

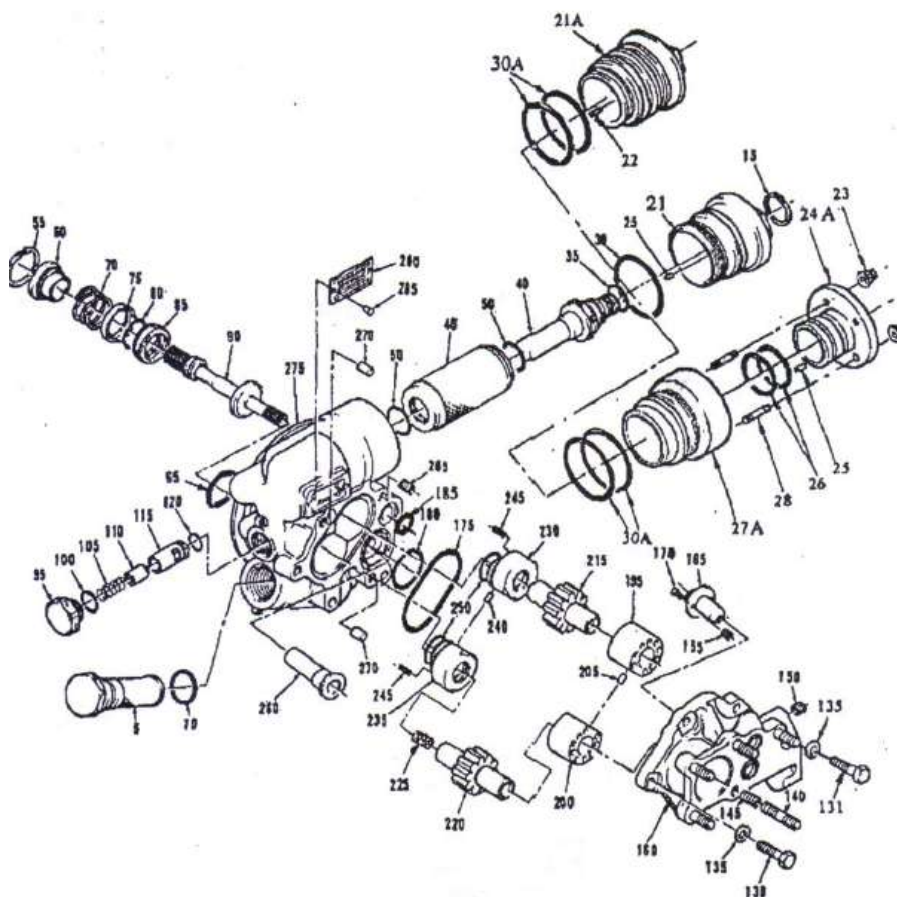
FICHA DE SERVIÇO
SERVICE SHEET

Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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ORDEM DE SERVIÇO:
WORK ORDER:

OVERHAUL - DISASSEMBLY CLEANING INSPEÇÃO ASSEMBLY TESTE

IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
Componente:	Power Driven Rotary Pump (PW118)	TSN:		Projeto:
PN:	5006488B () 500986C () 5009984C ()	TSO:		Manual:
S/No.:		Cliente:		C.M.M./I.P.L 73-10-07, REV.10, 28/06/02 (BT089/A022)
		Fabricante:	WOORWARD	Pane:



Powder Driven Rotary Pump - Figure 1

DISASSEMBLY (Ref. 73-10-07, Page 301 a 306)

2. Disassembly			
1.1 A. Mount Pump in holding fixture FDS-22868, RC2264 or equivalent to aid in disassembly.			
1.2 B. Remove filter element assembly (45) from pumps using filter cover assembly (20) as follows: <i>consultar manual</i> .			

Table 302 - Parts to be Maintained as Matched Sets

IPL FIGURE	NOMENCLATURE AND ITEM NUMBER
1	210 Matched spur gearset (Spur gears 215 and 220) 190 Matched bearing set (Stationary bearings 195 and 200)

Table 304 - Parts Recommended for Discard

1	Preformed packings (10,26, 30,35, 50,65, 80, 100, 120,175,180,185 and 250) Spring pins (205 and 240) Inserts (145, 150,155 and 265)
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---------------------------	-----------	---------------------

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Headless straight pin (270)
Pin, spring tubular slotted (22 and 25)

NOTE;

Discard listed items only if disturbed.

1.3	C. Remove filter clement assembly (45) from pumps using two piece filter cover assembly (24) as follows: <i>consultar manual.</i>			
1.4	D. Remove inlet filter (5) as follows: <i>consultar manual.</i> WARNING: WEAR SAFETY GLASSES WHEN REMOVING LOCKWIRE.			
1.5	E. Remove seal ring assembly (85) and spliced input shaft (90) as follows: <i>consultar manual.</i> CAUTION: USE CARE THAT PARTS ARE NOT DROPPED OR DAMAGED WHEN REMOVING RETAINING RING BECAUSE RETAINER IS SPRING LOADED.			
1.6	F. Remove filter bypass valve components (95 through 120) as follows: <i>consultar manual.</i> WARNING: WEAR SAFETY GLASSES WHEN REMOVING LOCKWIRE.			
1.7	G. Remove screws (130) and (131), washers (135), and pump cover assembly (125). Remove and discard preformed packings (175, 180 and 185). <i>consultar manual.</i>			
1.8	H. If jet nozzle (165) is damaged or pump cover assembly (125) Is being replaced, remove screws (170) and jet nozzle (165) from pump cover assembly. <i>consultar manual.</i>			



MARK DRIVEN GEAR AND BEARINGS WITH SYMBOL "I"



MARK DRIVE GEAR AND BEARINGS WITH SYMBOL "X"

1.9	I. Disassemble gear element as follows: <i>ver manual</i> Procedure : <i>consultar manual.</i> WARNING: LAYOUT DYE IS TOXIC AND FLAMMABLE. DO NOT BREATHE VAPORS. USE IN WELL VENTILATED AREA FREE FROM SPARKS, FLAME, OR HOT SURFACES. WEAR SPLASH GOGGLES. SOLVENT-RESISTANT GLOVES AND OTHER PROTECTIVE GEAR. IN CASE OF EYE CONTACT, FLUSH WITH WATER AND SEEK MEDICAL ATTENTION. IN CASE OF SKIN CONTACT, WASH WITH SOAP AND WATER			
1.10	J. Do not remove mixing tube (260) from pump housing assembly (255) unless damaged. <i>consultar manual.</i>			
1.11	K. Do not remove identification plate (280) unless damaged, illegible or additional identification data is to be added. If necessary, remove drive screws (285) to remove identification plate. <i>consultar manual.</i>			

Observação:

Data	Técnico:	Data	Inspetor:
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WORK ORDER:

<i>Ficha N°</i> <i>A00-04-03-140</i>	<i>REV.</i> <i>O</i>	<i>DATA:</i> <i>05/03/2015</i>
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IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
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CLEANING (Ref. 73-10-07 , Page 402 a 406)

2.1	1. General This section contains a general discussion of cleaning practices. It also contains general procedures for flushing and maintenance of cleaning solvents. General materials required for cleaning are listed in Table 401. Equipment required for cleaning is listed in Table 402. A. Cleaning procedure for metallic parts is given in paragraph 2. B. . Flushing of housings is given in paragraph 3. C. Cleaning of cleanable filter element is given in paragraph 4. D. Solvent maintenance is given in paragraph 5.			
2.2	2. Cleaning and Removal of Foreign Deposits from Pump Components <i>consultar manual.</i> WARNING: WHEN USING COMPRESSED AIR FOR CLEANING OR DRYING, REGULATE PRESSURE TO 29 PSIG (200 KPA) OR LESS. WEAR GOGGLES OR FACE SHIELD TO PROTECT EYES.			
2.3	3. Flushing of Housings <i>consultar manual.</i>			
2.4	4. Cleaning Cleanable Filter Element <i>consultar manual.</i> NOTE: Cleanable filter element (45) must be cleaned prior to CHECK or whenever differential pressure indicator switch indicates filter bypass. Clean filter element according to the following procedure.			
2.5	CAUTION; FAILURE TO PLUG CENTER OF THE FILTER ELEMENT CAN RESULTS IN CONTAMINATION OF FILTER INTERIORS. FLOW THROUGH THE FILTER ELEMENT IS FROM THE OUTSIDE TO THE INSIDE, THE INTERIOR BEING THE CLEAN SIDE			
2.6	5. Solvent Maintenance			

Observação:

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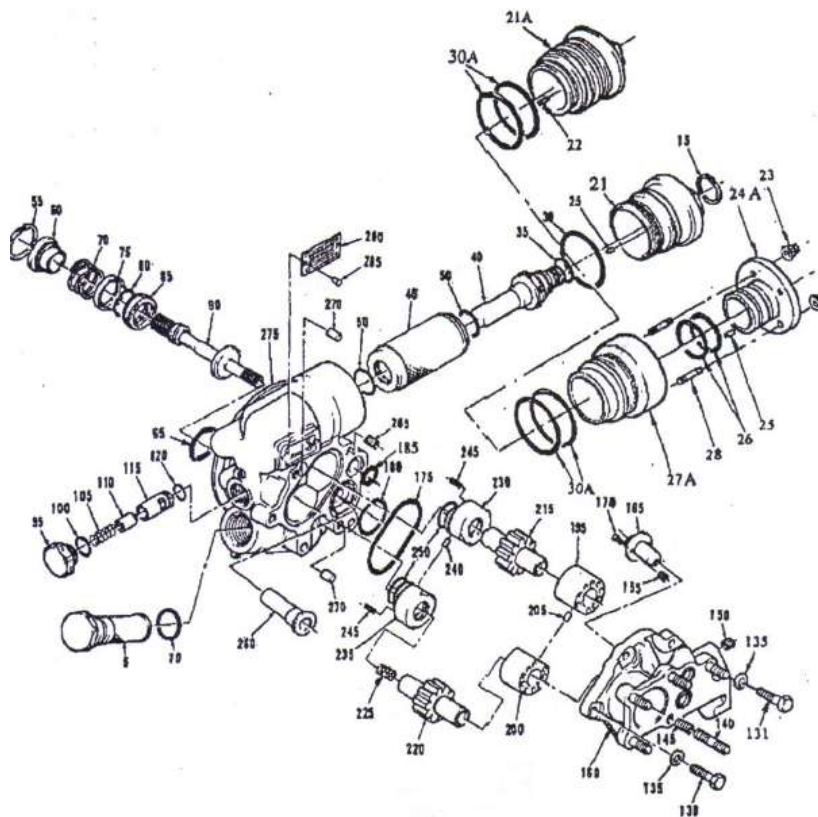
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Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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Powder Driven Rotary Pump - Figure 1

INSPEÇÃO (Ref. 73-10-07 ,Page 502 a 57)

3.1	1. General Visually check all parts for obvious wear or damage Refer to FITS AND CLEARANCES for applicable wear tolerance.			
	NOTE: Reference to item numbers in text implies that alpha variant items listed in the IPL may be used as determined by the effect code for that item. For example, reference to item (1) means that procedures also apply to alpha variant items (-1A, -1B and -1C) except where configurations differ. Alternate procedures are provided when necessary.			
Check Criteria				
Filter Cover (20 IPL, Fig, 1), Adaptor Assembly (27), Filter Bypass Valve Cap (95) and Screws (130, 131)				
3.2	Filter Cover (20 IPL, Fig, 1),			
3.3	Adaptor Assembly (27) * Visually check for stripped, crossed or damaged threads. * Replace damaged parts. * Check all studs for looseness and straightness. * Damaged threads of installed studs (140) maybe chased using a 0.250-28 UNJF-3A die. * Damaged studs (28) can be replaced according to REPAIR.			
3.4	Filter Bypass Valve Cap (95),			

FICHA DE SERVIÇO
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Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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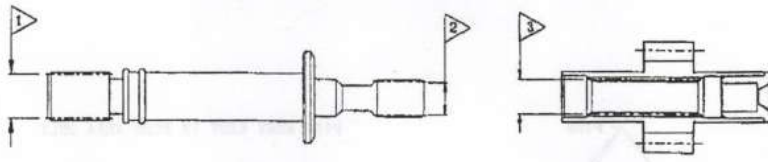
IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
3.5	Screws (130, 131) Action / Criteria * Visually check for stripped, crossed or damaged threads. * Replace damaged parts.			
3.6	Studs (140,28) * Check all studs for looseness and straightness. * Damaged threads of installed studs (140) maybe chased using a 0.250-28 UNJF-3A die. * Damaged studs (28) can be replaced according to REPAIR.			

Inlet Filter (5)

3.7	Inlet Filter (5) - Action / Criteria * Visually check for breaks and punctures in the screen and for broken joints and evidence of crushing. * Check for cleanliness and clean according to CLEANING. * Check inlet filter for stripped, crossed or damaged threads. * Replace inlet filter if threads are damaged, or if wear exceeds the limits given, in Figure 507.			
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Splined Input Shaft (90), Drive Gear (220)

3.8	Splined Input Shaft (90) Action / Criteria * Dimensionally check external splines of input shaft and internal spline of drive gear for wear. * Dimensionally check scaling surface of splined input shaft. Drive Gear (220) * Replace if wear exceeds the limits given in FITS AND CLEARANCES.			
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3.8.1	 Splined Input Shaft (90) and Drive Gear (220) showing spline wear limits.			
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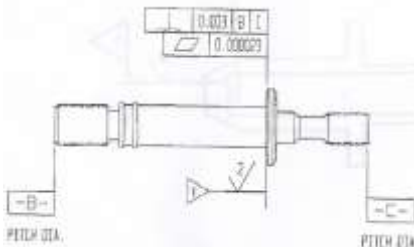
3.8.2	 External spline: 12 teeth, 20/40 pitch, 30° pressure angle. Minimum dimension over pins, 0.7331 in. (1.862 cm).	Splined Input Shaft (90)		
		Drive Gear (220)		
3.8.3	 External spline: 11 teeth, 24/48 pitch, 30° pressure angle. Minimum dimension over pins, 0.5611 in. (1.425 cm).	Splined Input Shaft (90)		
		Drive Gear (220)		
3.8.4	 Internal spline: 11 teeth, 24/48 pitch, 30° pressure angle. Wear step should not exceed, 0.0025 in. (0.00635 cm).	Splined Input Shaft (90)		
		Drive Gear (220)		

FICHA DE SERVIÇO
SERVICE SHEET

Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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ORDEM DE SERVIÇO:
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IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
3.8.5	 Dimensional Check of Splined Input Shaft Seal Mating Face Figure 807			
3.8.6	 Surface finish must be a circular pattern with no scratches extending radially across the face.			

Spring (70, 105, 225 and 245)

3.9	Spring (70)			
3.10	Spring (105)	Action / Criteria * Visually check for breaks, cracks, deformation and ends that are not squared. * Dimensionally check. * Load/Height according to FITS AND CLEARANCES- * Replace damaged springs.		
3.11	Spring (225)			
3.12	Spring (245)			

Table 801 - Spring Specification

Fig/ Item	Identifying Dimensions		Dimension Criteria			
	Spring Diameter Inches (Cm)	Wire Diameter Inches (Cm)	Load/Height			
1-70	1.053 (2.67 cm)	0.053 (0.135 cm)	5.00 ± 0.25 lbs at 0.250 in. (2.25 ± 0.11 kg at 0.635 cm)			
1-105	0.240 (0.61 cm)	0.032 (0.081 cm)	5.74 ± 0.57 lbs at 0.567 in. (4.54 ± 0.453 kg at 3.015 cm)			
1-225	0.344 (0.873 cm)	0.047 (0.119 cm)	10.00 ± 1.00 lbs at 1.187 in. (2.61 ± 0.26 kg at 1.45 cm)			
1-245	0.105 (0.266 cm)	0.023 (0.058 cm)	5.00 ± 0.50 lbs at 0.469 in. (0.26 ± 0.23 kg at 1.191 cm)			

Bypass-Valve Piston (110), Bypass Valve Sleeve (-115)

3.13	Bypass-Valve Piston (110) Action / Criteria * Visually check outside diameter of valve piston and inside diameter of valve sleeve for nicks, scratches and other defects. * If the surface cannot be restored by lapping according to REPAIR. replace the piston and sleeve.			
	Bypass Valve Sleeve (-115) * Minor defects can be lapped to allow for free movement of the piston in the sleeve, for leakage check refer to Fig. 505.			

FICHA DE SERVIÇO
SERVICE SHEET

Ficha N°
A00-04-03-140

REV.
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DATA:
05/03/2015

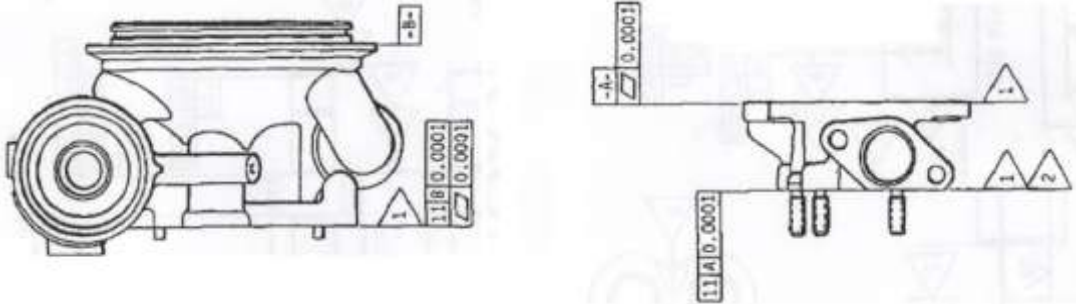
ORDEM DE SERVIÇO:
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IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
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Pump Cover Assembly (125), Pump Housing Assembly (255)

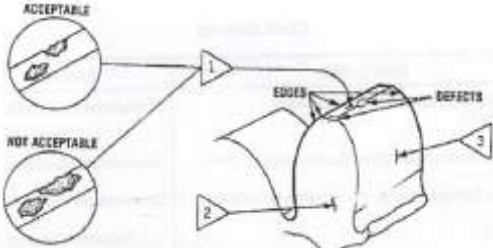
3.14	Pump Cover Assembly (125) Action / Criteria * Visually check the pump cover assembly and pump housing assembly for cracks using fluorescent penetrant inspection procedures according to Specification ASTM E1417. * Replace damaged part Visually check inserts (145, 150, 155 and 265) for damage or looseness.			
	Pump Housing Assembly (255) * Replace damaged or loose inserts according to REPAIR. * Dimensionally check according to FITS AND CLEARANCES.			

3.14 .1	 Mating Surfaces Fits and Clearances Figure 803			
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3.14 .2	 Notes surfaces to be free of nicks, scratches and scoring.	Pump Cover Assembly (125)		
		Pump Housing Assembly (255)		
3.14 .3	 Noted surface must be free of nicks in the area of the preformed packing sealing surface. Nicks and scratches that do not exceed 0.005 in. (0.013 cm) depth, and do not extend above the surface arc in a non-sealing area (inside or outside the preformed packing scaling surface), are acceptable.	Pump Cover Assembly (125)		
		Pump Housing Assembly (255)		

Matched Gearset (210)

3.15	Matched Gearset (210)- Action / Criteria * Visually check gears for wear and cracked or chipped surfaces according to Fig. 501 and 502. * Check for hidden cracks using magnetic particle inspection procedures according to Specification ASTM E1444. * Replace the matched gearset if any flaws are detected. * Dimensionally check according to FITS AND CLEARANCES.			
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3.15 .1	 Check of Gear Teeth for Damage (Figure 501)			
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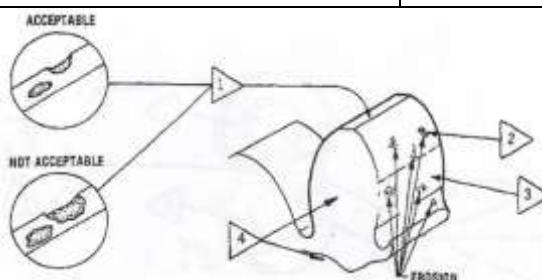
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3.15 .2		Edges: Chips and nicks on tooth edge must not exceed an area of 0.030 in. by 0.007 in. by 0.007 in. (0.76 cm by 0.018 cm by 0.018 cm) deep and should not extend more than halfway (circumferentially) across tip.
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3.15 .3		Gear End Face: Chips or nicks on one or both end faces of gears may be removed according to REPAIR
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3.15  Tooth Face Surface: Scuff marks on tooth face surface must not exceed 125 microinches.



Check of Gear for Erosion and Overheating (Figure 502)

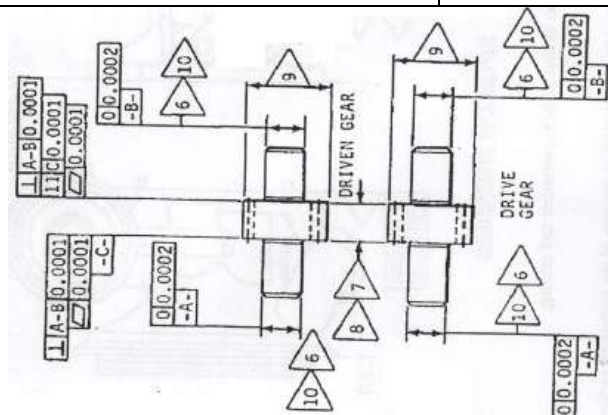
3.15 .6		Notes And Dimensions (<i>Pág. 506</i>) Erosion not to extend more than halfway (circumferentially) across width of tooth tip.
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3.15
7

2 Erosion not to exceed 0.010 in (0.025 cm) depth in noted area.

3.15  Erosion not to exceed 0.020 in. (0.051 cm) depth in noted area.

3.15 .9		Inspect for evidence of overheating, (i.e. discoloration that cannot be removed with light polishing and surface hardness is less than 92 Rockwell 15N).
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Dimensional Check of Bearings, Matched Gearset, and Pump Housing Assembly Figure 804 (Sheet 1 of 3)

FICHA DE SERVIÇO
SERVICE SHEET

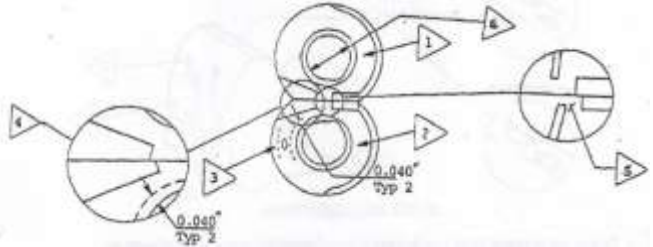
Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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3.15 .11	6 Min. gear journal OD to be 0.6844 in. (1.74 cm).			
3.15 .12	7 Min. gear thickness 0.6540 in. (1.661cm).			
3.15 .13	8 Gear thickness to be matched within 0.0002 in. (0.0005 em).			
3.15 .14	9 Min. gear tip OD to be 1.4980 in. (3.80 cm).			
3.16 .15	10 Diametral clearance between bearing ID and OD of gear journals to be 0.0030 to 0.0042 in. (0.0076 to 0.011 cm).			

Matched Bearing Set (190), Floating Bearings, (230,235)

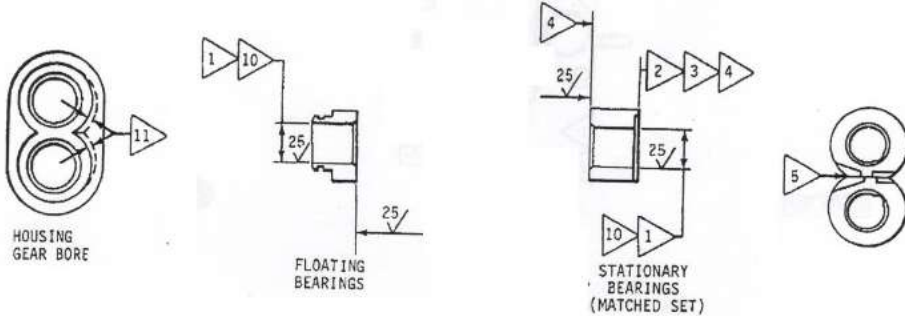
3.16	Matched Bearing Set (190) * Visually check for nicks, gouges, scratches grooves, pitting and wear according to Fig. 503. * If bearings are to be replaced, fit new bearings to bores of pump housing (275), lap bearings flats according to REPAIR. Floating Bearings, (230,235) * Dimensionally check bearings according to FITS AND CLEARANCE before lapping.			
3.16 .1	 Check of Bearings for Pitting and Erosion (Figure 503 (Sheet 1 of 2))			
3.16 .2	1 Bearing surface circular grooving not to exceed 25 microinches.			
3.16 .3	2 Surface pitting less than 0.005 in. (0.013 cm) depth is acceptable at any location if total erosion area is less than 15 % of total bearing face.			
3.17 .4	3 A max of 3 pits, not to exceed 0.015 in. (0.038 cm) depth and up to 0.093 in. (0.240 cm) dia. (or equivalent area) are permissible. Pits of this size arc not allowed within 0.040 in. (0.103 cm) of the inner edge.			
3.17 .5	4 Erosion less than 0.156 in. (0.402 cm) max depth permitted outside of 0.040 in. (0.103 cm) band width in approximate area shown. Depth measured from parent surface.			
3.17 .6	5 Erosion permitted in area shown provided that there is no direct flowpath connecting the slot and discharge window.			

FICHA DE SERVIÇO
SERVICE SHEET

Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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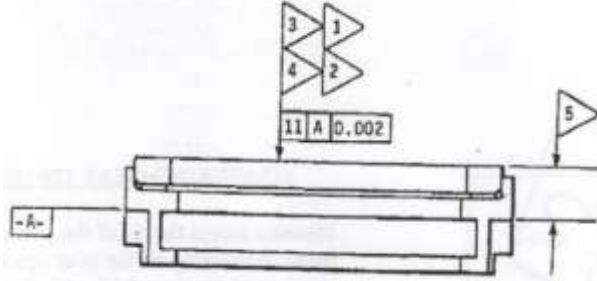
IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
3.17 .7	 Dispersed pitting up to 0.031 in. (0.080 cm) dia. is acceptable on noted I.D. so long as dimensional criteria is met			
3.17 .8	 HOUSING GEAR BORE FLOATING BEARINGS STATIONARY BEARINGS (MATCHED SET) Dimensional Check of Bearings, Matched Gearset, and Pump Housing Assembly Figure 804 (Sheet 1 of 3)			
3.17 .9	 Inside diameter of bearings (195, 200, 230 and 235) to be 0.6886 in. (1.75 cm) max. Bearing ID must be round within 0.0005 in. (0.0013 cm) when used with new gears, and round within 0.001 in. (0.0025 cm) when used with existing gears.			
3.17 .10	 Minimum matched (stationary) bearing set thickness, 0.9195 in. (2.335 cm).			
3.17 .11	 Thickness of matched (stationary) bearing set to be matched within 0.0002 in. (0.0005 cm).			
3.17 .12	 Faces of matched (stationary) bearing set to be parallel within 0.0002 in. (0.0005 cm).			
3.17 .13	 Clearance between bearing flats (installed in housing) to be 0.0008 in. min. to 0.0015 in. max. (0.002 to 0.0038 cm).			
3.17 .14	 Diametral clearance between bearing ID and OD of gear journals to be 0.0030 to 0.0042 in. (0.0076 to 0.011 cm).			
3.17 .15	 Max. gear wipe depth, 0.003 in. (0.0076 cm).			
Seal Ring Assembly (85)				
3.18	Dimensionally check according to FITS AND CLEARANCES.			

FICHA DE SERVIÇO
SERVICE SHEET

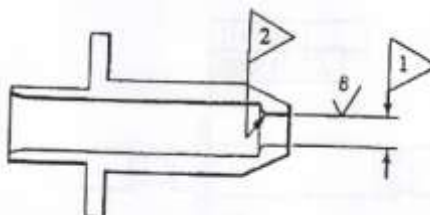
Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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ORDEM DE SERVIÇO:
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3.18 .1	 Dimensional Check of Seal Ring Assembly Figure 806			
3.18 .2	 Reject if chips or cracks extend more than 20% across sealing surface. Scattered chipped areas which do not extend more than 0.010 in. (1.0254 cm) radially or at edges of lubricating grooves, are permissible.			
3.18 .3	 No more than seven scratches of 5 microinches (0.000127 mm) max. depth by 5 microinches (0.000127 mm) width per 0.0625 in. (0.159 cm) lineal face length are allowed.			
3.18 .4	 No more than three continuous circular scratches 20 microinches (0.000508 mm) maximum depth are permissible. Edges of scratches must not be above surface. Scratches are not to extend radially across seal face.			
3.18 .5	 Noted face of carbon seal to be flat within 0.000023 in. (0.000058 cm) (2 light bands).			
3.18 .6	 Minimum dimension, 0.161 in. (0.409 cm)			

Jet Nozzle (165)

3.19 .7	Jet Nozzle (165) Dimensionally check according to FITS AND CLEARANCES.			
3.19 .8	 Jet Nozzle Fits and Clearances Figure 808			
3.19 .9	 Noted diameter of jet nozzle orifice to be 0.182 in. max. (0.4623 cm).			
3.19 .10	 Radius of orifice to have 8 microinches (0.2 Micrometer*).			

SERVICE SHEET

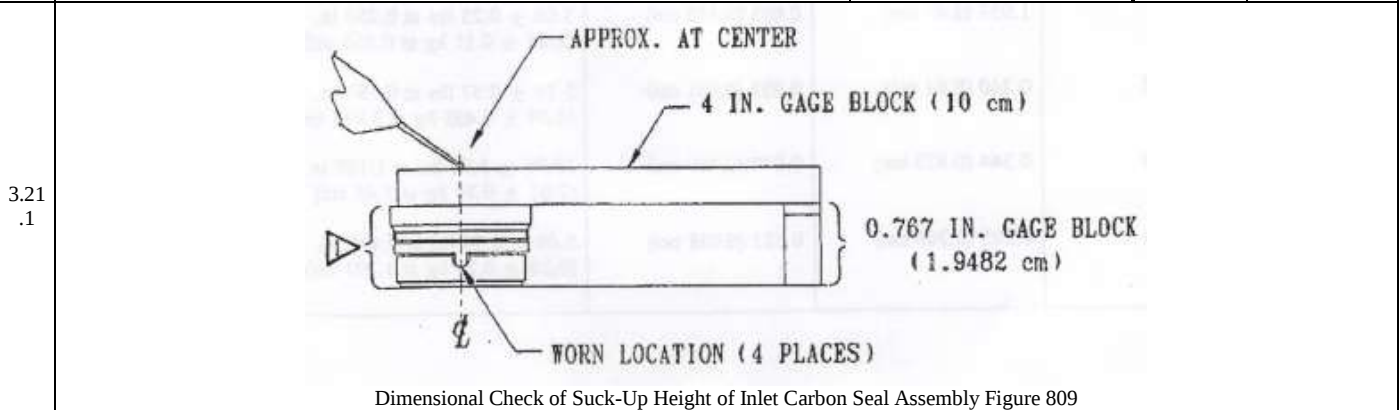
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DATA:
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3.20	CLeanable Filter Element (45) * Check cleanliness and clean according to CLEANTNH Visually check filter for breaks, punctures, evidence of crushing or collapse and broken joints. * Check for hidden flaws according to Fig. 504. * Replace the filter clement if any flaws are detected. * However, cracks are allowed at the inside diameter of both end caps if not exceeding 2/3 length of the lip and 0.045" (0.114 cm) width (Ref. Fig. 506)			
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3.21	Seal Retainer (60) Visually check retaining slots for excessive wear (Ref. Fig 809), apply repair procedures according to REPAIR.			
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Dimensional Check of Suck-Up Height of Inlet Carbon Seal Assembly Figure 809

3.22 .2		Measure slack-up height of the seal assembly as indicated in the procedure. If stack-up height is less than .755 in. (1.9177 cm) and slots of seal retainer are obviously worn, repair seal retainer (refer to repair no. 11). Remeasure stack-up height again with the repaired seal retainer, if the height is still under 0.755 in. (1.9177 cm), replace sealing ring assembly and key washer.				
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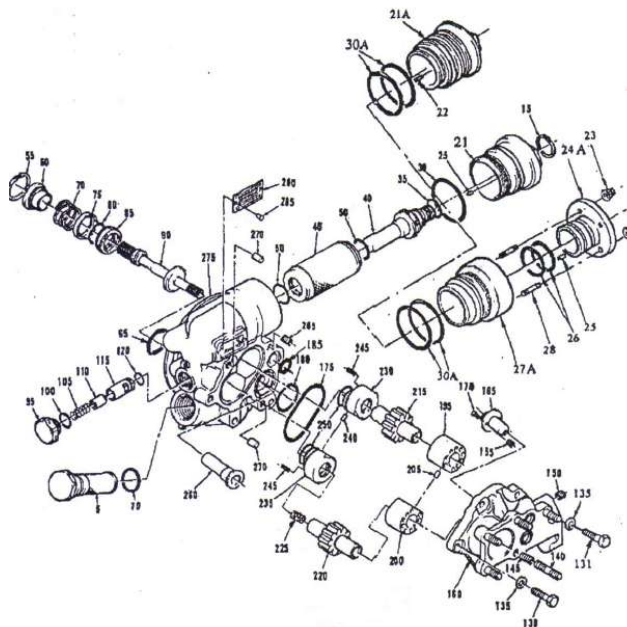
FICHA DE SERVIÇO
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Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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Powder Driven Rotary Pump - Figure 1

REPAIR (Ref. 73-10-07, Page 601 a).

4.1	General consultar manual. This section contains repair procedures, required to return the pumping unit assembly to serviceable condition. Replace all parts that do not meet requirements after repair. NOTE: Reference to item numbers in text implies that alpha variant items listed in the IPL may be used as determined by the effect code for the item. For example, reference to item (1) means that procedures also apply to alpha variant items (-1 A, -1B, and -1C) except where configurations differ. Alternate procedures are provided when necessary. A. A list of repairs is provided in Table 601. B. Materials required for repair are listed in Table 602. C. Symbols used for repair are listed in Table 603.			
4.2	Repair. consultar manual. Observação: se necessário reparo em alguma partes fazer ficha de solicitação de serviço e registrar aqui e arquivar com as OS.Registrar: Solicitação No. // Data da Solicitação // OF solicitada // Data de Recebimento.			

Observação:

Data	Técnico:	Data	Inspetor:
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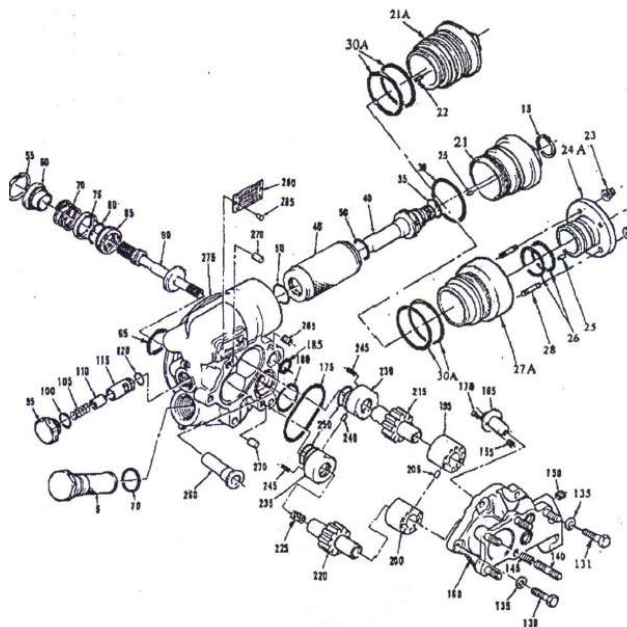
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SERVICE SHEET

Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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ORDEM DE SERVIÇO:
WORK ORDER:

OVERHAUL - DISASSEMBLY CLEANING INSPÇÃO ASSEMBLY TESTE

IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
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Powder Driven Rotary Pump - Figure 1

ASSEMBLY (Ref. 73-10-07 ,Page 701 a 708)

5.1	1. General This section contains assembly procedures. When necessary, assembly illustrations are also provided. Reference to item numbers in the text and accompanying illustrations are identical to those in the IPL Refer to FITS AND CLEARANCES for summarized assembly procedures and torque values. Storage instructions are also included in this section. NOTE: Reference to item numbers in text implies that alpha variant items listed in the IPL may be used as determined by the effect code for that item For example, reference to item (1) means that procedures also apply to alpha variant items (-1A, -1B, and -1C) except where configurations differ. Alternate -procedures are provided when necessary. A. Materials required for assembly are listed in Table 701. B. Special tools and equipment used for assembly arc listed in Table 702. C. Use light mineral oil (Table 701) to aid assembly of preformed packings and to lubricate all bores into which the preformed packings are installed, except where otherwise stated. Lubricate threads and moving parts with MIL-L-23-699C lubricating oil. D. Use new preformed packings al each overhaul.			
5.2	2. Assembly <i>consultar manual</i> NOTE: Mount pump in Holding Fixture-RC2264 to aid assembly. A. Install identification plate as follows: <i>consultar manual</i>			
5.3	B. Assemble pump housing assembly (255) as follows: <i>consultar manual</i>			
5.4	C. Assemble gear element as follows: <i>consultar manual</i>			

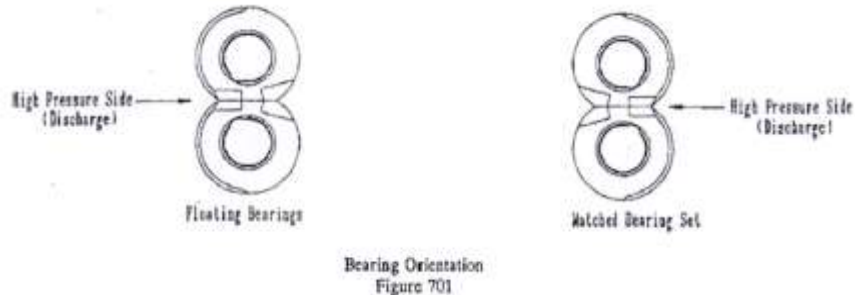
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SERVICE SHEET

Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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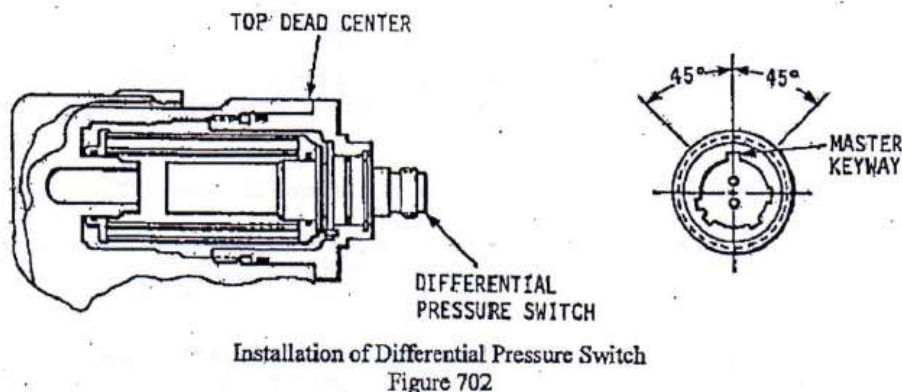
ORDEM DE SERVIÇO:
WORK ORDER:

OVERHAUL - DISASSEMBLY CLEANING INSPEÇÃO ASSEMBLY TESTE

IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
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5.5	D. Assembly pump cover (160) as follows: <i>consultar manual</i>			
5.6	E. Install pump cover assembly (125) on pump housing assembly (255) using five washers (135) four screws (130) and screw (131). Torque screws 110 to 122 lb.-in. (12.4 to 13.8 Nm). NOTE: <i>Screw (131) should be located nearest to filter cover assembly (20) or adapter assembly (27).</i>			
5.7	F. Install components of filter bypass valve assembly (95 through 120) as follows: <i>consultar manual</i>			
5.10	G. Install preformed packing (65) into pump housing (265). <i>consultar manual</i>			
5.11	H. Install splined input shaft (90) into pump housing assembly (255). Be sure external spline of shaft is engaged with the interior spline of drive spur gear (220). <i>consultar manual</i>			
5.12	I. Install seal ring assembly (85) as follows: <i>consultar manual</i> CAUTION: <i>USE CARE WHEN HANDLING THE SEAL RING. DO NOT TOUCH, SCRATCH OR MARK THE CONTACT FACE, OR LEAKAGE AND PREMATURE FAILURE MAY RESULTS.</i>			
5.13	J. Install differential pressure switch (40) (40A) and the stainless steel filter cover (20) as follows: <i>consultar manual</i>			



5.14	K. Install differential pressure switch (40) (40A) and the two piece filter cover (24). <i>consultar manual</i>			
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SERVICE SHEET

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<i>Ficha N°</i> <i>A00-04-03-140</i>	<i>REV.</i> <i>O</i>	<i>DATA:</i> <i>05/03/2015</i>
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OVERHAUL - DISASSEMBLY CLEANING INSPEÇÃO ASSEMBLY TESTE				
IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura

5.15	I. Install inlet filter as follows: <i>consultar manual</i>			
5.16	4. Storage After Assembly <i>consultar manual</i>			

Observação:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

<i>Data</i>	<i>Técnico:</i>	<i>Data</i>	<i>Inspetor:</i>

FICHA DE SERVIÇO
SERVICE SHEET

Ficha N°
A00-04-03-140

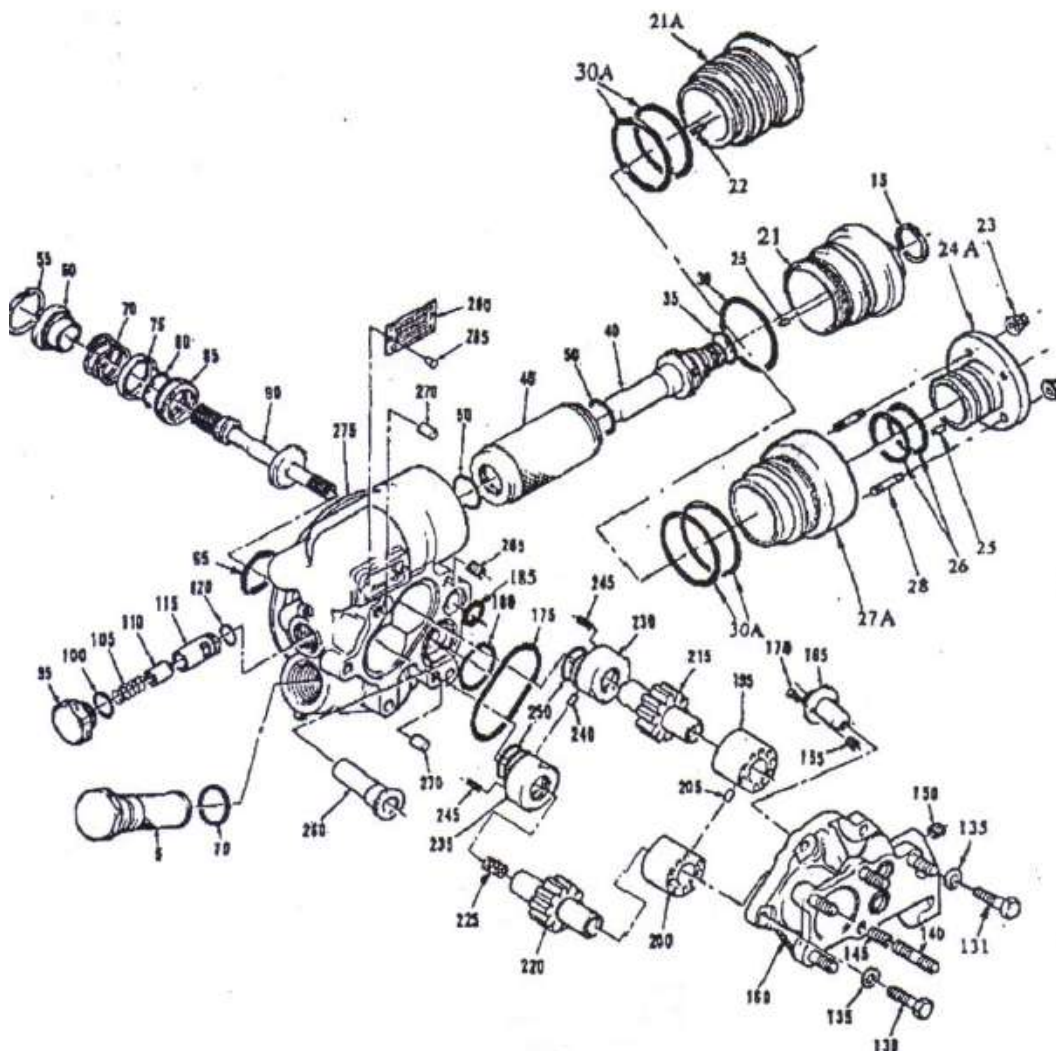
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05/03/2015

ORDEM DE SERVIÇO:
WORK ORDER:

OVERHAUL - DISASSEMBLY CLEANING INSPEÇÃO ASSEMBLY TESTE

IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
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Powder Driven Rotary Pump - Figure 1

Testing (Ref. 73-10-07 ,Page 701 a 708)

6.1	3. PRETESTING CHECK (73-10-07,Para.3.Pág.102) For a Power Driven Rotary Pump removed from service, proceed as follows: A. Visually check pump for damage and missing external components.		
6.2	B. Visually check for contamination, corrosion, or other obstructions that could affect performance.		
6.3	C. Slowly rotate splined input shaft by using hand crank tool T4142S to check if static torque value obtained is over max. limit of 50 lb. in. (5.65 NM). Do not proceed with test.		
6.4	D. If the pump has no obvious defects, test according to the following. If all tests are satisfactory, the pump may be returned to service. If the pump fails any test condition, proceed with troubleshooting and maintenance.		

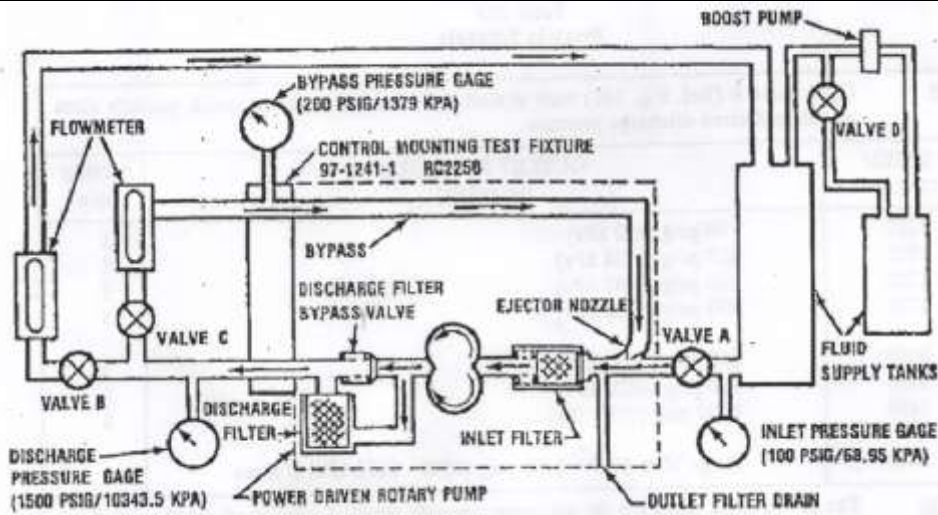
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SERVICE SHEET

Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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ORDEM DE SERVIÇO:
WORK ORDER:

OVERHAUL - DISASSEMBLY CLEANING INSPÇÃO ASSEMBLY TESTE

IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
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Typical Test Schematic (Figure 101)

6.5	4. BREAK-IN TEST (73-10-07, Para. 4. Pág. 102) A. Remove the filter element (45, IPL Fig. 1) from the pump and install the test filter • element, preformed packings (30 and 50), and filter cover assembly (-20) for types 5006488, and (23), (-24), (-27), for types 5009984, 5009986 and 770037. Remove inlet filter screen and install pressure tap MS 24399-17 and performed packing MS 25988-1-912.			
6.6	B. Install test fixtures RC2254 at outlet and RC2255 at inlet.			
6.7	C. Refer to DESCRIPTION AND OPERATION for identification of ports and recommended mounting position. Install pump on test stand in a position resembling its engine mounted position as nearly as possible (discharge filter housing on top and horizontal). Connect fuel lines to ports as shown in Figure 101. WARNING: Calibrating Fluid Is Toxic And Flammable. Do Not Breathe Vapors. Use In Well Ventilated Area Free From Sparks, Flame Or Hot Surfaces. Wear Splash Goggles, Solvent-Resistant Gloves And Other Protective Gear In Case Of Eye Contact, Flush With Water And Seek Medical Attention. In Case Of Skin Contact, Wash With Soap And Water			
6.8	D. Start boost pump, then operate pump .to purge air from Ac system to be sure all internal pumping components are immersed in calibrating fluid.			
6.9	E. Operate the pump' according to Break-In Schedule, Table 103, Refer to Figure 101 to identify the test valves.			
6.10	(1) Open valve A, close valve C, and adjust valve B for the required discharge pressure.			
6.11	(2) With the boost pump operating, adjust valve D to maintain the inlet pressure at 15 to 25 psig (103-172 kPa) and inlet temperature 60° to 90°F (15.5° to 32.2°C) for break in.			

FICHA DE SERVIÇO
SERVICE SHEET

Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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ORDEM DE SERVIÇO:
WORK ORDER:

OVERHAUL - DISASSEMBLY CLEANING INSPEÇÃO ASSEMBLY TESTE

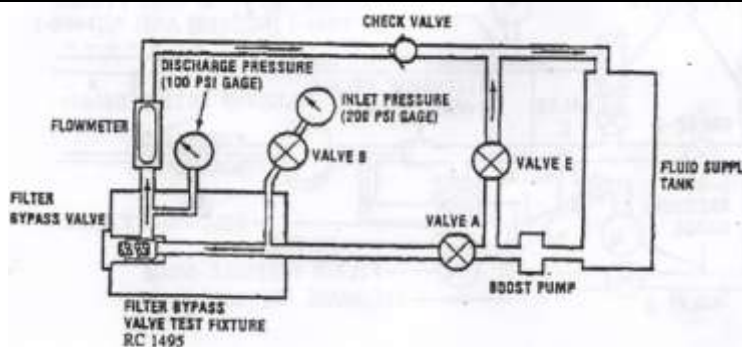
IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
6.12	(3) Bearing temperature may be measured during break-in using a thermometer or thermocouple temporarily attached to the side of the pump housing. Hot spots can also be determined by feeling the pump housing by hand. If the bearing temperature rises 10°F (5.5°C) above the fuel inlet temperature or if the torque or outlet pressure is unsteady, reduce the pump speed and pressure until bearing temperature falls within specified limit and pressure and torque can be held steady. NOTE: If only rubber parts were replaced, break-in time may be reduced to one-half of that shown. If metal parts were replaced (body, gears or bearings), the complete break-in is required.			
6.13	(4) Perform surge test as follows: (a) With pump speed at 3450 rpm, gradually increase pump discharge pressure from 1000 to 1400 psig (6890 to 9652 kPa) two (2) times. CAUTION: Do Not Remain At 1400 Psig (9652 Kpa) Longer Than (3) Seconds.			
6.14	(b) Shut-off boost pump and pump under test. Re-install filter element assembly, filter with differential pressure switch. Torque cover according to ASSEMBLY.			

Table 103 Break-In Schedule

NOTE: Open valve B (Ref. Fig. 101) wide at start and at each increase in speed; partially close to obtain desired discharge pressure.			
PUMP SPEED (rpm)	OUTLET PRESSURE (psig)(kPa)	* TIME (min.)	Observação
1725	100 psig (690 kPa)	5	
1725	250 psig (1724 kPa)	5	
1725	500 psig (3447 kPa)	5	
1725	750 psig (5170 kPa)	5	
3450	500 psig (3447 kPa)	5	
3450	700 psig (4820 kPa)	5	
3450	1000 psig (6890 kPa)	5	
3450	Surge from 1000 - 1400 psig (6890 - 9652 kPa) 2 times		

*** NOTE:**

The above listed times are the minimum intervals required when mechanical parts of the pump have been replaced, if only rubber parts of the pump have been replaced, the above listed times can be reduced by one-half.



Bypass Valve Test Schematic (Figure 102)

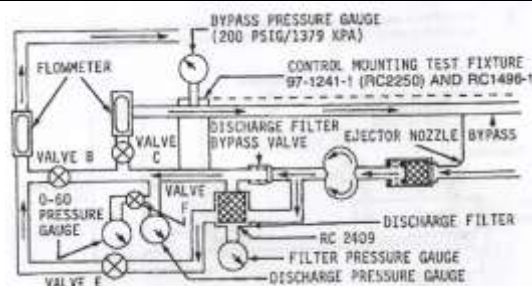
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SERVICE SHEET

Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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ORDEM DE SERVIÇO:
WORK ORDER:

OVERHAUL - DISASSEMBLY CLEANING INSPEÇÃO ASSEMBLY TESTE

IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
6.15	5. Discharge Filter Bypass Valve Check (73-10-07, Para. 5. Pág. 106) A. Remove filler bypass valve from pump and install in filter bypass valve test fixture RC 1495 (refer to Table 102). Connect fuel lines and pressure gages as shown in Figure 102. Disconnect line from test fixture discharge port.			
6.16	B. Open valve E and start boost pump. Open valves A and B, and increase inlet pressure by closing valve E until a pressure of 40.0 psig (275.79 kPa) is obtained. Leakage from discharge port shall not exceed 50 cubic centimeters per minute.			
6.17	C. Adjust valve E to slowly increase inlet pressure until valve opens, indicated by an increase in flow from discharge port. Opening pressure shall be 41.0 to 62.0 psig (282.69 to 427.47 kPa). Reconnect test fixture discharge port line.			
6.18	D. Adjust valve E to obtain 4,221 Lbs/hr. (531.84 g/s) flow through the filter bypass valve. Pressure differential between the inlet pressure gage and outlet pressure gage shall not exceed 125 psi (861.84 kPa).			
6.19	E. Shut-off boost pump. Close valve A, remove filter bypass valve from test fixture RC 1495 and install in pump. Torque filter bypass valve cap according to ASSEMBLY.			



Differential Pressure Indicator Switch Test Schematic (Figure 103)

6.20	6. Differential Pressure Indicator Switch Test (73-10-07, Para. 6. Pág. 107) A. Install fixture RC24U9 hand tight in place of the filter cover. Attach dummy filler into RC2409. Install filler cover hand tight with differential switch into RC2409. Connect needle valve (E) and pressure gauge. Follow Figure 103.			
6.21	B. Open valve F.			
6.22	C. Apply boost pressure of 15 psig.			
6.23	D. Increase pump speed to 500 rpm.			
6.24	E. Close valve E until indicator light turns on, Then open valve E completely to release filter pressure and the indicator light should turn-off.			
6.25	F. Increase pump speed at increments of 500 rpm, repeat step (E) at each increment of speed change up to and including 3000 rpm.			

FICHA DE SERVIÇO
SERVICE SHEET

Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
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ORDEM DE SERVIÇO:
WORK ORDER:

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OVERHAUL - DISASSEMBLY CLEANING INSPEÇÃO ASSEMBLY TESTE

IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
6.26	G. Reduce pump speed to 2000 ± 500 rpm. Close valve E again until indicator light turns on.			
6.27	H. Check and record the reading of the filter pressure gauge attached to RC2409.			
6.28	I. Record discharge pressure on the O-60 pressure gauge.			
6.29	J. Obtain differential pressure by subtracting pressure recorded in step (H) from pressure recorded in step (I). The acceptable limit is 20 to 35 PSIG (137.9 to 241.32 Kpag). CAUTION: Close Valve "E" And "F" At The Conclusion Of This Test.			
6.30	7. Calibration Test (73-10-07,Para.7.Pág.108) WARNING: Calibrating Fluid Is Toxic And Flammable. Do Not Breathe Vapors. Use In Well Ventilated Area Free From Sparks, Flame Or Hot Surfaces. Wear Splash Goggles, Solvent-Resistant Gloves And Other Protective Gear. In Case Of Eye Contact, Flush With Water And Seek Medical Attention. In Case Of Skin Contact, Wash With Soap And Water. A. Start boost pump. Operate pump to purge air from system to be sure all internal pumping components are immersed in calibrating fluid.			
6.31	B. Operate pump according to Table 104 as follows: (1) For steps 1 and 2, open valve A (Ref. Fig 101), close valve C and adjust valve B for required discharge pressure.			
6.32	(2) For step 3 adjust valves B and C simultaneously for discharge pressure and flow rate.			
6.33	(3) For step 4 open valve C completely. Stop boost pump to reduce inlet pressure to zero psig (0 kPa). Then, simultaneously adjust valves B and C to obtain discharge pressure and flow rate.			
6.34	8. Seal Leakage (73-10-07,Para.8.Pág.109) A. Open Valve A (Ref. Fig. 101) and close valve C . Operate pump at 4200 rpm and adjust valve for 665 psig (4581.85 kPag) discharge pressure.			
6.35	B. Adjust valve D to increase inlet pressure to 50 psig (345 kPag) for 3 minutes.			
6.36	C. Leakage from the Input shaft seal shall not exceed 2 drops per minute and there shall be no leakage from casting or parting line.			
6.37	9. Post Test Procedure (73-10-07,Para.9.Pág.109) A. After testing is completed, attach locicwire to valve cap (95, IPL Fig. 1) and inlet filter (5).			
6.38	B. Using an oil can, inject preservative oil into the inlet and outlet ports of the pump and turn the splined input shaft (90) by Hand Crank Tool T41425 to lubricate internal parts.			

FICHA DE SERVIÇO
SERVICE SHEET

Ficha N° A00-04-03-140	REV. O	DATA: 05/03/2015
---------------------------	-----------	---------------------

ORDEM DE SERVIÇO:
WORK ORDER:

OVERHAUL - DISASSEMBLY CLEANING INSPEÇÃO ASSEMBLY TESTE

IT	Nomenclatura / Action/Criteria	Disposição Final	Data	Assinatura
6.39	C. Install shipping parts according to Storage Instructions in ASSEMBLY to close ports and to protect the splined input shaft.			

Table 104 Calibration Test									Observação:
PRESSURE			FLOW						
Con. No.	Speed (Rpm)	Disch (Psig)	Inject Disch (Psig)	Inlet (Psig)	Bypass (Psig)	Engine (Pph)	Bypass (Pph/Gpm)	Torque (In./Lbs.)	
1	400	160	N/A	15	N/A	250	0	N/A	
2	4200	665	N/A	15	N/A	3720	0	150 max.	
(16.95 Nm)									
3	4200	580	22 min	15	N/A.	1440	Record *	N/A	
4	4200	200	N/A	0	90/120	185	Record **	N/A	
* Adjust bypass valve (C) to set correct engine flow.									
** Open bypass valve (C) completely before reducing inlet pressure.									
*** Connect 0 - 200 psig pressure gauge to the inlet filter port of pump with tube reducer MS24399-17 for measurement of injector discharge pressure.									

Observação

Data	Técnico:	Data	Inspetor: