FEEDLINE PRECISION
INSTALLATION AND MAINTENANCE PROCEDURES

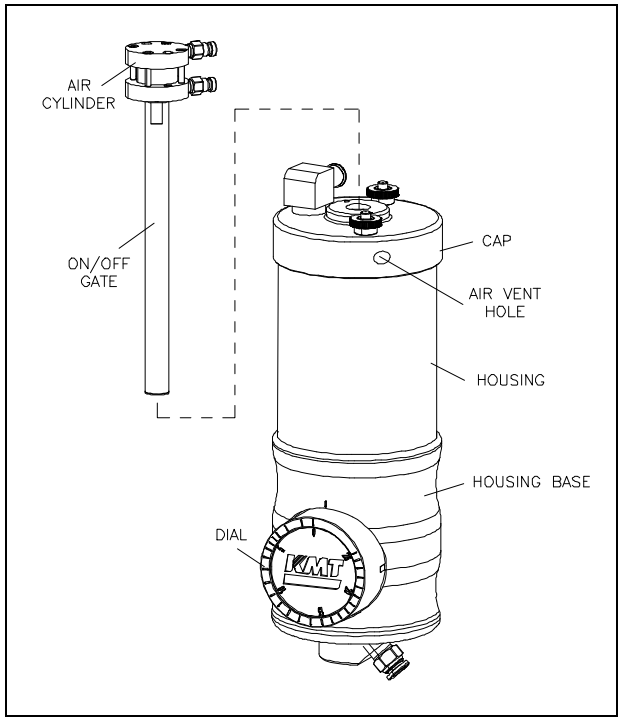
1. Overview

The Feedline Precision is designed especially for the abrasive waterjet cutting process, supplying the desired abrasive flow rate to the cutting head.

2. Feedline Precision Components

The Feedline Precision consists of a housing and base, with a front mounted dial to view or change the abrasive flow rate setting. The on/off gate opens or closes to control the abrasive flow when air is supplied or removed from the air cylinder.

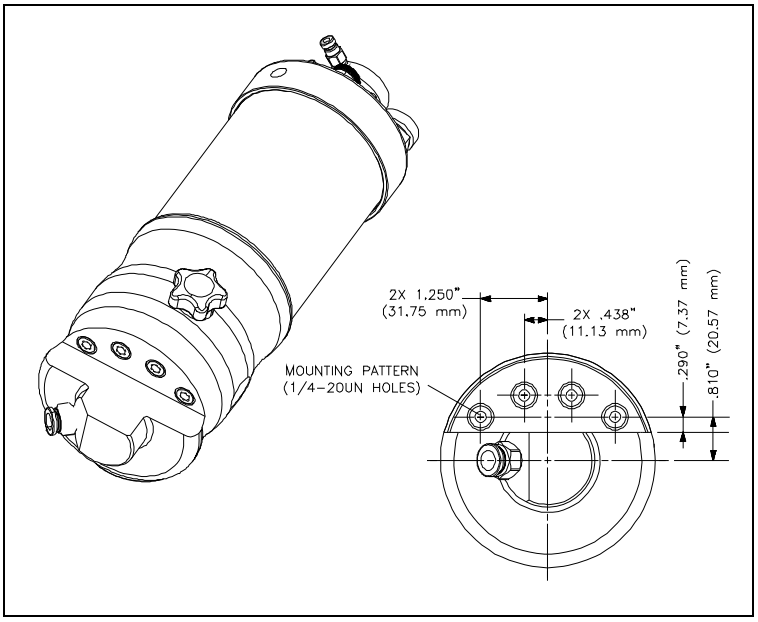
Figure 1: Feedline Precision Components



3. Installation

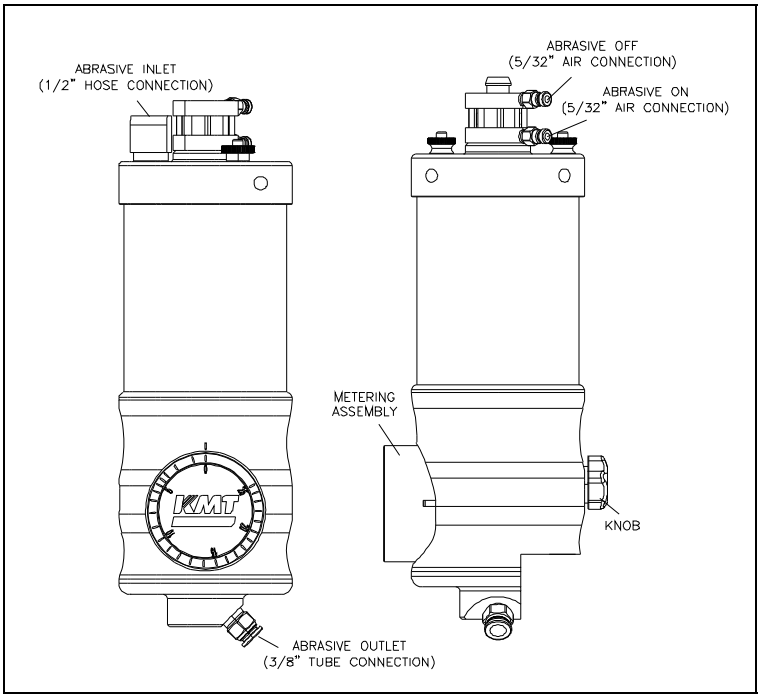
The Feedline Precision can be mounted directly to the cutting table or to a customer supplied bracket using the four, 1/4-20UN threaded fastening holes located on the bottom of the base.

Figure 2: Mounting



Attach the air supply and abrasive lines as illustrated below.

Figure 3: Installation



NOTE

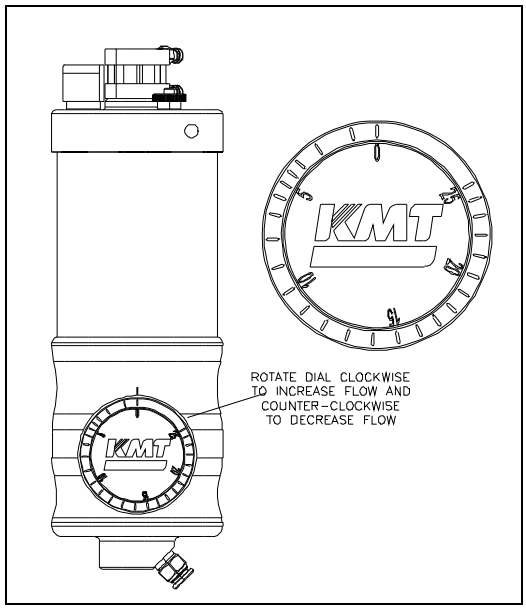
If water backs up in the abrasive outlet during operation, remove the knob in the metering assembly and use compressed air to clean and dry the metering assembly, the cavity in the base of the metering assembly and the abrasive outlet. This will allow the smooth and consistent delivery of abrasive. It is not necessary to disassemble the metering assembly.

4. Abrasive Flow Adjustment

Abrasive flow rate is determined by the position of the dial. Rates are based on the customary grain size of 80-mesh.

Each tick mark on the dial approximately corresponds to 0.10 lb/min. For example, a setting of '5' on the dial corresponds to 0.50 lb/min, based on 80 mesh garnet. If other abrasive types are used the flow rate can be determined using a pail and scale method.

Figure 4:Abrasive Flow Adjustment



CAUTION

Do not excessively force the dial against either positive stop to avoid damaging or breaking the lead screw nut. If the nut is damaged the metering housing must be partially disassembled and the nut must be replaced.

5. Calibration Procedure

If the abrasive flow becomes erratic or the flow is more or less than expected, the metering assembly may require calibration.

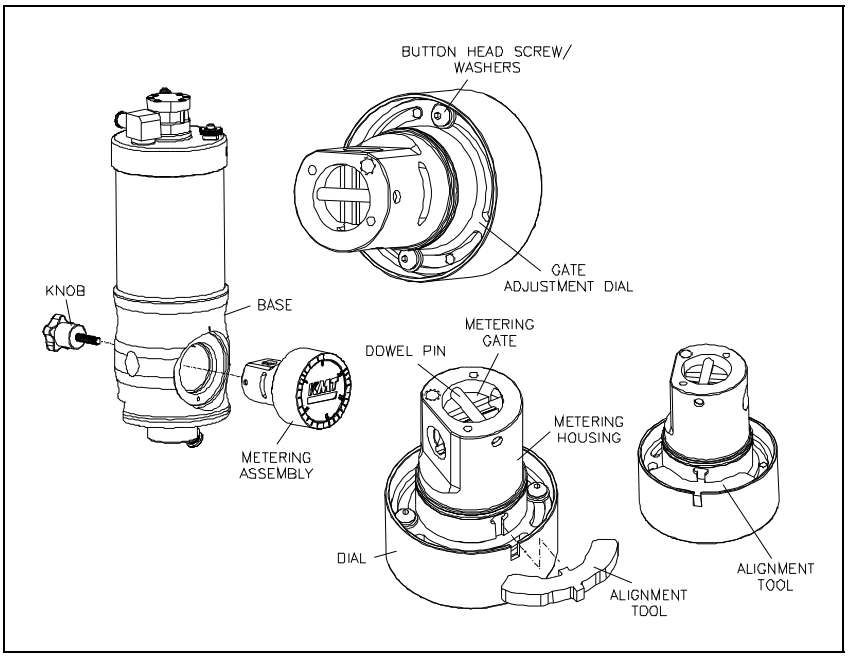
1. Unscrew the knob and remove the metering assembly from the base.

CAUTION

Use caution when removing knob and metering assembly. Do not drop them directly in a pool of water.

2. Loosen and remove the two button head screws and washers in the gate adjustment dial.

Figure 5: Calibration Procedure



3. Insert the alignment tool into the dial and metering housing so the tab on the tool aligns with the notches on the dial and the housing.
4. Ensure the metering gate is fully extended against the dowel pin. If it is not, use a small screwdriver to rotate the gate adjustment dial until it is. There will be some resistance due to the friction of an o-ring. The alignment tool does not have to be removed to move the gate adjustment dial.
5. Replace the washers and screws in either set of holes, 180° from each other, and tighten the screws.
6. Remove the alignment tool. Retain the alignment tool for future use.

6. Lead Screw Nut Assembly Replacement

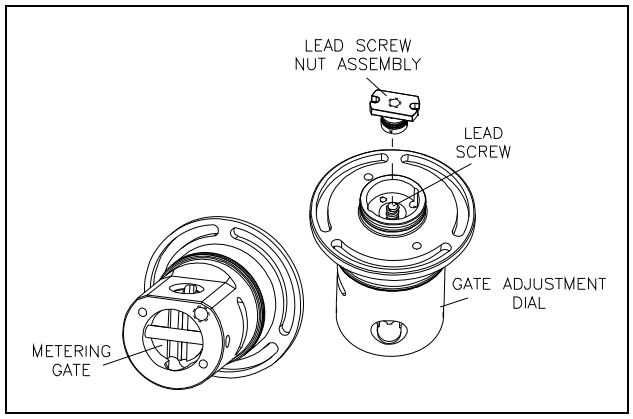
1. Unscrew the knob and remove the metering assembly from the base.

CAUTION

Use caution when removing knob and metering assembly. Do not drop them directly in a pool of water.

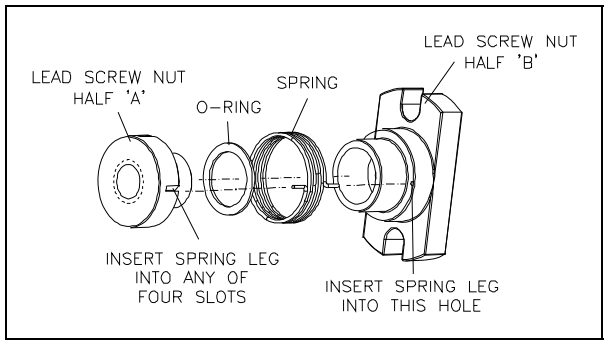
2. Loosen and remove the two button head screws and washers in the gate adjustment dial.
3. Remove the dial from the gate adjustment dial.
4. Remove the pan head screws and lock washers attaching the lead screw nut assembly to the adjustment dial.
5. Use a screwdriver or needle-nose pliers to unscrew and remove the lead screw nut assembly. It may be helpful to use a wooden dowel or similar tool to apply pressure to the metering gate to extend the lead screw beyond the adjustment dial as far as possible.

Figure 6: Lead Screw Nut Assembly Removal



6. The lead screw nut consists of two halves, half ‘A’ and half ‘B’. A spring and an o-ring are positioned between the two halves. Properly assemble a new lead screw nut assembly as illustrated below. Ensure the spring is not under tension.

Figure 7: Lead Screw Nut Assembly



CAUTION

Do not apply any grease or lubricants to the lead screw nut assembly or the lead screw, it is self-lubricating. Simply ensure the threads are clean and dry.

7. Use a wooden dowel to maintain the extension of the lead screw.
8. Hold the lead screw nut assembly together and thread it clockwise onto the lead screw approximately 45 degrees.
9. Apply light downward pressure to half 'B' along the lead screw axis and rotate **only** half 'B' approximately 1/2 to 3/4 of a revolution counter-clockwise to correctly tension the spring. Half 'A' should not move.
10. While maintaining downward pressure, rotate half 'B' clockwise. The two halves of the nut assembly should now rotate as one as it is threaded onto the lead screw.

NOTE

If half 'B' will not thread onto the lead screw, rotate it counter-clockwise slightly and then clockwise to start it.

11. Continue threading the tensioned nut assembly onto the lead screw until the screw slots are aligned with the threaded holes in the gate adjustment dial.
12. When aligned, remove the wooden dowel to allow the metering gate, lead screw and nut assembly to move as one.
13. Gently push the nut assembly until it contacts the gate adjustment dial. Install the lock washers and pan head screws. Do not over-tighten.
14. Turn the gate adjustment dial until the metering gate is fully extended against the dowel pin.
15. Install the dial, ensuring the notch in the dial is as closely aligned with the notch in the metering housing as possible.
16. Calibrate the metering assembly, following Steps 3-6 of the Calibration Procedure in Section 5.

7. Troubleshooting

The troubleshooting guide will help identify the probable cause of a system malfunction and assist in providing corrective action.

Table 1
Feedline Precision Troubleshooting Guide

Malfunction		Indication	Comments
1.	Supply vessel runs empty	Conveying pressure is too low in conveying system	Increase air conveying pressure via the control system.
		Inlet opening is blocked	Clean inlet opening.
2.	Erratic abrasive flow or the flow is more or less than expected	Using an incorrect dial setting for the desired abrasive flow rate	Ensure dial is set to the correct position.
		Abrasive passages are partially or completely blocked	Clean passages.
		On/off gate is partially covering inlet holes even though air cylinder is retracted	On/off gate is not fully seated on air cylinder rod. Fully seat the gate against the air cylinder rod shoulder.
		Metering gate and dial are incorrectly calibrated	Recalibrate the metering assembly following the Calibration Procedure.
		Static buildup in abrasive is causing clumping	Attach one end of the supplied ground wire to the stud (item 1, Table 3) and the other to an earth ground. Hold the ground wire in place with the thumb nut (item 2, Table 3).
		Lead screw nut assembly is broken or stripped out	Replace the nut assembly following the procedure, Lead Screw Nut Replacement in Section 6.
3.	Abrasive will not turn off or on, or is slow and erratic in its actuation	On/off gate is broken or worn	Replace the gate.
		Loss of or insufficient air signal to air cylinder	Ensure proper air supply to air cylinder, a minimum of 40 psi (2.8 bar).
4.	Abrasive on/off behavior is opposite of what is expected	Air signal tubes to air cylinder are reversed	Switch air signal tube position on air cylinder.

Table 1
Feedline Precision Troubleshooting Guide

Malfunction		Indication	Comments
5.	Abrasive flow is significantly more than expected for the dial setting	Air vent holes are obstructed causing air pressure to build, forcing abrasive through the metering assembly	Remove obstruction.
		Lead screw nut assembly is broken or stripped out	Replace the nut assembly following the procedure, Lead Screw Nut Replacement in Section 6.
6.	Abrasive blows out of the air vent holes	Conveying pressure is too high in the conveying system	Reduce air conveying pressure via the control system.
7.	Abrasive flow rate does not change when the dial is rotated in either direction.	Lead screw nut assembly is broken or stripped out	Replace the nut assembly following the procedure, Lead Screw Nut Replacement in Section 6.

8. Specifications

Technical specifications for the Feedline Precision are listed in Table 2.

Table 2
Technical Specifications

Length	4.00” (102 mm)
Width	5.17” (131 mm)
Height	13.03” (330 mm)
Weight, dry	4.75 lbs (2.15 kg)
Housing volume	.15 gal (.57 L)
Recommended air supply	40 psi (2.7 bar)
Abrasive flow rate	0-2.50 lb/min (0-1.10 kg/min)

9. Parts List

This section contains a parts list for the Feedline Precision. To facilitate the ordering of replacement parts, item numbers in the Table 3 correspond to the identifying numbers in the accompanying figure.

Use the following information to contact the Customer Service Department at KMT Waterjet Systems.

USA

Customer Service Department
KMT Waterjet Systems
PO Box 231
635 West 12th Street
Baxter Springs, KS 66713-0231

Phone (800) 826-9274
Fax (620) 856-2242
Email wj.service@kmtgroup.com
wj.parts@kmtgroup.com

Europe

Spare Parts Manager
KMT Waterjet Systems GmbH
Wasserstrahl Schneidetechnik
Auf der Laukert 11
61231 Bad Nauheim
Germany

Phone +49-6032-997-115
Fax +49-6032-997-270
Email order.spares@kmt-waterjet.com

Table 3
Parts List
Feedline Precision
20497504

Item	Part Number	Description	Quantity	Item	Part Number	Description	Quantity
1	72115018	Stud, 1/4-20 x 7.0	2	20	20480968	Socket Head Screw, 6-32 x 1-1/4	2
2	72113464	Thumb Nut, 1/4-20	2	21	72120156	Adapter, Hose Barb/Pipe, .50 x .50	1
3	72101073	Air Cylinder	1	22	49886542	Pipe Nipple, .50 x 1.50	1
4	72101122	Knob	1	23	61101650	Ball Bearing	1
5	20497445	Cap	1	24	05080346	O-Ring, 1.63 x 1.75 x .06	1
6	20497470	Feeder Housing	1	25	20454822	O-Ring, .88 x 1.0 x .06	1
7	20498725	On/Off Gate	1	26	10114627	Flat Washer, #8	2
8	20497463	Housing Support	1	27	10069607	Lock Washer, #8	2
9	72101255	Shoulder Screw, .25 x .66	2	28	20452752	Button Head Screw, 8-32 x 3/8	2
10	72108178	Decal	1	29	20493744	Rod Wiper	1
11	20497486	Base	1	30	72101536	Lead Screw Nut Assembly	1
12	20497528	Dial	1	31	20497809	Metering Gate	1
13	20497512	Gate Adjustment Dial	1	32	72101528	Lead Screw	1
14	10174373	Lock Washer, #4	2	33	49874423	O-Ring, 3.50 x 3.63 x .06	2
15	05097316	Pan Head Screw, 4-40 x 1/4	2	34	20497817	Meter Housing	1
16	20485398	Thread Insert, 1/4-20	4	35	72104724	Alignment Tool	1
17	61126297	Adapter, Tube/Pipe, .38 x .25	1	36	20413913	O-Ring, 1.06 x 1.19 x .06	1
18	49867047	Dowel Pin, .19 x 1.50	1	37	72118454	Ground Wire Assembly, not shown	1
19	72104641	Adapter, Pipe/Tube, 10-32 x .16	2	38	95119012	Socket Head Screw, 1/4-20 x 1, not shown	4

Figure 8: Feedline Precision

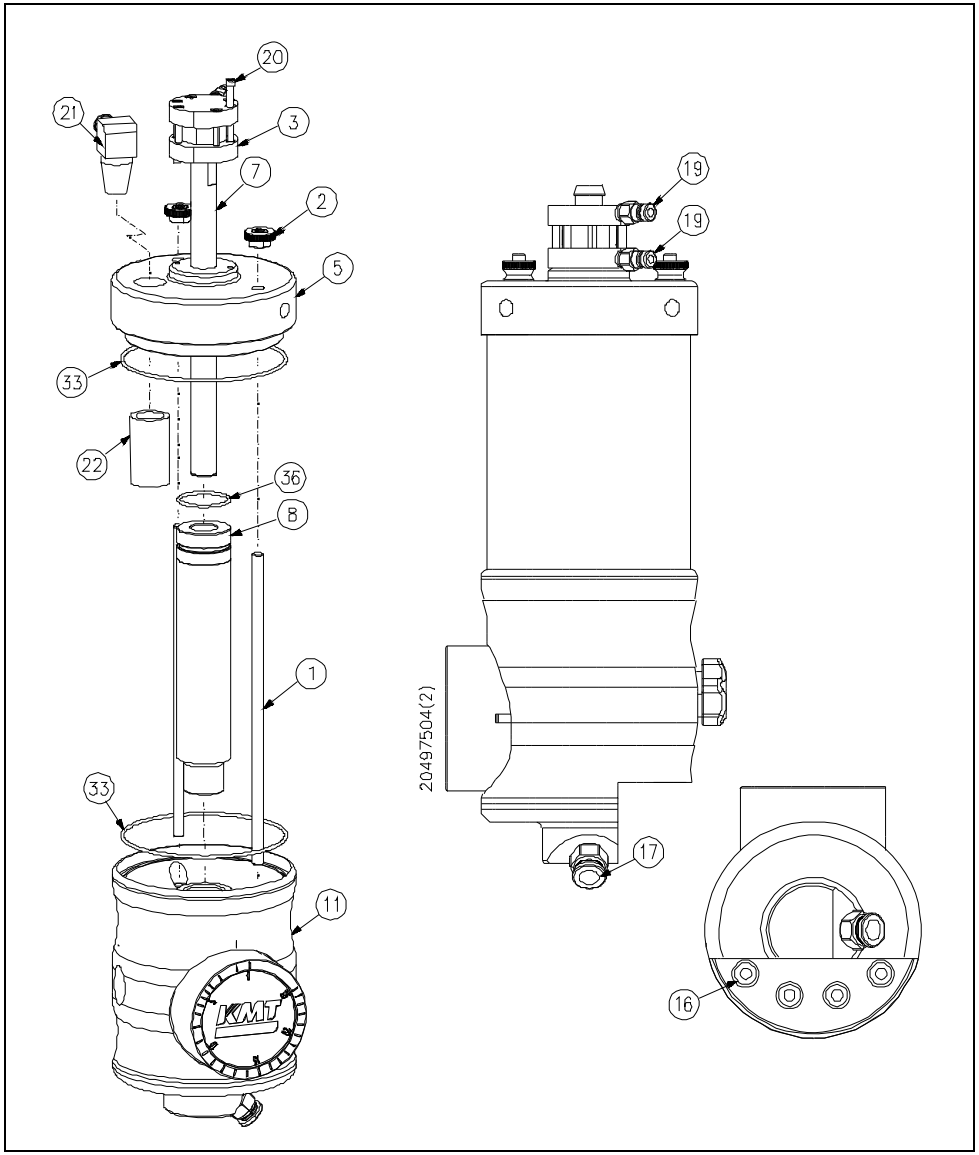
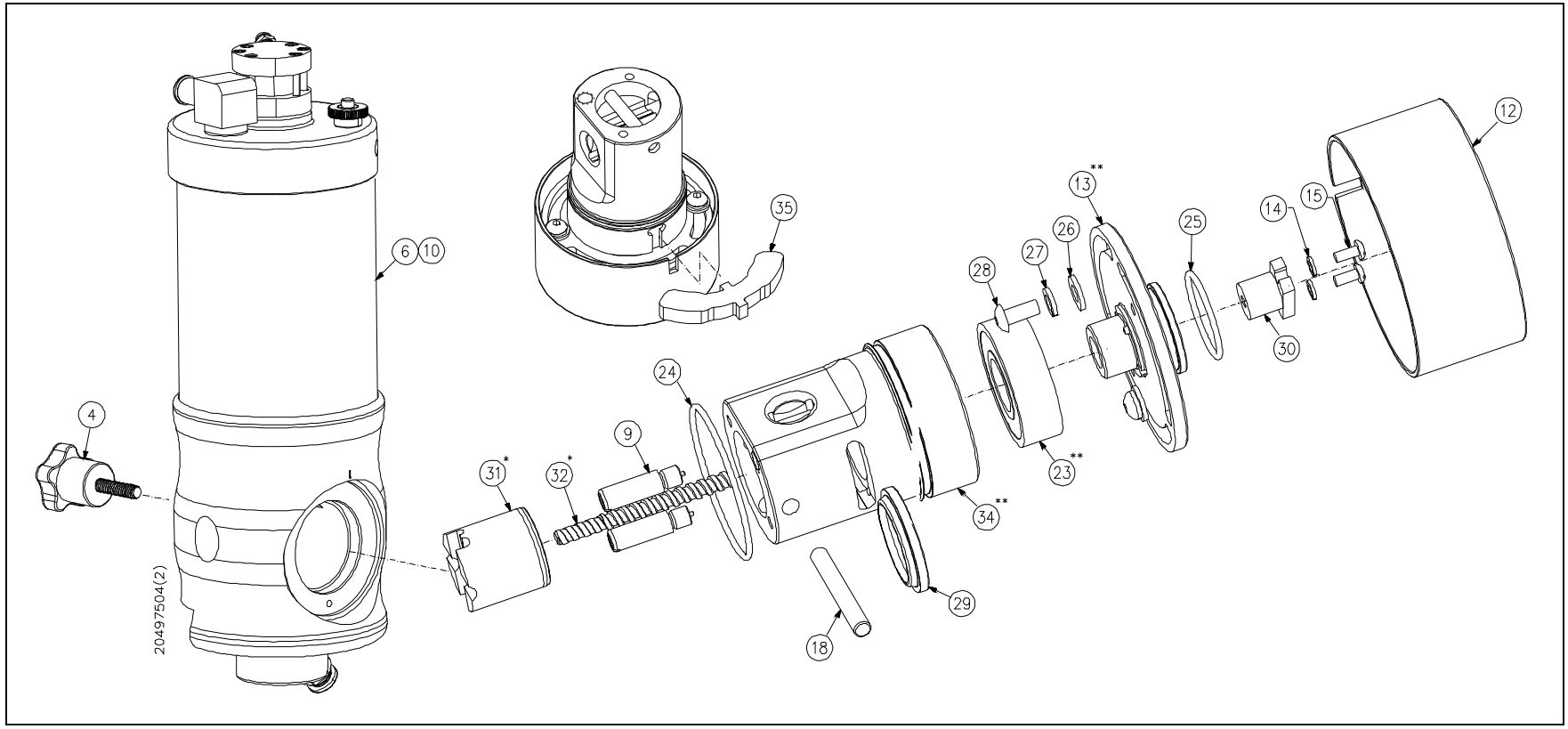


Figure 8: Feedline Precision

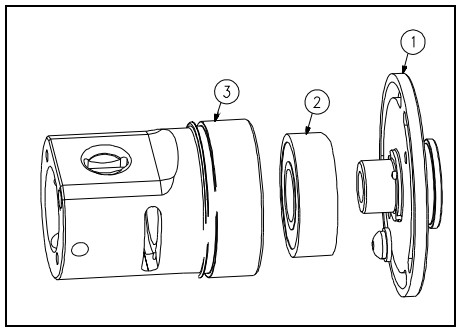


* Non-serviceable assembly, see 72104063 Repair Kit, Table 4

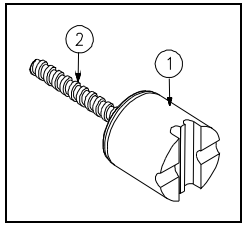
** Non-serviceable assembly, see 72109805 Repair Kit, Table 4

Table 4
Feedline Precision
Repair Kits

Item	Part Number	Description	Quantity
	72109805	**Repair Kit, Gate Adjustment**	
1	20497512	Gate Adjustment Dial	1
2	61101650	Ball Bearing	1
3	20497817	Meter Housing	1



	72104063	**Repair Kit, Metering Gate**	
1	20497809	Metering Gate	1
2	72101528	Lead Screw	1



Item	Part Number	Description	Quantity
	72109813	**Repair Kit, Metering Assembly, see Figure 8**	
9	72101255	Shoulder Screw, .25 x .66	2
13	20497512	Gate Adjustment Dial	1
14	10174373	Lock Washer, #4	2
15	05097316	Pan Head Screw, 4-40 x 1/4	2
18	49867047	Dowel Pin, .19 x 1.50	1
23	61101650	Ball Bearing	1
24	05080346	O-Ring, 1.63 x 1.75 x .06	1
25	20454822	O-Ring, .88 x 1.0 x .06	1
26	10114627	Flat Washer, #8	2
27	10069607	Lock Washer, #8	2
28	20452752	Button Head Screw, 8-32 x 3/8	2
29	20493744	Rod Wiper	1
30	72101536	Lead Screw Nut Assembly	1
31	20497809	Metering Gate	1
32	72101528	Lead Screw	1
34	20497817	Meter Housing	1
35	72104724	Alignment Tool	1