREW, SERVO ADV ADJ	1	26087				
PLUNGER, SERVO ADV	1	22917				

NOTES: LUBRICATE PER S.B. 387

DESCRIPTION	QTY	P/N	COVER GROUP	P/N	QTY	DESCRIPTION
(60007)						
SCREW, BUTTON HD CAP	3	22351				
STRAP, TERM GROUNDING	1	20951				
WASHER, INTL TOOTH	1	18493		14760	2	NUT, HEX LOCK
INSULATOR, TERMINAL	1	21618		12049	4	WASHER, INTL TOOTH
TERMINAL, BLADE	1	22985		12519	2	NUT, HEX
WASHER, PLAIN	2	18501		12500	2	WASHER, FIBER
RGLTR ASSY, HSG PRESS	1	23645		23629	1	COVER, GOV CONTROL
SEAL, O-RING	1	27607		23861	1	SOL ASSY, COLD ADV TUBE, INSULATE 1-23190
SEAL, RECTANGULAR SECTION	1	27244		12500	1	WASHER, FIBER
SOLENOID, 12V ETR 2-23190 TUBE, INSULATE	1	26214		18501	1	WASHER, PLAIN
				12519	1	NUT, HEX
				12049	2	WASHER, INTL TOOTH
				21518	1	TERMINAL
				14760	1	NUT, HEX LOCK
				21618	1	INSULATOR, TERMINAL

NOTES: INSTALL GROUNDING STRAP ON RIGHT SIDE VIEWING TRANSFER PUMP REFERENCE S.B. 108

FOR SERVICE USE ONLY
APPLICABLE SERVICE ASSEMBLIES

THROTTLE SHAFT BUSHING REPLACEMENT	15093
GASKET KIT	24370
ESO MOUNTING AND GROUNDING KIT	26431
.008 OVERSIZE ADVANCE PISTON	26383

FOR ENGINEERING USE ONLY
DATE CHANGE NO. EDITION

08/03/1989	19247	1
09/29/1989	19513	2
07/06/1991	20787	3
06/08/2005	29069	4