



Tool Code: PKJ

Document: MN-PKJ-SX-B

Production Knuckle Joint

Production Knuckle Joint

Ball Type, Sondex Ends

Operational & Maintenance Manual

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0 ABOUT THIS MANUAL

0.1 MANUAL HISTORY

Date	Issue	Description	Auth	Chk	App
13/09/05	A	First Issue. This manual will replace the mechanical maintenance and operation manuals for the tools, mentioned in Section 1.4.2 .	FV	SA	GT
21/08/06	B	DWG/PL Updates: 3184 1392.	Fv	FV	FV

0.2 UPDATES TO BE USED WITH THIS MANUAL

Consult the CD Directory for the appropriate Manual Updates to be used with this Manual.

0.3 TECHNICAL HELP

For further technical help contact Sondex as follows:

Address: Unit 1, Saxony Way,
Blackbushe Business Park,
Yateley, Hampshire,
GU46 6AB
United Kingdom
Telephone: +44(0)1252 862 200
Fax: +44(0)1252 862 349
Email: support@sondex.com

0.4 FEEDBACK

Please help us improve future issues of this manual by sending your comments or corrections to Documentation-UK@sondex.com, referencing the document number.

Thank you.

Photographs and sketches are for illustration purposes only. Depending on the tool model that you have, certain features or dimensions may differ from those shown.

Documents from external sources (i.e. MSDS), supplied with/referenced in this manual, are considered the latest version at time of manual issue. However, the document can be altered by the external source without prior notice to Sondex.

1 EQUIPMENT

The Sondex Conducting Knuckle Joint is a compact universal ball joint with a limited degree of movement. It is used to add flexibility to the toolstring.

The Knuckle Joint allows $\pm 10^\circ$ movement in both the X and Y-axis. Electrical connection is made through a hollow stainless coil with metal seals. The ball joints provide greater strength than previous types of knuckle joints.



1.1 OPERATING PRINCIPLE

- To separate tools that need to be centralised from tools that need to be positioned against the casing or tubing.
- To reduce the maximum straight line length of a toolstring to help pass through completion items, and to negotiate doglegs or kick off points of short radius horizontal wells.
- To reduce the weight of tools to be centralised in highly deviated or horizontal wells.

For the shortest possible string, a pair of single knuckle joints are used, separated by a tool, such as a Thermometer or Gamma-Ray tool, which is insensitive to its position and altitude in the well.

1.2 APPLICATION

- Situations where flexible toolstrings are required.
- To offset the CCL for improved collar logs.
- To minimise the centralised weight in highly deviated or horizontal wells.

1.3 INTERFACING & TOOL COMBINATIONS

- Normally used in conjunction with Roller Centralisers.
- Simultaneous use with other Production Logging Tools.
- $1\frac{3}{16}$ " UN 12 tpi Sondex, GO or Other Heads.

1.4 SPECIFICATION

1.4.1 GENERAL

Parameter	Specification	Remarks
Max. Pressure	15,000psi	12,000psi for 1 ¹ / ₂ "
Max. Temperature	392°F (200°C)	
Knuckle Movement	±10°	
Length	6.8" (173mm)	
Diameters available	1 ³ / ₈ " (35mm)	1 ¹ / ₂ " (38mm)
	1 ¹¹ / ₁₆ " (43mm)	2 ¹ / ₈ " (54mm)
Materials	Corrosion Resistant Throughout	
Voltage Rating	300V	
End Connector (Top)	Pin (4mm)	
End Connector (Bottom)	Socket (4mm)	
End Threads (Top)	Sondex Female	1 ³ / ₁₆ " UNF 12 tpi.
End Threads (Bottom)	Sondex Male	1 ³ / ₁₆ " UNF 12 tpi.

1.4.2 TOOL SPECIFIC

Tool Code	Tool Diameter	Weight	Max Tension	Max Torque	Remarks
PKJ013	1 ¹¹ / ₁₆ "	3.5lb (1.6kg)	15,400lb	250lb/ft (339Nm)	
PKJ023	1 ¹ / ₂ "	2.7lb (1.2kg)	12,100lb	130lb/ft (176Nm)	
PKJ027	1 ³ / ₈ "	2.5lb (1.1kg)	10,000lb	130lb/ft (176Nm)	
PKJ030	2 ¹ / ₈ "	4.4lb (2.0kg)	15,400lb	250lb/ft (339Nm)	
PKJ032	1 ¹¹ / ₁₆ "	4.4lb (2.0kg)	15,400lb	250lb/ft (339Nm)	Lockable

2 SAFETY

2.1 GENERAL

Beware trapped pressure.

Do not look directly into connector ends during disassembly.



Warning! **HOT WORK!** Sondex equipment may, under certain circumstances or failure modes, become a potential source of ignition. Using it must therefore be considered "**HOT WORK**" and appropriate precautionary procedures should be followed when testing at surface in areas where there is a risk of gas leaks or other potentially explosive atmospheres.



Liquid O-ring

LOR101 is used for lubricating the tool during maintenance. Contact with skin or eyes can be harmful. For more details see the [Material Safety Data Sheet for Liquid O-ring](#).

2.2 DISASSEMBLY WARNINGS

2.2.1 DISASSEMBLY

PKJ tools should not be disassembled, except for essential internal O-ring replacement or other repair. Unless care is taken, there is risk of damaging the line wire. Line wire repair can be difficult and may require returning to Sondex.

2.2.2 LINE WIRE REPAIR

If the pressure bypass tube coil in the body is clean, the line wire inside can be pulled with some difficulty through this assembly. If both ends of the wire are accessible, a fine wire can be attached, pulled through and used to pull another line wire through. Solder joints must be sufficiently short so that they can move in the coiled tube. If not possible, the Bypass tube assembly will need replacing. Contact Sondex.

2.2.3 BYPASS TUBE ASSEMBLY REPLACEMENT

This procedure is not described here.

It is recommended that PKJ tools are returned to Sondex to guarantee a pressure tight result.

To replace the Bypass Tube, the correct tools and torque wrench are required. The finished repair must be pressure tested.

3 OPERATING PROCEDURE

3.1 PRE-LOGGING CHECKS

Ref.: PKJ General Assembly 09637

3.1.1 MECHANICAL

Clean and grease upper and lower O-ring seals. Replace O-rings (2x item 30) if damaged.

Check that the knuckle joint rotates freely.

Check the ball area is full with grease, see [Section 5.2.1 Flushing/Grease Filling](#).

Ensure that upper and lower electrical connectors are clean, dry and undamaged.

3.1.2 ELECTRICAL

Using a megohm meter (set to 250V), check the insulation (between the housing and pins). The reading should be $>100M\Omega$.

Using a multi-meter, check the through resistance (between upper and lower pins). The readings should be $<0.5\Omega$

3.2 CONNECTING TO TOOLSTRING

Upper and lower tool joint O-rings and seal surfaces should be clean, undamaged and lightly greased.

The PKJ may be inserted into a PL tool string in any location where articulation is required, see the operating procedures of the relevant PL tool manual.

The maximum transverse torque of an unsleeved PKJ is indicated in [Section 1.4.2](#). It is possible to exceed this torque when connecting the PKJ to the toolstring.

Never tighten up the joints by applying torque across the knuckle joint. Always tighten each end separately.

Care should be taken when handling the toolstring if there are long rigid sections. Lifting long strings from the horizontal and swinging vertically may subject the Knuckle Joint to large transverse torques.

3.3 LOGGING

The following are guidelines only and must be used in conjunction with local policy and specific well site conditions both downhole and at surface. The table below is appropriate for near vertical wells and must be adjusted accordingly when in deviated wells. Use of a Head Tension Unit is highly recommended.

Note: Do not exceed the calculated safe working load of your selected weakpoint. If in doubt, use a head tension unit, especially in deviated wells where calculation from surface tension is less accurate.

Depth (ft)	Speed Pulling Out of Hole	Speed Running in Hole
In/out of catcher (pressure rig up only)	Dead slow or manual.	
30 to 150	30ft/min	
150 to 400	60ft/min	
>400 clear cased hole	Surface tension not to exceed 120% of tension when tool stationary. Speed not to exceed 150ft/min.	Surface tension should not be less than 80% of tension when tool stationary. Speed not to exceed 150ft/min.
>400 clear open hole	Surface tension not to exceed 130% of tension when tool stationary. Speed not to exceed 150ft/min.	Surface tension should not be less than 70% of tension when tool stationary. Speed not to exceed 150ft/min.
Approaching potential obstacles^a	30ft/min	
Logging Data	Do not exceed the above speeds.	

^a. For example: Reduced diameters, gas lift mandrels, fluid levels, valves, tubing shoes, packers, cross overs and other downhole equipment.

In exceptional circumstances, the maximum transverse torque (as indicated in [Section 1.4.2](#)) may be exceeded. The following contribute to this risk:

- 1 Logging from a large diameter casing or open hole section into a small diameter with a high hole deviation.
- 2 Long rigid toolstring sections below a Knuckle Joint.

To minimise the risk due to item 1 above, increase the number of Knuckle Joints in the toolstring.

3.4 POST-LOGGING DISASSEMBLY

The tool should be cleaned before the toolstring is disassembled.

Take care when unfitting the tool from the toolstring, that maximum transverse torque is not exceeded, see [Section 1.4 Specification](#).

Ensure that well fluid does not reach the electrical connectors. Refit thread protectors.

It is recommended that a high temperature melting point grease is flushed through the assembly after every run downhole, see [Section 5.2.1 Flushing/Grease Filling](#).

4 MECHANICAL DESCRIPTION

Ref.: PKJ General Assembly 09637

4.1 DESCRIPTION

The upper and lower bodies of the tool pivot around a ball and socket arrangement. The upper and lower bodies limit the articulation about each axis to approximately 10°. Articulation reduces slightly away from these axes.

The monoconductor connection is passed through the knuckle joint via a pressure proof coil. The knuckle joint is thus virtually maintenance free as there are no exposed wires.

The ball units will normally exhibit slight play rotationally, but should be replaced if the side-to-side action becomes sloppy, indicating deformation of the joint.

4.2 UPPER END DISASSEMBLY & REASSEMBLY

Refer to [Section 2.2 Disassembly Warnings](#) before continuing.

4.2.1 DISASSEMBLY OF UPPER END

- 1 **For PKJ032 only:** Remove the locking spring (item 40).
- 2 At the female threaded end, unscrew the insulator retainer (item 5) from the top of the insulator upper sub (item 6).

Note: A screwdriver is normally sufficient, however the assy spanner PKJ of the handtool kit can be used, refer to [A.2 Maintenance Equipment](#).

- 3 Gently remove the contact assembly from the body (item 1) by extracting the banana pin (item 19).

Note: If tight, the pulling pliers should be levered or tapped out. If pulled hard, the contact assembly may loosen suddenly and cause the wire to break. The contact wire may be loose, but will probably be short and will need pulling through the body (item 1) as the other end is generally replaced last.

- 4 Check that no liquids have leaked into the recess. If they have, the tube metal seal joints need checking and pressure testing, this may require returning to Sondex.
- 5 Remove O-ring (item 29) from the insulator (item 6).
- 6 Remove nuts (items 17 & 18) and washer (item 16).
- 7 Remove the spirol pin (item 25) locking the contact pin (item 7) to the insulator (item 6). Remove it by knocking it through.
- 8 Pull the banana pin (item 19) and contact pin (item 7) out of the insulator (item 6).
- 9 Remove O-ring (item 27) and washer (item 15).

4.2.2 REASSEMBLY OF UPPER END

- 1 Replace the O-ring (item 29) into the groove of the insulator (item 6). Grease lightly with Liquid O-ring.
- 2 Replace O-ring (item 27). Grease lightly with Liquid O-ring.
- 3 Lightly grease the contact pin (item 7) and carefully insert the contact pin (item 7) into the insulator (item 6).
- 4 Line up the hole in the insulator (item 6) with the hole in the contact pin (item 7) and secure the contact pin (item 7) with spirol pin (item 25).
- 5 Replace washer (item 15).
- 6 Screw the banana pin (item 19) onto the contact pin (item 7).

Note: Ensure the O-ring (item 27) is not damaged during this operation.

- 7 Refit the washer (item 16) and nuts (item 17 & 18), ensuring that the connection wire is not damaged.

4.3 LOWER END DISASSEMBLY & REASSEMBLY**4.3.1 DISASSEMBLY OF LOWER END & REINSTALLING UPPER END**

- 1 Remove O-rings (item 30).
- 2 Remove the Circlip (item 20) from the lower threaded end.
- 3 Gently remove the contact assembly from the body (item 1) by pulling on the hexagonal socket (item 10), whilst feeding the upper insulator assembly (from [Section 4.2.2](#)) back into the top end of the body (item 1) to give the wire enough slack during extraction.

Note: Extraction of the assembly can be tight due to the O-ring (item 28) and will suddenly come free. Therefore, the pulling tool or pliers should be levered or tapped out. If pulled hard, it may come free suddenly and break the line wire.

Note: This will allow insertion of the upper insulator assembly during the final assembly until the outer O-ring (item 29) reaches the edge of its seating surface in the body (item 1) without the risk that the wire could be loose and damaged during insertion.

- 4 Press the upper insulator assembly down until the top of the insulator (item 6) is level with the top of the body (item 1).

Note: If it will not go down sufficiently, the wire may be trapped between the insulator (item 6) and seating shoulder of the body (item 1). In this case, remove the upper assembly, check wire for damage and repeat the procedure until it fits.

- 5 Screw insulator retainer (item 5) into upper body.
- 6 **For PKJ032 only:** Refit the locking spring (item 40).
- 7 Remove O-ring (item 28) from the lower end.

- 8 Remove nuts (items 17 & 18) and push out hexagonal socket (item 10) from the insulator (item 8).
- 9 Remove O-ring (item 27).
- 10 Remove the washer (item 16).

4.3.2 RESASSEMBLY OF LOWER END

- 1 Replace the 2 O-rings (items 27 & 28). Grease lightly.
- 2 Place the hexagonal socket (item 10) through the lower sub insulator (item 8).
- 3 Push back the contact pin (item 7) through the insulator (item 8) and O-ring (item 27).

Note: Ensure the O-ring (item 27) is not damaged during this operation.

- 4 Replace the washer (item 16) and refit the nuts (item 17 & 18).

Note: Ensure that the wire, soldered into nut (item 18), is not damaged.

4.4 FINAL REASSEMBLY

- 1 Taking care that the wire is not damaged, loop it up inside the lower recess of the body (item 1).
- 2 Line up the slot outside the lower insulator assembly with spirol pin (item 23) and press inside the recess.
- 3 Replace circlip (item 20).
- 4 Replace O-rings (item 30). Lightly grease with Liquid O-ring.

5 EXTENDED CHECKS

See also: [APPENDIX B Drawings & Parts Lists](#)

5.1 PREVENTATIVE MAINTENANCE

5.1.1 GREASE & LUBRICANTS

Sondex recommends the use of "Liquid O-ring type 101" (p/n LOR101(L)) for threads and O-rings, see [APPENDIX A](#).

All O-rings and housing threads are assumed to be and must be lightly greased unless specifically indicated differently.

Correct use of grease and lubricants is essential to the maintenance of all Sondex downhole equipment.

Note that some threads are internal; grease can get inside the tool. Do not use excessive quantities.

Sondex does not recommend Copper loaded greases since some types can cause electrical leaks. Some types are also not suitable for use on O-rings. Silicone grease may be used on O-rings, but must be kept clear of threads especially stainless steel to stainless steel.

Cavities e.g. spring housings, should be filled with a suitable heavy high melting point grease, such as Castrol Spheerol L-EP or LMX.



Warning! The use of certain greases, such as some types of Lubriplate, can cause electrical failure if they have any volatile content, which can burn off and can cause corrosive gasses to build up inside the tool.

5.1.2 MECHANICAL

- 1 Remove dirt and old grease from pressure housing threads and O-rings and replace with fresh.
- 2 Inspect O-rings for damage or ageing/hardening and replace where required.
- 3 For frequency of exchanging O-rings, refer to [Section 5.2.2](#).
- 4 Check for:
 - Damaged components.
 - Loose screws/nuts/components/connectors.

Note: If RTV or similar compound is used to secure loose components, it must be fully cured before housing is replaced.

- Heat or chemical damage (discoloured components).
 - Incorrect thread grease or excessive quantity, see [Section 5.1.1](#).
- 5 Check connectors for cleanliness and loose/bent pins before replacing.
 - 6 Check all fixings for tightness.

- 7 Check grub screws are tight.

5.1.3 ELECTRONICS SECTION

Ensure that upper and lower electrical connectors are clean, dry and undamaged.

Using a megohm meter (set to 250V), check the insulation (between the housing and pins). The reading should be >100M Ω .

Using a multi-meter, check the through resistance (between upper and lower pins). The readings should be <0.5 Ω

5.2 EXTRAORDINARY MAINTENANCE

Ref.: PKJ General Assembly *09637*

5.2.1 FLUSHING/GREASE FILLING

See also: *Section 3.1 Pre-Logging Checks*

After every run downhole, Sondex recommends that the tool is flushed through with high temperature melting point grease. The addition of the high temperature grease also lubricates the ball joint, prolonging the life of the tool.

- 1 Remove two grub screws (items 37 and 38) from the knuckle joint assembly.
- 2 Insert the grease nipple (item 36) into the grease nipple port and flush high temperature melting point grease through the Knuckle Joint.
- 3 Remove grease nipple and re-insert the two grub screws.

5.2.2 CHANGING O-RINGS

It is advised to replace O-rings (2x item 30) after every run and when the tool is disassembled for inspection.

The O-rings in the connector assemblies are not in contact with well fluids nor do they normally have a pressure across them. They are designed however to provide backup pressure isolation should the flexible tubing or its joints fail downhole.

Every 6-12 months they should be changed. The service interval depends on time and temperature of use. A shorter interval may be required for frequent hot use, especially if the internal ends become dirty.

All O-ring need replacement after contact with H₂S.

APPENDIX A EQUIPMENT & RECOMMENDED SPARES

Item	Part no.	Description	Qty	Remarks
1	PKJ..	Production Knuckle Joint	1	See Section 1.4.2 for part number.

A.1 ANCILLARY EQUIPMENT

Item	Part no.	Description	Qty	Remarks
1		None Required.		

A.2 MAINTENANCE EQUIPMENT

Item	Part no.	Description	Qty	Remarks
1	91050	Tool Kit for All 1 ¹¹ / ₁₆ " Tools	1	See Section 1.4.2 for Tool Diameter.
2	91294	Tool Kit for All 1 ³ / ₈ " Tools	1	See Section 1.4.2 for Tool Diameter.
3	91295	Tool Kit for All 1 ¹ / ₂ " Tools	1	See Section 1.4.2 for Tool Diameter.
4	91296	Tool Kit for All 2 ¹ / ₈ " Tools	1	See Section 1.4.2 for Tool Diameter.
5	LOR101	Grease for O-ring & threads	1	5oz. pot.
6	LOR101L	Grease for O-ring & threads	AR	12oz. pot.

A.3 RECOMMENDED SPARES

Part no.	Description	Qty	Remarks
KITB-PKJM	Basic Spares Kit, PKJ Metal Seal	1	To support 1 run in hole.
KITB-PKJM 1 3/8	Basic Spares Kit, PKJ Metal Seal 1 ³ / ₈ "	1	To support 1 run in hole.
KITR-PKJ1 11/16MS	Recommended Spares Kit, PKJ 1 ¹¹ / ₁₆ "	1	To support 25 runs in hole.
KITR-PKJ1 1/2MS	Recommended Spares Kit, PKJ 1 ¹ / ₂ "	1	To support 25 runs in hole.
KITR-PKJ1 3/8MS	Recommended Spares Kit, PKJ 1 ³ / ₈ "	1	To support 25 runs in hole.

NOTE: Spares kits suitable for remote logging operation can be supplied upon request.

PARTS LISTING					
Part:	Issue:		Drawn:	Checked:	Approved:
91050	-		NGH	PD	DJF
			Date:	Date:	Date:
			14/01/2002	14/01/2002	14/01/2002
Description: Tool Kit for all 1 11/16 Tools SX and GO					

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
-	14/01/2002	Initial Release	PD	DJF			

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	91005	-	Spanner Open Ended 42mmx38mm		2	ea	
002	91019	-	Spanner C 50mm 35mm		1	ea	
003	10038	A	Spanner Box 3/8 x 5/16 Modified		2	ea	
004	91028	-	Spanner 3/8x5/16		1	ea	
005	91027	-	Spanner Single Open End 18mm		1	ea	
006	91029	-	Key Hex Metric		1	ea	
007	91030	-	Punch Pin Parallel set		1	ea	
008	00615	A	Assy Spanner PKJ		1	ea	
009	91293	PT1	Screwdriver Parallel tip (3 0 x 75)		1	ea	
010	91105	-	Toolroll With SX Badge Large Black		1	ea	
011	91104	-	Screwdriver Parallel tip (5 5 x 200)		1	ea	
012	91103	-	Pliers Circlip 812 Chrome/Van		1	ea	
013	91102	-	Pliers Mini Flat Nose 5 Inch		1	ea	
014	10037	A	Bar Tommy		2	ea	
015	10051	A	Kemlon tool Sondex - 4BA Hex Socket		1	ea	
016	91280	-	Hammer, 4oz ball pein		1	ea	
017	91130	-	Pin C Spanner 35-50mm		1	ea	

(AR = As Required)

PARTS LISTING					
Part:	Issue:		Drawn:	Checked:	Approved:
91294	-		PD	DJF	DJF
			Date:	Date:	Date:
			13/07/2000	13/07/2000	13/07/2000
Description: Tool Kit for all 1 3/8 Tools SX and GO					

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
-	13/07/2000	Initial Release	DJF	DJF			

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	91223	-	Spanner Open Ended 32mmx30mm		2	ea	
002	91285	-	Spanner C 35mm 15mm		1	ea	
003	10038	A	Spanner Box 3/8 x 5/16 Modified		2	ea	
004	91028	-	Spanner 3/8x5/16		1	ea	
005	91027	-	Spanner Single Open End 18mm		1	ea	
006	91029	-	Key Hex Metric		1	ea	
007	91030	-	Punch Pin Parallel set		1	ea	
008	00615	A	Assy Spanner PKJ		1	ea	
009	91293	-	Screwdriver Parallel tip (3 0 x 75)		1	ea	
010	91105	-	Toolroll With SX Badge Large Black		1	ea	
011	91104	-	Screwdriver Parallel tip (5 5 x 200)		1	ea	
012	91103	-	Pliers Circlip 812 Chrome/Van		1	ea	
013	91102	-	Pliers Mini Flat Nose 5 Inch		1	ea	
014	10037	A	Bar Tommy		2	ea	
015	10051	A	Kemlon tool Sondex - 4BA Hex Socket		1	ea	
016	91222	-	Allen Key 0 89mm		3	ea	
017	91280	-	Hammer, 4oz ball pein		1	ea	

(AR = As Required)

PARTS LISTING

Part: 91295	Issue: -		Drawn: NGH	Checked: PD	Approved: DJF
Description: Tool Kit for all 1 1/2 Tools SX and GO			Date: 14/01/2002	Date: 14/01/2002	Date: 14/01/2002

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
-	14/01/2002	Initial Release	PD	DJF			

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	91007	-	Spanner Open Ended 34mmx30mm		2	ea	
002	91019	-	Spanner C 50mm 35mm		1	ea	
003	10038	A	Spanner Box 3/8 x 5/16 Modified		2	ea	
004	91028	-	Spanner 3/8x5/16		1	ea	
005	91027	-	Spanner Single Open End 18mm		1	ea	
006	91029	-	Key Hex Metric		1	ea	
007	91030	-	Punch Pin Parallel set		1	ea	
008	00615	A	Assy Spanner PKJ		1	ea	
009	91293	PT1	Screwdriver Parallel tip (3 0 x 75)		1	ea	
010	91105	-	Toolroll With SX Badge Large Black		1	ea	
011	91104	-	Screwdriver Parallel tip (5 5 x 200)		1	ea	
012	91103	-	Pliers Circlip 812 Chrome/Van		1	ea	
013	91102	-	Pliers Mini Flat Nose 5 Inch		1	ea	
014	10037	A	Bar Tommy		2	ea	
015	10051	A	Kemlon tool Sondex - 4BA Hex Socket		1	ea	
016	91280	-	Hammer, 4oz ball pein		1	ea	
017	91130	-	Pin C Spanner 35-50mm		1	ea	

(AR = As Required)

PARTS LISTING					
Part:	Issue:		Drawn:	Checked:	Approved:
91296	-		PD	PD	DJF
			Date:	Date:	Date:
			14/01/2002	14/01/2002	14/01/2002
Description: Tool Kit for all 2 1/8 Tools SX and GO					

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
-	14/01/2002	Initial Release	PD	DJF			

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	91006	-	Spanner Open Ended 1 7/8x1 11/16 A/F		2	ea	
002	91023	-	Spanner C (50 - 80, 2 3/4) (WAS 91065)		1	ea	
003	10038	A	Spanner Box 3/8 x 5/16 Modified		2	ea	
004	91028	-	Spanner 3/8x5/16		1	ea	
005	91027	-	Spanner Single Open End 18mm		1	ea	
006	91029	-	Key Hex Metric		1	ea	
007	91030	-	Punch Pin Parallel set		1	ea	
008	00615	A	Assy Spanner PKJ		1	ea	
009	91293	PT1	Screwdriver Parallel tip (3 0 x 75)		1	ea	
010	91105	-	Toolroll With SX Badge Large Black		1	ea	
011	91104	-	Screwdriver Parallel tip (5 5 x 200)		1	ea	
012	91103	-	Pliers Circlip 812 Chrome/Van		1	ea	
013	91102	-	Pliers Mini Flat Nose 5 Inch		1	ea	
014	10037	A	Bar Tommy		2	ea	
015	10051	A	Kemlon tool Sondex - 4BA Hex Socket		1	ea	
016	91280	-	Hammer, 4oz ball pein		1	ea	
017	91131	-	Pin C Spanner 2 5		1	ea	
018	91551	-	Spanner open ended 1"		1	EACH	

(AR = As Required)

PARTS LISTING					
Part:	Issue:		Drawn:	Checked:	Approved:
KITB-PKJm	-		PJ	PJ	PJ
			Date:	Date:	Date:
			07/01/2002	07/01/2002	07/01/2002
Description: Kit, Spares, Basic, PKJ(Metal Seal)					

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
-	07/01/2002	1st Issue	PJ	PJ			

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	01028	C	Assy, Banana Pin (4mm)		1	ea	
003	99211	-	O Ring Viton 90 Type 211		2	ea	
004	91001	-	Nipple Grease M6 Straight		1	ea	
005	01030	-	Screw, Grub Skt Hd, M6 x 6mm Long, St/Steel		1	ea	
006	93011	-	Screw, Grub Skt Hd, M5 x 5mm Lg, SS		1	ea	

(AR = As Required)

PARTS LISTING					
Part:	Issue:		Drawn:	Checked:	Approved:
kitb-pkjm 1 3/8	-		PJ	PJ	PJ
			Date:	Date:	Date:
			07/01/2002	07/01/2002	07/01/2002
Description: Kit, Spares, Basic, PKJ(Metal Seal) 1 3/8					

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
-	07/02/2001	1st Issue	PJ	PJ			

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	01028	C	Assy, Banana Pin (4mm)		1	ea	
002	99211	-	O Ring Viton 90 Type 211		2	ea	
003	91001	-	Nipple Grease M6 Straight		1	ea	
004	01082	A	Screw Grub Skt Hd M6x5mm Lg SS MOD		1	ea	
005	93011	-	Screw, Grub Skt Hd, M5 x 5mm Lg, SS		1	ea	

(AR = As Required)

PARTS LISTING					
Part: kitr-pkj1 11/16ms	Issue: B		Drawn: pj	Checked: pj	Approved: pj
			Date: 14/01/2002	Date: 14/01/2002	Date: 14/01/2002
Description: Kit, Spares, Recommended(25Run), PKJ(1 11/16), Metal Seal					

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
A	14/01/2002	re-issued to reflect procedures recommended in the manuals	PJ	PJ			
B	25/07/2002	ECR1279. Item 7 deleted, Items 13 to 19 added	RH	RH			

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	01028	C	Assy, Banana Pin (4mm)		2	ea	
002	95115	-	O Ring Viton 75 Type 115		2	ea	
003							
004	01047	-	Circlip, Internal, 5/8, St/Steel		2	ea	
005	00695	B	Pin Hex Female Lower		1	ea	
006	95009	-	O Ring Viton 75 Type 009		6	ea	
007							
008	95112	-	O Ring Viton 75 Type 112		2	ea	
009							
010	01030	-	Screw, Grub Skt Hd, M6 x 6mm Long, St/Steel		5	ea	
011	93011	-	Screw, Grub Skt Hd, M5 x 5mm Lg, SS		5	ea	
012	91001	-	Nipple Grease M6 Straight		2	ea	
013	01026	-	Half-Nut, Hex, 10-32UNF, St/Steel		2	ea	
014	01027	-	Washer, Plain, 10-32UN, St/Steel		4	ea	
015	10016	B	Nut, Hex, 10-32UNF, Brass/Nickel Plate, (with wire hole)		1	ea	
016	93014	-	Pin, Spirol, 2.5mm x 18mm Lg, SS		2	ea	
017	93019	-	Pin, Spirol, 1mm x 8mm Lg, SS		2	ea	
018	93257	-	Washer Wavy M5 SS		2	ea	
019	99211	-	O Ring Viton 90 Type 211		50	ea	

(AR = As Required)

PARTS LISTING					
Part:	Issue:		Drawn:	Checked:	Approved:
KITR-PKJ1 1/2MS	B		PJ	PJ	PJ
			Date:	Date:	Date:
Description:			17/01/2002	17/01/2002	17/02/2002
Kit, Spares, Recommended(25Run), PKJ(1 1/2), Metal Seal					

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
A	17/01/2002	1st Issue	PJ	PJ			
B	--/--/--	ECRS 1279,1393: item 7 deleted, items 13 to 19 added	DMO				

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	01028	C	Assy, Banana Pin (4mm)		2	ea	
002	95115	-	O Ring Viton 75 Type 115		2	ea	
003							
004	01047	-	Circlip, Internal, 5/8, St/Steel		2	ea	
005	00695	B	Pin Hex Female Lower		1	ea	
006	95009	-	O Ring Viton 75 Type 009		6	ea	
007							
008	95112	-	O Ring Viton 75 Type 112		2	ea	
009							
010	01030	-	Screw, Grub Skt Hd, M6 x 6mm Long, St/Steel		5	ea	
011	93011	-	Screw, Grub Skt Hd, M5 x 5mm Lg, SS		5	ea	
012	91001	-	Nipple Grease M6 Straight		2	ea	
013	99211	-	O Ring Viton 90 Type 211		50	ea	
014	01026	-	Half-Nut, Hex, 10-32UNF, St/Steel		2	ea	
015	01027	-	Washer, Plain, 10-32UN, St/Steel		4	ea	
016	10016	B	Nut, Hex, 10-32UNF, Brass/Nickel Plate, (with wire hole)		1	ea	
017	93014	-	Pin, Spirol, 2.5mm x 18mm Lg, SS		2	ea	
018	93019	-	Pin, Spirol, 1mm x 8mm Lg, SS		2	ea	
019	93257	-	Washer Wavy M5 SS		2	ea	

(AR = As Required)

PARTS LISTING					
Part: KITR-PKJ1 3/8MS	Issue: A		Drawn: PJ	Checked: PJ	Approved: PJ
			Date: 17/01/2002	Date: 17/01/2002	Date: 17/02/2002
Description: Kit, Spares, Recommended(25Run), PKJ(1 3/8), Metal Seal					

CHANGE HISTORY					RELATED DOCUMENTS		
<i>Iss</i>	<i>Date</i>	<i>Remarks</i>	<i>Chkd</i>	<i>Appr</i>	<i># Documents</i>	<i>Issue</i>	<i>Notes</i>
-	07/01/2002	1st Issue	PJ	PJ			
A	--/--/--	ECRs 1279,1393: item 7 deleted, items 14 to 19 added	DMO				

PARTS LIST							
<i>Item</i>	<i>Part No.</i>	<i>Issue</i>	<i>Description</i>	<i>Component Value</i>	<i>Qty</i>	<i>Units</i>	<i>Remarks</i>
001	01028	C	Assy, Banana Pin (4mm)		2	ea	
002	95115	-	O Ring Viton 75 Type 115		2	ea	
003							
004	01047	-	Circlip, Internal, 5/8, St/Steel		2	ea	
005	00695	B	Pin Hex Female Lower		1	ea	
006	95009	-	O Ring Viton 75 Type 009		6	ea	
007							
008	95112	-	O Ring Viton 75 Type 112		2	ea	
009							
010	01082	A	Screw Grub Skt Hd M6x5mm Lg SS MOD		5	ea	
011	93011	-	Screw, Grub Skt Hd, M5 x 5mm Lg, SS		5	ea	
012	91001	-	Nipple Grease M6 Straight		2	ea	
013	99211	-	O Ring Viton 90 Type 211		50	ea	
014	01026	-	Half-Nut, Hex, 10-32UNF, St/Steel		2	ea	
015	01027	-	Washer, Plain, 10-32UN, St/Steel		4	ea	
016	10016	B	Nut, Hex, 10-32UNF, Brass/Nickel Plate, (with wire hole)		1	ea	
017	93014	-	Pin, Spirol, 2 5mm x 18mm Lg, SS		2	ea	
018	93019	-	Pin, Spirol, 1mm x 8mm Lg, SS		2	ea	
019	93257	-	Washer Wavy M5 SS		2	ea	

(AR = As Required)

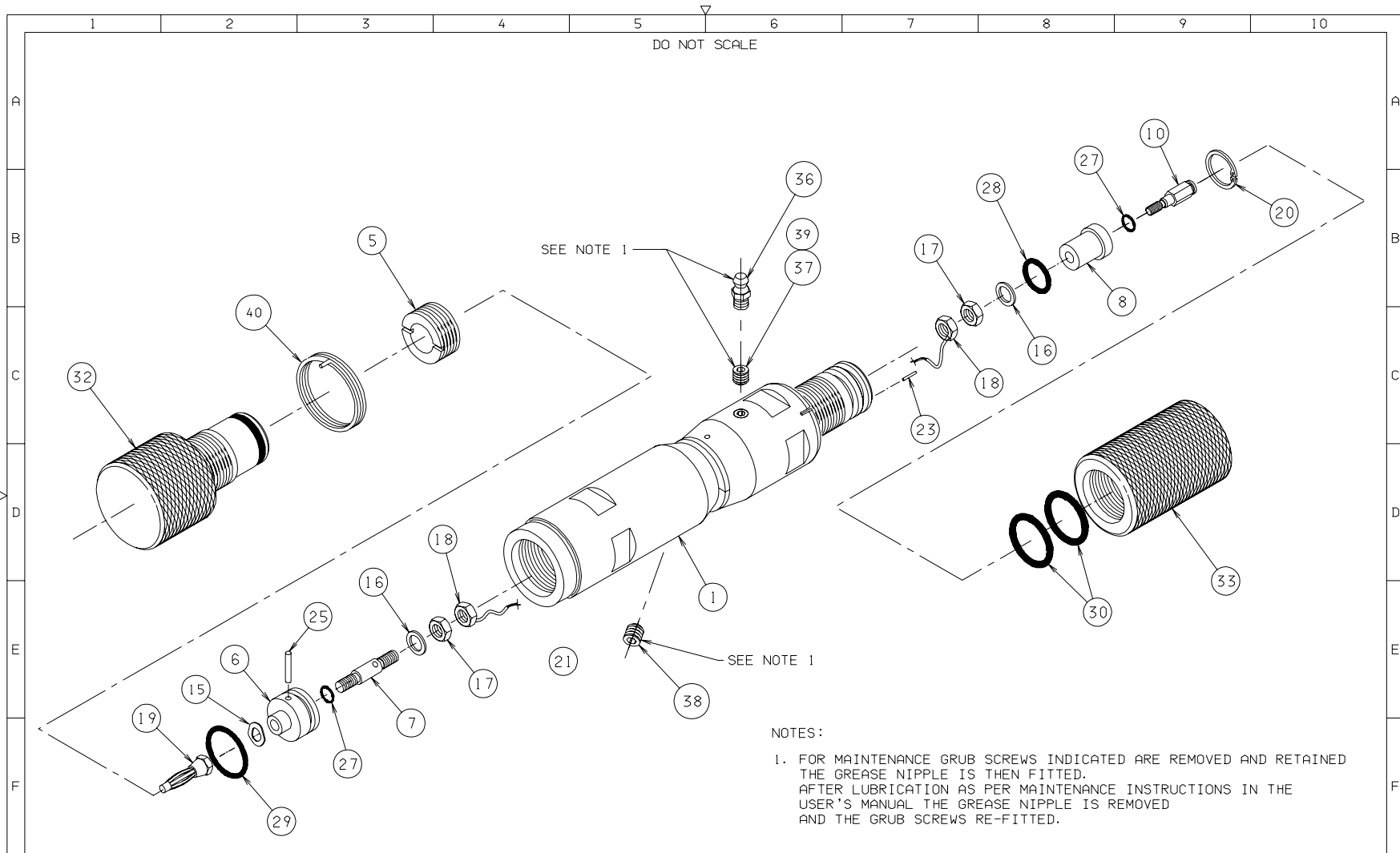
APPENDIX B DRAWINGS & PARTS LISTS

B.1 MECHANICAL DRAWINGS

Tool Code	Specification	Parts List	Drawing ^a
PKJ013	1 ¹¹ / ₁₆ " , Ball Type, Sondex Ends	05092-F	09637-PT1
PKJ023	1 ¹ / ₂ " , Ball Type, Sondex Ends	09071-C	09637-PT1
PKJ027	1 ³ / ₈ " , Ball Type, Sondex Ends	09414-PT3	09637-PT1
PKJ030	2 ¹ / ₈ " , Ball Type, Sondex Ends	09607-PT3	09637-PT1
PKJ032	1 ¹¹ / ₁₆ " , Ball Type, Sondex Ends, Lockable	09637-PT1	09637-PT1

a. The general assembly drawings for all Production Knuckle Joints are visually identical, therefore one drawing is shown for reference.

Note: Item number 40 on the drawing is only applicable for the PKJ032. Disregard for the other tools.



NOTES:
 1. FOR MAINTENANCE GRUB SCREWS INDICATED ARE REMOVED AND RETAINED THE GREASE NIPPLE IS THEN FITTED. AFTER LUBRICATION AS PER MAINTENANCE INSTRUCTIONS IN THE USER'S MANUAL THE GREASE NIPPLE IS REMOVED AND THE GRUB SCREWS RE-FITTED.

DRAWN NGH	CHECKED PL	APPROVED TG	ISS PT1	DESCRIPTION INITIAL RELEASE	APPD TG	DATE 15/10/03	Sondex Tel. 0118 932 6755 THIS DRAWING IS THE PROPERTY OF Sondex AND SHALL NOT BE COPIED OR USED WITHOUT PRIOR PERMISSION		USED ON PKJ032	TITLE ASSY PKJ \varnothing 1-11/16" BALL TYPE METAL SEAL SX (LOCKABLE)	
DATE 01/10/03	DATE 10/15/03	DATE 15/10/03					MACHINE FINISH 63/	GEN TOL 0.X \pm 0.020" 0.XX \pm 0.010" 0.XXX \pm 0.005" ANGLE \pm 0.5°	SHEET 1/1	DRAWING No. 09637	ISSUE .PT1
DIM IN INCHES		MATL: SEE DETAIL DRAWINGS		THIRD ANGLE PROJECTION							

PARTS LISTING					
Part:	Issue:		Drawn:	Checked:	Approved:
05092	F		AJB	DJF	DJF
			Date: 09/04/1996	Date: 10/05/1996	Date: 10/05/1996
Description: Assy 1 11/16 Ball Type Metal Seal SX					

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
B	21/11/1996	Item 1 Up-Issued	DJF	DJF	01 SA-16806	PT1	Optional Pin Adjustment
C	30/09/1997	See C/R 271, C/R 272	DJF	DJF			
D	02/11/1998	See ECR 335 (plus ECR677)	JDR	KRC			
E	17/10/2005	ECR 3167 Refers - Part no W001-00204 was 94052	BT	BT			
F	21/04/2006	ECR 3184 Refers - Item 021 deleted, Items 800-802 & 900 added	JC	JC			

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	05254	F	Assy Body PKJ Ball Type 1 11/16		1	ea	
002						(AR)	
003						(AR)	
004						(AR)	
005	00693	C	Retainer Insulator		1	ea	
006	00691	B	Insulator Upper Sub		1	ea	
007	00692	B	Pin Contact Upper Sub		1	ea	
008	00690	E	Insulator Lower Sub		1	ea	
009						(AR)	
010	00695	C	Pin Hex Female Lower		1	ea	
011						(AR)	
012						(AR)	
013						(AR)	
014						(AR)	
015	93257	-	Washer Wavy M5 SS		1	ea	
016	01027	-	Washer, Plain, 10-32UN, St/Steel		2	ea	
017	01026	-	Half-Nut, Hex, 10-32UNF, St/Steel		2	ea	
018	10016	B	Nut, Hex, 10-32UNF, Brass/Nickel Plate, (with wire hole)		2	ea	
019	01028	C	Assy, Banana Pin (4mm)		1	ea	
020	01047	-	Circlip, Internal, 5/8, St/Steel		1	ea	
021						(AR)	
022						(AR)	
023	93019	-	Pin Spirol 1mm x 8mm LG MCK SS		1	ea	
024						(AR)	
025	93014	-	Pin Spirol 2.5mm x 18mm LG MCK SS		1	ea	
026						(AR)	
027	95009	-	O Ring Viton 75 Type 009		2	ea	
028	95112	-	O Ring Viton 75 Type 112		1	ea	
029	95115	-	O Ring Viton 75 Type 115		1	ea	
030	99211	-	O Ring Viton 90 Type 211		2	ea	
031						(AR)	
032	10148	A	Thread Protector, Male, Standard, (Upper End) with O'Ring		1	ea	
033	01019	E	Thread Protector, Female, Standard (Lower End)		1	ea	
034						(AR)	

PARTS LISTING					
Part: 05092	Issue: F		Drawn: AJB	Checked: DJF	Approved: DJF
Description: Assy 1 11/16 Ball Type Metal Seal SX			Date: 09/04/1996	Date: 10/05/1996	Date: 10/05/1996

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
035						(AR)	
036	91001	-	Nipple Grease M6 Straight		1	ea	
037	01030	-	Screw, Grub Skt Hd, M6 x 6mm Long, St/Steel		1	ea	
038	93011	-	Screw Grub Skt Hd M5 x 5mm LG SS		1	ea	
039	91183	-	Grease, Polybutylcuprysil			(AR)	
040						(AR)	
041						(AR)	
042						(AR)	
043						(AR)	
044						(AR)	
045						(AR)	
046						(AR)	
047						(AR)	
048						(AR)	
049						(AR)	
050						(AR)	
800	AI-05092	PT1	Assembly Instruction			(AR)	
801	AR-05092	PT1	Assembly Record			(AR)	
802	TR-05092	F	Test Results			(AR)	
900	AD-05092	E	Assembly Drawing			(AR)	

(AR = As Required)

PARTS LISTING					
Part: 09071	Issue: C		Drawn: AJB	Checked: NGH	Approved: DJF
			Date: 28/04/1998	Date: 30/04/1998	Date: 08/05/1998
Description: PKJ(Ball), 1 1/2, Metal to Metal Seal, Sondex					

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
B	11/02/1998	Change as per ECR 335, 366	KRC	KRC	01 AI-02811	D	Assembly Instructions
C	17/10/2005	ECR 3167 Refers - Part no W001-00204 was 94052	BT	BT	02 TR-05092	F	Test Results
					03 SA-16806	PT1	Optional Pin Adjustment
					04 AD-09071	B	Assembly Drawing

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	02811	C	Assy Body 1 1/2 Ball Type Knuckle Joint Metal Seal		1	ea	
002						(AR)	
003						(AR)	
004						(AR)	
005	00693	C	Retainer Insulator		1	ea	
006	00691	B	Insulator Upper Sub		1	ea	
007	00692	B	Pin Contact Upper Sub		1	ea	
008	00690	E	Insulator Lower Sub		1	ea	
009						(AR)	
010	00695	C	Pin Hex Female Lower		1	ea	
011						(AR)	
012						(AR)	
013						(AR)	
014						(AR)	
015	93257	-	Washer Wavy M5 SS		1	ea	
016	01027	-	Washer, Plain, 10-32UN, St/Steel		2	ea	
017	01026	-	Half-Nut, Hex, 10-32UNF, St/Steel		2	ea	
018	10016	B	Nut, Hex, 10-32UNF, Brass/Nickel Plate, (with wire hole)		1	ea	
019	01028	C	Assy, Banana Pin (4mm)		1	ea	
020	01047	-	Circlip, Internal, 5/8, St/Steel		1	ea	
021	W001-00204	-	Wire, PTFE, Type A, 300V, 3A, 200C	7/0.12 Yellow		(AR)	
022						(AR)	
023	93019	-	Pin Spirol 1mm x 8mm LG MCK SS		1	ea	
024						(AR)	
025	93014	-	Pin Spirol 2.5mm x 18mm LG MCK SS		1	ea	
026						(AR)	
027	95009	-	O Ring Viton 75 Type 009		2	ea	
028	95112	-	O Ring Viton 75 Type 112		1	ea	
029	95115	-	O Ring Viton 75 Type 115		1	ea	
030	99211	-	O Ring Viton 90 Type 211		2	ea	
031						(AR)	
032	10148	A	Thread Protector, Male, Standard, (Upper End) with O'Ring		1	ea	
033	01019	E	Thread Protector, Female, Standard (Lower End)		1	ea	
034						(AR)	
035						(AR)	

PARTS LISTING					
Part: 09071	Issue: C		Drawn: AJB	Checked: NGH	Approved: DJF
			Date: 28/04/1998	Date: 30/04/1998	Date: 08/05/1998
Description: PKJ(Ball), 1 1/2, Metal to Metal Seal, Sondex					

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
036	91001	-	Nipple Grease M6 Straight		1	ea	
037	01082	A	Screw Grub Skt Hd M6x5mm Lg SS MOD		1	ea	
038	93011	-	Screw Grub Skt Hd M5 x 5mm LG SS		1	ea	
039	91183	-	Grease, Polybutylcuprysil			(AR)	
040						(AR)	
041						(AR)	
042						(AR)	
043						(AR)	
044						(AR)	
045	00359	B	Obsolete (Use 00352)		1	ea	

(AR = As Required)

PARTS LISTING					
Part: 09414	Issue: PT3		Drawn: TLS	Checked: KRC	Approved: KRC
			Date: 14/09/2001	Date: 20/09/2001	Date: 20/09/2001
Description: PKJ(Ball), 1 3/8, Metal to Metal Seal(Ball), Sondex					

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
PT1	20/09/2001	INITIAL ISSUE	KRC	KRC	01 SA-16806	PT1	Optional Pin Adjustment
PT2	17/10/2005	ECR 1392 & 3167 Refers- part no A001-00204 was 94052	BT	BT			
PT3	21/04/2006	ECR 3184 Refers - Item 021 deleted, Item 900 added	JC	JC			

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	05264	PT2	Sub Assembly 1 3/8 Knuckle Body		1	ea	
002						(AR)	
003						(AR)	
004						(AR)	
005	00693	C	Retainer Insulator		1	ea	
006	00691	B	Insulator Upper Sub		1	ea	
007	00692	B	Pin Contact Upper Sub		1	ea	
008	00690	E	Insulator Lower Sub		1	ea	
009						(AR)	
010	00695	C	Pin Hex Female Lower		1	ea	
011						(AR)	
012						(AR)	
013						(AR)	
014						(AR)	
015	93257	-	Washer Wavy M5 SS		1	ea	
016	01027	-	Washer, Plain, 10-32UN, St/Steel		2	ea	
017	01026	-	Half-Nut, Hex, 10-32UNF, St/Steel		2	ea	
018	10016	B	Nut, Hex, 10-32UNF, Brass/Nickel Plate, (with wire hole)		1	ea	
019	01028	C	Assy, Banana Pin (4mm)		1	ea	
020	01047	-	Circlip, Internal, 5/8, St/Steel		1	ea	
021						(AR)	
022						(AR)	
023	93019	-	Pin Spirol 1mm x 8mm LG MCK SS		1	ea	
024						(AR)	
025	93014	-	Pin Spirol 2.5mm x 18mm LG MCK SS		1	ea	
026						(AR)	
027	95009	-	O Ring Viton 75 Type 009		2	ea	
028	95112	-	O Ring Viton 75 Type 112		1	ea	
029	95115	-	O Ring Viton 75 Type 115		1	ea	
030	99211	-	O Ring Viton 90 Type 211		2	ea	
031						(AR)	
032	10148	A	Thread Protector, Male, Standard, (Upper End) with O'Ring		1	ea	
033	01019	E	Thread Protector, Female, Standard (Lower End)		1	ea	
034						(AR)	
035						(AR)	

PARTS LISTING					
Part: 09414	Issue: PT3		Drawn: TLS	Checked: KRC	Approved: KRC
			Date: 14/09/2001	Date: 20/09/2001	Date: 20/09/2001
Description: PKJ(Ball), 1 3/8, Metal to Metal Seal(Ball), Sondex					

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
036	91001	-	Nipple Grease M6 Straight		1	ea	
037	01082	A	Screw Grub Skt Hd M6x5mm Lg SS MOD		1	ea	
038	93011	-	Screw Grub Skt Hd M5 x 5mm LG SS		1	ea	
039	91183	-	Grease, Polybutylcuprysil			(AR)	
040						(AR)	
041						(AR)	
042						(AR)	
043						(AR)	
044						(AR)	
045						(AR)	
046						(AR)	
047						(AR)	
048						(AR)	
049						(AR)	
800	AI-05092	PT1	Assembly Instruction			(AR)	
801	AR-05092	PT1	Assembly Record			(AR)	
802	TR-05092	F	Test Results			(AR)	
900	AD-09414	PT2	Assembly Drawing			(AR)	

(AR = As Required)

PARTS LISTING					
Part:	Issue:		Drawn:	Checked:	Approved:
09607	PT3		AJB	IH	TG
			Date: 18/07/2003	Date: 18/07/2003	Date: 18/07/2003
Description: Assy 2 1/8 PKJ Ball Type Metal Metal Seal SX					

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
PT1	18/07/2003	Initial Release	IH	TG	01 SA-16806	PT1	Optional Pin Adjustment
PT2	17/10/2005	ECR 3167 Refers - Part no W001-00204 was 94052	BT	BT			
PT3	21/04/2006	ECR 3184 Refers - Item 021 deleted, Items 800 to 803 & 900 added	JC	JC			

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	05268	PT2	Assy Body PKJ Ball Type 2 1/8"		1	ea	
002						(AR)	
003						(AR)	
004						(AR)	
005	00693	C	Retainer Insulator		1	ea	
006	00691	B	Insulator Upper Sub		1	ea	
007	00692	B	Pin Contact Upper Sub		1	ea	
008	00690	E	Insulator Lower Sub		1	ea	
009						(AR)	
010	00695	C	Pin Hex Female Lower		1	ea	
011						(AR)	
012						(AR)	
013						(AR)	
014						(AR)	
015	93257	-	Washer Wavy M5 SS		1	ea	
016	01027	-	Washer, Plain, 10-32UN, St/Steel		2	ea	
017	01026	-	Half-Nut, Hex, 10-32UNF, St/Steel		2	ea	
018	10016	B	Nut, Hex, 10-32UNF, Brass/Nickel Plate, (with wire hole)		2	ea	
019	01028	C	Assy, Banana Pin (4mm)		1	ea	
020	01047	-	Circlip, Internal, 5/8, St/Steel		1	ea	
021						(AR)	
022						(AR)	
023	93019	-	Pin Spirol 1mm x 8mm LG MCK SS		1	ea	
024						(AR)	
025	93014	-	Pin Spirol 2.5mm x 18mm LG MCK SS		1	ea	
026						(AR)	
027	95009	-	O Ring Viton 75 Type 009		2	ea	
028	95112	-	O Ring Viton 75 Type 112		1	ea	
029	95115	-	O Ring Viton 75 Type 115		1	ea	
030	99211	-	O Ring Viton 90 Type 211		2	ea	
031						(AR)	
032	10148	A	Thread Protector, Male, Standard, (Upper End) with O'Ring		1	ea	
033	01019	E	Thread Protector, Female, Standard (Lower End)		1	ea	
034						(AR)	
035						(AR)	
036	91001	-	Nipple Grease M6 Straight		1	ea	

PARTS LISTING					
Part: 09607	Issue: PT3		Drawn: AJB	Checked: IH	Approved: TG
			Date: 18/07/2003	Date: 18/07/2003	Date: 18/07/2003
Description: Assy 2 1/8 PKJ Ball Type Metal Metal Seal SX					

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
037	01030	-	Screw, Grub Skt Hd, M6 x 6mm Long, St/Steel		1	ea	
038	93011	-	Screw Grub Skt Hd M5 x 5mm LG SS		1	ea	
039	91183	-	Grease, Polybutylcuprysil			(AR)	
040						(AR)	
041						(AR)	
042						(AR)	
043						(AR)	
044						(AR)	
045						(AR)	
046						(AR)	
047						(AR)	
048						(AR)	
049						(AR)	
050						(AR)	
800	AI-05092	PT1	Assembly Instruction			(AR)	
801	AR-05092	PT1	Assembly Record			(AR)	
802	TR-05092	F	Test Results			(AR)	
900	AD-09607	PT2	Assembly Drawing			(AR)	

(AR = As Required)

PARTS LISTING					
Part: 09637	Issue: PT1		Drawn: NGH	Checked: PML	Approved: TG
Description: Assy PKJ 1 11/16 Ball Type Metal Seal SX (Lockable)			Date: 30/09/2003	Date: 15/10/2003	Date: 15/10/2003

CHANGE HISTORY					RELATED DOCUMENTS		
Iss	Date	Remarks	Chkd	Appr	# Documents	Issue	Notes
PT1	15/10/2003	INITIAL RELEASE	PML	TG	01 AD09637	PT1	Assembly Drawing
					02 PL09637	PT1	Parts List

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
001	05269	PT1	Assy Body PKJ Ball Type 1 11/16 (Lockable)		1	ea	
002						(AR)	
003						(AR)	
004						(AR)	
005	00693	C	Retainer Insulator		1	ea	
006	00691	B	Insulator Upper Sub		1	ea	
007	00692	B	Pin Contact Upper Sub		1	ea	
008	00690	E	Insulator Lower Sub		1	ea	
009						(AR)	
010	00695	C	Pin Hex Female Lower		1	ea	
011						(AR)	
012						(AR)	
013						(AR)	
014						(AR)	
015	93257	-	Washer Wavy M5 SS		1	ea	
016	01027	-	Washer, Plain, 10-32UN, St/Steel		2	ea	
017	01026	-	Half-Nut, Hex, 10-32UNF, St/Steel		2	ea	
018	10016	B	Nut, Hex, 10-32UNF, Brass/Nickel Plate, (with wire hole)		1	ea	
019	01028	C	Assy, Banana Pin (4mm)		1	ea	
020	01047	-	Circlip, Internal, 5/8, St/Steel		1	ea	
021						(AR)	
022						(AR)	
023	93019	-	Pin Spirol 1mm x 8mm LG MCK SS		1	ea	
024						(AR)	
025	93014	-	Pin Spirol 2.5mm x 18mm LG MCK SS		1	ea	
026						(AR)	
027	95009	-	O Ring Viton 75 Type 009		2	ea	
028	95112	-	O Ring Viton 75 Type 112		1	ea	
029	95115	-	O Ring Viton 75 Type 115		1	ea	
030	99211	-	O Ring Viton 90 Type 211		2	ea	
031						(AR)	
032	10148	A	Thread Protector, Male, Standard, (Upper End) with O'Ring		1	ea	
033	01019	E	Thread Protector, Female, Standard (Lower End)		1	ea	
034						(AR)	
035						(AR)	
036	91001	-	Nipple Grease M6 Straight		1	ea	
037	01030	-	Screw, Grub Skt Hd, M6 x 6mm Long, St/Steel		1	ea	

PARTS LISTING					
Part: 09637	Issue: PT1		Drawn: NGH	Checked: PML	Approved: TG
			Date: 30/09/2003	Date: 15/10/2003	Date: 15/10/2003
Description: Assy PKJ 1 11/16 Ball Type Metal Seal SX (Lockable)					

PARTS LIST							
Item	Part No.	Issue	Description	Component Value	Qty	Units	Remarks
038	93011	-	Screw Grub Skt Hd M5 x 5mm LG SS		1	ea	
039	91183	-	Grease, Polybutylcuprysil			(AR)	
040	01849	A	Spring, Locking, 1 11/16 Inch Tools		1	ea	

(AR = As Required)