



Document Title: Sonyks Joined Collars
Document Number: S-WI-3015
Issue Number: 1.1
Date of Issue: 11/04/2023

Work Instruction



Sonyks Joined Collars

Document Number: S-WI-3015

Revision: 1.1

Date of issue: 11/04/2023

Originator: Keith Thornicroft

	Name	Date	Signature
Author / updated by:	K. Thornicroft	08/02/2023	
Reviewed By:	A. Jolley	11/04/2023	
Approved By:	A. Jolley	11/04/2023	

Review Date*: 11/04/2024

* Normally 12 months from date of issue, unless otherwise stated.

Revision History

Revision	Date	Principal changes
1.0	09/02/2023	New at this issue.
1.1	11/04/2023	Updated Collar Combinations table for Sonyks 1.1R19.

Distribution List:- Revision 1.2

1	Eddyfi UK Ltd Office Manager (Amy Toop) – Central Register
---	--

The central Controlled Document Register is held on:
T:\SiteTeam\Quality\Documents\Written Instructions

Contents

- 1. Overview.....4
- 2. Responsibilities4
- 3. Equipment Required.....4
- 4. Collar Combinations5
 - 4.1. Inflation.....6
 - 4.2. Collar Connection to the Instrument.....6
- 5. Procedure7
 - 5.1. Verify link-up combination7
 - 5.2. Test Equipment7
 - 5.3. Position the collars on the pipe.....7
 - 5.4. Align the first collar clasp.....8
 - 5.5. Engage the second collar clasp.....9
 - 5.6. Pull the first collar clasp tight9
 - 5.7. Pull the second collar clasp tight9
 - 5.8. Ensure that the two collar gaps are equal and lock the clasps.....9
 - 5.9. Connect the tool lead and air hose 10
 - 5.10. Connect the Sonyks instrument 10
 - 5.11. Turn on the Sonyks instrument and start a new test.....11
- 6. Vertical Installation.....12

1. OVERVIEW

This document describes the steps needed to assemble, test, and install a Sonyks Piezo-Tool link-up for the Guided Wave Testing (GWT) of pipes with diameters greater than 24". This B version requires the use of Sonyks V1.1R19 and above. For earlier software versions, please use version A of this instruction.

2. RESPONSIBILITIES

It is the responsibility of the Sonyks operator to read this document and to ensure the correct selection of collars and the correct fitment of those collars to the pipe under test.

3. EQUIPMENT REQUIRED

- Sonyks link-up tool lead (P/N: SONYKS-ACC-PIEZO-TLEAD-Y)



Figure 1: The Sonyks link-up tool lead

(NOTE: the junction box in the centre is labelled 'INSTRUMENT', 'COLLAR 1' AND 'COLLAR 2')

- Sonyks link-up air hose (P/N: SONYKS-ACC-AIR-Y)



Figure 2: The Sonyks link-up air hose

- 2 x Piezo-Tools (P/N: PIEZO-GWT-COLLAR-XX)
- Populated modules (P/N: XXXX-XXX-XXXX)
- Sonyks instrument (P/N: SONYKS-GWT)
- Tape measure

4. COLLAR COMBINATIONS

The largest Piezo-Tool has been designed to fit on a 36" Nominal Pipe Size (NPS). For pipe sizes above 24", two collars can be joined together in a 'link-up' configuration. Table 1 shows the collar combinations needed to serve pipe sizes between 26" and 72".

Table 1: Piezo-Tool link-up information (NPS pipe sizes only)

Size	Collar 1	Collar 2	Number of Modules	Number of Transducers	Segment Capacitance (nF)
26"	10"	12"	76	152	4.8 / 5.6
28"	10"	14"	76	152	5.6 / 6.4
30"	14"	14"	80	160	8
	12"	14"	80	160	6.4 / 7.2
32"	14"	16"	88	176	8.8
34"	16"	16"	96	192	9.6
	14"	18"	96	192	9.6
36"	16"	18"	104	208	10.4
38"	18"	18"	112	224	11.2

Size	Collar 1	Collar 2	Number of Modules	Number of Transducers	Segment Capacitance (nF)
	16"	20"	112	224	11.2
40"	18"	20"	120	240	12
42"	20"	20"	128	256	12.8
	18"	22"	120	240	12
44"	20"	22"	128	256	12.8
46"	22"	22"	128	256	12.8
	20"	24"	136	272	13.6
48"	22"	24"	136	272	13.6
52"	24"	26"	152	304	12.8 / 13.6
56"	26"	28"	160	320	12.8
60"	28"	30"	170	340	13.6
64"	30"	32"	186	372	12.8 / 13.6
68"	32"	34"	192	384	12.8
72"	34"	36"	208	416	12.8

4.1. INFLATION

The Sonyks instrument will automatically detect the joined collars and will set the pump target pressure to 40psi.

! CAUTION !

When inflating with an external pump, the **target pressure MUST NOT exceed 40psi.**

4.2. COLLAR CONNECTION TO THE INSTRUMENT

IMPORTANT: For correct device configuration, the collars must be connected in the proper order. Collars 1 and 2 **MUST** be set as defined in the collar combinations table

Example:

For a 26" pipe, Collar 1 must be the 10" collar and Collar 2 must be the 12" collar.

Using the link-up tool lead (SONYKS-ACC-PIEZO-TLEAD-Y) make the connections in the following order:

1. Attach the connector marked as COLLAR 1 to Collar 1
2. Attach the connector marked as COLLAR 2 to Collar 2
3. Attach the connector marked as INSTRUMENT to the Sonyks instrument

Do not connect the tool lead to the Sonyks instrument until both collars have been connected.

5. PROCEDURE

5.1. VERIFY LINK-UP COMBINATION

Using Table 1, select the collars needed to perform the inspection and collect the equipment listed in Section 3: [Equipment Required](#).

5.2. TEST EQUIPMENT

Fit modules into both collars. Ensure that the tool lead is connected in the correct order (see [4.2](#)) and test the capacitance of the transducers using the Sonyks software. The capacitance values are available on the Tool Check screen after a project is created. Approximate capacitance values per segment can be found in [Table 1](#) of Section **Error! Reference source not found.** Where two capacitance values are shown, either value is acceptable if it is within a repeating pattern.

If the capacitance value of any segment differs by more than 0.8nF from the value in Table 1, isolate and replace the suspect transducer or module.

Note: It is advisable to perform these tests before attempting to install the collars.

5.3. POSITION THE COLLARS ON THE PIPE

Disconnect the tool lead from the instrument, and then from the collars. Lay both collars on top of the pipe such that the tool direction arrow on the connection boxes point in the same direction.

Note: It is recommended that the collars and tool lead connectors are kept covered with the supplied connector caps when not in use to minimise damage due to ingress.



Figure 3: 16" and 18" Piezo-Tools ready for installation on a 36" Schedule 40 pipe

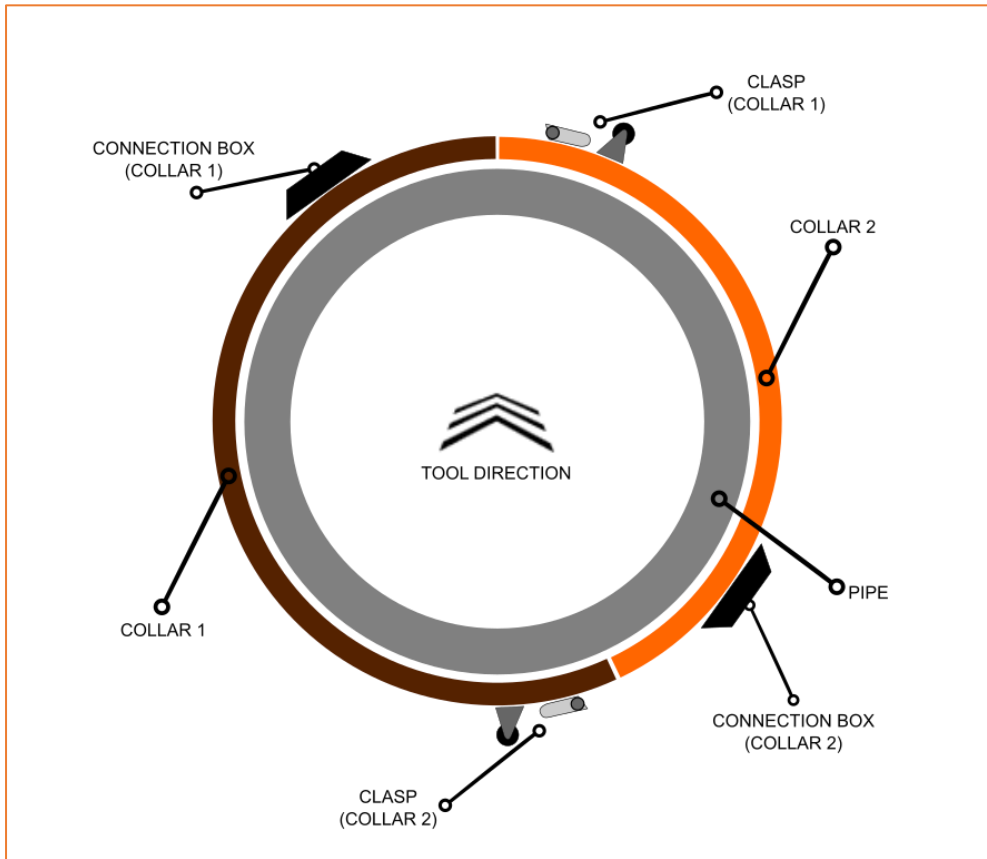


Figure 4: A cross-sectional view of the collar combination layout. The arrow in the centre of the pipe is the tool direction (into the page)

5.4. ALIGN THE FIRST COLLAR CLASP

Slide collar 1 around the pipe so that the connection box is on the bottom half of the pipe. Slide collar 2 around the pipe so that the connection box is on the top half of the pipe. Ensure that the clasp between the two collars appears at the Top-Dead-Centre (TDC) of the pipe (the 12 o'clock position) and clip the two collars together (Figure 5). Ensure that the clasp lock engages.



Figure 5: Initial collar engagement at TDC of the pipe

5.5. ENGAGE THE SECOND COLLAR CLASP

Reach underneath the pipe and engage the second collar clasp and ensure that the clasp lock is engaged.

5.6. PULL THE FIRST COLLAR CLASP TIGHT

Return to the first collar clasp and pull on the webbing so the ends of the collars are brought closer together

5.7. PULL THE SECOND COLLAR CLASP TIGHT

Reach underneath the pipe and pull on the webbing so that the ends of the collars are brought closer together.

5.8. ENSURE THAT THE TWO COLLAR GAPS ARE EQUAL AND LOCK THE CLASPS

Once both collar gaps have been minimised, lock both webbing loops by using the over-centre webbing lock. This action is identical to the method used to lock the clasp on a single Piezo-Tool.

At this point, check that all transducer modules are in contact with the pipe surface. There should be no space between the transducer modules and the pipe surface. If gaps are present, then tighten one or both webbing straps by pulling them through the clasp.

Using a measuring tape ensure that both gaps between the collars are approximately equal. A correctly mounted and locked link-up clasp should look like the configuration in [Figure 6](#) below.



Figure 6: A correctly mounted link-up configuration (note that the webbing is locked via the over-centre clasp and the collar gap has been minimised)

Ensure that the collar link-up assembly is normal to the axis of the pipe and that the ends of the collars are not misaligned.

5.9. CONNECT THE TOOL LEAD AND AIR HOSE

Ensure that the tool lead connectors are free of dirt and/or debris. Ensure that the dedicated connectors (COLLAR 1 and COLLAR 2) are attached to the correct collar.

Connect the air hose to both collars. The Schrader valves are not unique to one collar, they can be connected to either collar.



Figure 7: The connection of a collar link-up.

5.10. CONNECT THE SONYKS INSTRUMENT

Connect the Sonyks instrument to the collar by plugging in both the tool lead and air hose connectors.



Figure 8: A 36" link-up combination with a Sonyks instrument connected

5.11. TURN ON THE SONYKS INSTRUMENT AND START A NEW TEST

Once the collar is correctly installed, the inspection becomes a normal GWT inspection on the Sonyks instrument. Once a new project is started, the 'Tool' screen in the 'Dashboard' will now show the collar link-up configuration installed on the pipe.

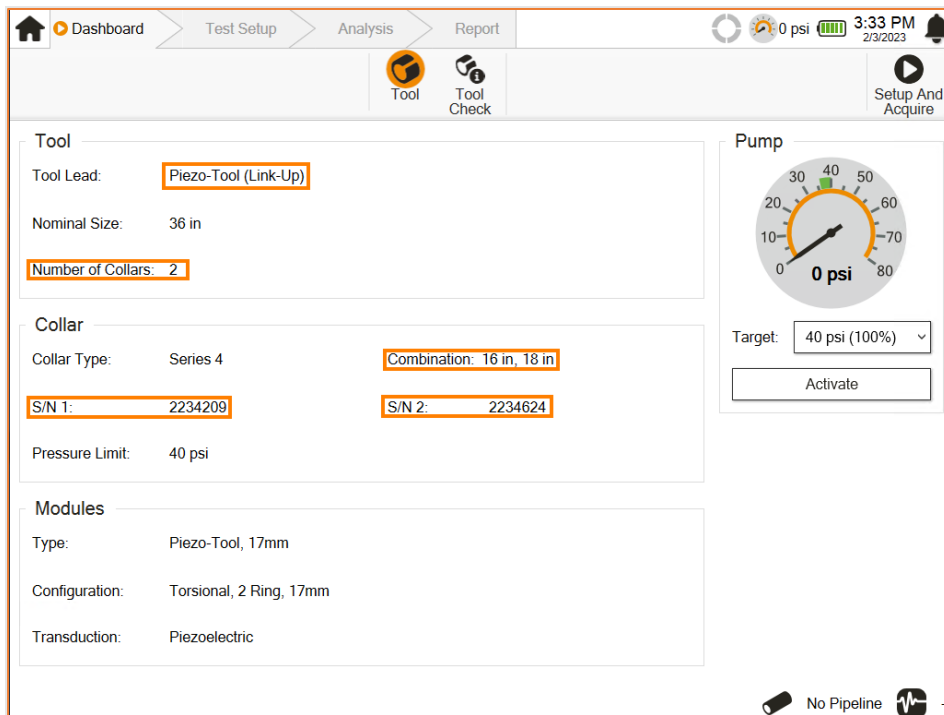


Figure 9: The 'Tool' screen on the Dashboard in the SonyksGO software

6. VERTICAL INSTALLATION

The steps for fitting a Piezo-Tool link-up to a vertical pipe are modified from those used for a horizontal pipe as, due to gravity, it becomes a two-person installation. The steps are as follows:

1. Join Collars 1 and 2 together ensuring that the tool direction arrows on both connection boxes are pointing in the same direction.
2. Pull out some of the webbing slack between the two collars.
3. Connect the air hose to both collars.
4. Connect the tool lead to both collars, ensuring that the dedicated connectors (COLLAR 1 and COLLAR 2) are attached to the correct collar.
5. Connect the tool lead and air hose to the Sonyks instrument.
6. Create or open a project.
7. Start a new test.
8. Set the pump pressure to 5psi. At this point DO NOT activate the pump.
9. Using two people (operators 1 and 2; one at either end of the assembly), lift the collar assembly up to the test location on the pipe and engage the modules on the surface of the pipe.
10. Pull the two ends of the collar assembly around the pipe and transfer both collar ends to operator 1.
11. Operator 2 must return to the opposite side of the pipe to support the weight of the collar assembly.
12. Both operator 1 and operator 2 can, in turn, tighten the slack in the webbing and lock off their over-centre webbing clamps.
13. Activate the pump.
14. Ensure that the collar assembly is sitting horizontal (normal to the pipe axis) and is safely secured. It is important that the collar is normal to the axis of the pipe. If there is any deviation from this condition the signal quality will be reduced. Deflate and adjust as required.
15. Set the pump pressure to 40psi.
16. Activate the pump and continue the inspection in the normal manner.