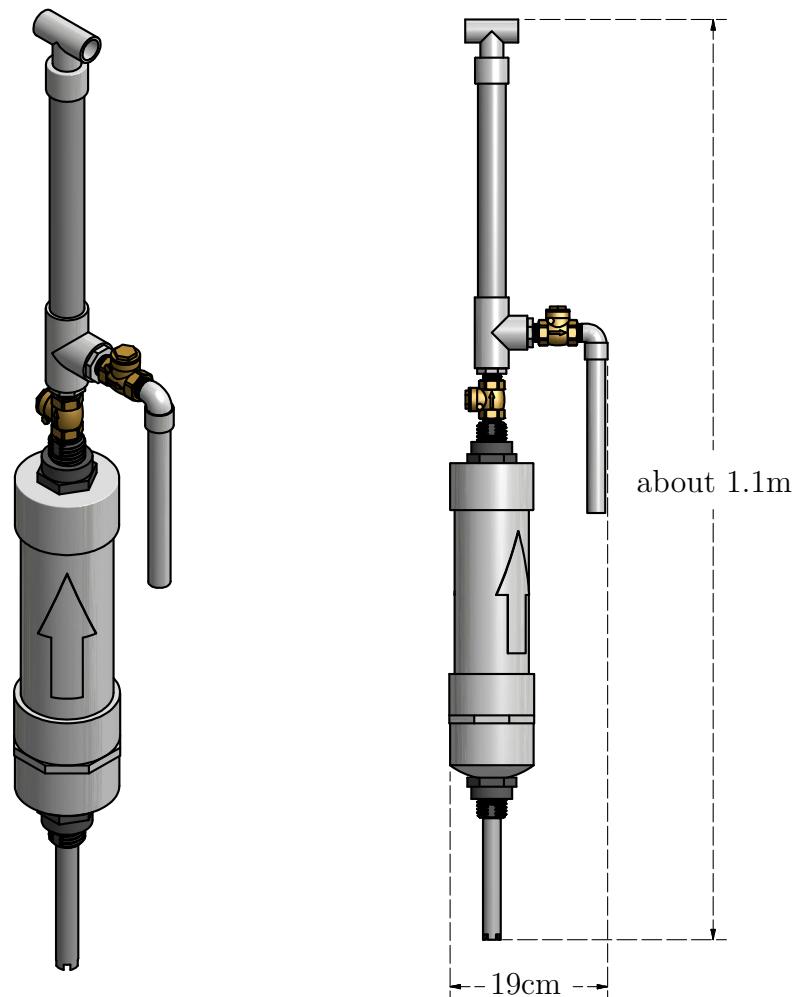


# Hand-Powered Water Filter

## Detail and Assembly



## Version 3.01

Patent Pending

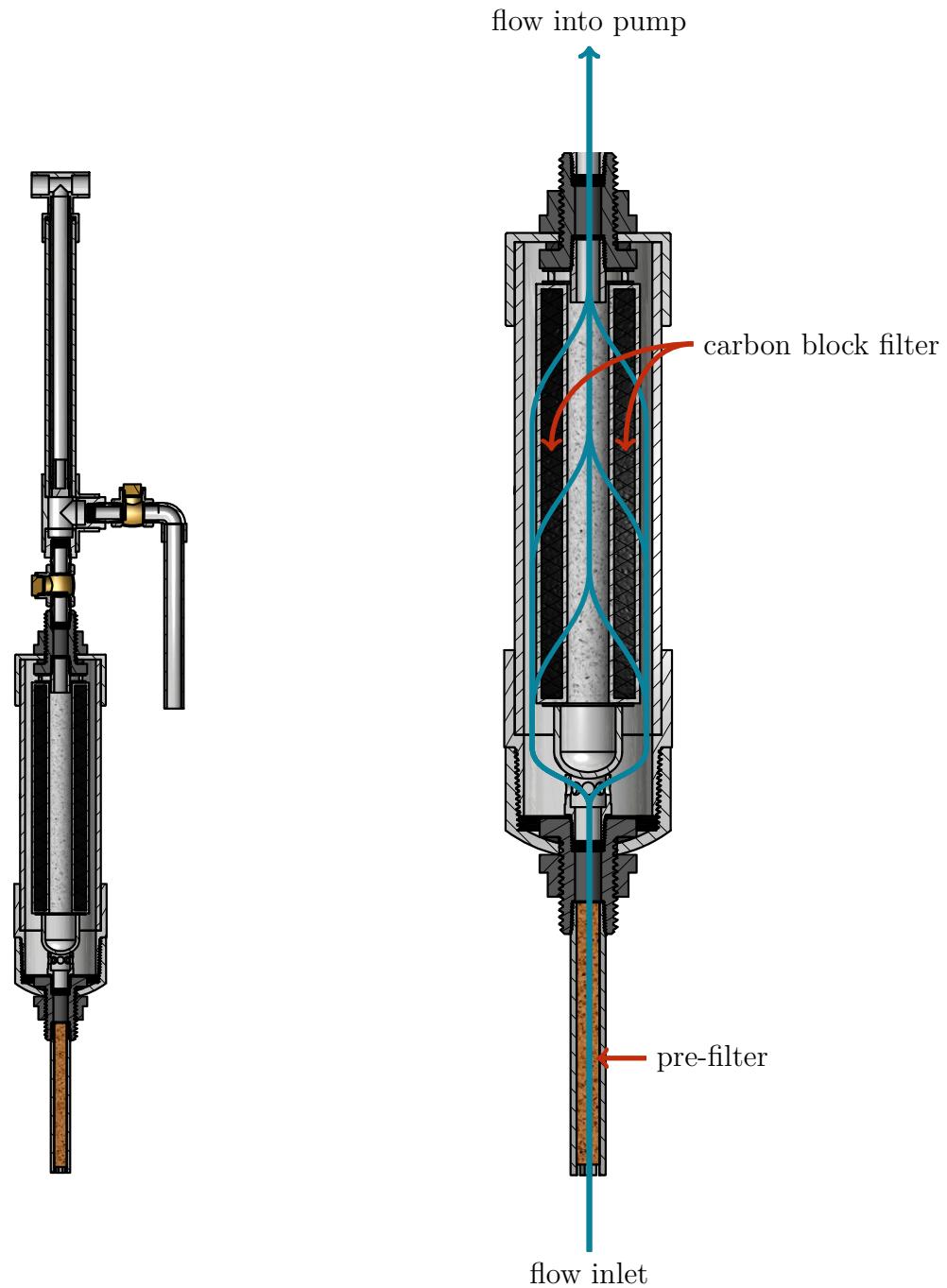
Last Updated September 11, 2017

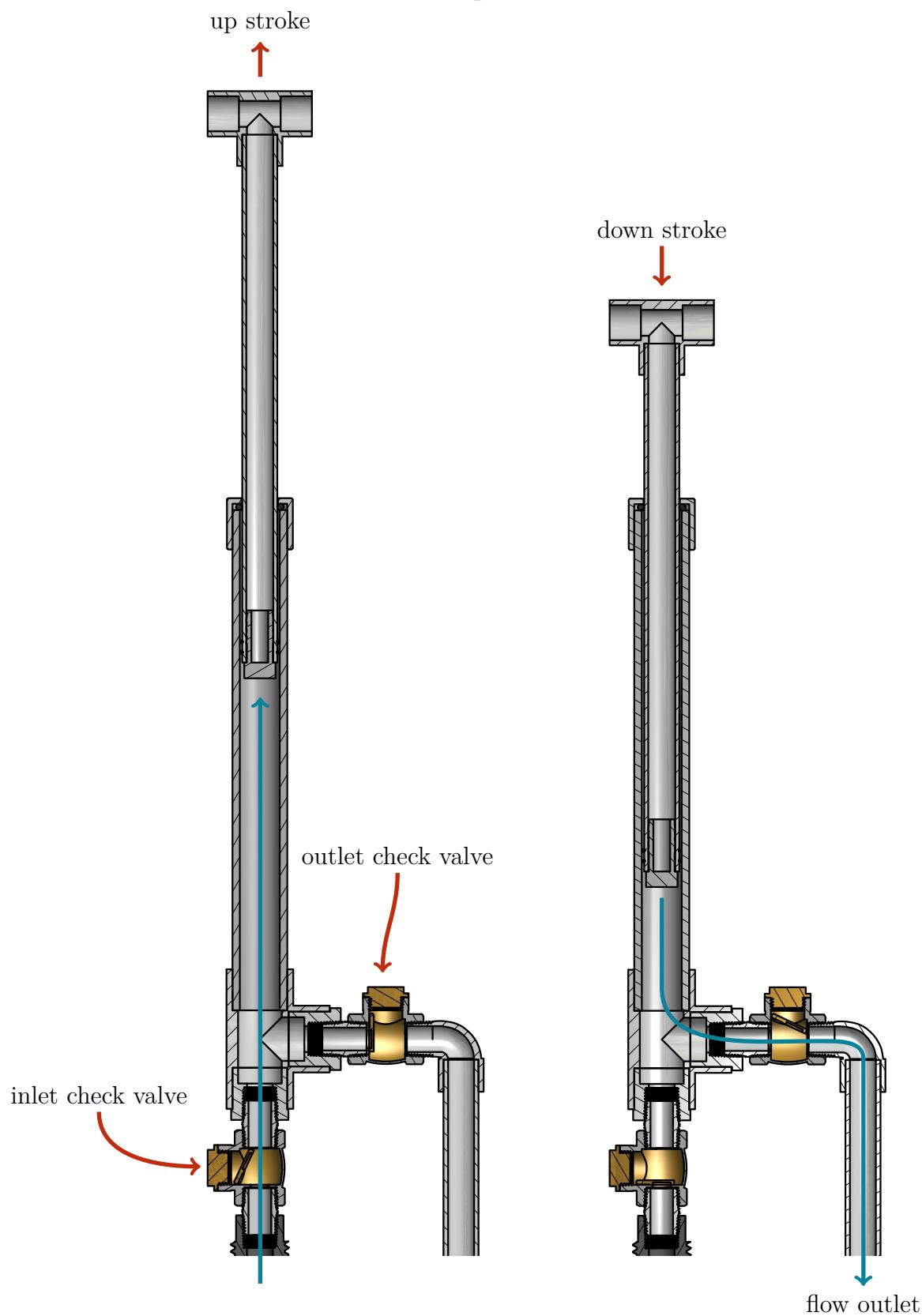
Chris [REDACTED] Logston



**Media Specifications (in order of flow)**

media	specification	removes
course pre-filter foam	$5 - 100 \mu\text{m}$ nominal pore size	sediment
carbon filter block	0.1 $\mu\text{m}$ absolute pore size	most biological pathogens

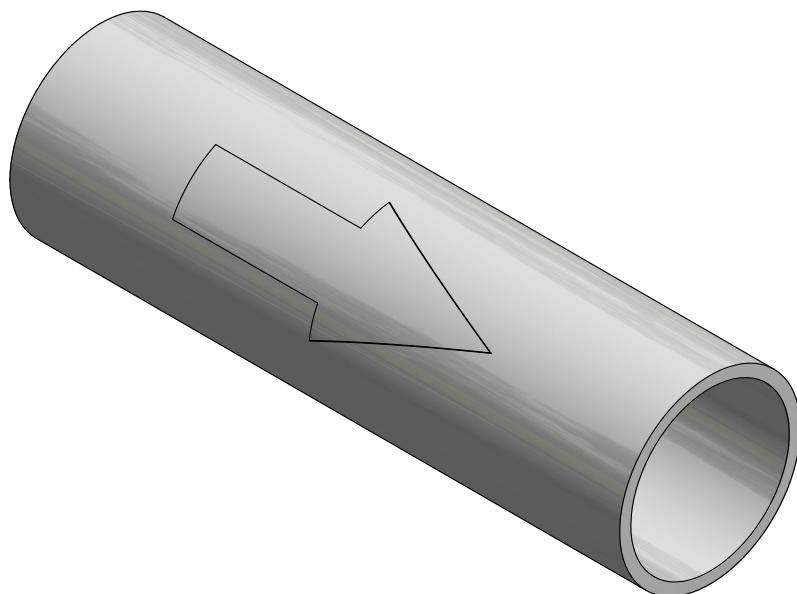
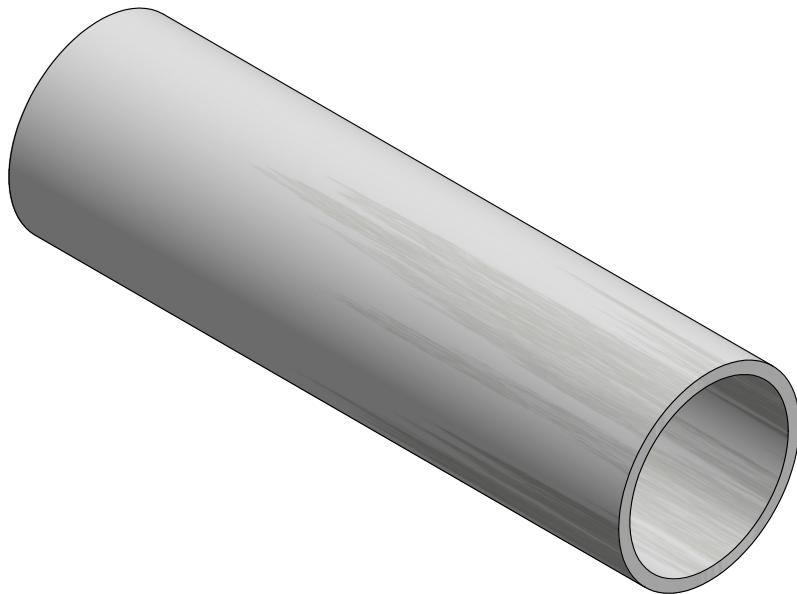
**Filter Media Interior View**

**Pump Detail**

## Part List

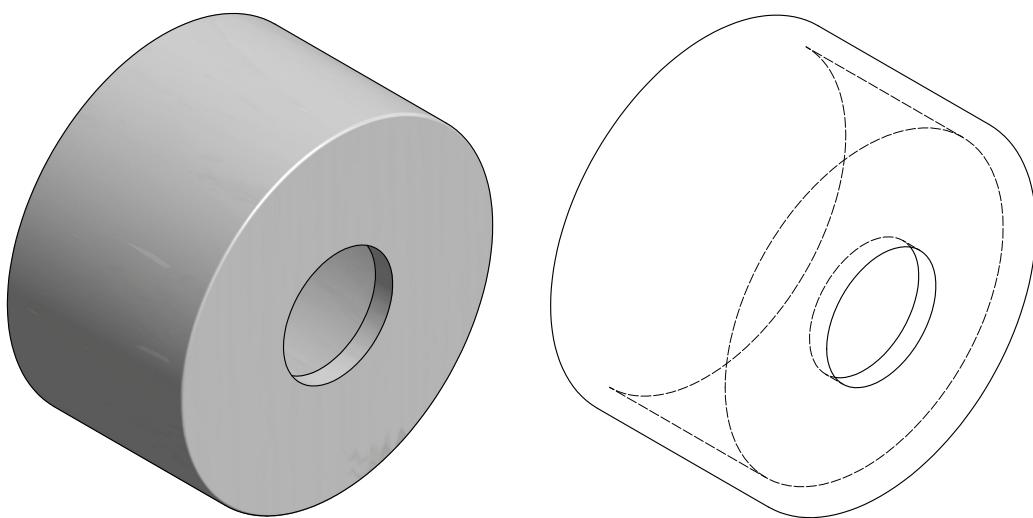
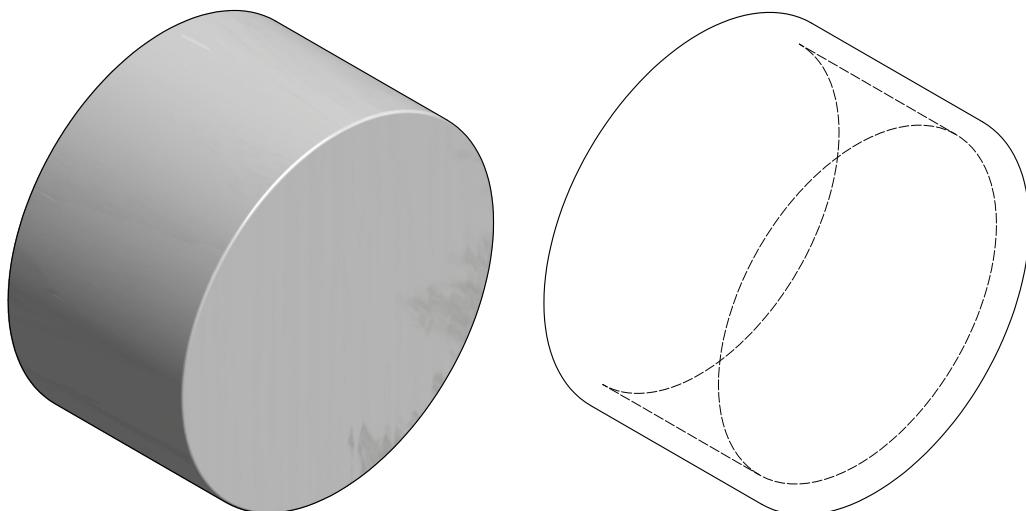
part no.	description	quantity	ppu	total
01	3" pipe, SCH 40, about 12" long	1	₹20	₹20
02	3" female socket end cap, SCH 40	1	₹30	₹30
03	3" female socket to male thread adapter, SCH 40	1	₹45	₹45
04	1/2" tank connector	2	₹40	₹80
05	1/2", half-threaded nipple, SCH 80	1	₹10	₹10
06	1 1/8" ID, 2 1/8" OD rubber washer	2	₹5	₹10
07	1 1/2" pipe slice, SCH 40, about 1/4" thick	1	₹1	₹1
08	1/2" tank connector gasket	1	₹5	₹5
09	1/2" tank connector nut	2	₹5	₹10
10	carbon block filter	1	₹30	₹30
11	1" fem. socket, 1/2" male thread adptr, SCH 40	1	₹20	₹20
12	3" female thread end cap, SCH 40	1	₹30	₹30
13	1" female socket end cap, SCH 40	1	₹15	₹15
14	1/2", half-threaded nipple, SCH 80, 7" long	1	₹5	₹5
15	11/16" OD, 3/8" ID washer	1	₹2	₹2
16	6" long piece of pre-filter foam	1	₹10	₹10
17	1/2" close nipple, SCH 80	3	₹20	₹60
18	1/2" swing check valve	2	₹200	₹400
19	1" socket tee, SCH 40	1	₹40	₹40
20	1" male socket, 1/2" fem. thread bushing, SCH 40	2	₹20	₹40
21	1" pipe piece, SCH 80, about 12" long	1	₹20	₹20
22	1/2" male thread, female socket elbow, SCH 40	1	₹15	₹15
23	1/2" pipe piece, SCH 40, about 8" long	1	₹10	₹10
24	1/2" pipe piece, SCH 40, about 12" long	1	₹15	₹15
25	plug for 1/2", SCH 40 pipe	1	₹15	₹15
26	O-ring, US 19	1	₹5	₹5
27	O-ring, US 267	1	₹5	₹5
28	1", female socket end cap, SCH 40	1	₹20	₹20
29	1/2" socket tee, SCH 40	1	₹20	₹20
			total	₹988

**Step 01:** Create arrow mark on side of 3" pipe.



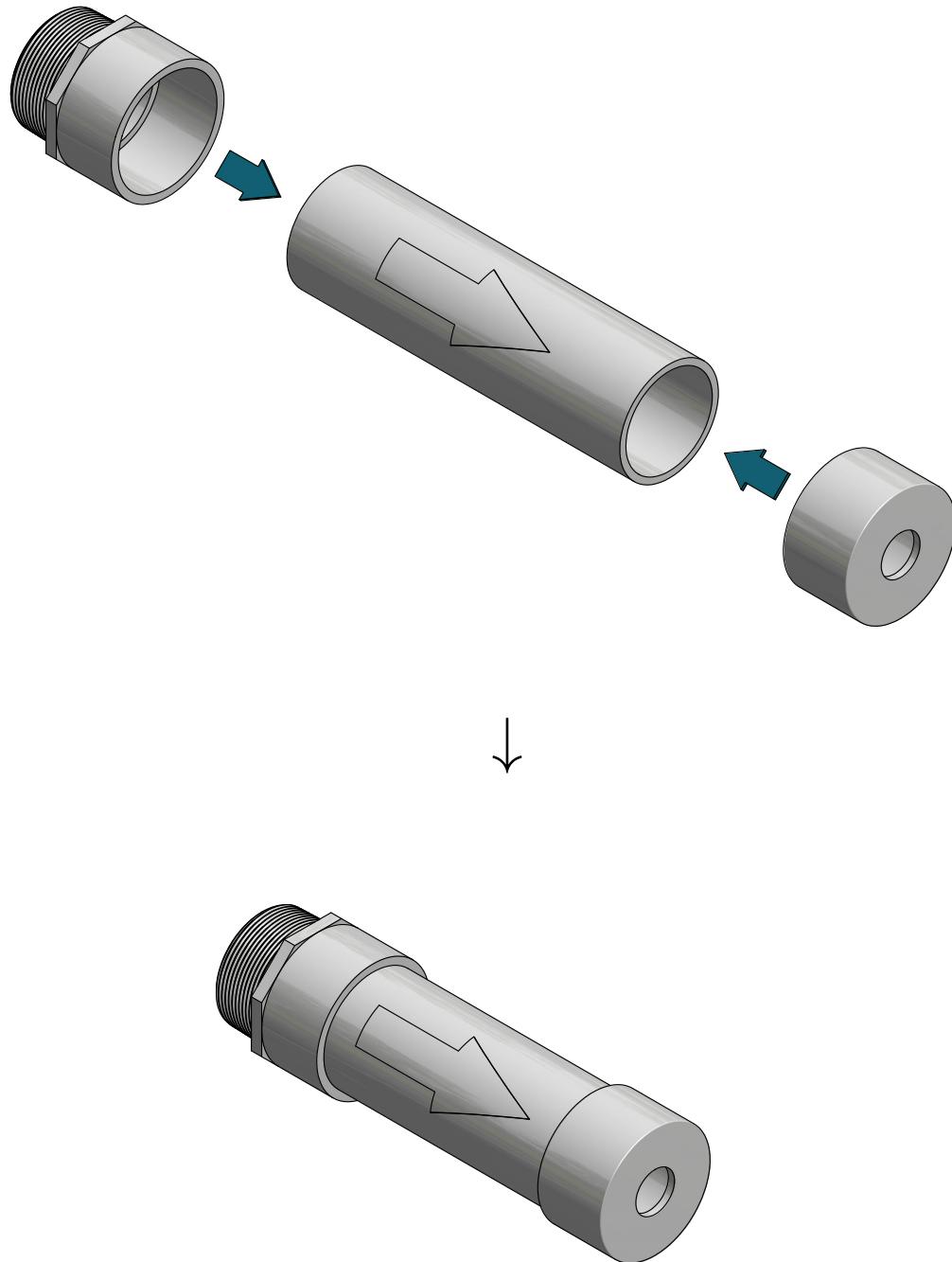
part no.	description
01	3" pipe, SCH 40, about 12" long

**Step 02:** Drill  $1\frac{3}{8}$ " hole in top of 3" socket end cap.



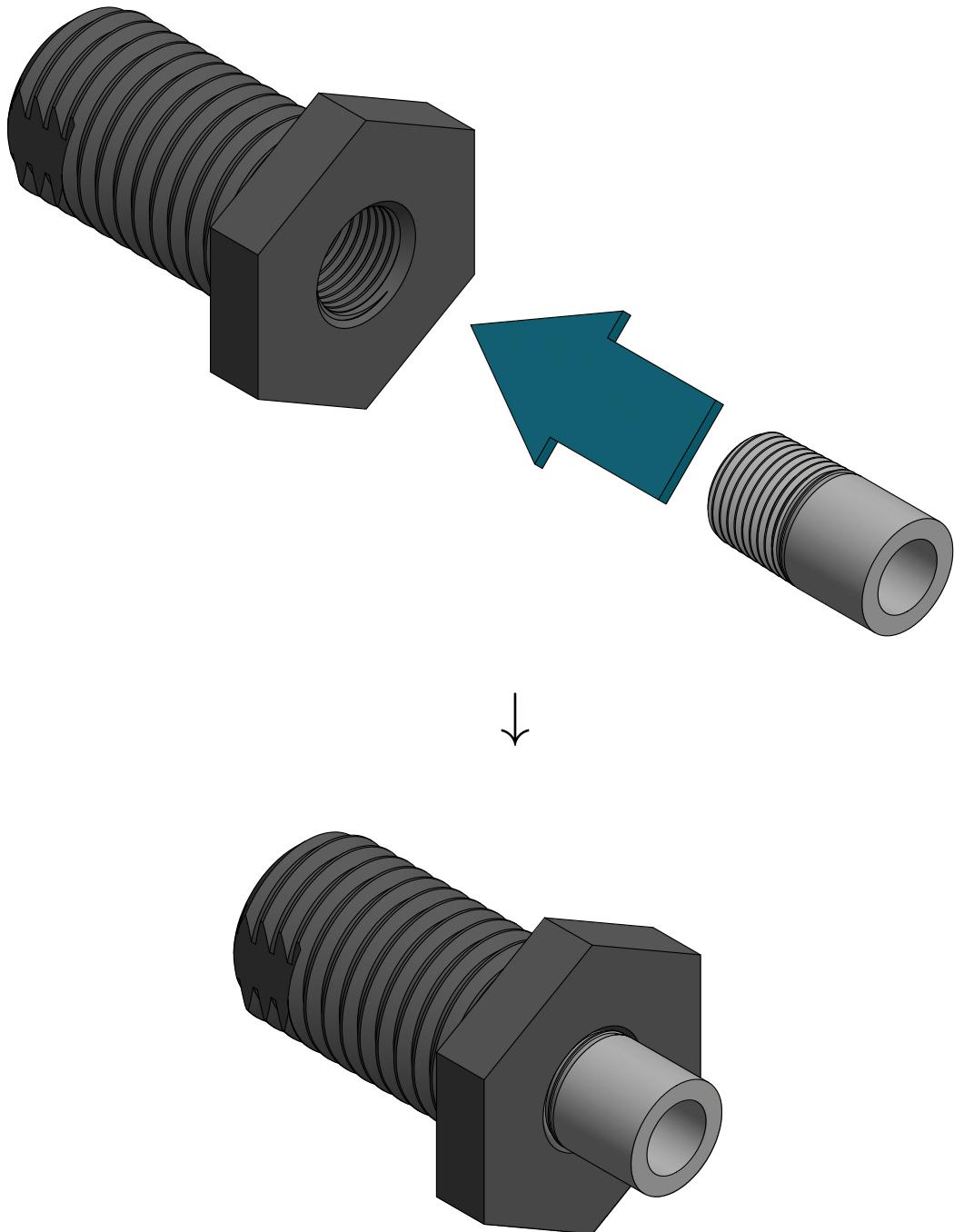
part no.	description
02	3", female socket end cap, SCH 40

**Step 03:** Attach end cap and adapter and cement in place.



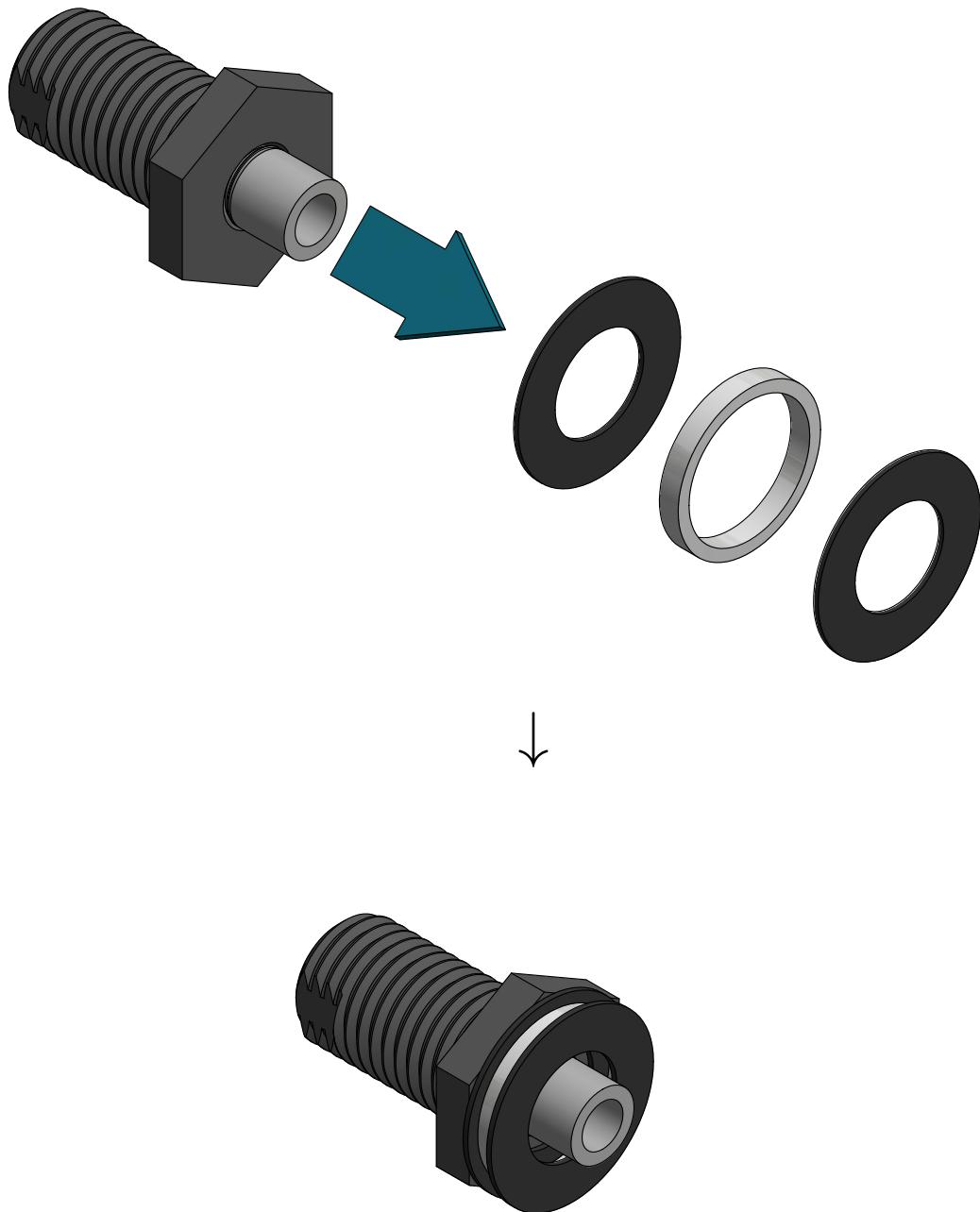
part no.	description
03	3" female socket to male thread adapter, SCH 40

**Step 04:** Insert 1/2", half-threaded nipple into tank connector.



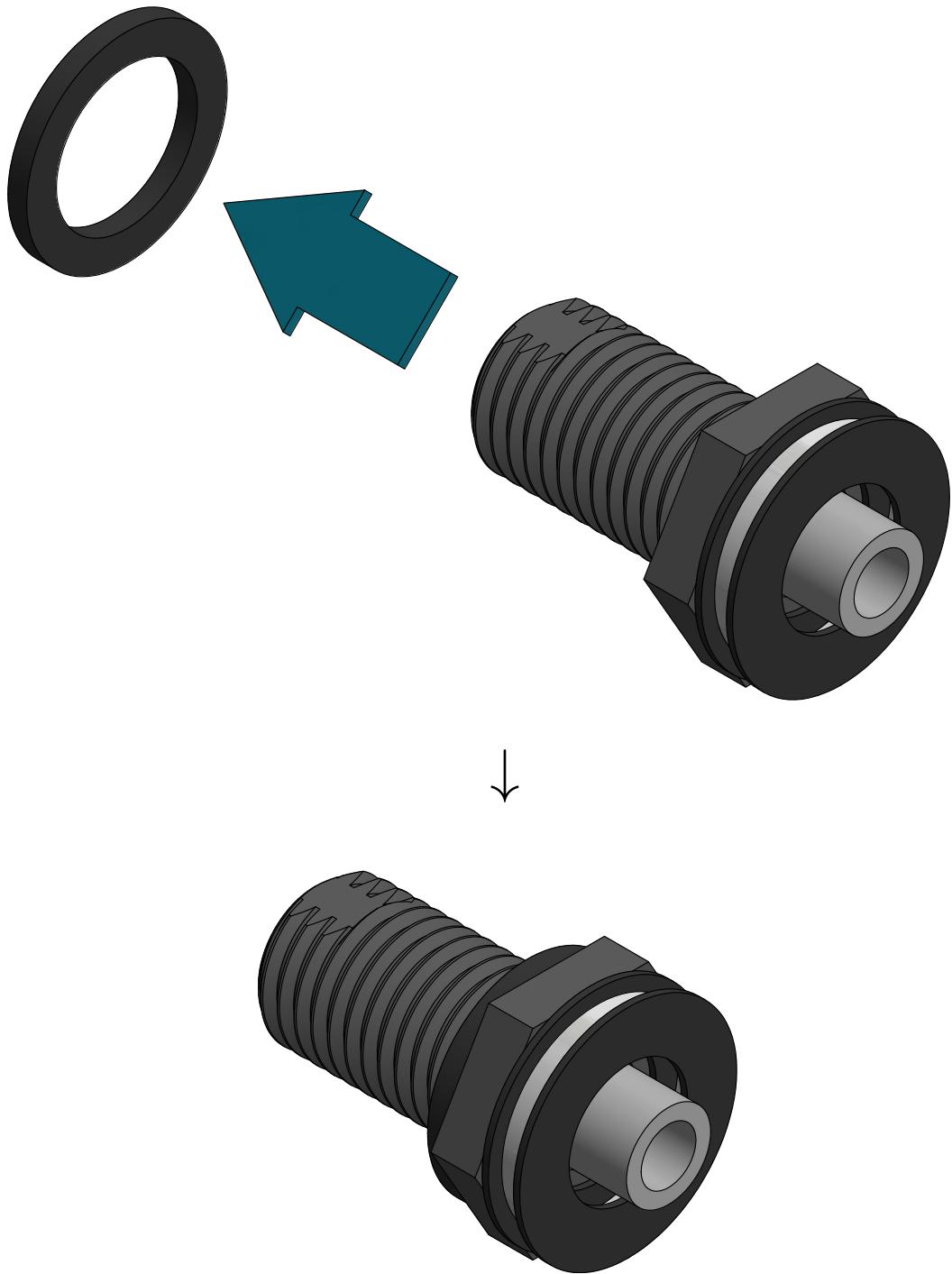
part no.	description
04	1/2" tank connector
05	1/2", half-threaded nipple, SCH 80

**Step 05:** Place rubber washers and pipe segment around half-nipple.



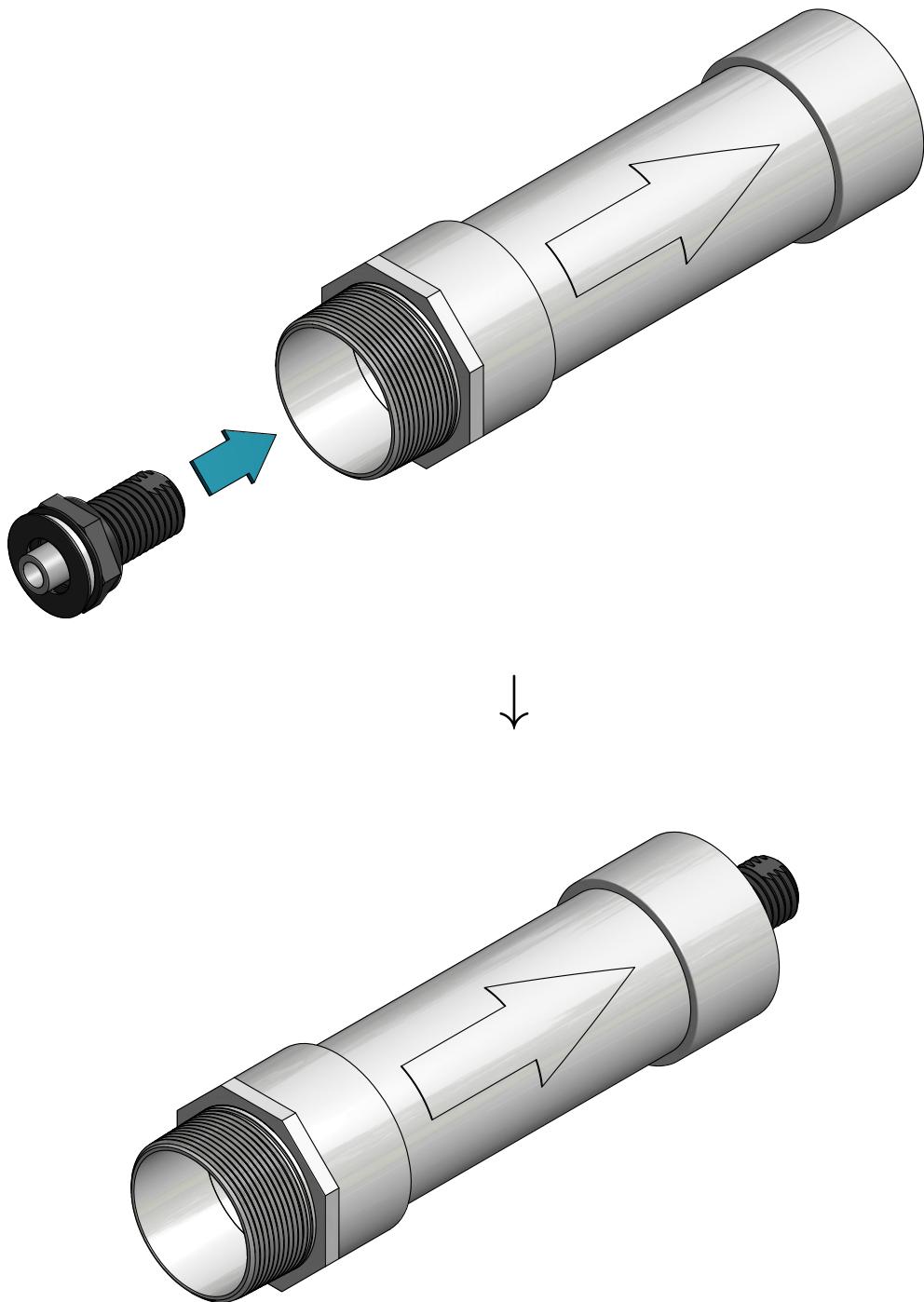
part no.	description
06	1 <sup>1</sup> / <sub>8</sub> " ID, 2 <sup>1</sup> / <sub>8</sub> " OD rubber washer
07	1 <sup>1</sup> / <sub>2</sub> " pipe slice, SCH 40, about 1/ <sub>4</sub> " thick

**Step 06:** Attach tank connector gasket.

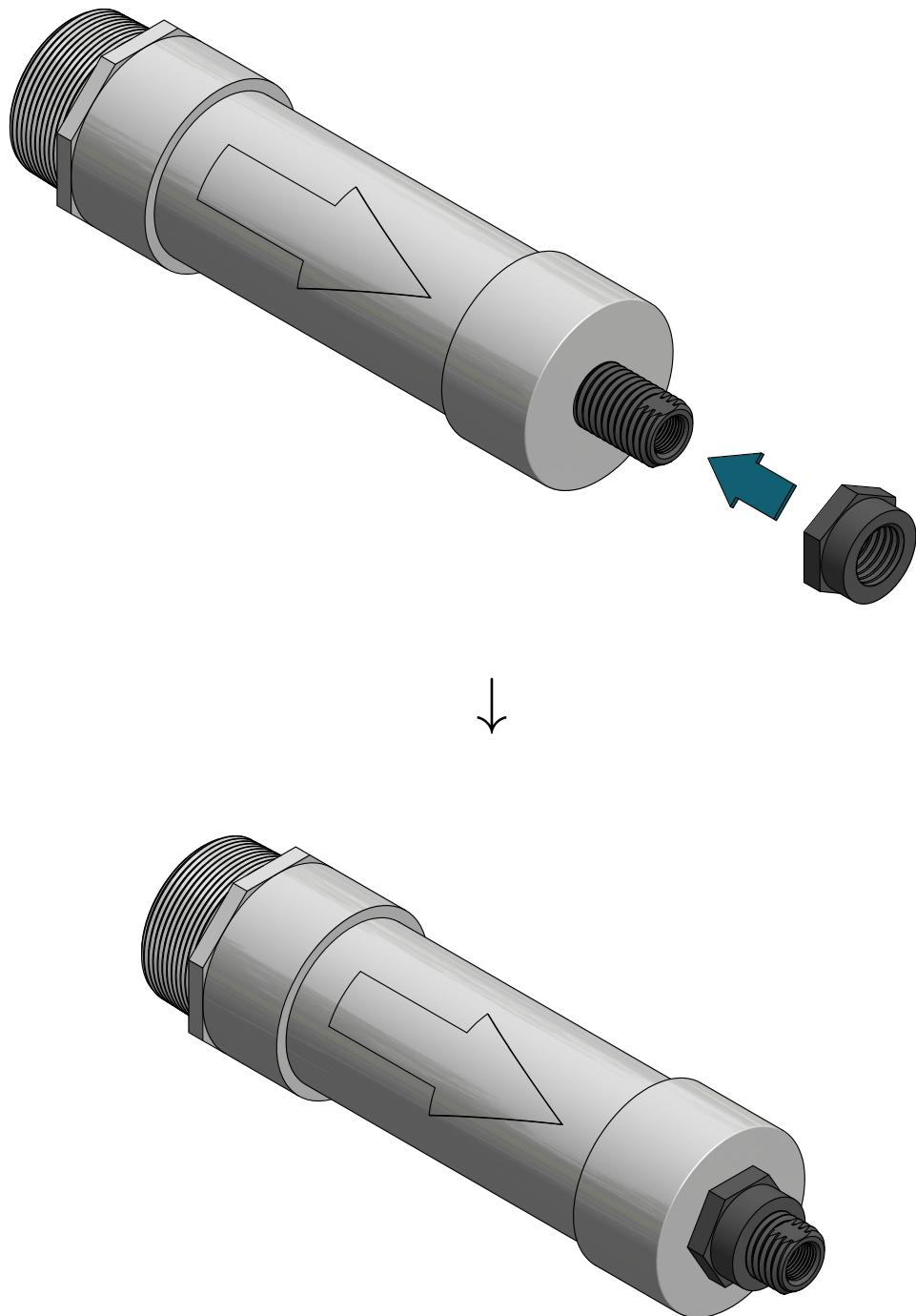


part no.	description
08	1/2" tank connector gasket

**Step 07:** Insert previous assembly into pipe/end cap assembly.

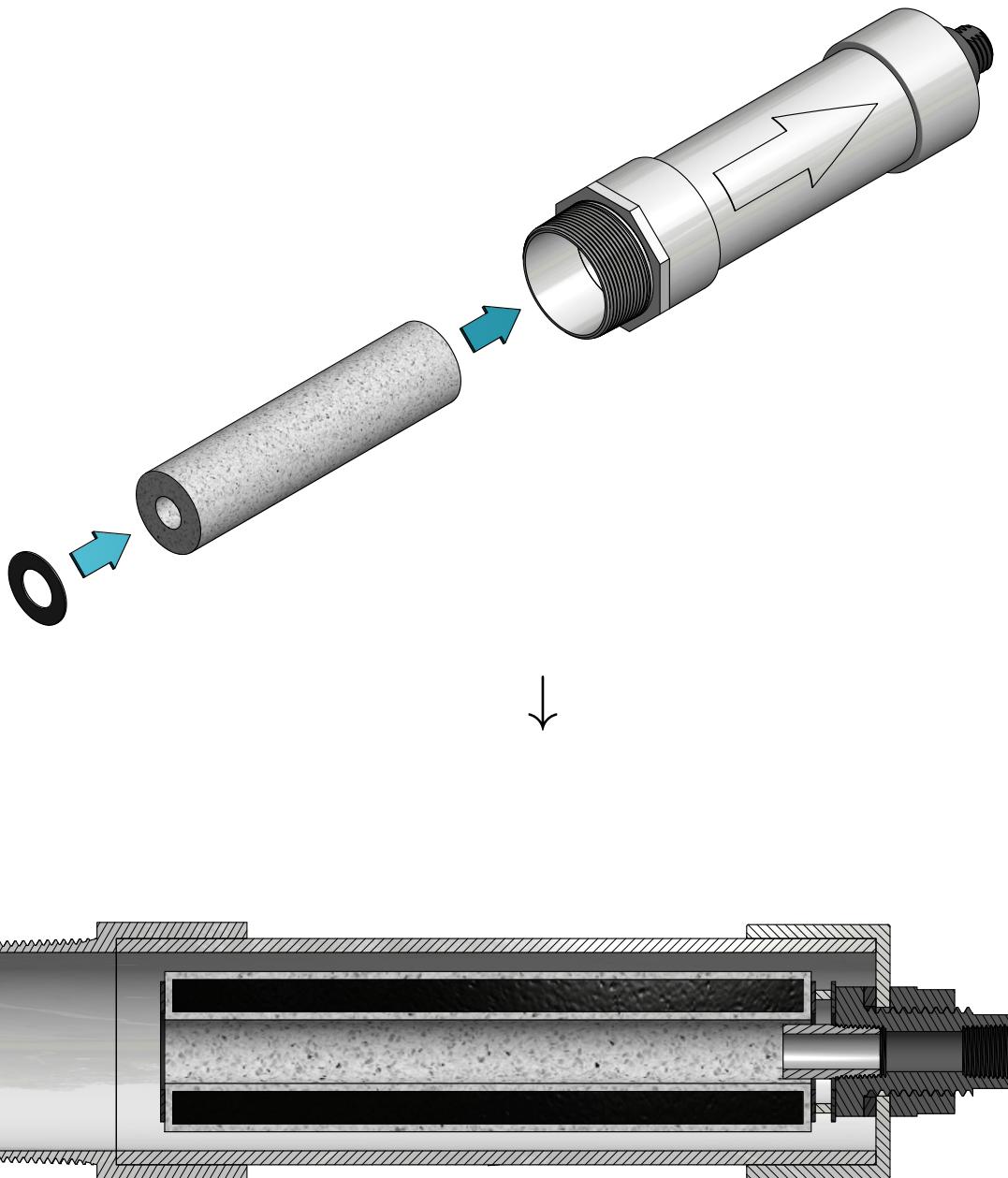


**Step 08:** Attach nut to tank connector.



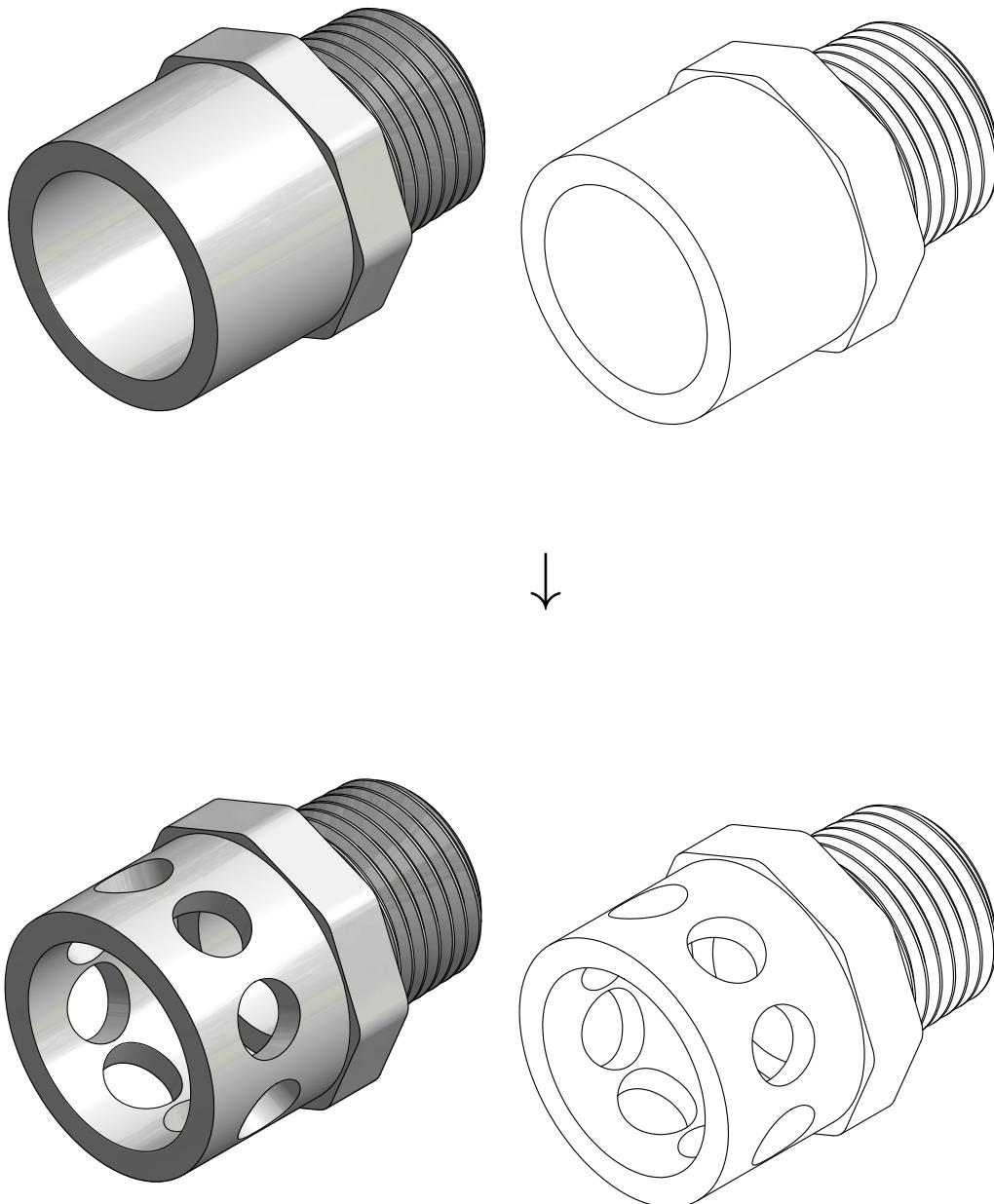
part no.	description
09	1/2" tank connector nut

**Step 09:** Insert carbon block filter and additional rubber washer.



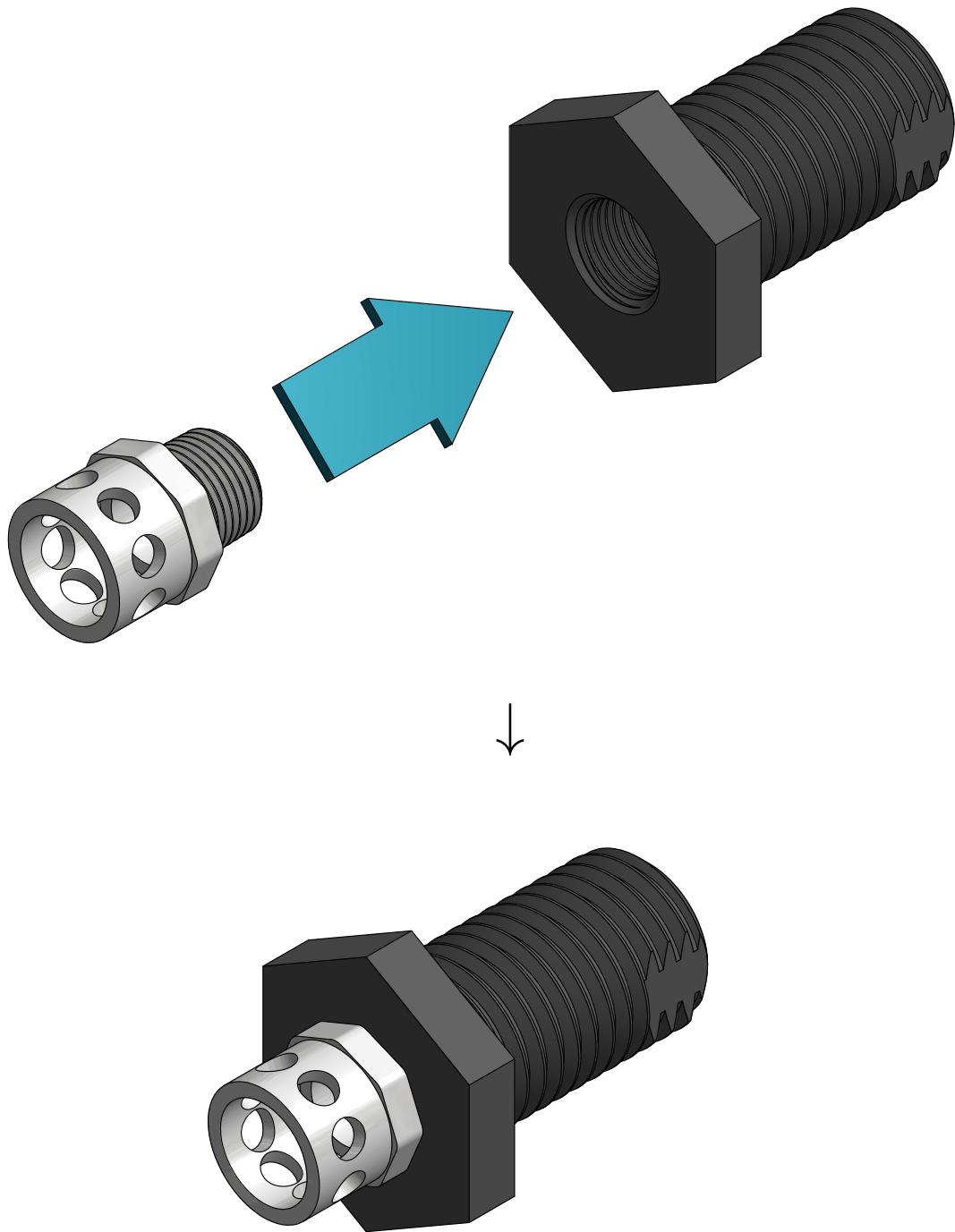
part no.	description
10	carbon block filter
06	1 <sup>1</sup> / <sub>8</sub> " ID, 2 <sup>1</sup> / <sub>8</sub> " OD rubber washer

**Step 10:** Drill holes in 1" female socket, 1/2" male thread adapter.



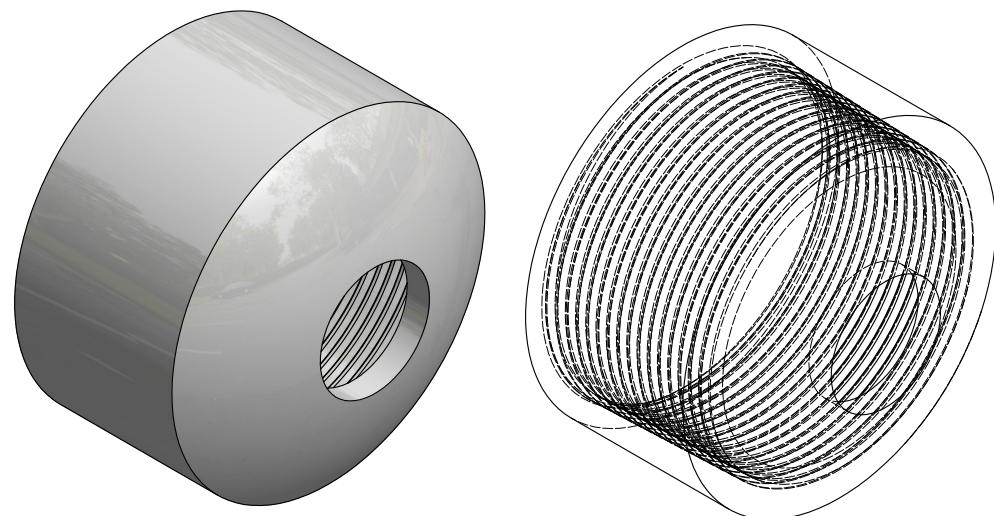
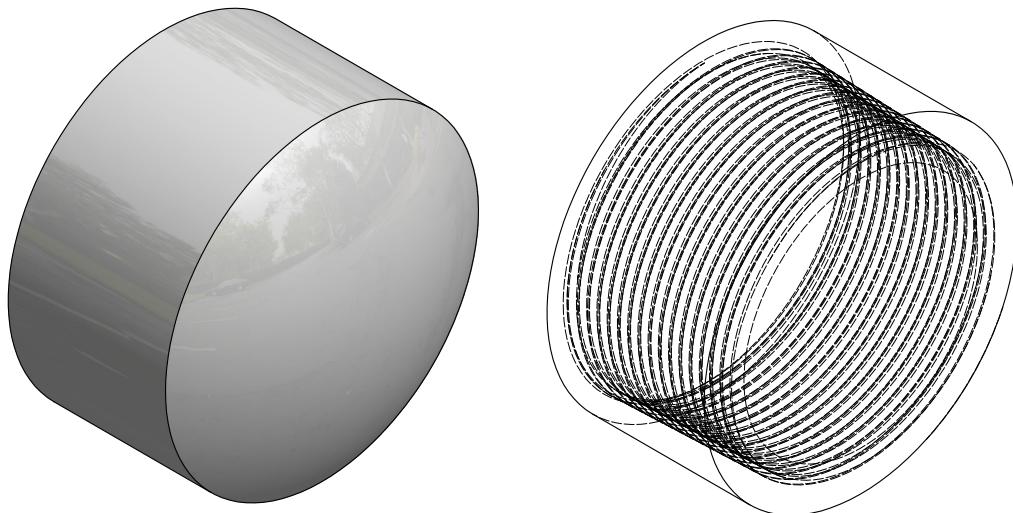
part no.	description
11	1" female socket, 1/2" male thread adapter, SCH 40

**Step 11:** Insert adapter into tank connector.



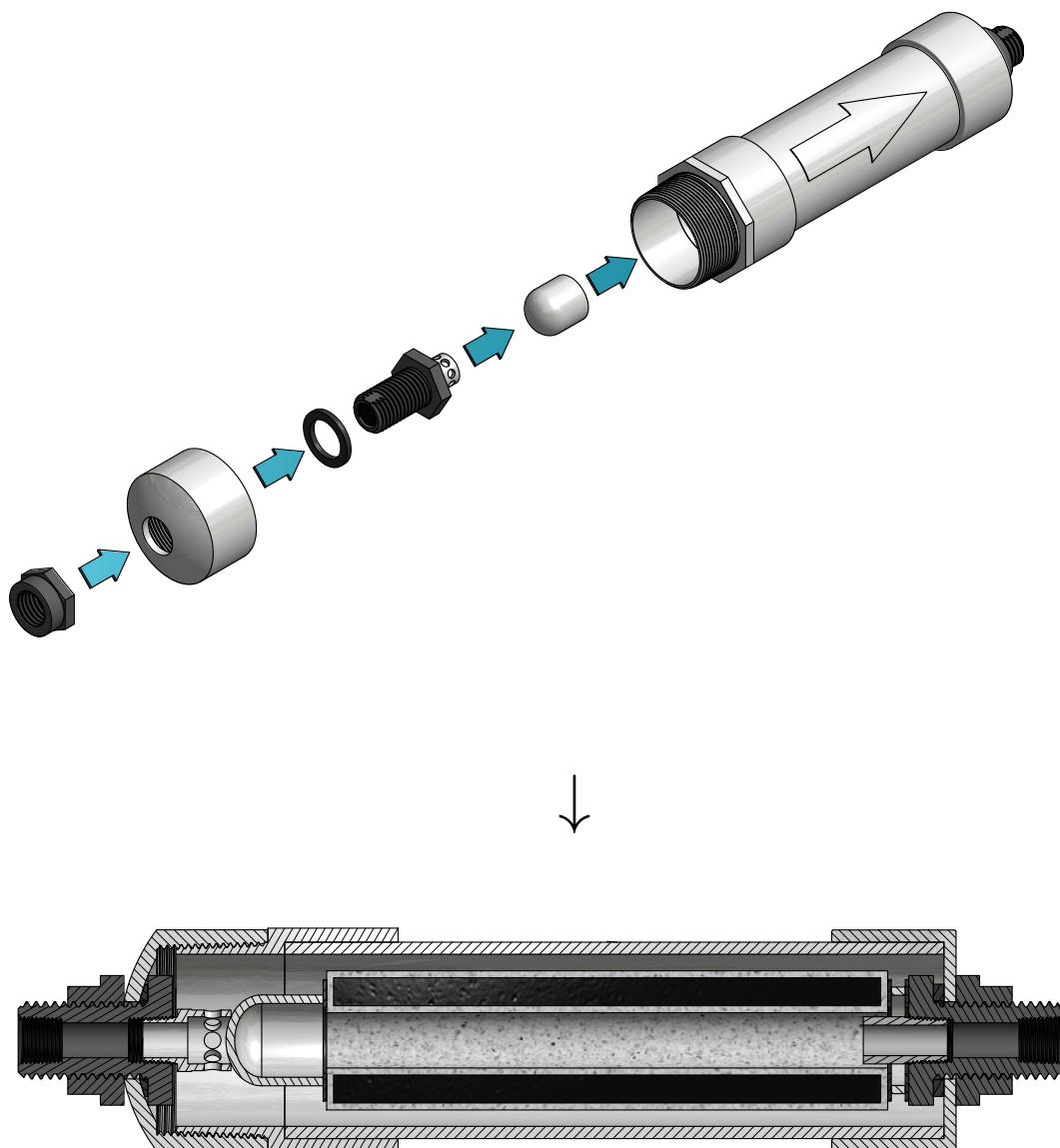
part no.	description
04	1/2" tank connector

**Step 12:** Drill  $1\frac{3}{8}$ " inch hole in 3" female thread end cap.



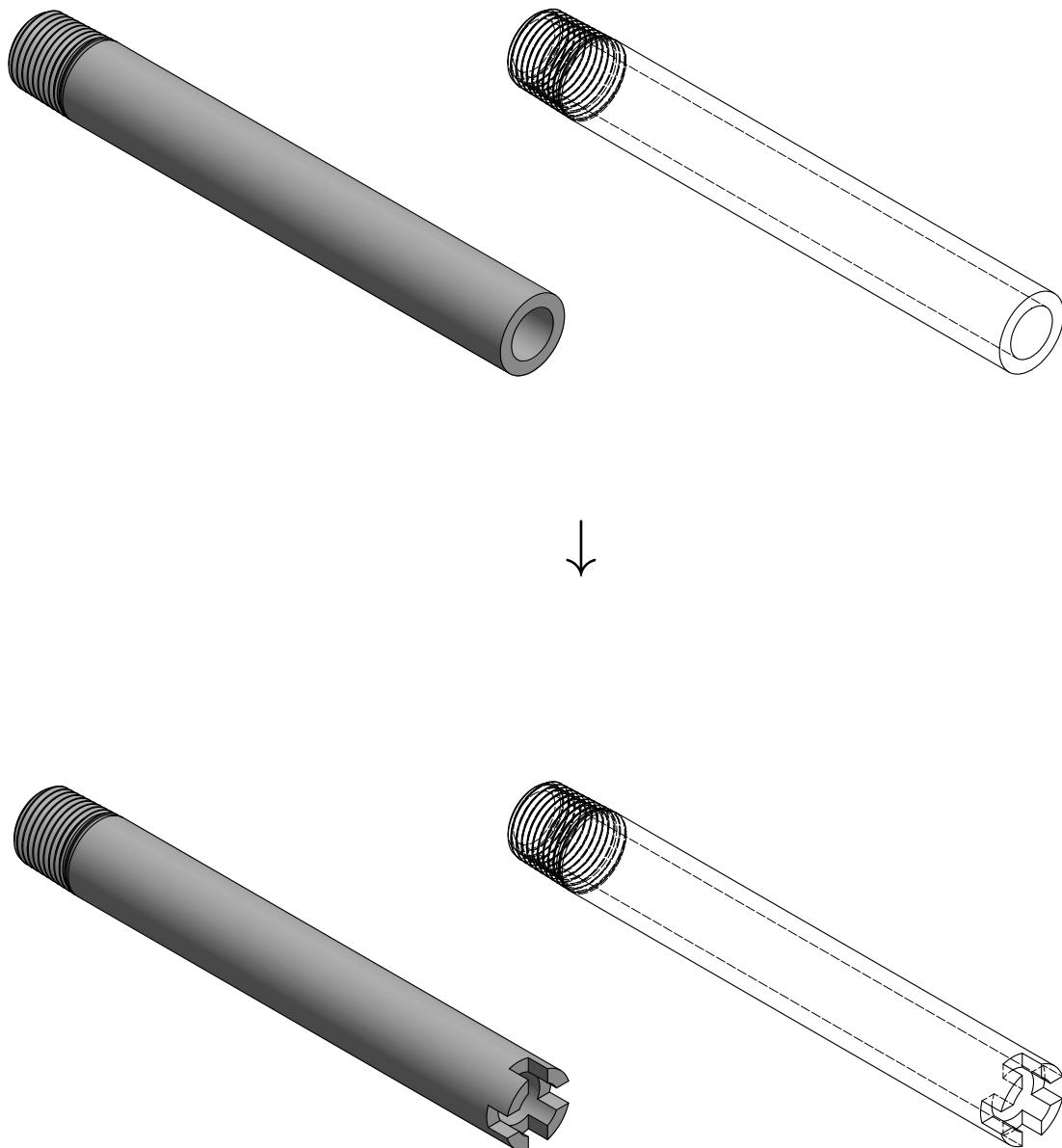
part no.	description
12	3" female thread end cap, SCH 40

**Step 13:** Insert 1" female socket end cap and attach previous assembly.



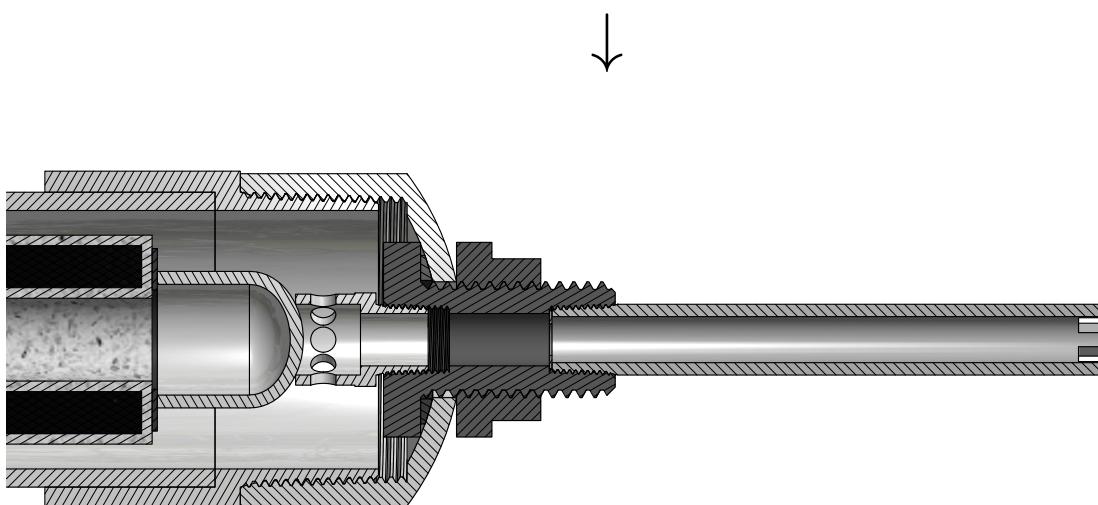
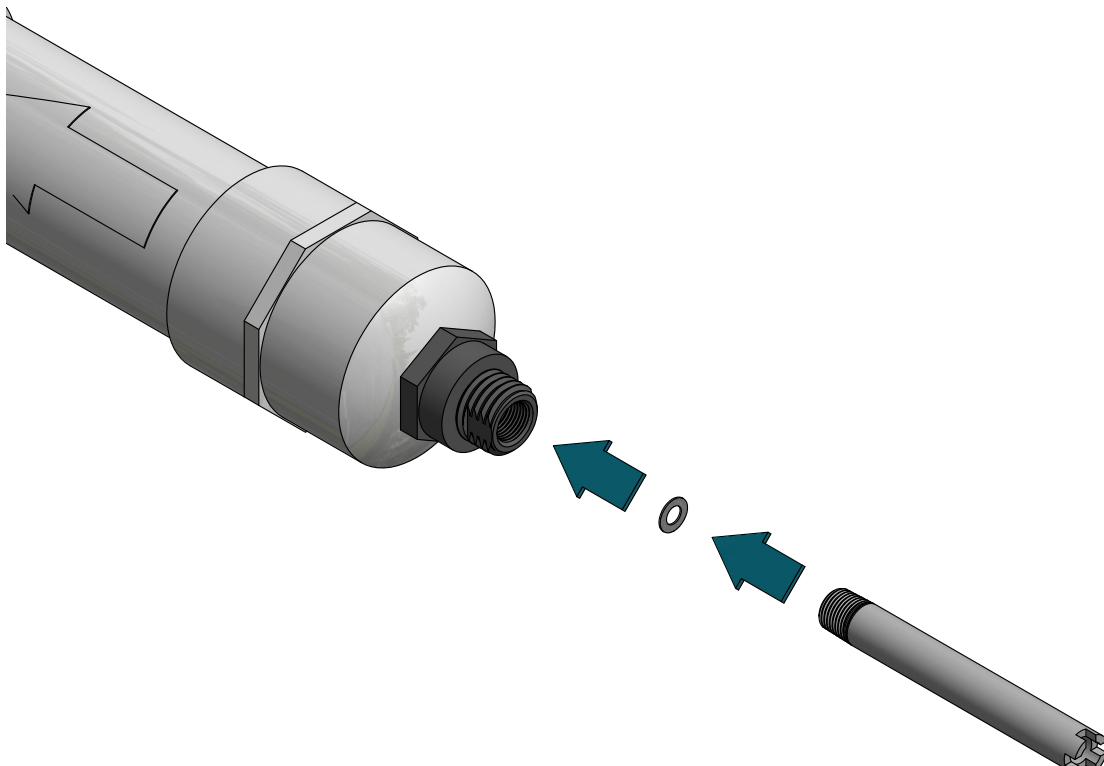
part no.	description
13	1" female socket end cap, SCH 40

**Step 14:** Cut slots in end of  $\frac{1}{2}$ ", 7" long, half threaded nipple.



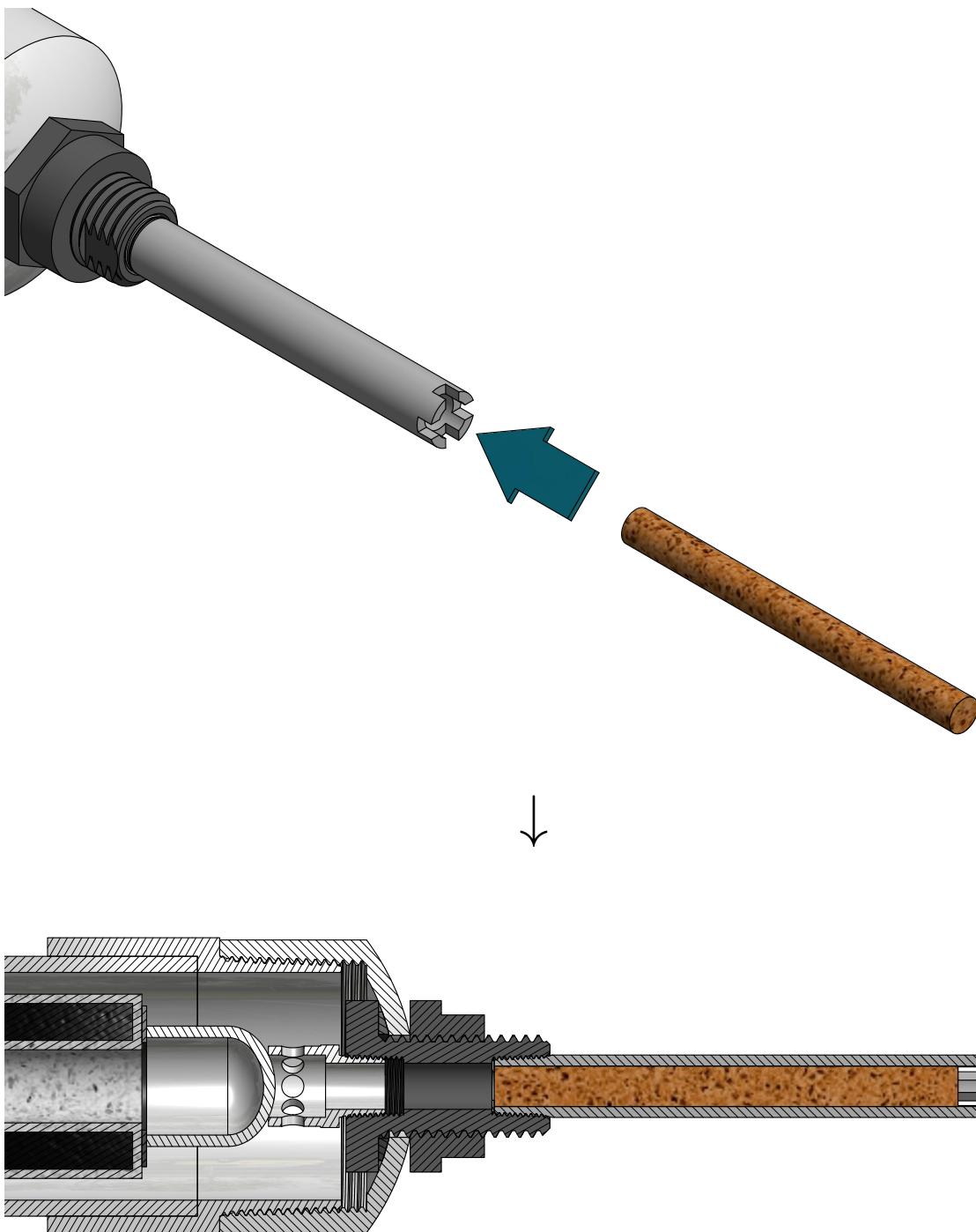
part no.	description
14	$\frac{1}{2}$ ", half-threaded nipple, SCH 80, 7" long

**Step 15:** Insert half-threaded nipple and washer into inlet of previous assembly.



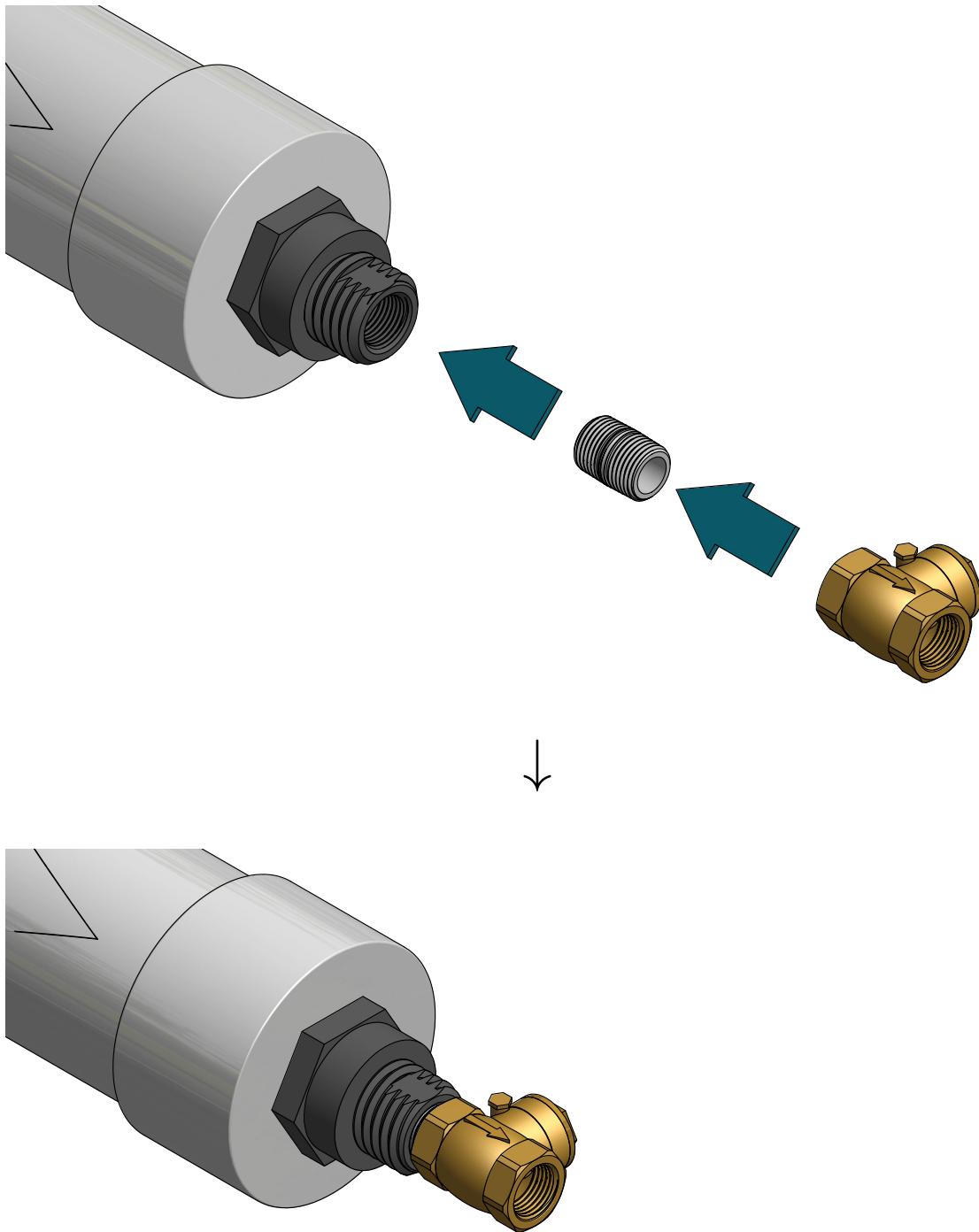
part no.	description
15	11/16" OD, 3/8" ID washer

**Step 16:** Insert pre-filter foam into threaded nipple.



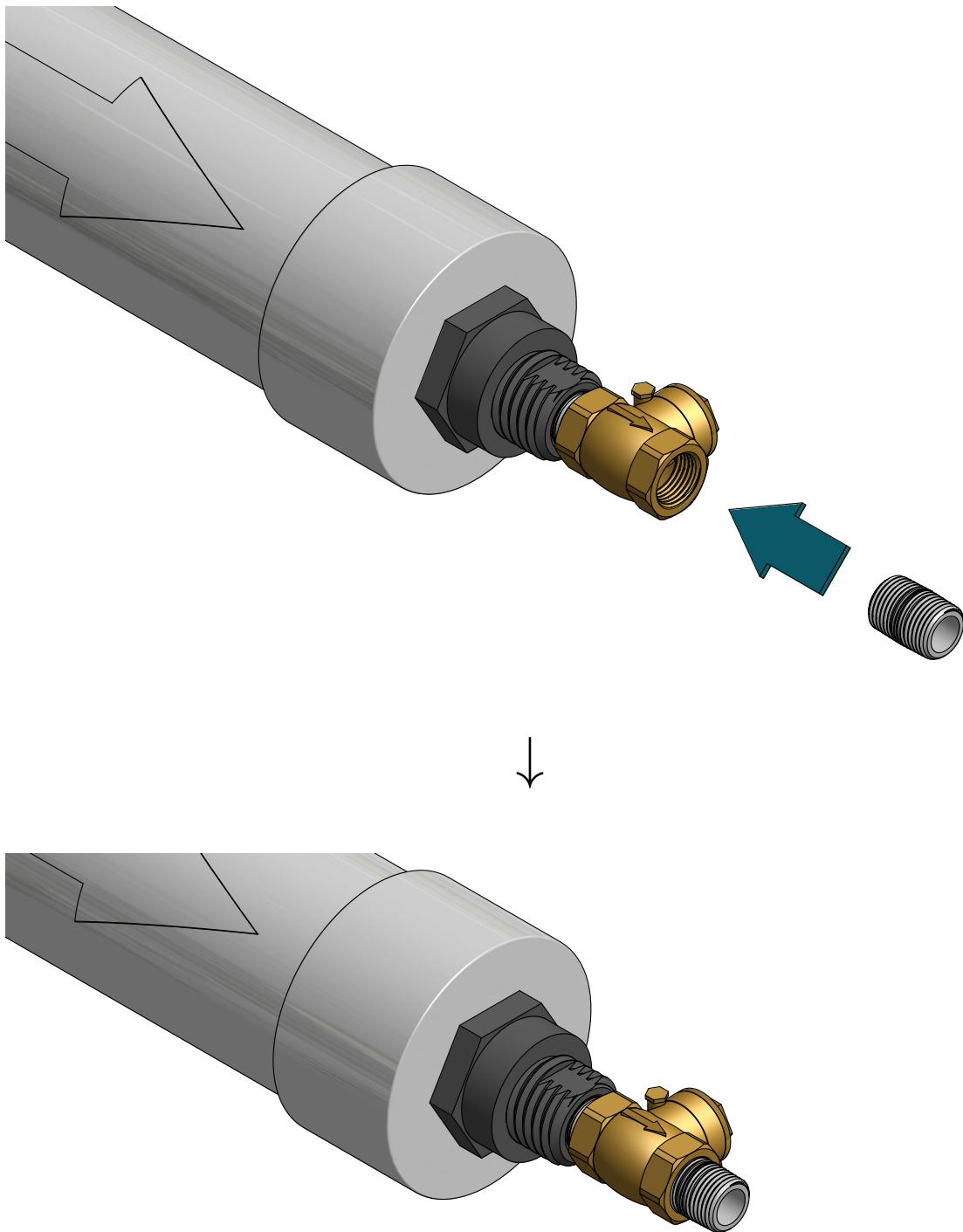
part no.	description
16	6" long piece of pre-filter foam

**Step 17:** Insert 1/2" close nipple and 1/2" swing check valve.



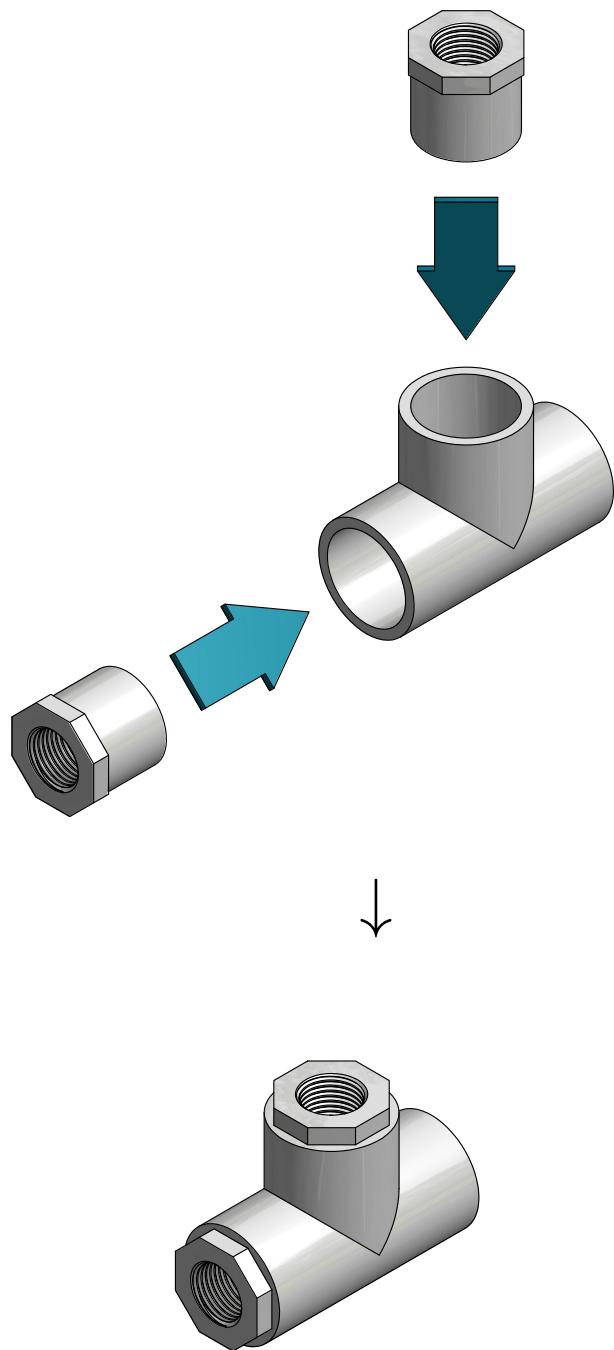
part no.	description
17	1/2" close nipple, SCH 80
18	1/2" swing check valve

**Step 18:** Insert another 1/2" close nipple.



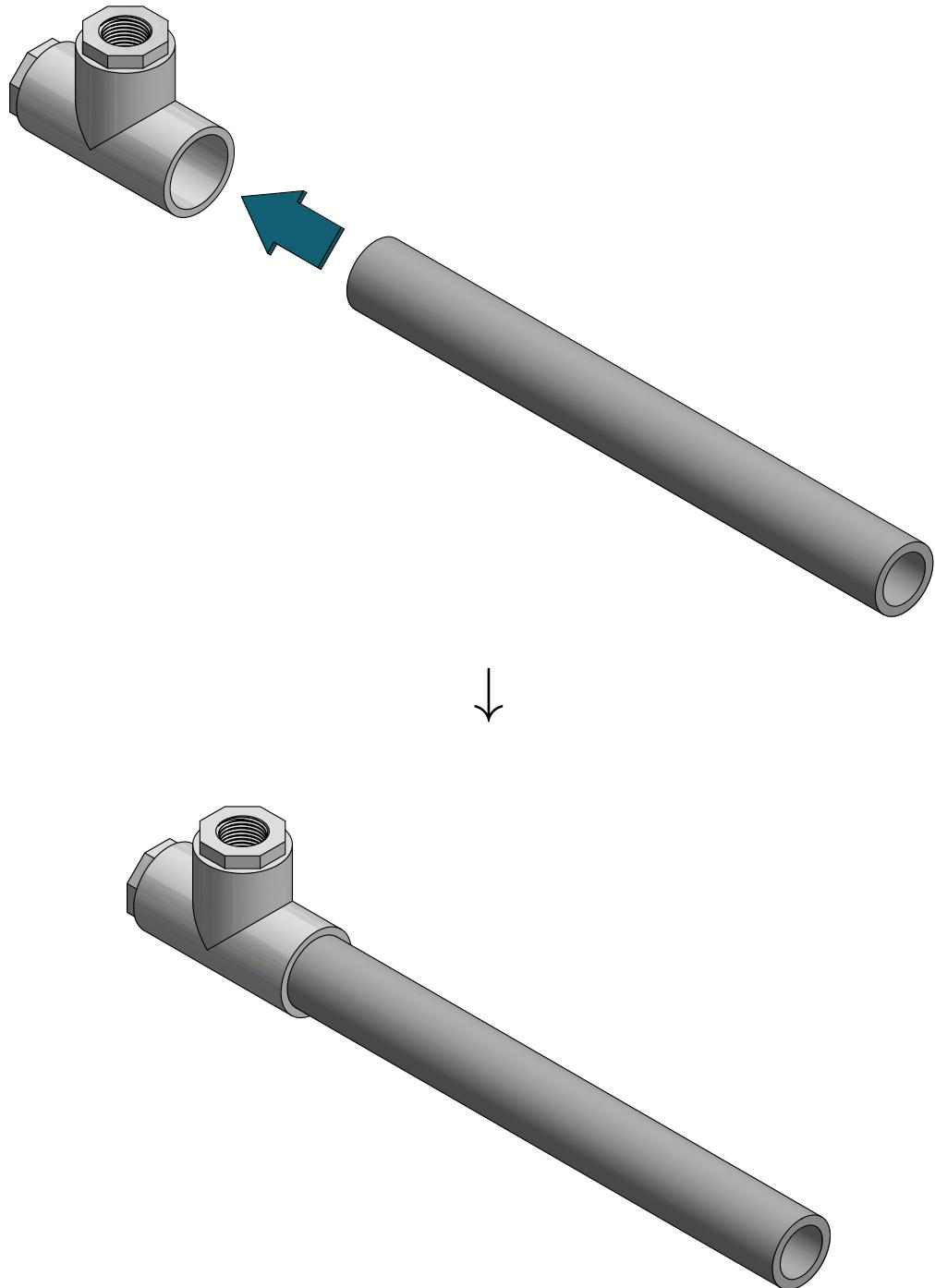
part no.	description
17	1/2" close nipple, SCH 80

**Step 19:** Cement two 1" male socket to 1/2" female thread bushings into tee.



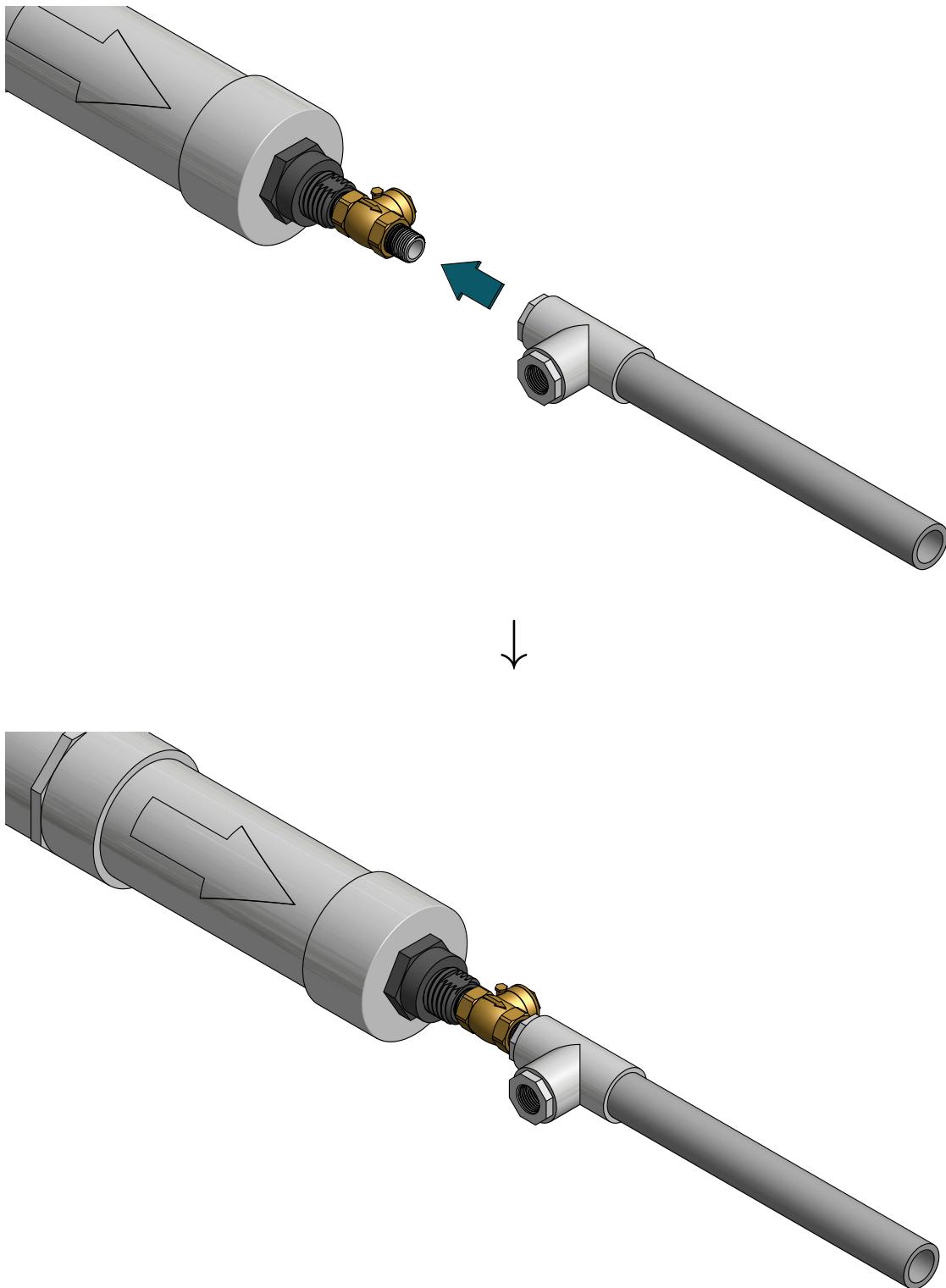
part no.	description
19	1" tee, SCH 40
20	1" male socket, 1/2" female thread bushing , SCH 40

**Step 20:** Insert 1", 12" long, SCH 80 pipe into other socket of tee and cement in place.

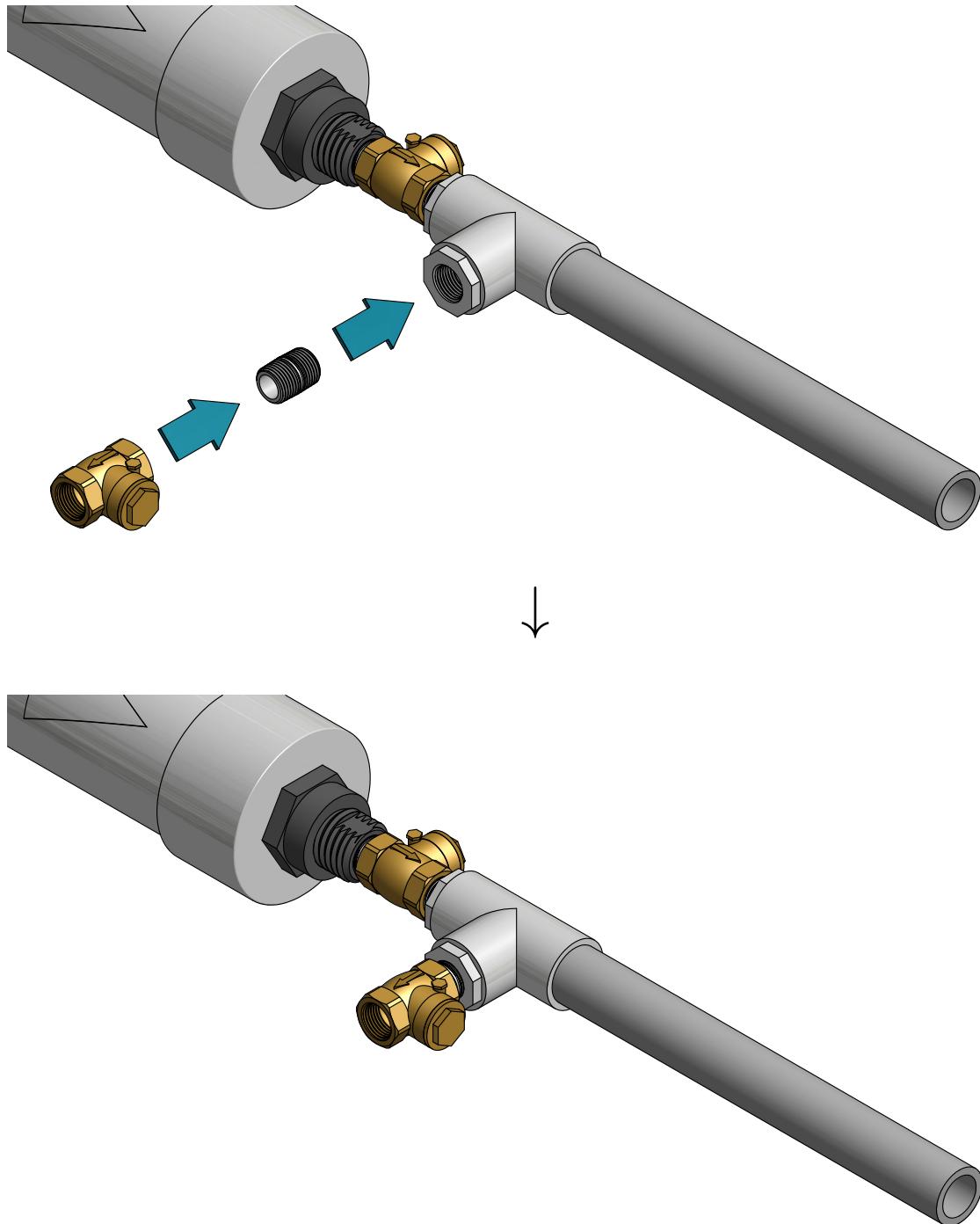


part no.	description
21	1" pipe, SCH 80, about 12" long

**Step 21:** Attach assembly to other end of close nipple.

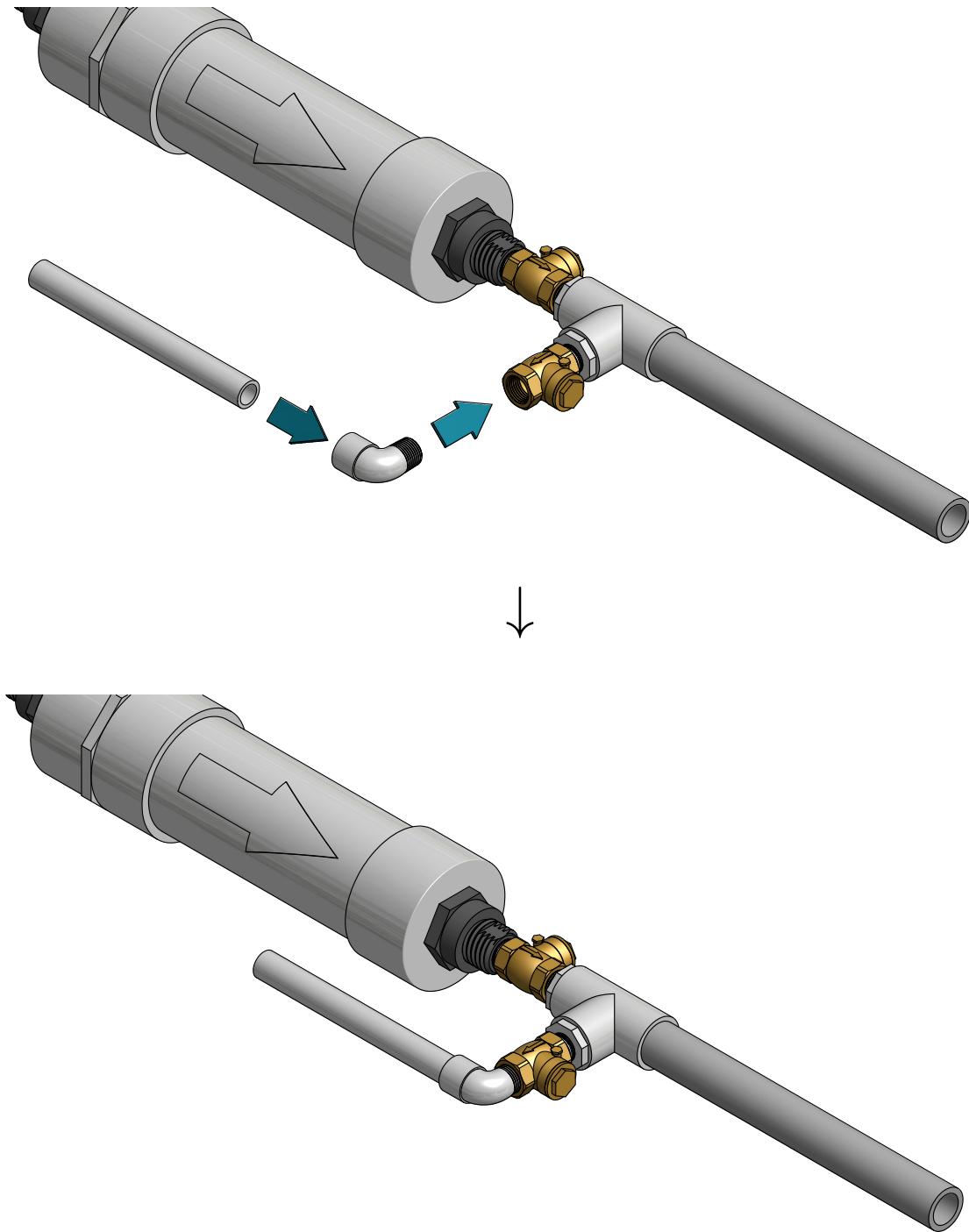


**Step 22:** Insert another 1/2" nipple and attach another 1/2" swing check valve.



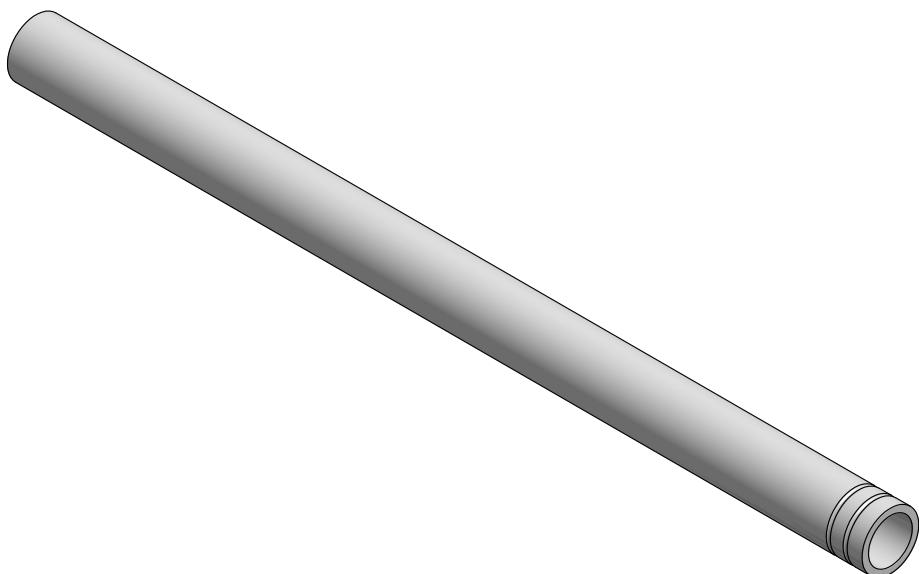
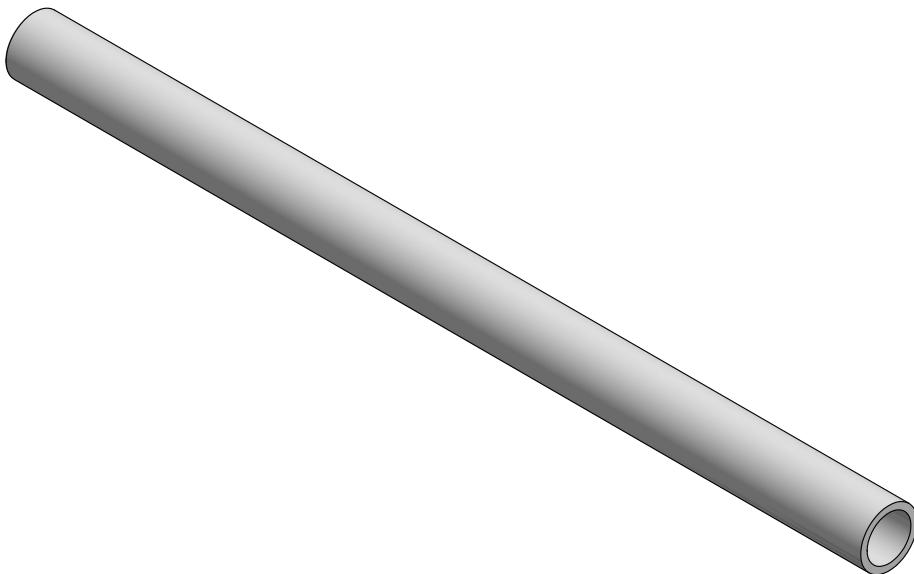
part no.	description
17	1/2" close nipple, SCH 80
18	1/2" swing check valve

**Step 23:** Insert 1/2" elbow and 1/2" pipe piece.



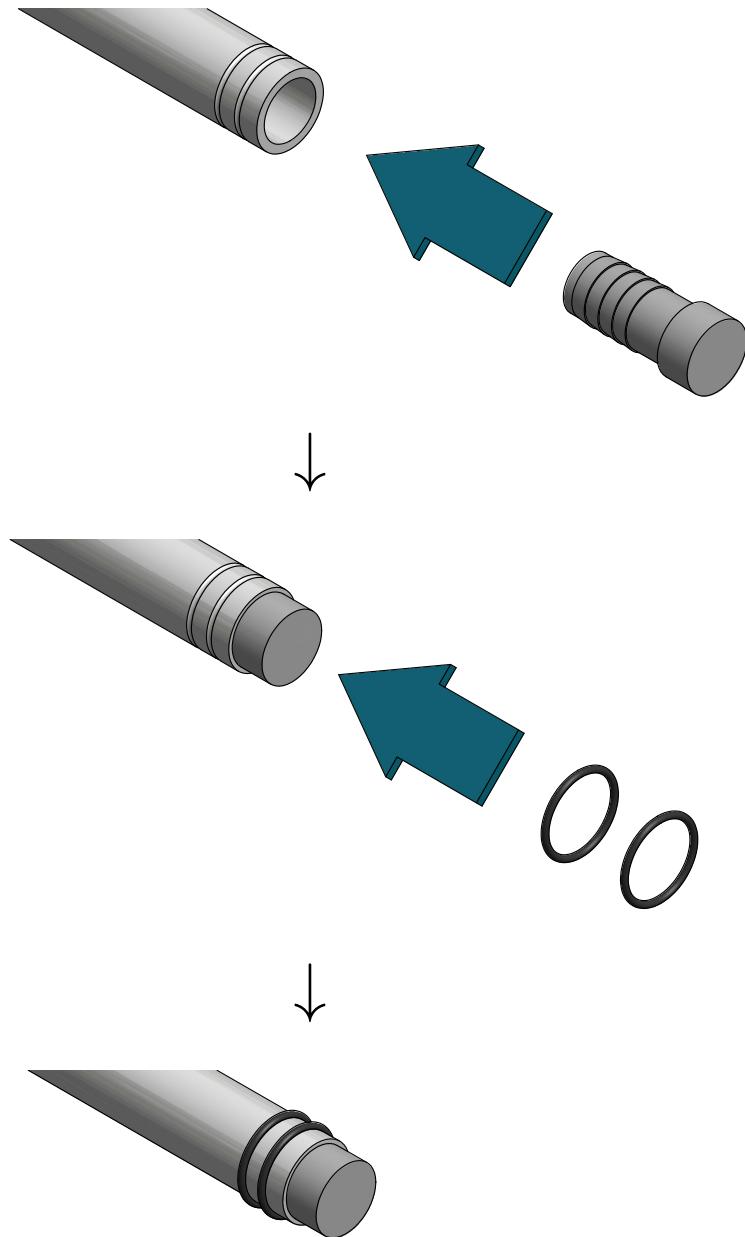
part no.	description
22	1/2" male thread, female socket elbow, SCH 40
23	1/2" pipe piece, SCH 40, about 8" long

**Step 24:** Cut two recesses in exterior surface of  $1/2"$  pipe piece.



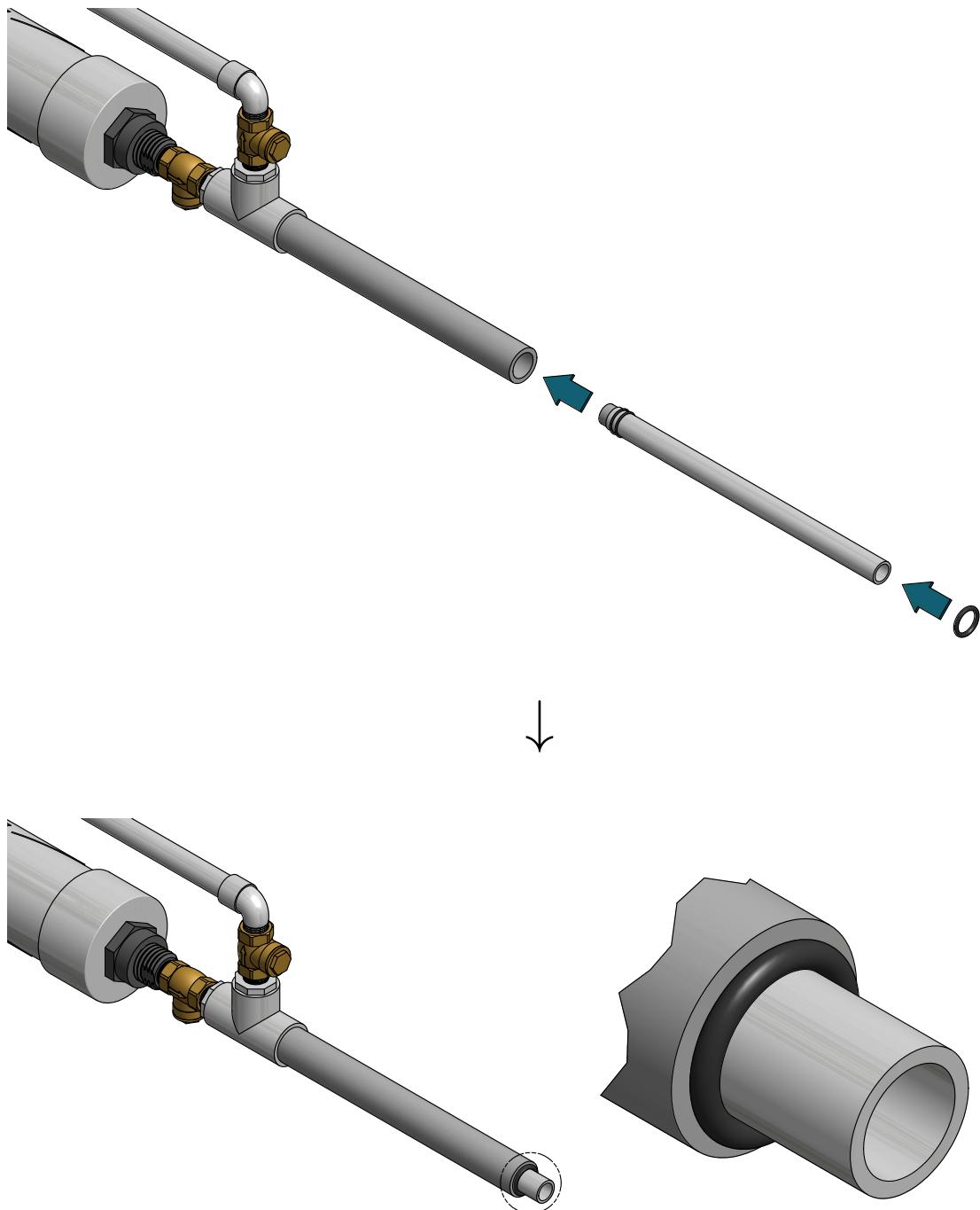
part no.	description
24	$1/2"$ pipe piece, SCH 40, about 12" long

**Step 25:** Insert plug and attach O-rings to shaft.



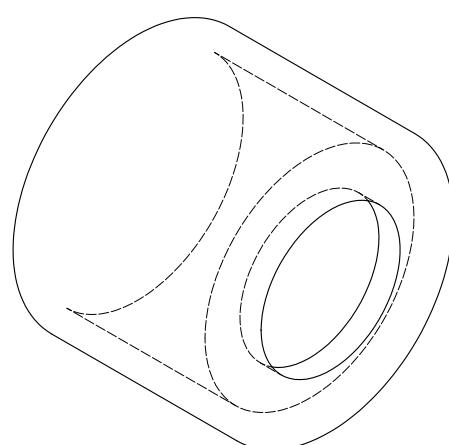
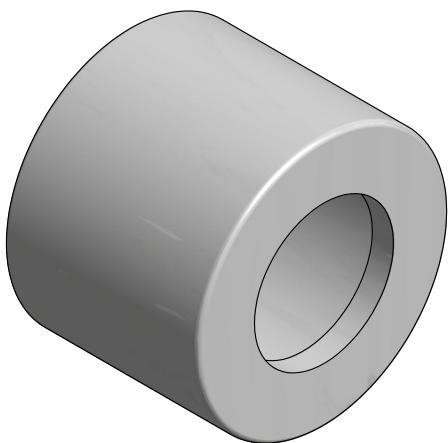
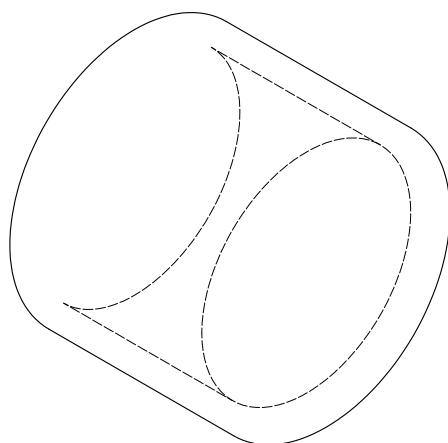
part no.	description
25	pipe plug for 1/2", SCH 40 pipe
26	O-ring, US 19

**Step 26:** Insert assembly into end of 1" pipe and attach O-ring.



part no.	description
27	O-ring, US 267

**Step 27:** Drill  $7/8"$  hole in top of 1" socket end cap.



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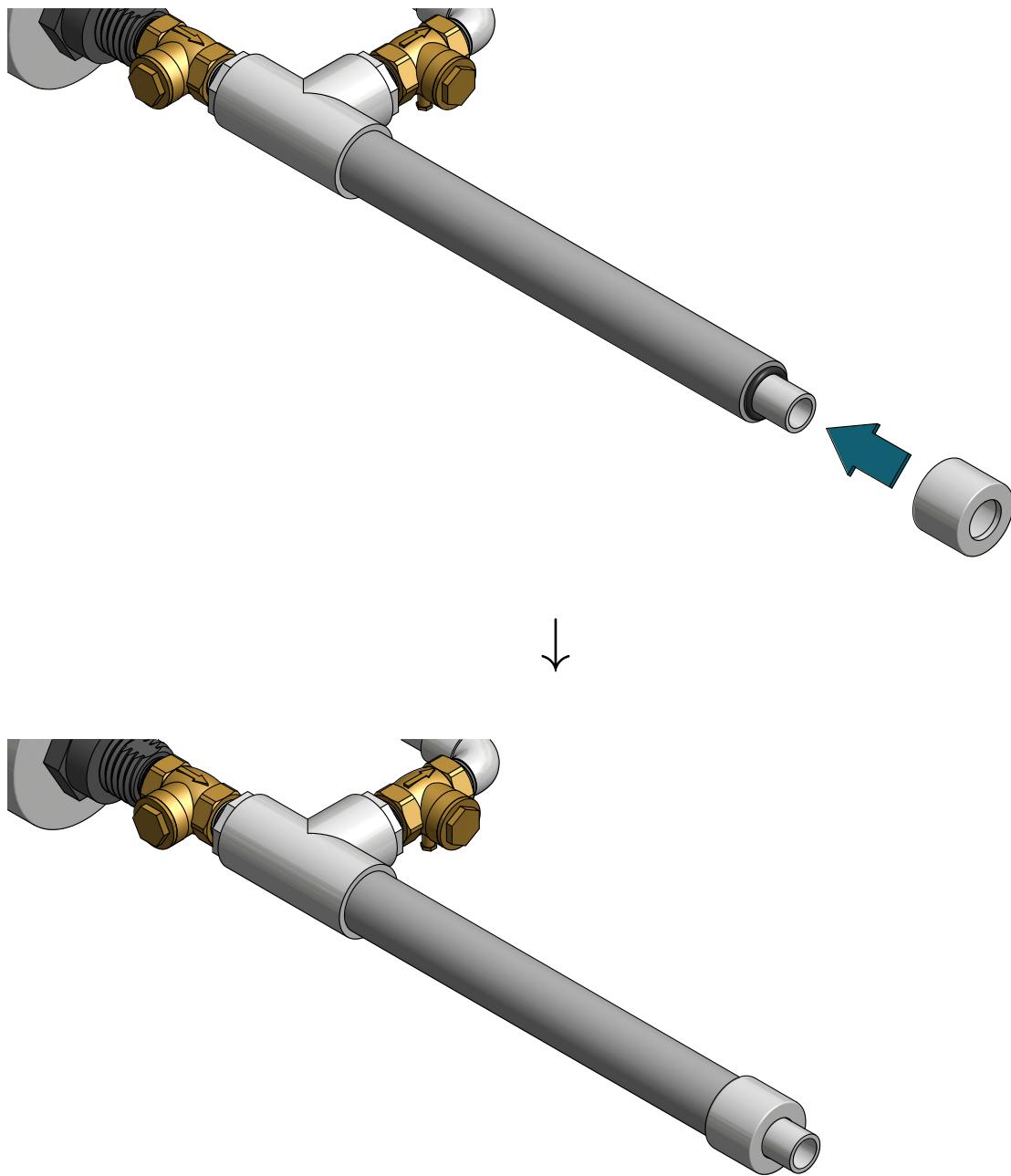
**part no.**

28

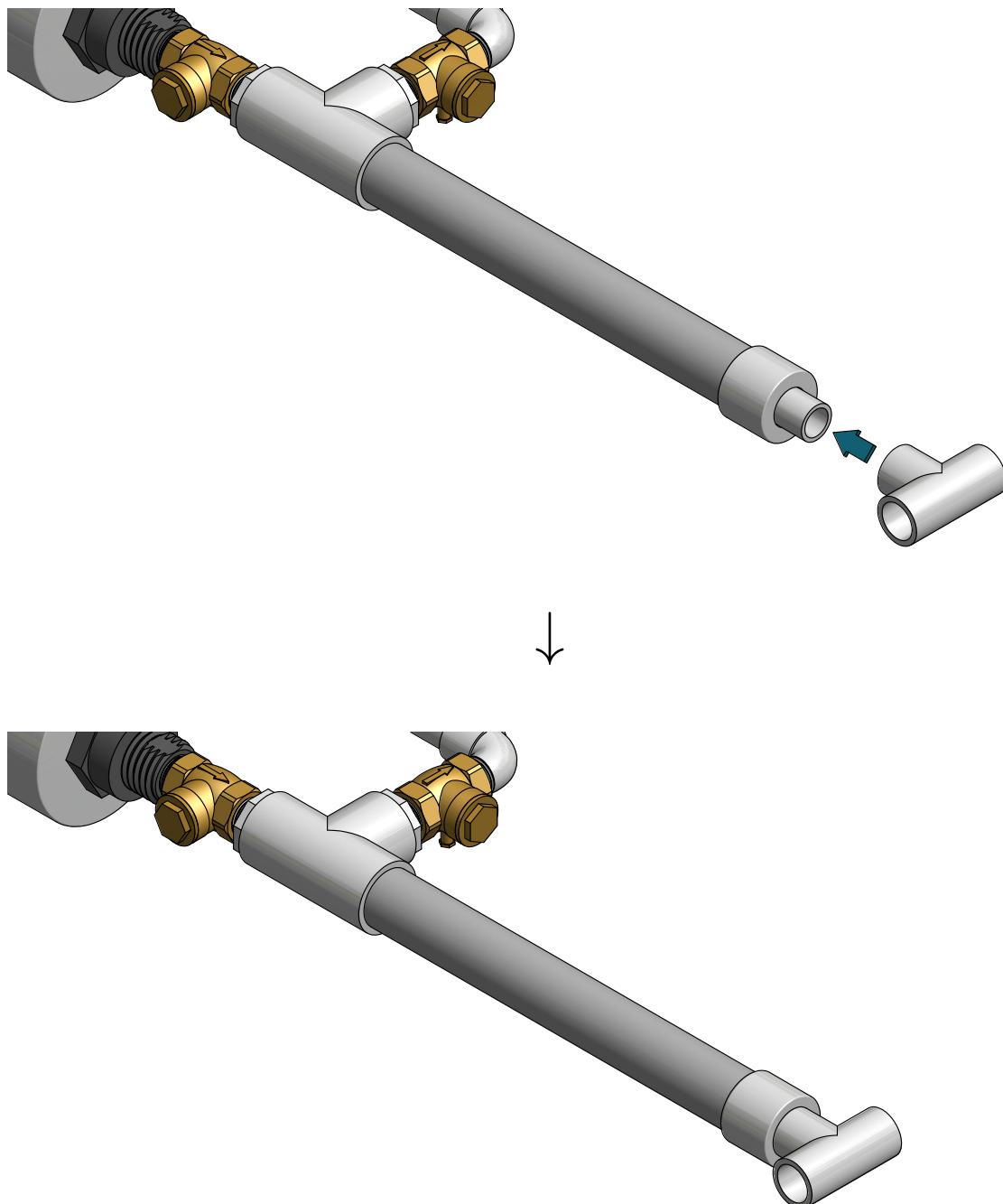
**description**

1", female socket end cap, SCH 40

**Step 28:** Attach cap to end of pipe.



**Step 29:** Attach  $\frac{1}{2}$ " socket tee.



part no.	description
29	1/2" socket tee, SCH 40