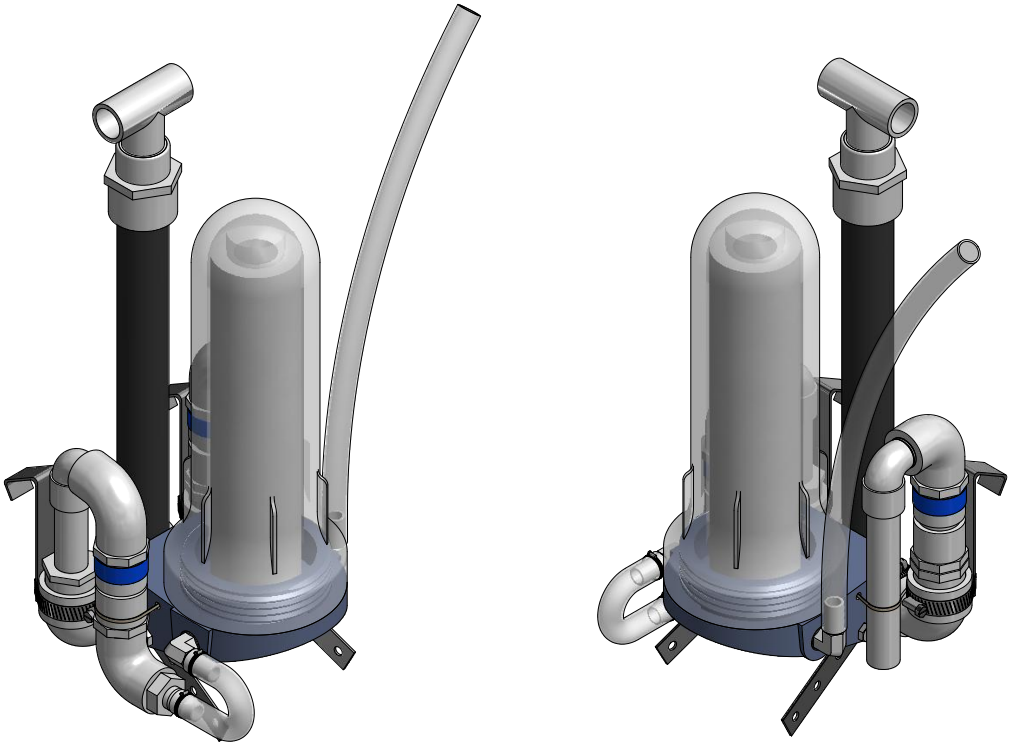
Pure Paani

Assembly Drawings

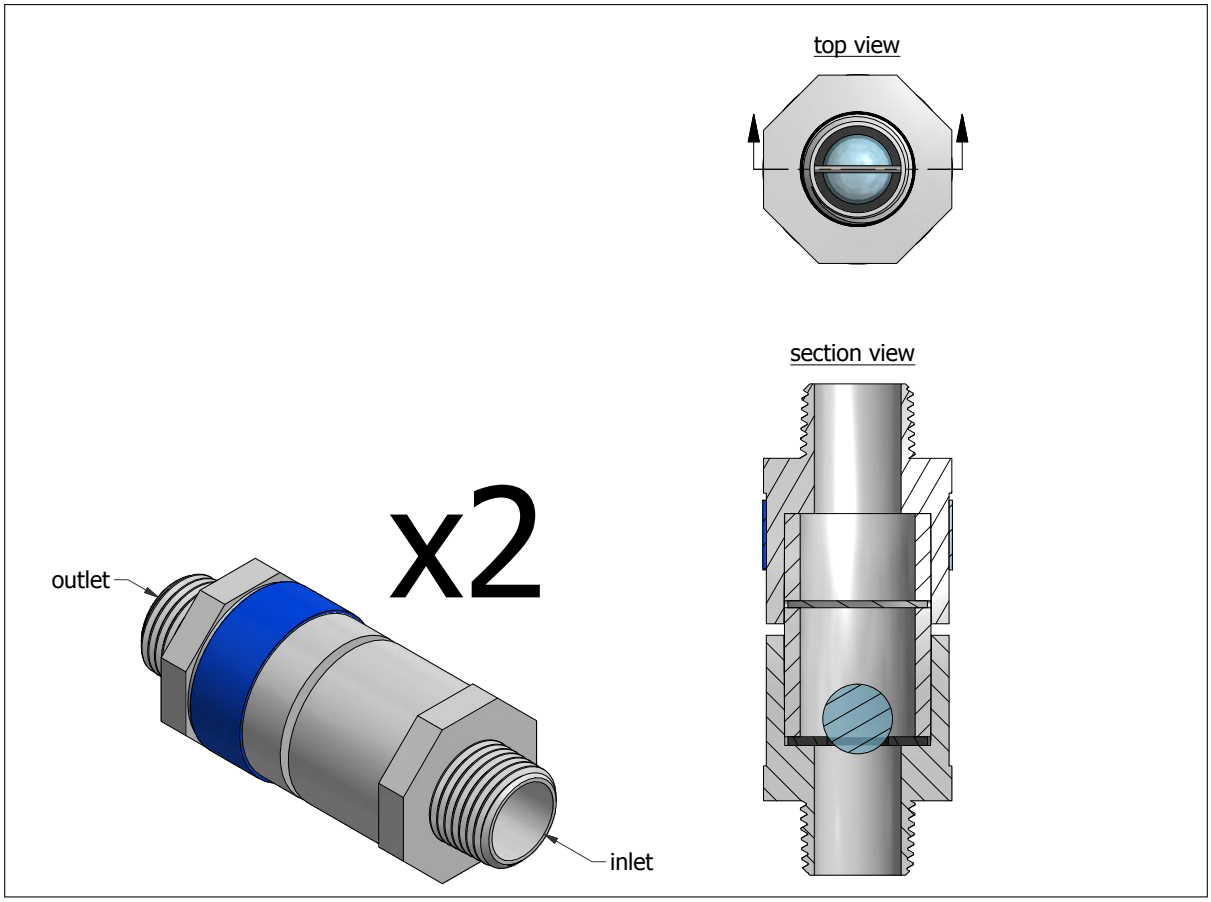
Version 1.0 - Last Updated April 3rd, 2016

Chris [redacted] Logston

Contents



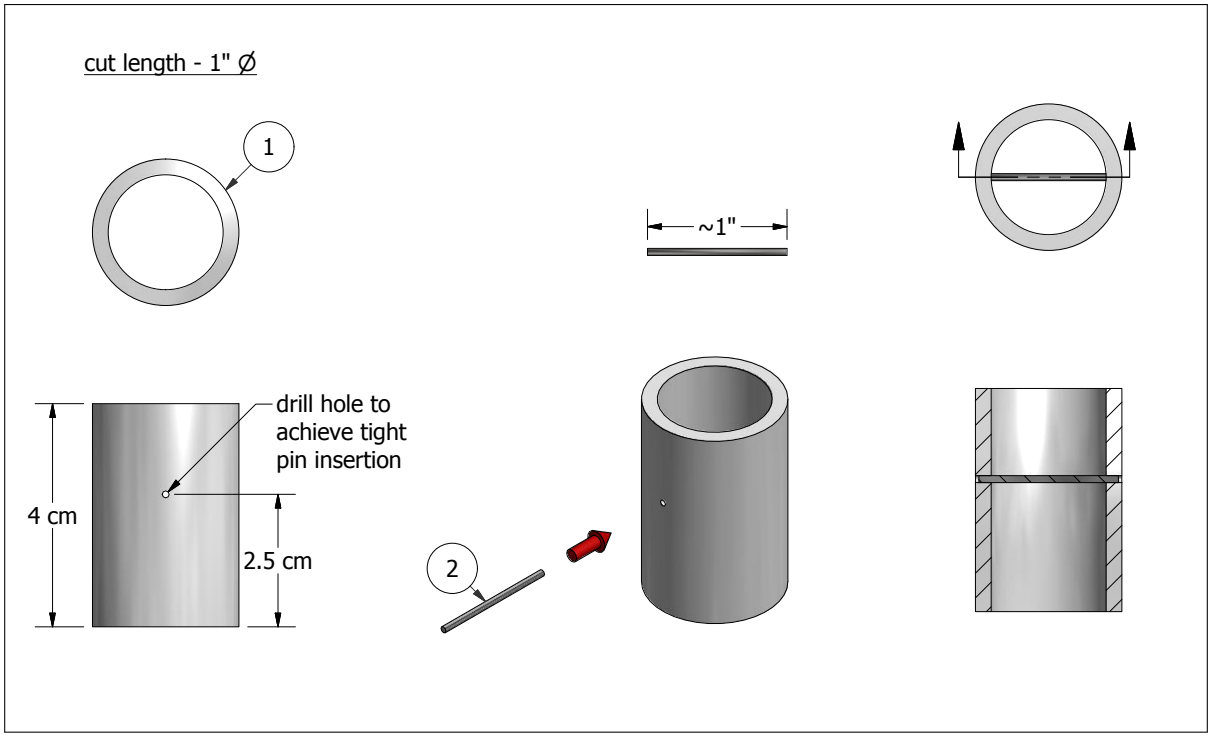
1 Check Valve Assembly



Total Parts Needed for Assembly of 2 Check Valves

part no.	description	dimensions	material	qty
1	pipe piece	$^{3}/_{4}$”, 4cm long	PVC - sch. 40	2
2	nail with head cut off	different gauges work, 0.125 cm ⌀ shown, 1” long	non-rusting metal	2
3	standard marble	$^{1}/_{2}$”⌀	glass	2
4	rubber washer	$^{7}/_{16}$” ID, 1” OD, $^{1}/_{16}$” thickness	rubber	2
5	reducer	$^{3}/_{4}$” unthreaded female to $^{1}/_{2}$” threaded male	PVC, sch. 40	4

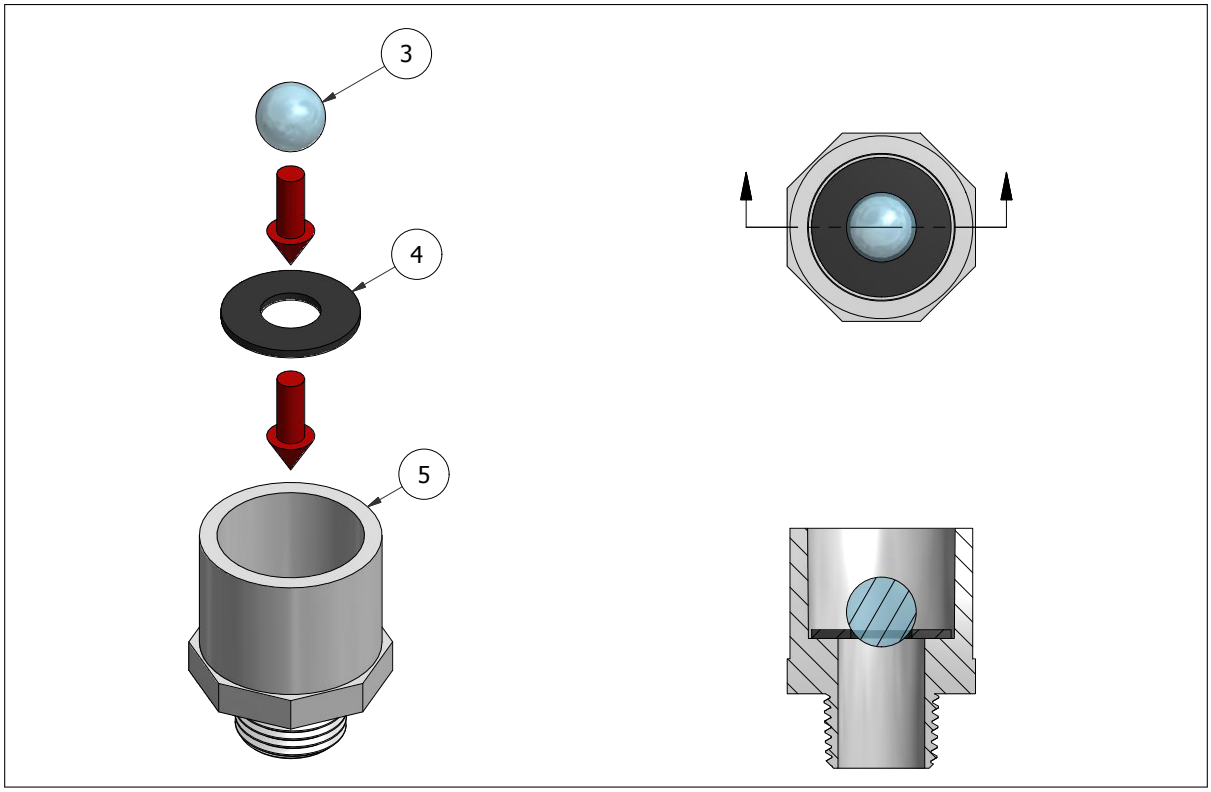
Step 1



- Cut pipe to approximately 2cm.
- Drill holes slightly smaller than nail thickness to achieve tight fit.
- Nail cannot protrude past exterior surface of pipe.

part no.	description	dimensions	material	qty
1	pipe piece	¾", 4cm long	PVC - sch. 40	1
2	nail with head cut off	different gauges work, 0.125 cm ⌀ shown, 1" long	non-rusting metal	1

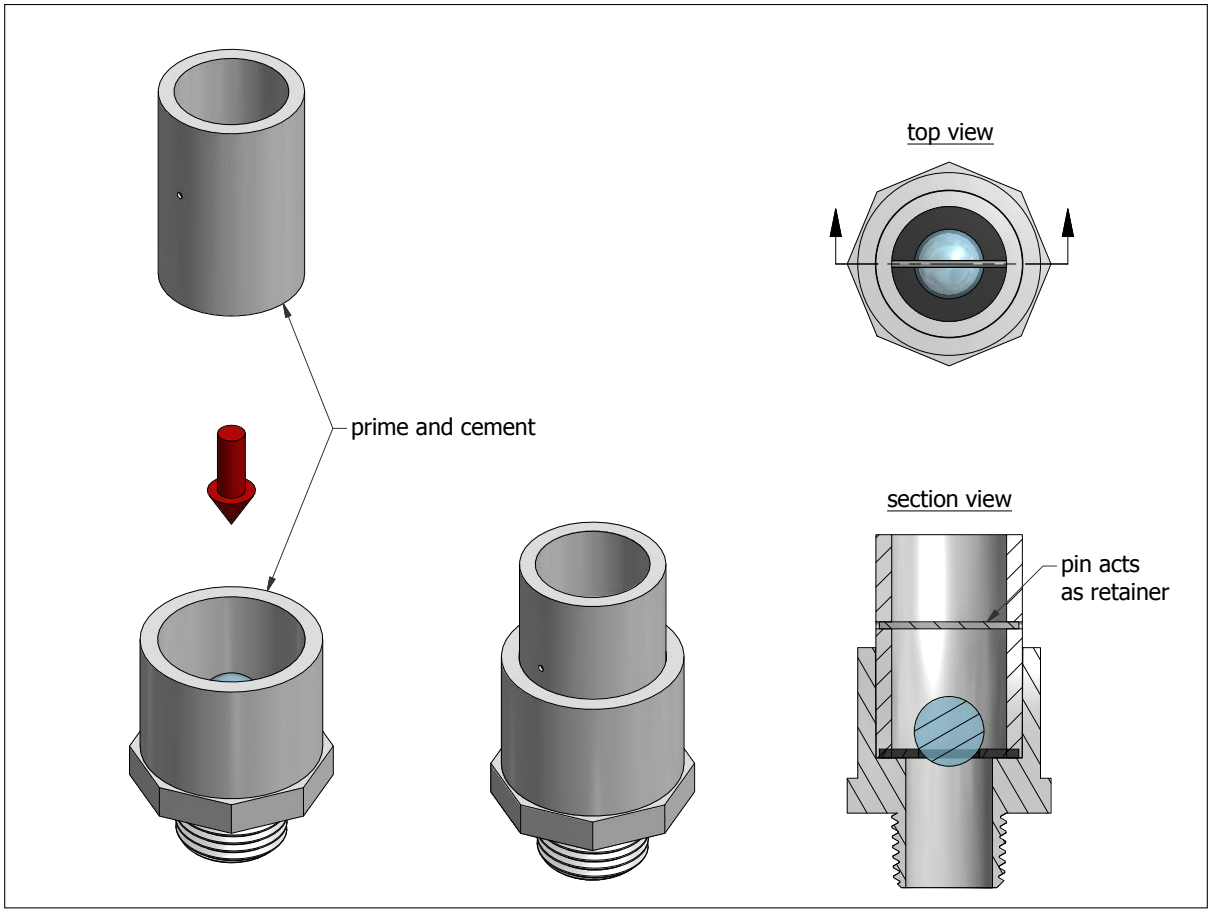
Step 2



- Drop rubber washer into reducer.
- Let marble rest on top of washer.

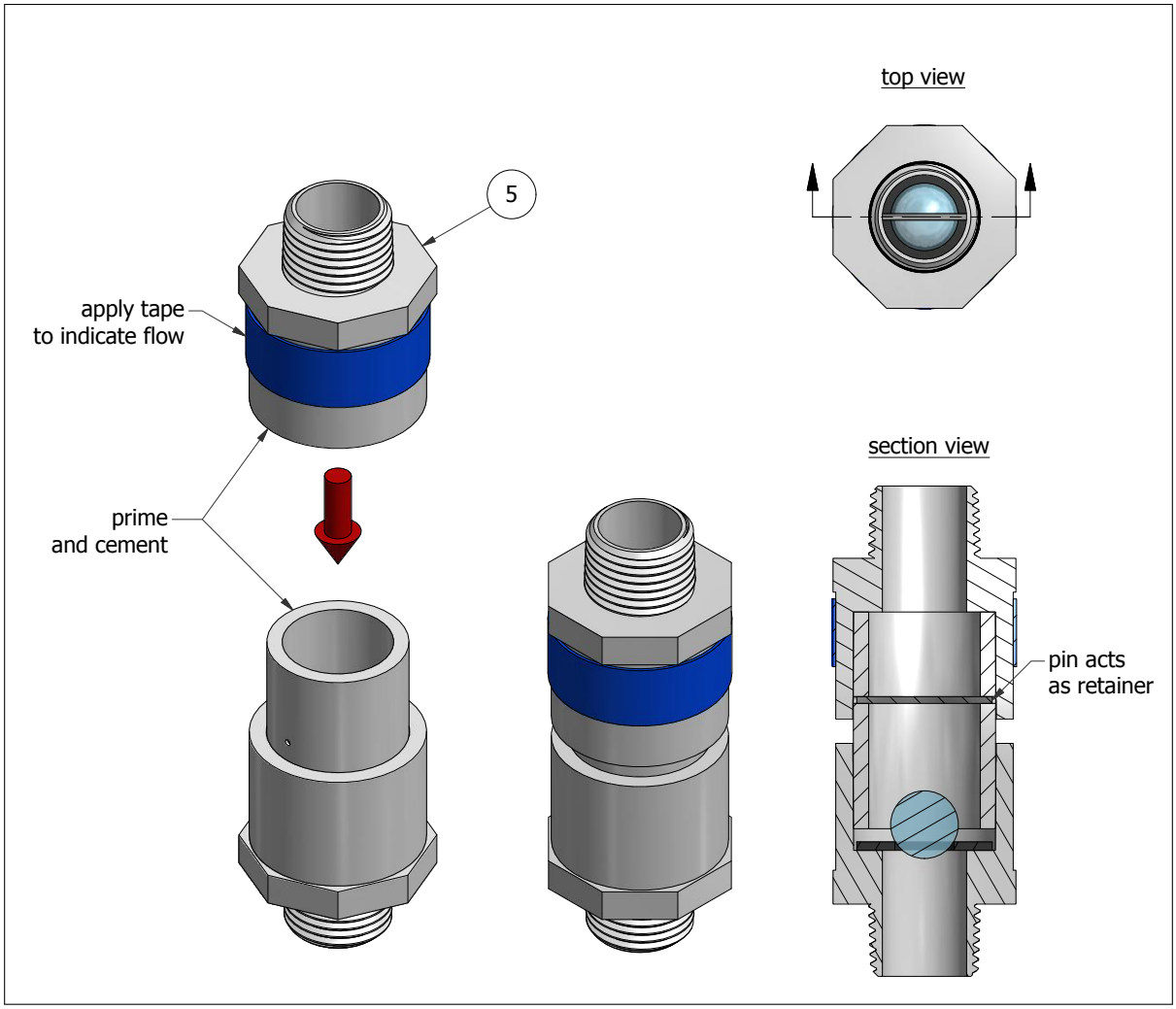
part no.	description	dimensions	material	qty
3	standard marble	$^{1}/_{2}$”⌀	glass	1
4	rubber washer	$^{7}/_{16}$” ID, 1” OD, $^{1}/_{16}$” thickness	rubber	1
5	reducer	$^{3}/_{4}$” unthreaded female to $^{1}/_{2}$” threaded male	PVC, sch. 40	1

Step 3



- Carefully prime reducer interior surface.
- Try to avoid contact between primer and washer as much as possible.
- Prime exterior surface of pipe-nail assembly on end opposite nail insertion.
- Apply cement on primed surface of pipe-nail assembly.
- Insert pipe-nail assembly into reducer, over marble, such that washer is held in place and twist about 45°.

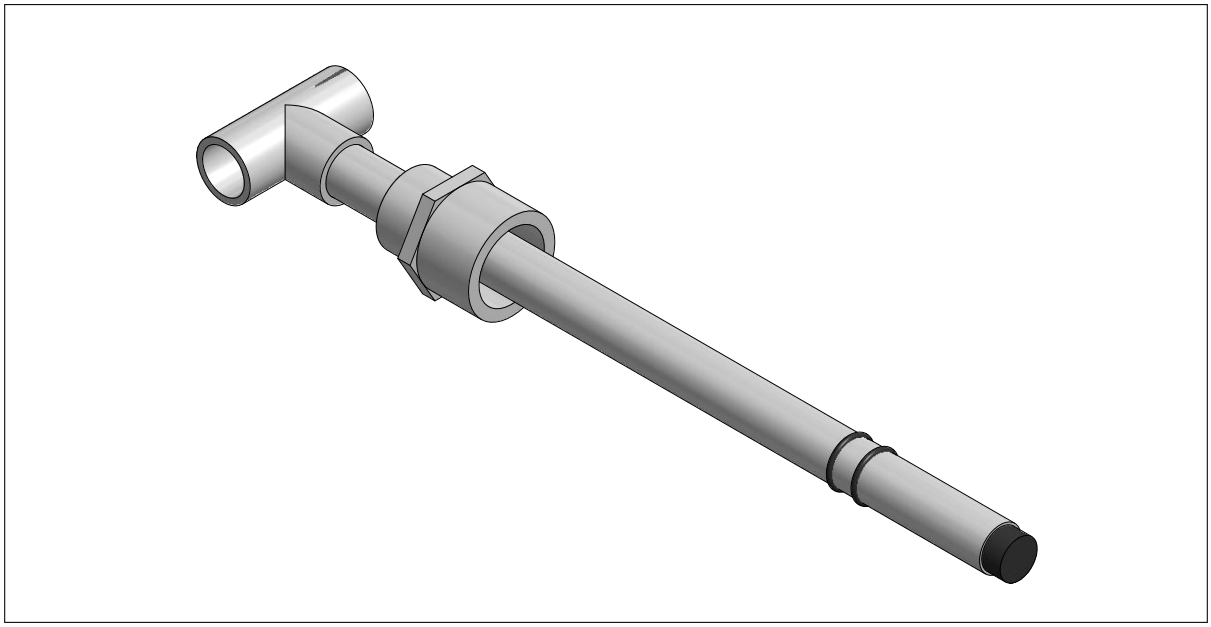
Step 4



- Apply tape to other reducer.
- Prime interior surface of other reducer.
- Prime exterior surface of other end of pipe-nail assembly.
- Cement exterior surface of other end of pipe-nail assembly.
- Insert other end of pipe-nail assembly into reducer and twist about 45°.

part no.	description	dimensions	material	qty
5	reducer	$^{3}/_{4}$” unthreaded female to $^{1}/_{2}$” threaded male	PVC, sch. 40	1

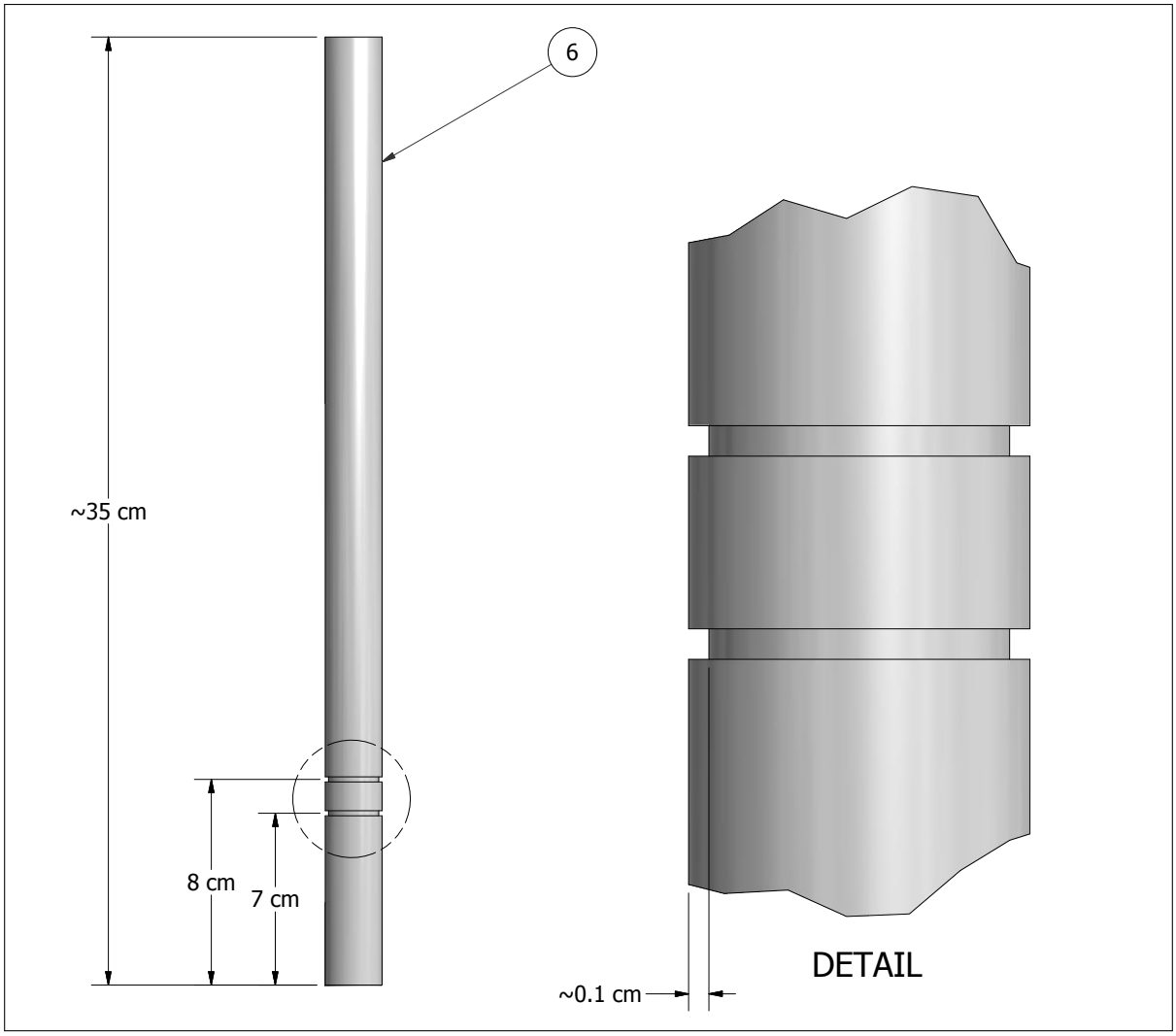
2 Plunger Assembly



Total Parts Needed for Plunger Assembly

part no.	description	dimensions	material	qty
6	pipe piece	1/2”⌀, 35 cm long	PVC - sch. 40	1
7	o-ring	#14 - 15/16” OD, 3/4” ID	PTFE	2
8	barbed plug	for ID of 1/2” sch. 40 pipe	PVC	1
9	adapter	1” unthreaded female to 3/4” threaded female	PVC - sch. 40	1
10	handle tee	1/2” all ends unthreaded	PVC - sch. 40	1

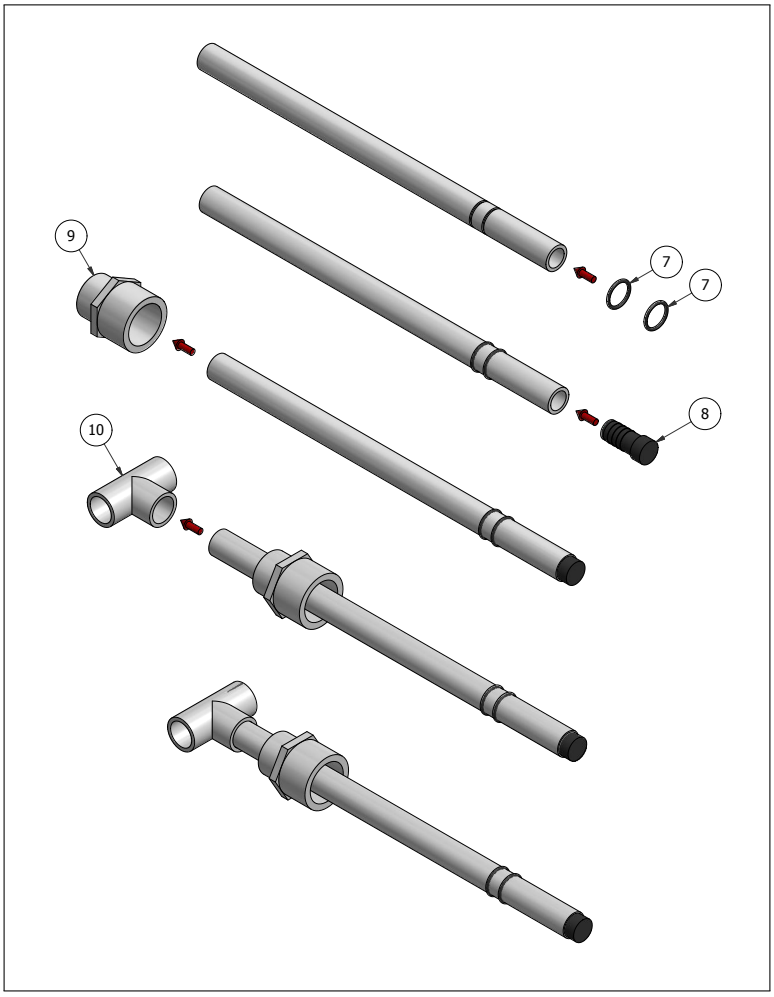
Step 1



Using a table saw, lower blade such that very little of the wheel's teeth protrude above the work surface. By shifting pipe over these teeth and rotating, create very minor recess along exterior surface, as shown.

part no.	description	dimensions	material	qty
6	pipe piece	1/2"⌀, 35 cm long	PVC - sch. 40	1

Step 2



- Slide 2 O-rings along pipe, into recesses.
- Insert plug into pipe end.
- Slide adapter over other end, such that female end faces plugged end.
- Place tee on end opposite plug. No primer/cement needed.

part no.	description	dimensions	material	qty
7	o-ring	#14 - $^{15}/_{16}$” OD, $^{3}/_{4}$” ID	PTFE	2
8	barbed plug	for ID of $^{1}/_{2}$” sch. 40 pipe	PVC	1
9	adapter	1” unthreaded female to $^{3}/_{4}$” threaded female	PVC - sch. 40	1
10	handle tee	$^{1}/_{2}$” all ends unthreaded	PVC - sch. 40	1

3 Filter Bowl Components

Separate parts of filter bowl. Head will be used first, with cartridge and bowl added later.

part no.	description	dimensions	material	qty
B1	filter bowl head	manufactured	plastic	1
B2	filter bowl	premanufactured length	plastic	1
B3	filter cartridge	10” standard nominal length	-	1

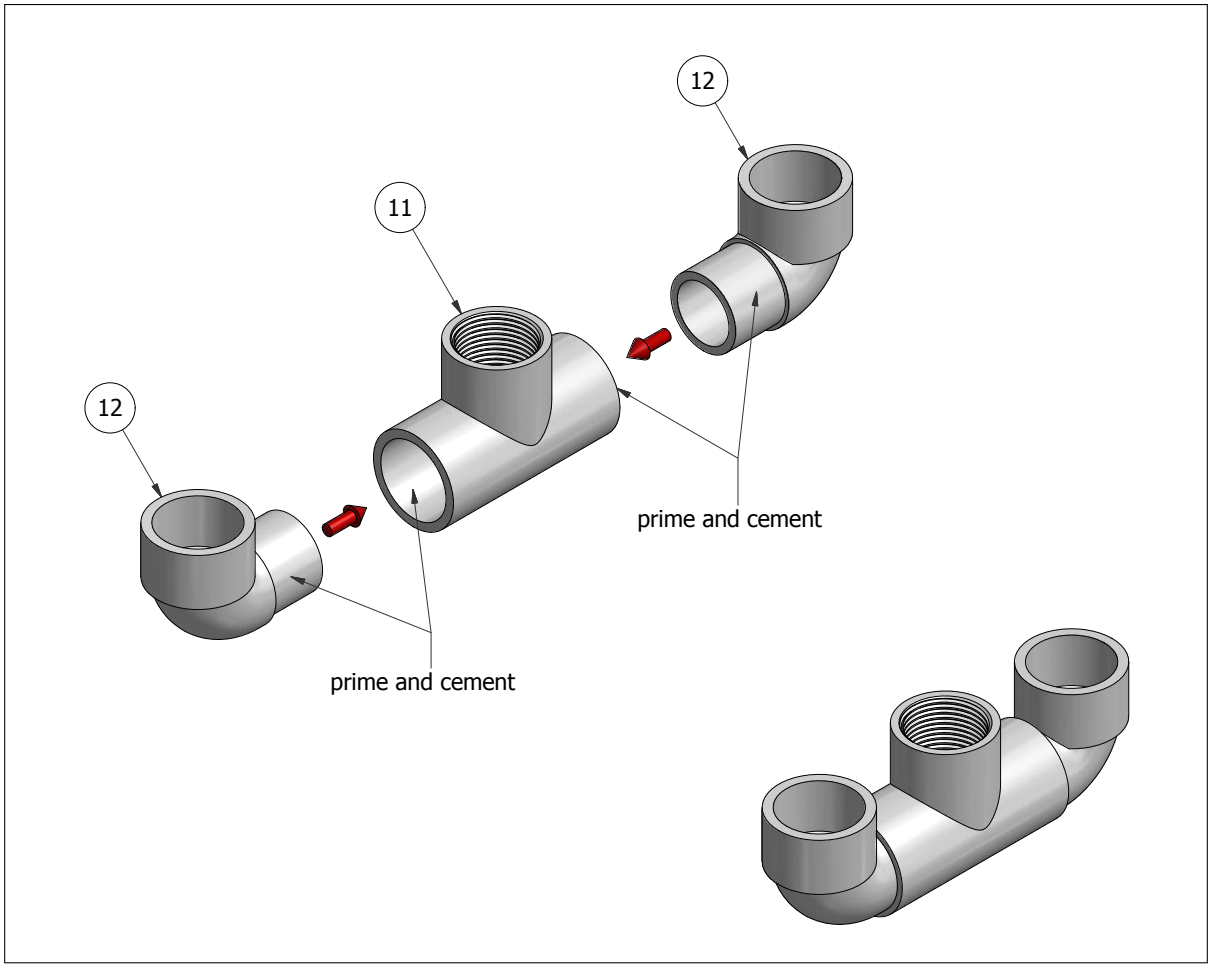
4 Complete Assembly

The remaining steps require 2 preassembled check valves, 1 preassembled plunger system, 1 pre-manufactured filter bowl, and the folloiwng parts. Note that the barbed elbows into/out of the filter head (part 20) need to be matched to the threading of the filter bowl.

Parts Needed to Complete Assembly

part no.	description	dimensions	material	qty
11	tee, female	1", 1 end threaded, 2 ends unthreaded	PVC - sch. 40	1
12	elbow, male to female	1", both ends unthreaded	PVC - sch. 40	2
13	bushing	1" unthreaded male to 1/2" threaded female	PVC - sch. 40	1
14	bushing	1" unthreaded male to 1/2" unthreaded female	PVC - sch. 40	1
15	pipe piece	1/2", ~ 9 cm long	PVC - sch. 40	1
16	hose clamp	for ~ 1 1/2"⌀	non-rusting metal	2
17	metal bar/strip	3/4" wide, ~ 4.25" long	non-rusting metal	2
18	nut	1/4" – 20	non-rusting metal	4
19	bolt	1/4" – 20, 3/4" long	non-rusting metal	4
20	barbed elbow	match male threading to filter head, barbed outlet for tube of 1/2" ID	PVC or nylon	2
21	male-female elbow	1/2", threaded male to unthreaded female	PVC, sch. 40	1
22	female-female elbow	1/2", female-female threaded	PVC sch. 40	1
23	barbed fitting	1/2" male threaded to barbed outlet for tube of 1/2" ID	nylon	1
24	flexible tube	1/2" ID, ~ 5" long	polyvinyl	1
25	hose clamp	for ~ 3/4"⌀	non-rusting metal	2
26	pipe piece	1/2", 14cm long	PVC - sch. 40	1
27	threaded nipple	1"⌀, 14cm long	PVC - sch. 80	1
28	bent clip	bend according to container, unbent length ~ 4.25"	non-rusting metal	2
B1	filter bowl head	manufactured	plastic	1
B2	filter bowl	premanufactured length	plastic	1
B3	filter cartridge	10" standard nominal length	-	1
-	check valve	preassembled	-	2
-	plunger assembly	preassembled	-	1
-	zip ties	-	nylon	2

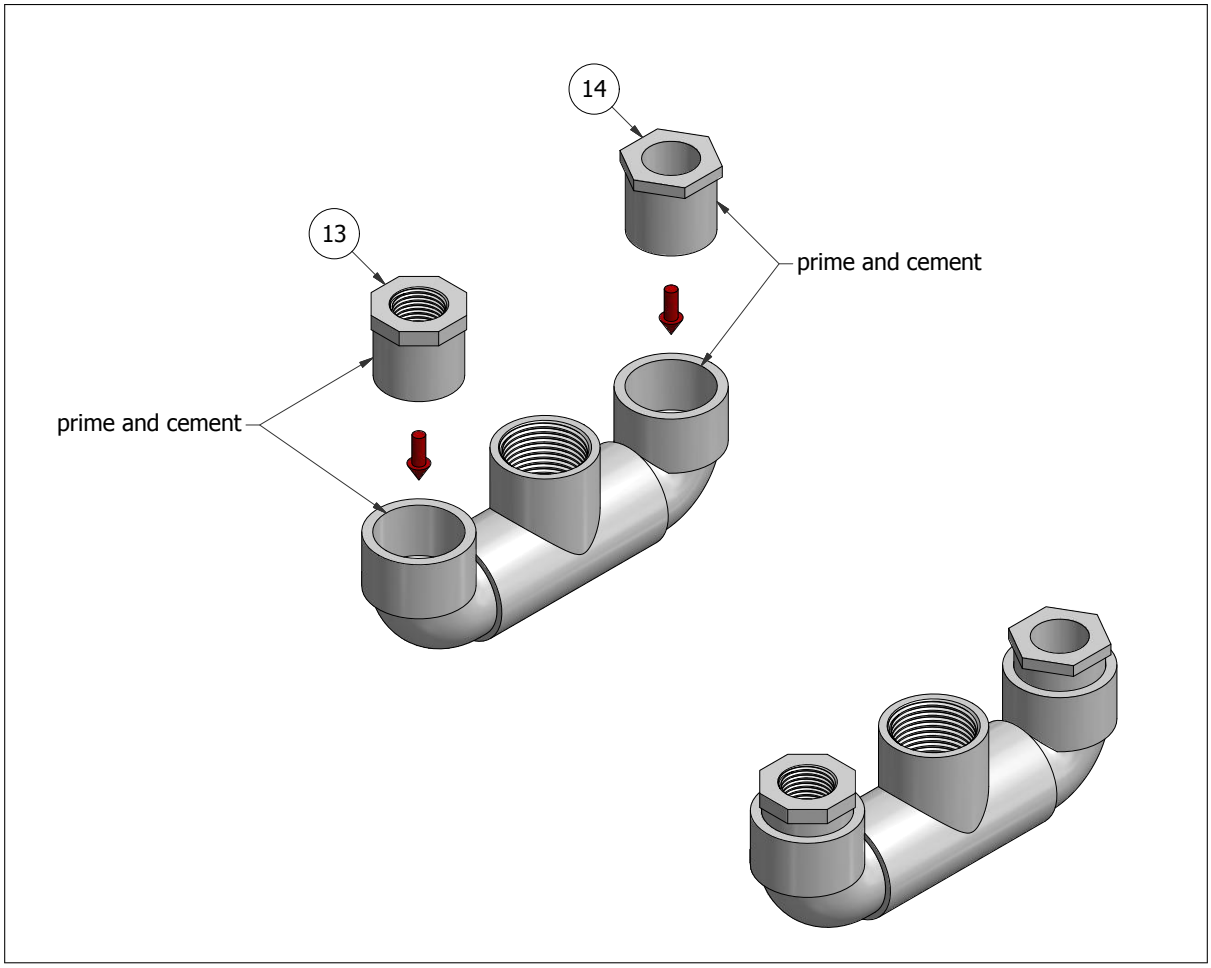
Step 1



- Prime exterior surface of both elbows.
- Prime interior surfaces of unthreaded ends of tee.
- Cement exterior surfaces of elbows.
- Insert elbows into tee at a 45° angle and rotate into alignment as shown.

part no.	description	dimensions	material	qty
11	tee, female	1”, 1 end threaded, 2 ends unthreaded	PVC - sch. 40	1
12	elbow, male to female	1”, both ends unthreaded	PVC - sch. 40	2

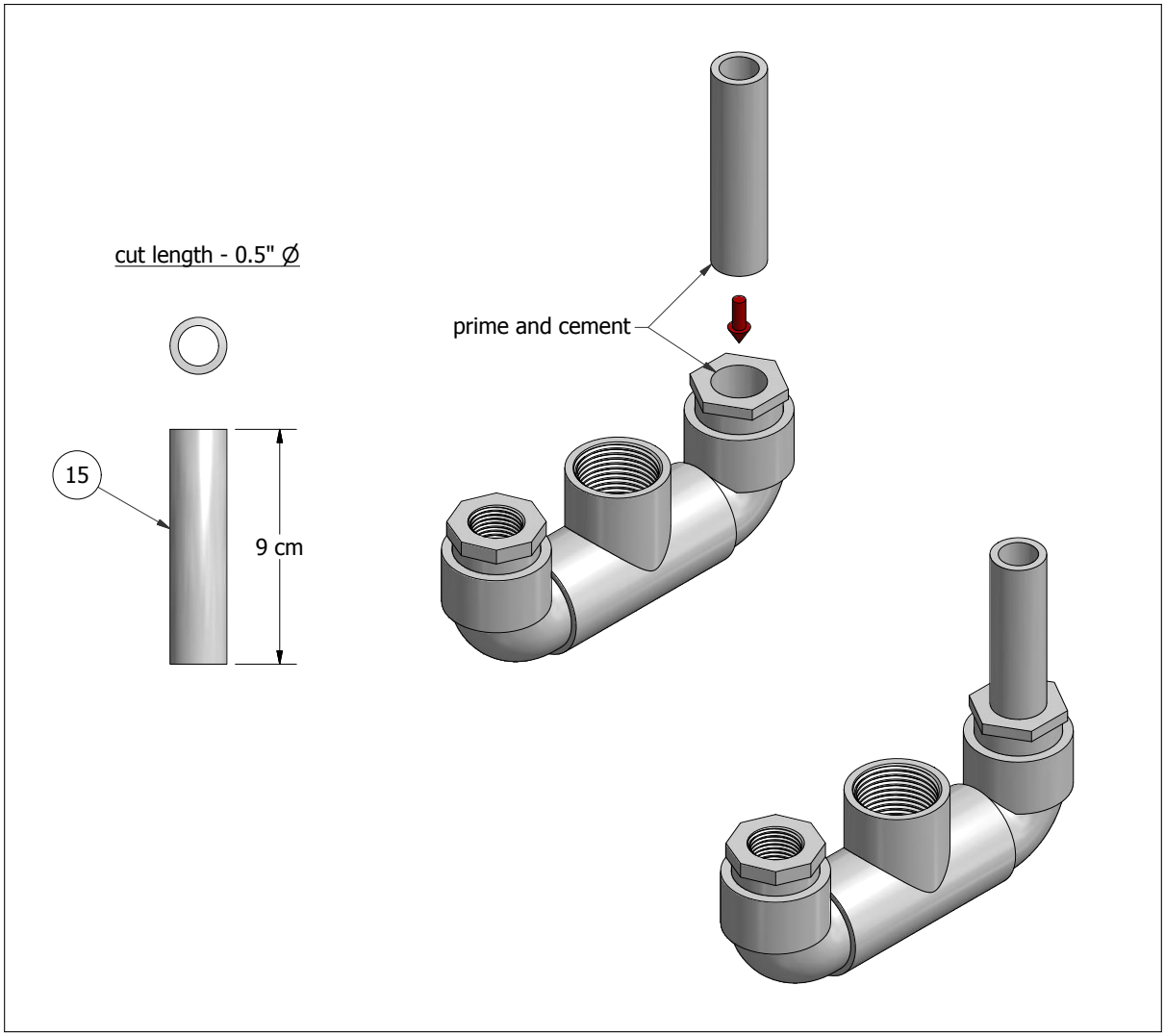
Step 2



- Prime exterior surface of both bushings.
- Prime interior surfaces of both elbows.
- Cement exterior surfaces of both bushings.
- Insert bushings into elbows and twist 45°.

part no.	description	dimensions	material	qty
13	bushing	1” unthreaded male to 1/2” threaded female	PVC - sch. 40	1
14	bushing	1” unthreaded male to 1/2” unthreaded female	PVC - sch. 40	1

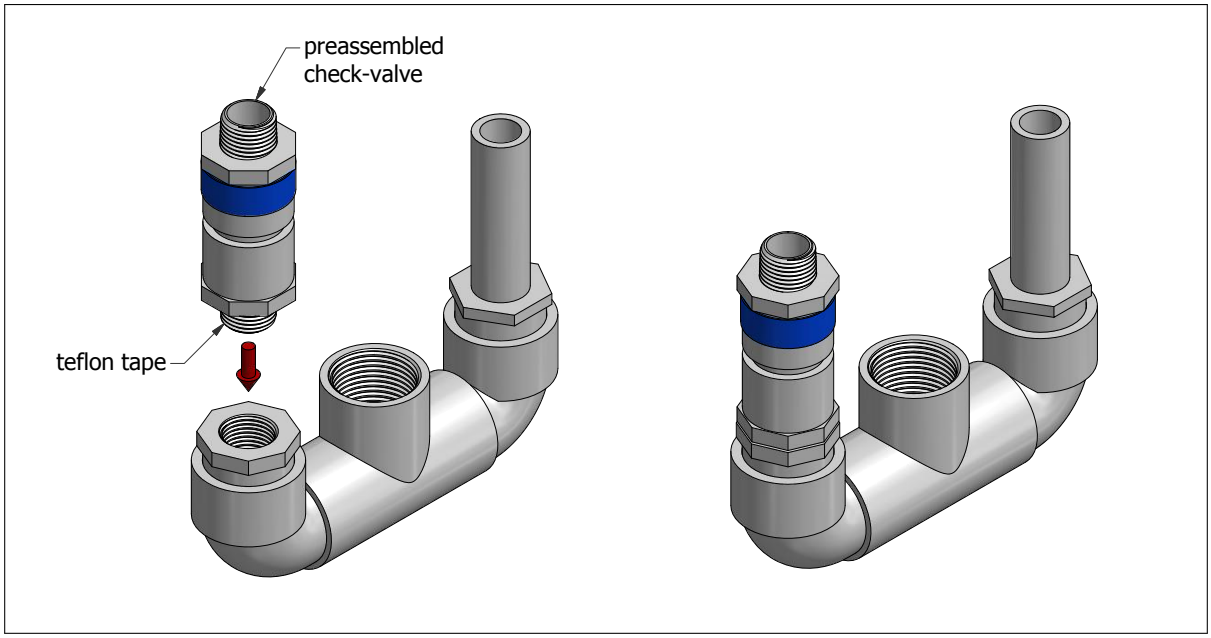
Step 3



- Cut 9cm length of 1/2" pipe.
- Prime exterior surface of one end of pipe.
- Prime interior surface of unthreaded busing.
- Cement exterior surface of pipe.
- Insert cemented end of pipe into unthreaded bushing and twist 45°.

part no.	description	dimensions	material	qty
15	pipe piece	1/2", ~ 9 cm long	PVC - sch. 40	1

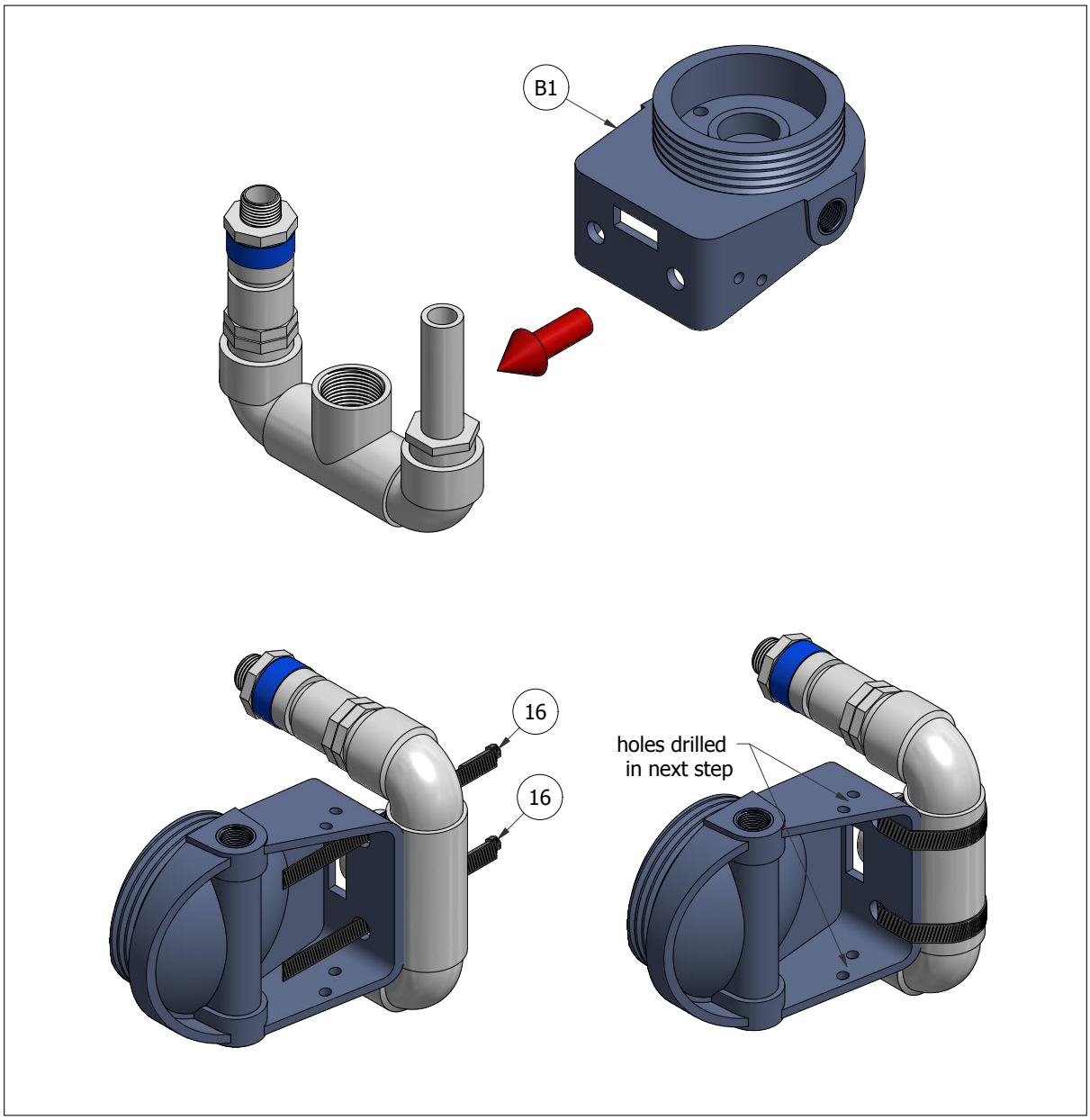
Step 4



- Apply teflon tape (in proper direction) to inlet into 1st check valve.
- Insert tefloned end into threaded bushing.

part no.	description	dimensions	material	qty
-	check valve	preassembled	-	1

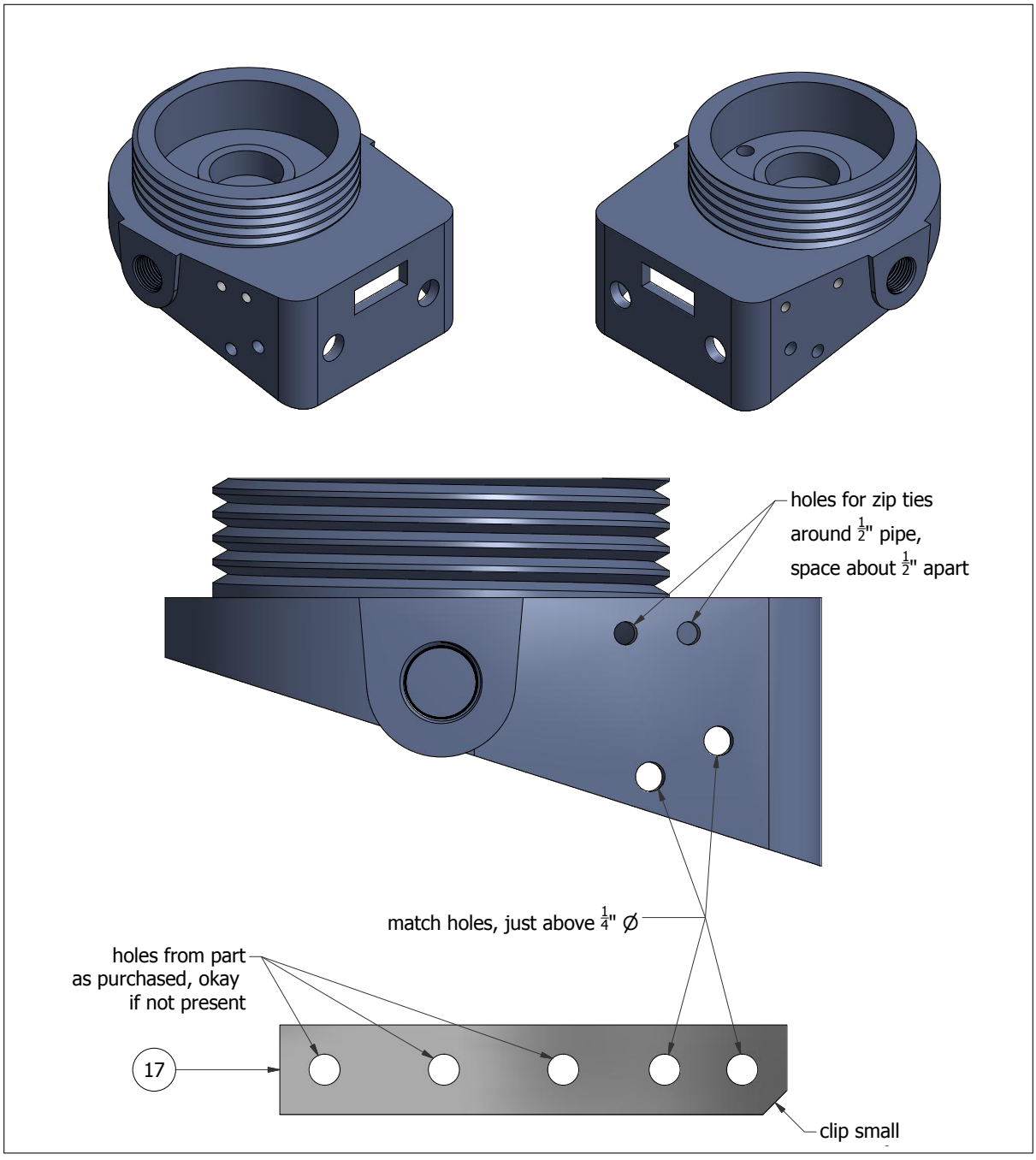
Step 5



Using hose clamps, attach filter bowl head to assembly. Use whatever mounting holes are already present on head.

part no.	description	dimensions	material	qty
B1	filter bowl head	manufactured	plastic	1
16	hose clamp	for ~ 1 1/2"⌀	non-rusting metal	2

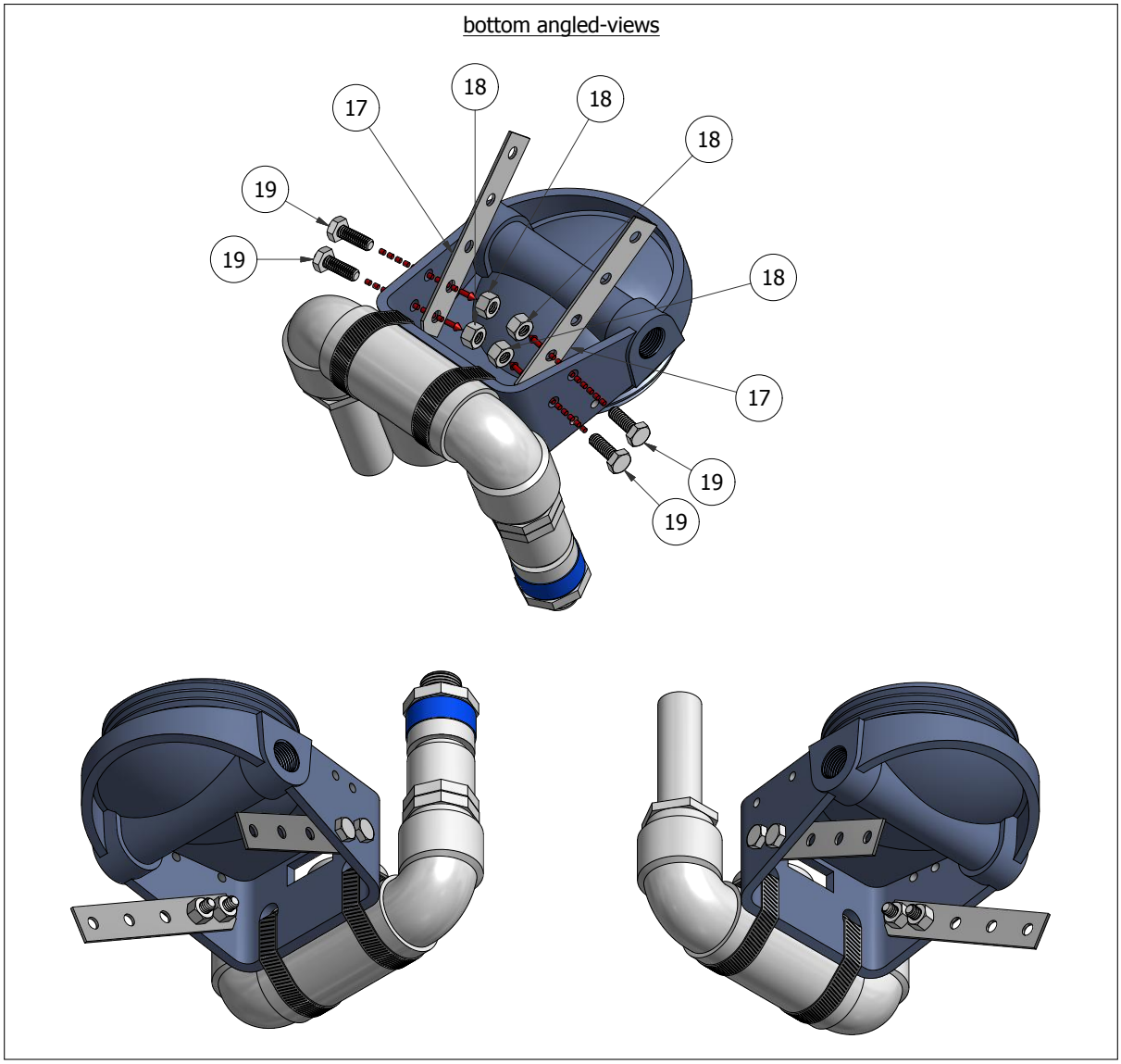
Step 6



Drill holes in head and any rigid metal strip such that when attached, the assembly rests upright. If needed, clip strip corners to avoid interference.

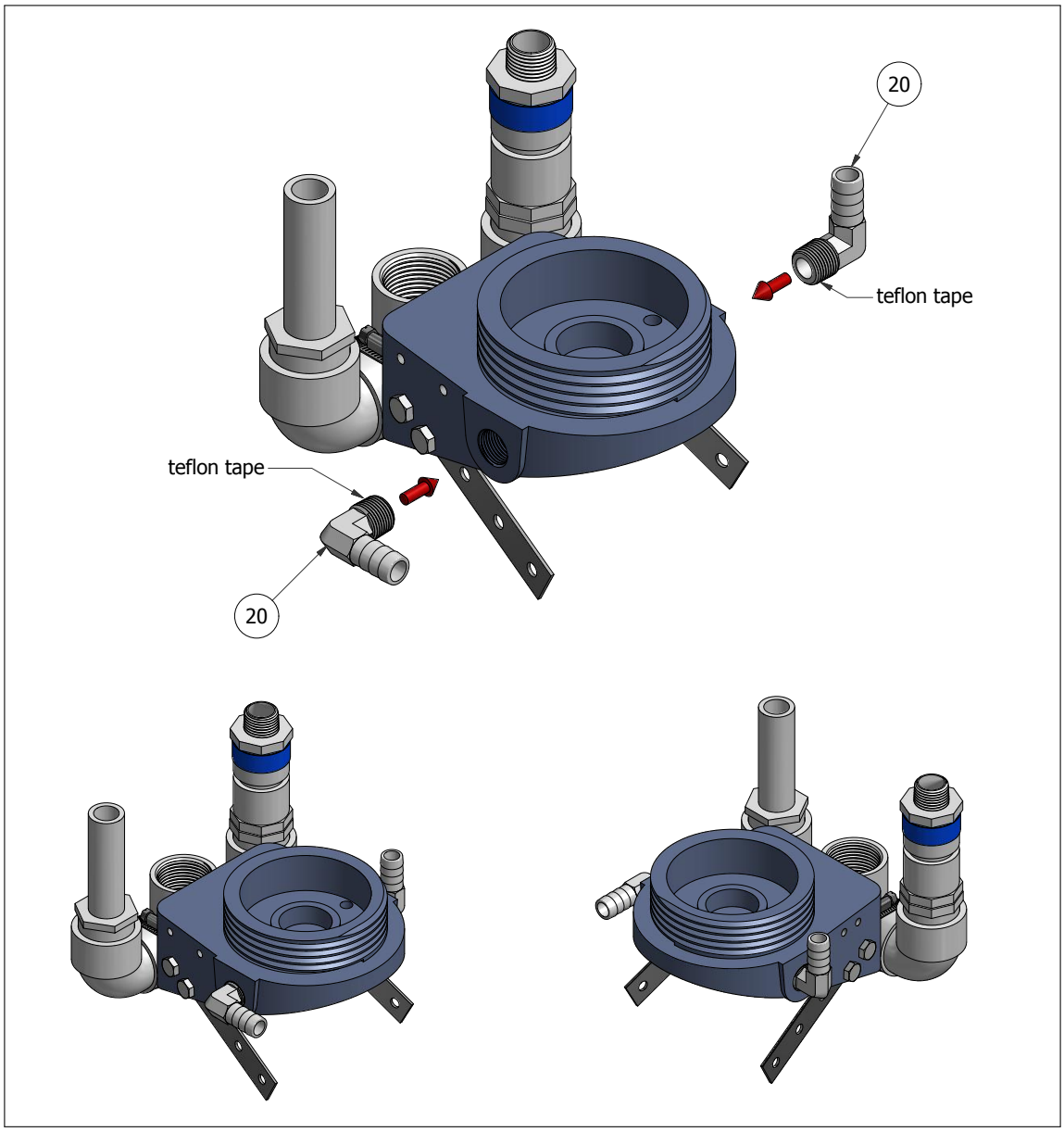
part no.	description	dimensions	material	qty
17	metal bar/strip	3/4" wide, ~ 4.25" long	non-rusting metal	2

Step 7



part no.	description	dimensions	material	qty
17	metal bar	3/4" wide, ~ 4.25" long	non-rusting metal	2
18	nut	1/4" – 20	non-rusting metal	4
19	bolt	1/4" – 20, 3/4" long	non-rusting metal	4

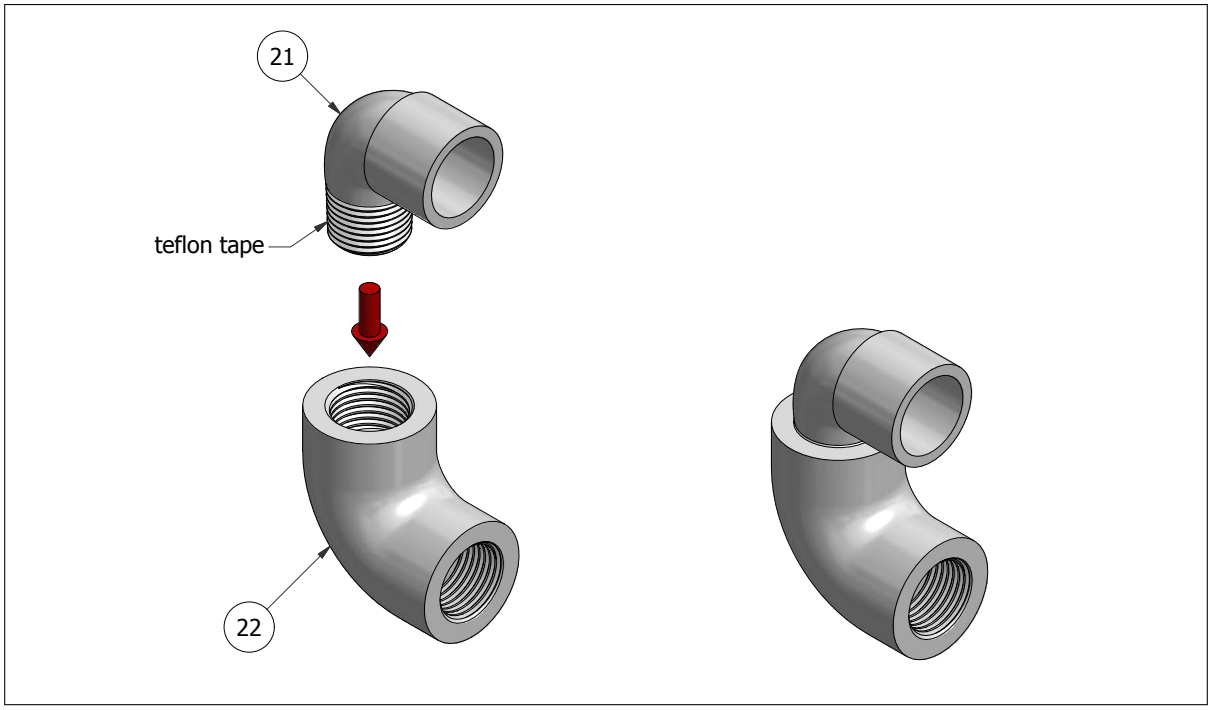
Step 8



- Apply teflon tape to threaded portion of barbed elbows.
- Insert barbed elbows into inlet and outlet of filter head.
- Orient inlet vertically and outlet horizontally, as shown.

part no.	description	dimensions	material	qty
20	barbed elbow	match male threading to filter head, barbed outlet for tube of 1/2" ID	PVC or nylon	2

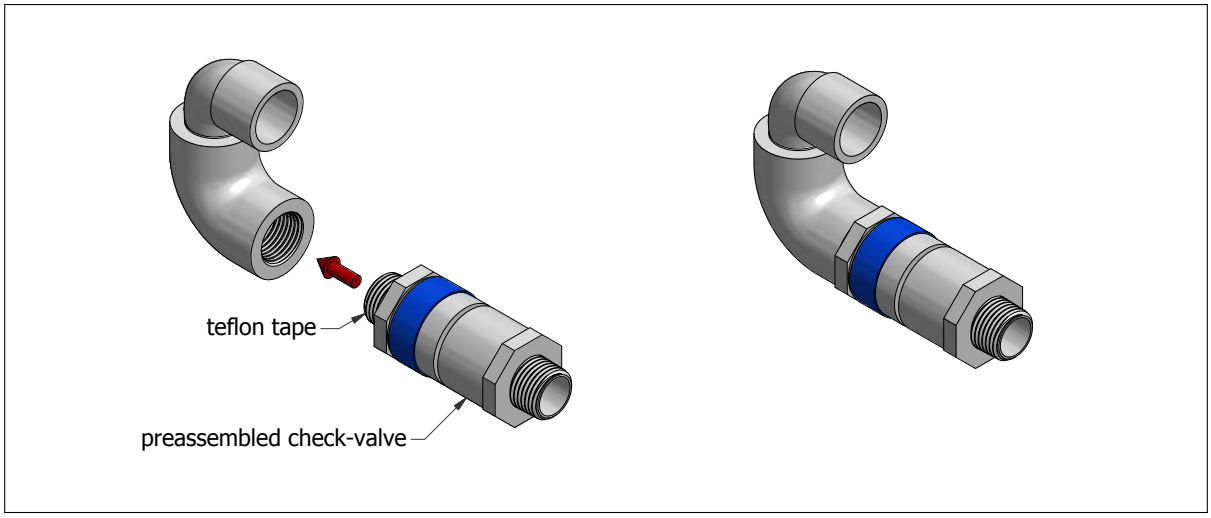
Step 9



- Apply teflon tape to threaded portion of threaded-unthreaded elblow.
- Insert tefloned end into fully threaded elbow, twisting until aligned as shown.

part no.	description	dimensions	material	qty
21	male-female elbow	1/2", threaded male to unthreaded female	PVC, sch. 40	1
22	female-female elbow	1/2", female-female threaded	PVC sch. 40	1

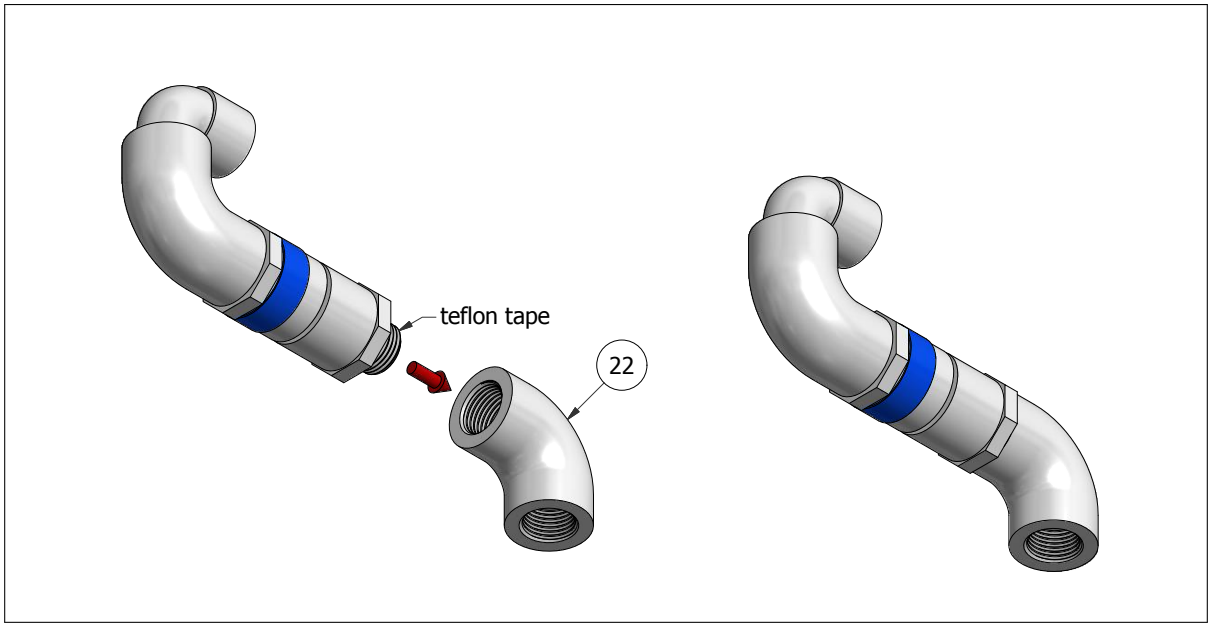
Step 10



- Apply teflon tape to outlet of 2nd check valve.
- Insert into other end of fully threaded elbow.

part no.	description	dimensions	material	qty
-	check valve	preassembled	-	1

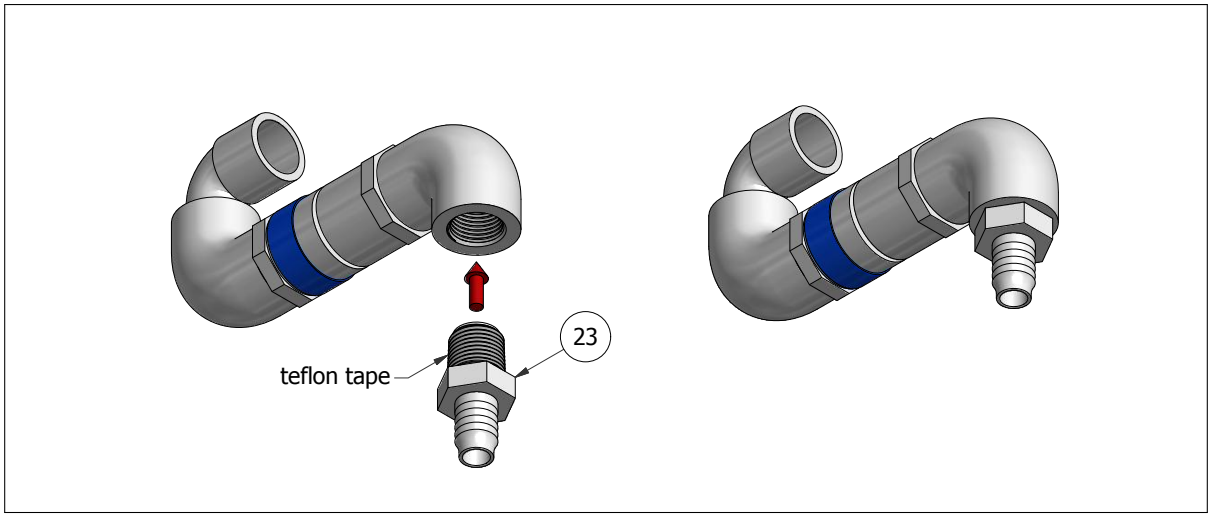
Step 11



- Apply teflon tape to inlet of check valve.
- Insert into fully threaded elbow, twisting until aligned as shown.

part no.	description	dimensions	material	qty
22	female-female elbow	1/2", female-female threaded	PVC sch. 40	1

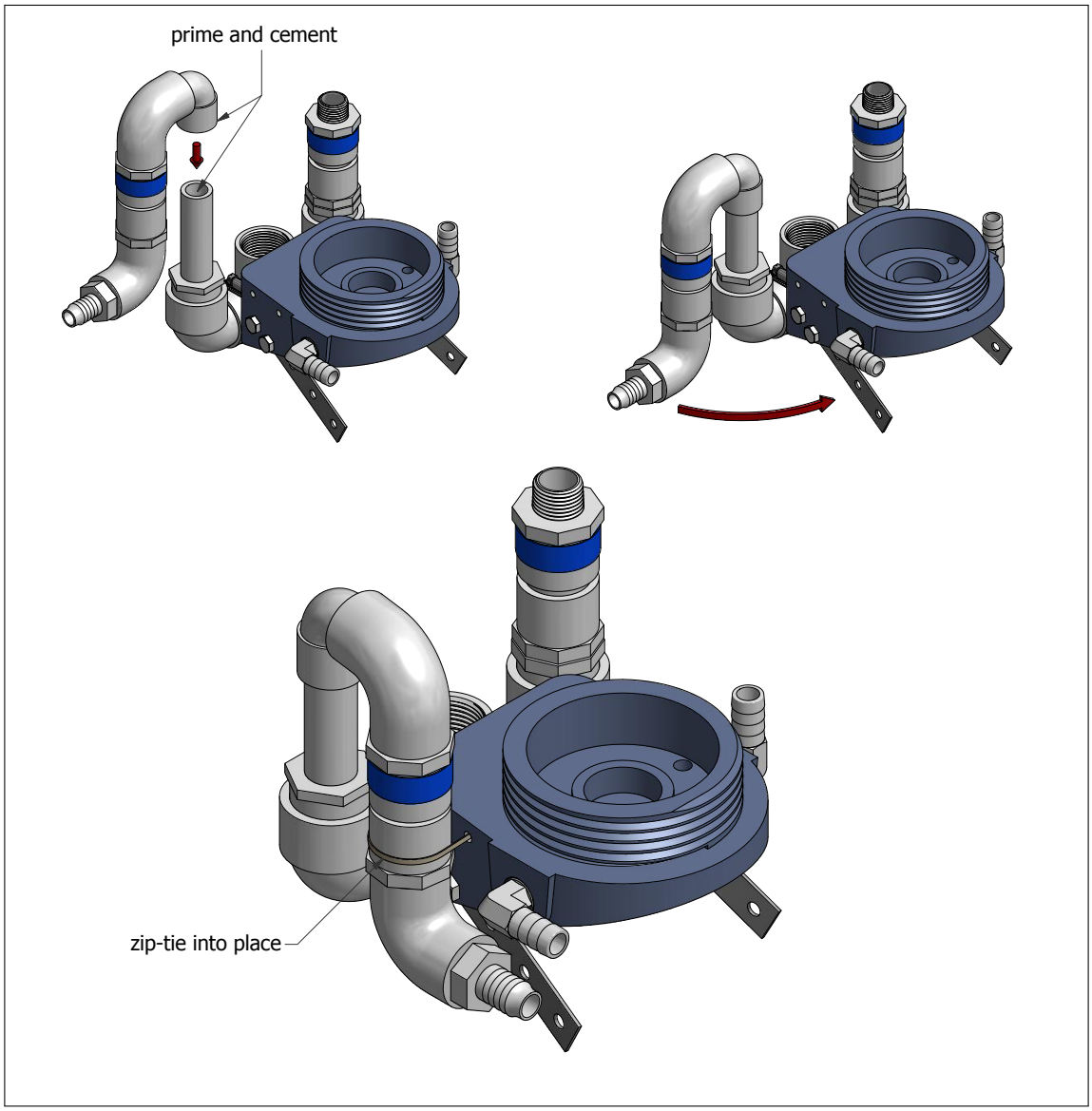
Step 12



- Apply teflon tape to threaded end of barbed fitting.
- Insert into exposed, threaded end of elbow.

part no.	description	dimensions	material	qty
23	barbed fitting	$^1/_2$” male threaded to barbed outlet for tube of $^1/_2$” ID	nylon	1

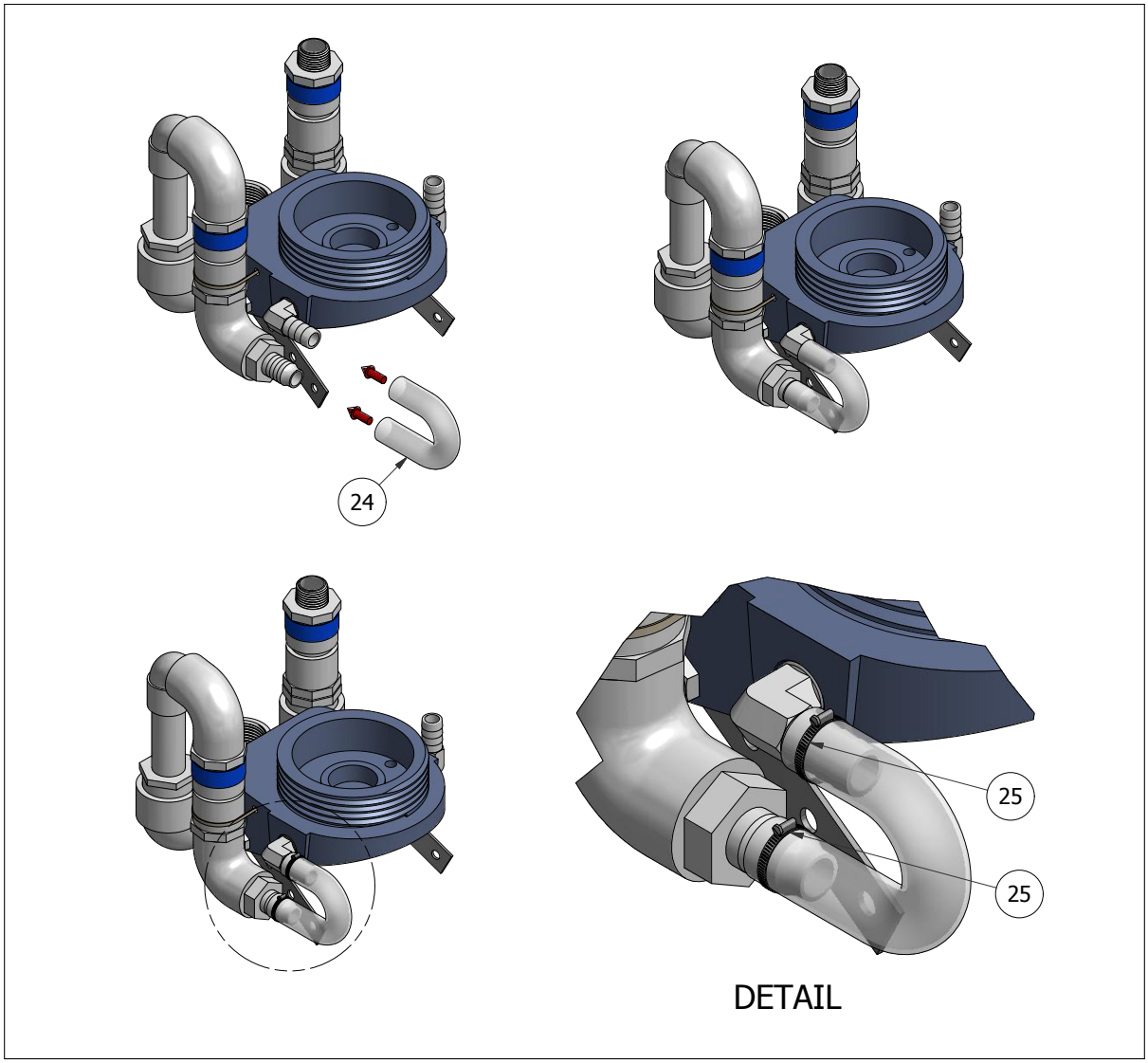
Step 13



- Apply primer to unthreaded, interior surface of elbow.
- Apply primer to exterior surface of vertical pipe.
- Apply cement to exterior surface of pipe.
- Insert vertical pipe into elbow at angle and twist until aligned as shown.
- Zip tie check valve into place.

part no.	description	dimensions	material	qty
-	zip tie	-	nylon	1

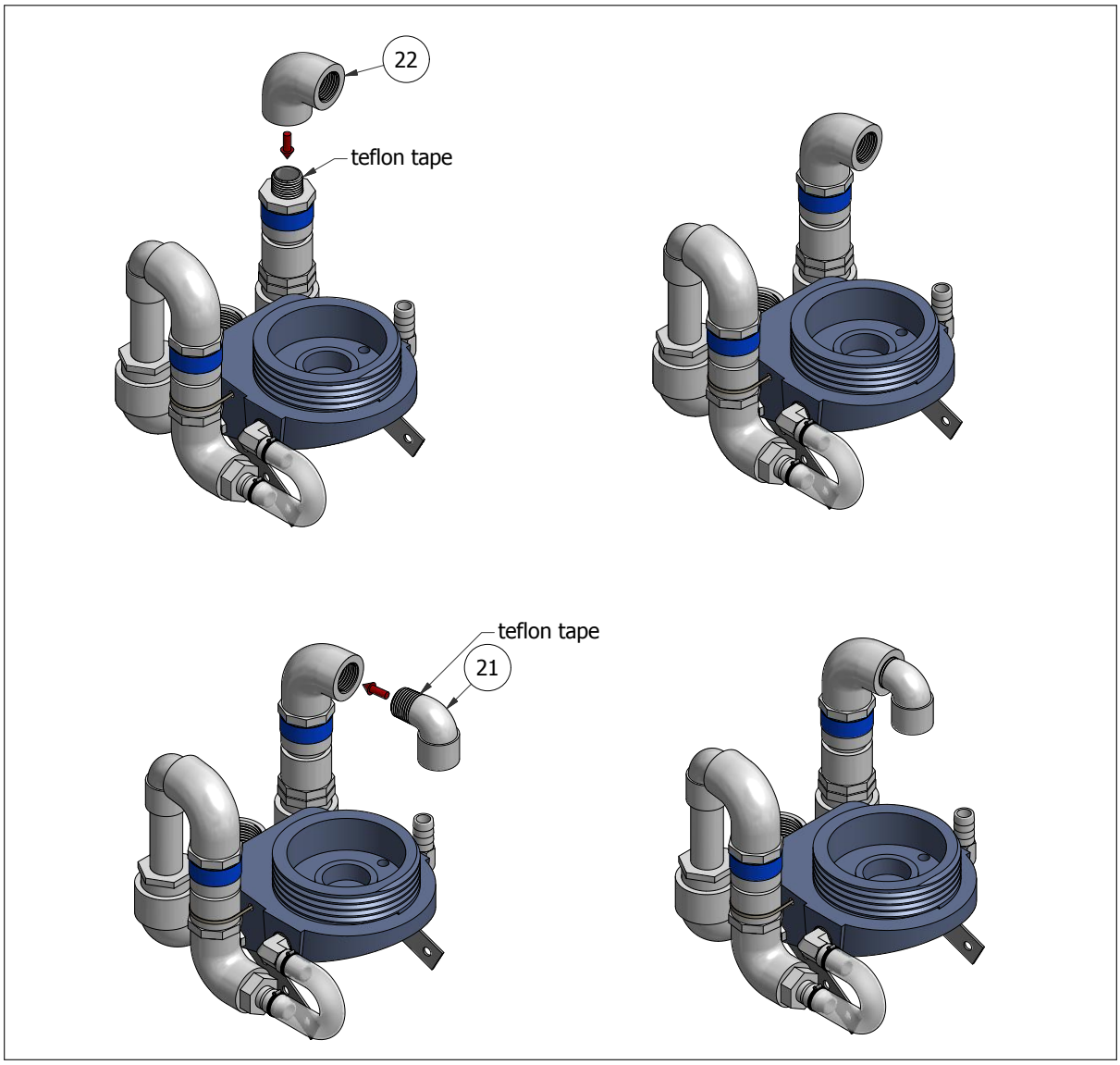
Step 14



- Cut approximately 5” of flexible tubing.
- Insert over head-outlet barbed fitting and check valve inlet, as shown.
- Be careful to avoid hose kinking.
- Hose-clamp tight both barbed fittings.

part no.	description	dimensions	material	qty
24	flexible tube	1/2” ID, ~ 5” long	polyvinyl	1
25	hose clamp	for ~ 3/4”⌀	non-rusting metal	2

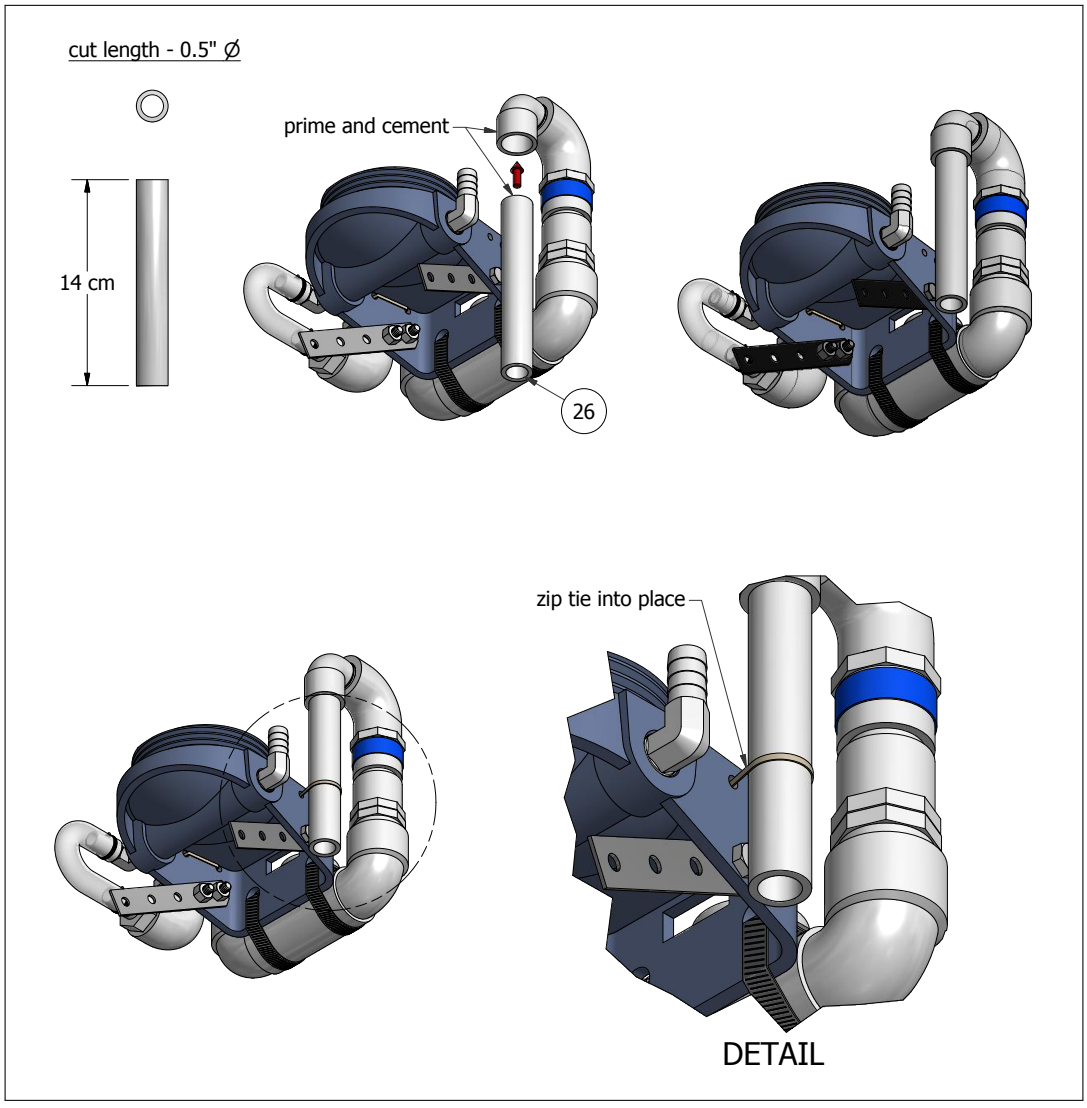
Step 15



- Apply teflon tape to check valve outlet.
- Attach fully threaded elbow until approximately aligned perpendicular to 1” tee.
- Apply teflon tape to threaded end of next elbow.
- Insert into fully threaded elbow, twisting until aligned downward, as shown.

part no.	description	dimensions	material	qty
21	male-female elbow	1/2”, threaded male to unthreaded female	PVC, sch. 40	1
22	female-female elbow	1/2”, female-female threaded	PVC, sch. 40	1

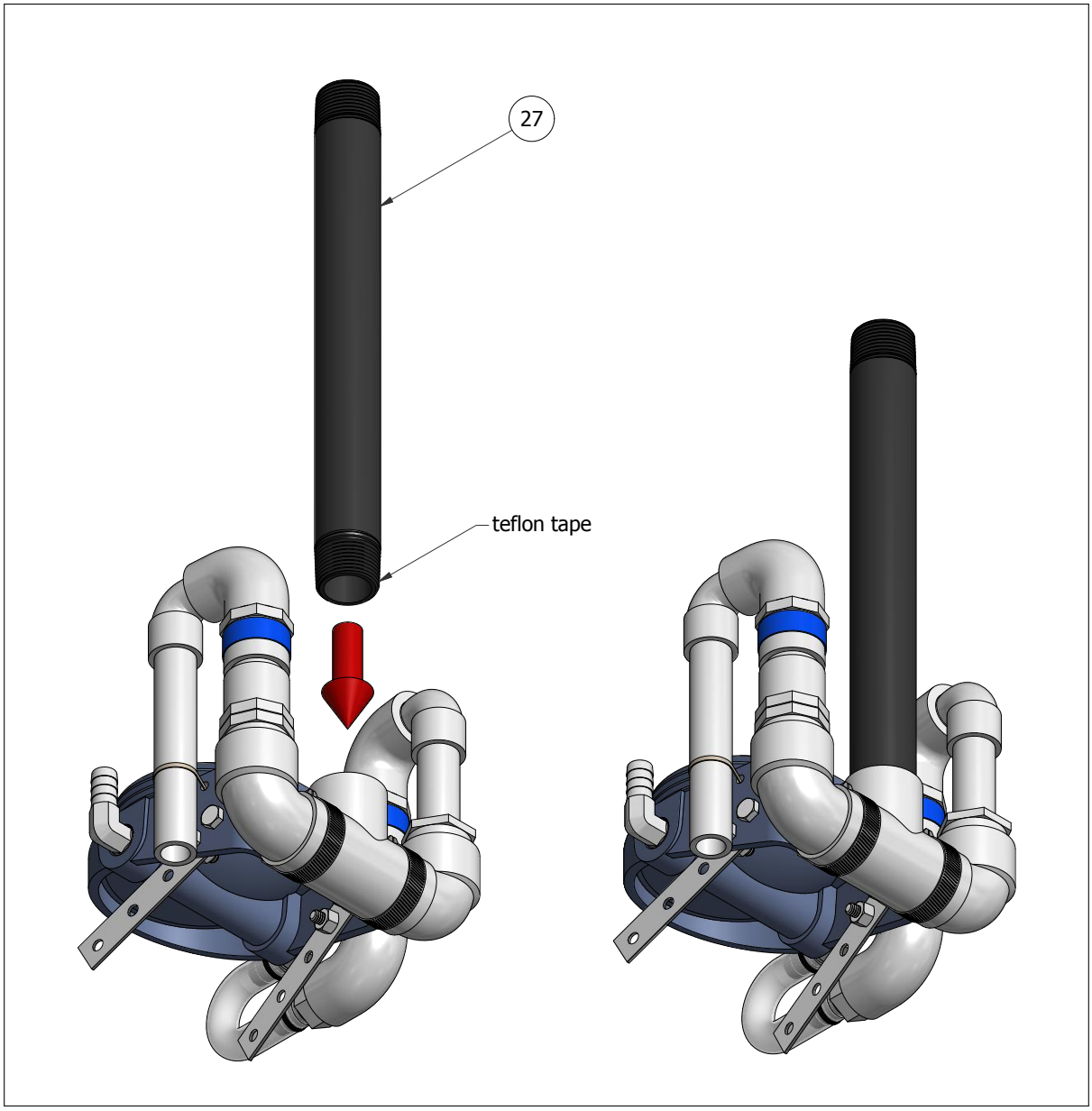
Step 16



- Cut pipe piece about 14cm long.
- Prime exterior surface of one end of pipe.
- Prime interior surface of downward-facing elbow.
- Cement exterior surface of pipe piece end.
- Insert pipe piece into elbow and twist 45°.
- Zip tie pipe piece into place.

part no.	description	dimensions	material	qty
26	pipe piece	1/2", 14cm long	PVC - sch. 40	1

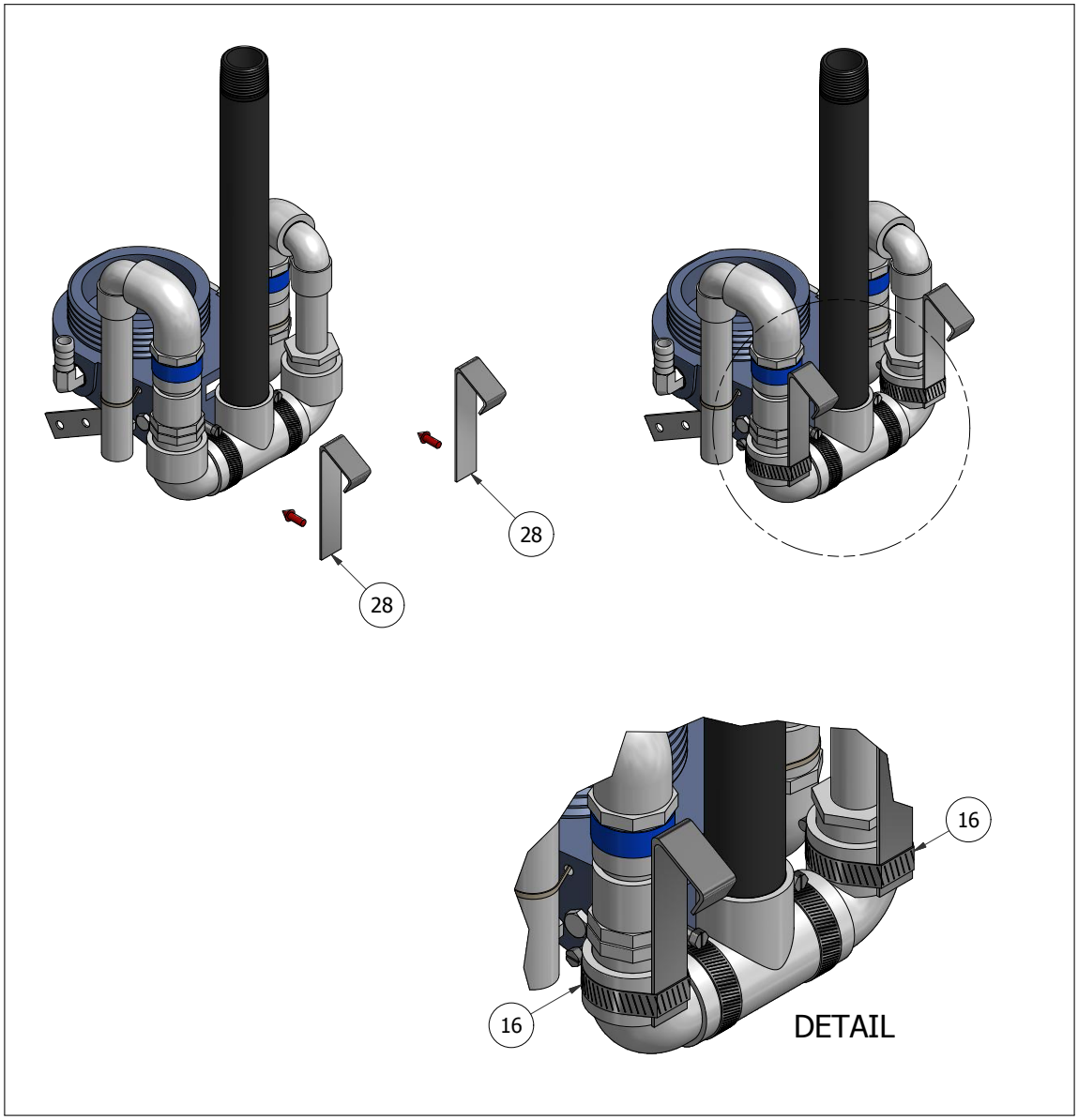
Step 17



- Apply teflon tape to one end of threaded nipple.
- Insert and twist until snug.

part no.	description	dimensions	material	qty
27	threaded nipple	1”⌀, 14cm long	PVC - sch. 80	1

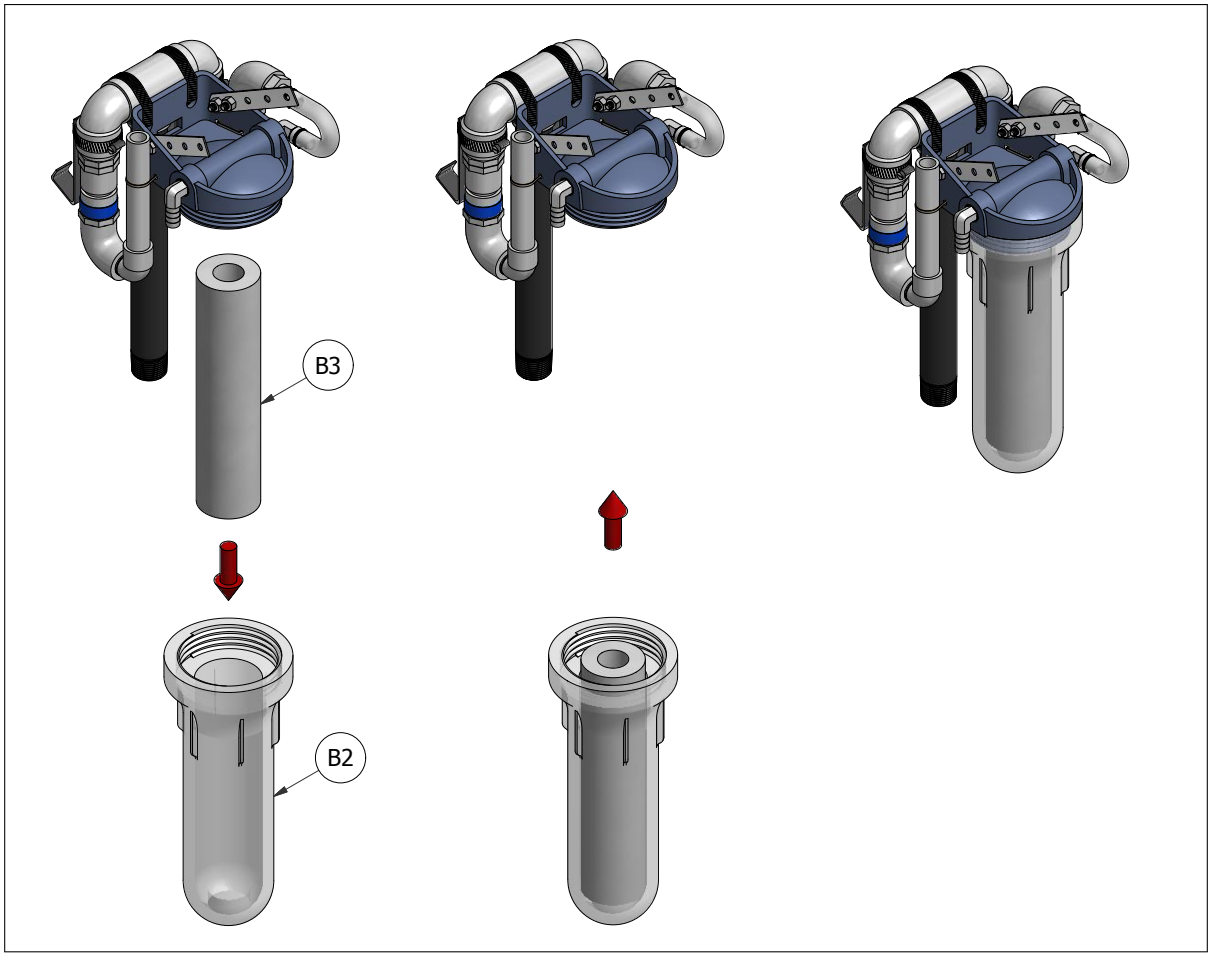
Step 18



- Bend clips according to container to be used.
- Attach clips as shown using hose clamps.

part no.	description	dimensions	material	qty
28	bent clip	bend to latch onto anticipated container, unbent length ~ 4.25”	non-rusting metal	2
16	hose clamp	for ~ $1^1/_2$”⌀	non-rusting metal	2

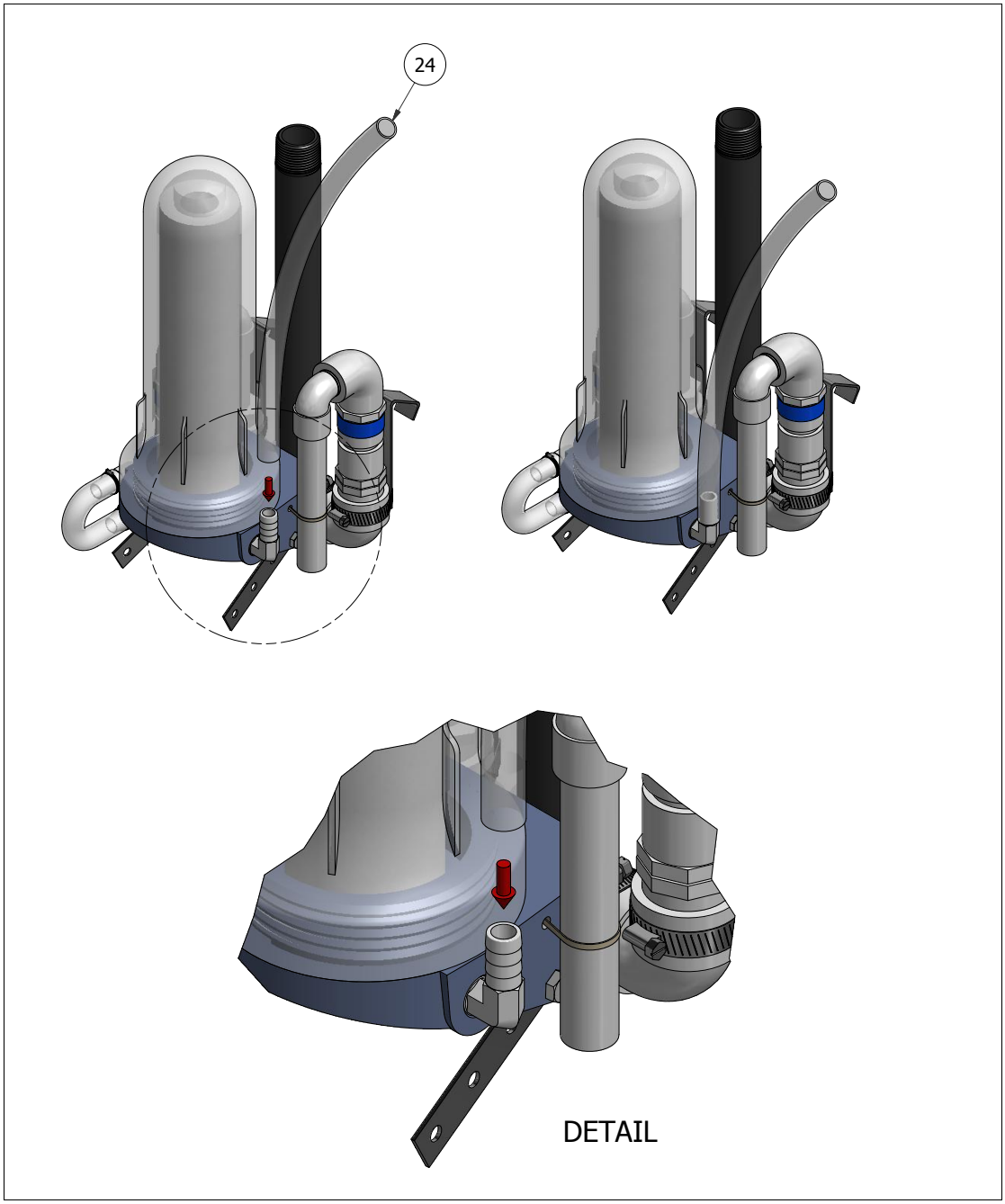
Step 19



- Turn assembly upside down.
- Attach cartridge and filter bowl as shown.

part no.	description	dimensions	material	qty
B2	filter bowl	premanufactured length	plastic	1
B3	filter cartridge	10” standard nominal length	-	1

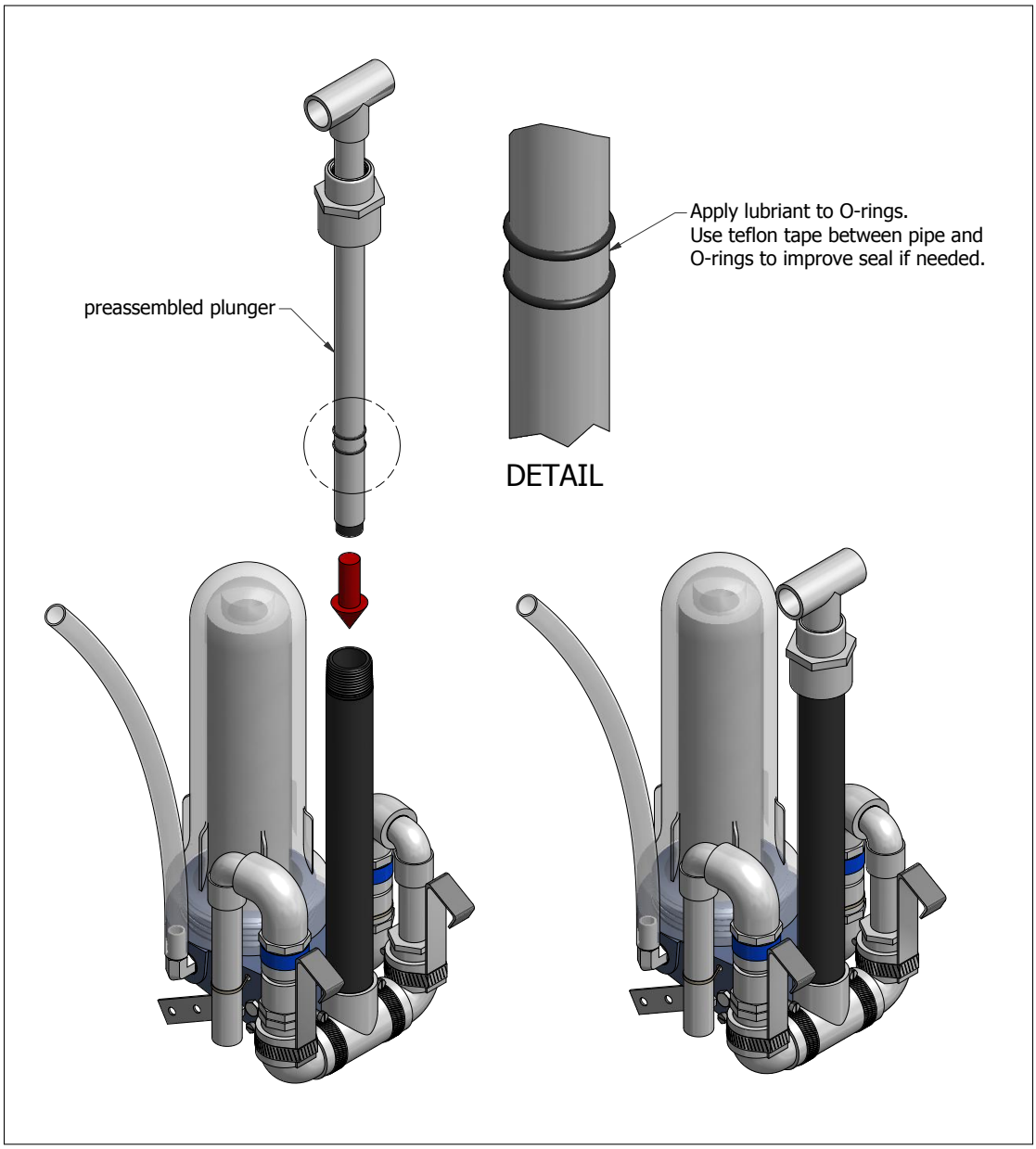
Step 20



- Cut flexible tube to desired length. (See demo view in section 7)
- No hose clamp necessary.

part no.	description	dimensions	material	qty
24	flexible tube	cut to desired length ~ 14” shown	polyvinyl	1

Step 21



- Apply food-grade lubricant for to plunger O-rings.
- Insert plunger assembly into threaded nipple.
- If seal not tight enough, pull off O-rings, apply layer of teflon tape to recesses, re-position O-rings, insert assembly, test seal and repeat until acceptable.

part no.	description	dimensions	material	qty
-	plunger assembly	preassembled	-	1

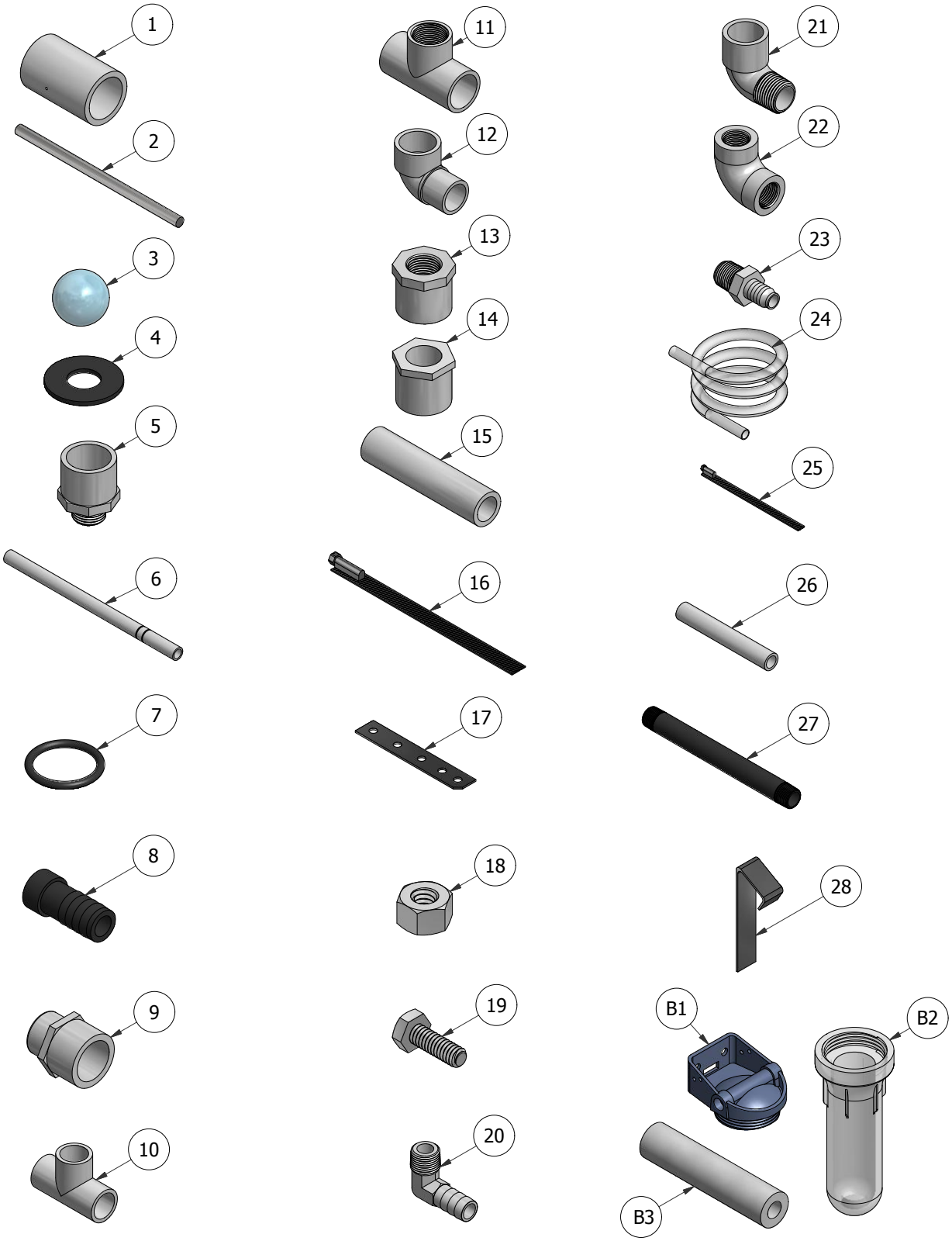
5 Complete Parts List

part no.	description	dimensions	material	qty
1	pipe piece	3/4", 4cm long	PVC - sch. 40	2
2	nail with head cut off	different gauges work, 0.125 cm ⌀ shown, 1" long	non-rusting metal	2
3	standard marble	1/2"⌀	glass	2
4	rubber washer	7/16" ID, 1" OD, 1/16" thickness	rubber	2
5	reducer	3/4" unthreaded female to 1/2" threaded male	PVC, sch. 40	4
6	pipe piece	1/2"⌀, 35 cm long	PVC - sch. 40	1
7	o-ring	#14 - 15/16" OD, 3/4" ID	PTFE	2
8	barbed plug	for ID of 1/2" sch. 40 pipe	PVC	1
9	adapter	1" unthreaded female to 3/4" threaded female	PVC - sch. 40	1
10	handle tee	1/2" all ends unthreaded	PVC - sch. 40	1
11	tee, female	1", 1 end threaded, 2 ends unthreaded	PVC - sch. 40	1
12	elbow, male to female	1", both ends unthreaded	PVC - sch. 40	2
13	bushing	1" unthreaded male to 1/2" threaded female	PVC - sch. 40	1
14	bushing	1" unthreaded male to 1/2" unthreaded female	PVC - sch. 40	1
15	pipe piece	1/2", ~ 9 cm long	PVC - sch. 40	1
16	hose clamp	for ~ 1 1/2"⌀	non-rusting metal	2
17	metal bar/strip	3/4" wide, ~ 4.25" long	non-rusting metal	2
18	nut	1/4" – 20	non-rusting metal	4
19	bolt	1/4" – 20, 3/4" long	non-rusting metal	4
20	barbed elbow	match male threading to filter head, barbed outlet for tube of 1/2" ID	PVC or nylon	2
21	male-female elbow	1/2", threaded male to unthreaded female	PVC, sch. 40	1
22	female-female elbow	1/2", female-female threaded	PVC sch. 40	1
23	barbed fitting	1/2" male threaded to barbed outlet for tube of 1/2" ID	nylon	1
24	flexible tube	1/2" ID, ~ 5" long	polyvinyl	1
25	hose clamp	for ~ 3/4"⌀	non-rusting metal	2
26	pipe piece	1/2", 14cm long	PVC - sch. 40	1
27	threaded nipple	1"⌀, 14cm long	PVC - sch. 80	1
28	bent clip	bend according to container, unbent length ~ 4.25"	non-rusting metal	2
B1	filter bowl head	manufactured	plastic	1
B2	filter bowl	premanufactured length	plastic	1
B3	filter cartridge	10" standard nominal length	-	1

Also needed:

- teflon tape
- PVC pipe primer (for potable systems)
- PVC pipe cement (for potable systems)
- lubricant/grease for punger O-rings (for potable systems)
- zip ties (at least 2 per device).

6 Parts View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7 Demo View