

# 3M™ Water Filtration Products

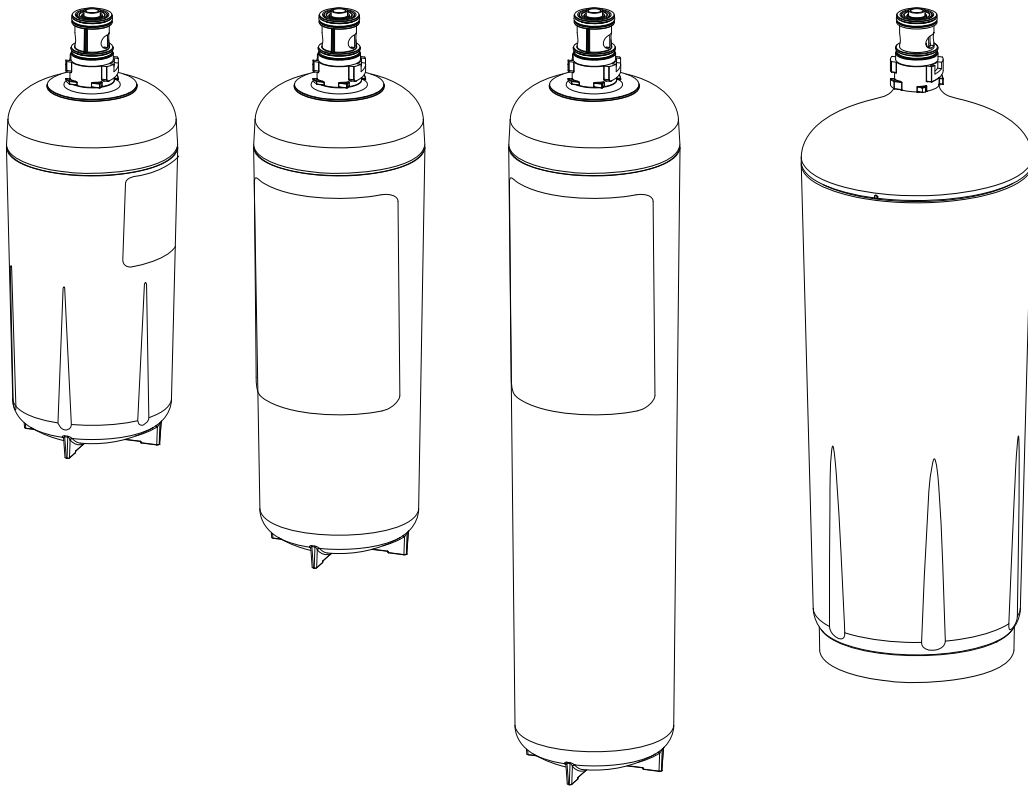
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## Cartridge Change-Out Instructions

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# *for* 3M™ ScaleGard™ Blend Series of Products

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For ALL 3M™ ScaleGard™ Blend (SGB) Series of Products

B145-CLS, B145H-CLS, B165-CLS, B165H-CLS, B195-CLS, B195H-CLS, B1175H-S,  
B1175-S, ES145-CLS, ES165-CLS

Note: Installer - Please leave with owner/operator



**WARNING:**

**Read entire manual: Failure to follow all guides and rules could cause personal injury or property damage.**

- Check with your local public works department for plumbing codes. You must follow their guidelines as you install the Water Filtration system.
- Your Water Filtration system will withstand up to 125 pounds per square inch (psi) (862 kPa; 8,62 bar) water pressure. (100 psi (689 kPa; 6,89 bar) for B1175H-S & B1175-S only). If your water supply pressure is higher than 80 psi (552 kPa; 5,52 bar), install a pressure reducing valve before installing the Water Filtration system.

**To reduce the risk associated with choking:**

- **Do not** allow children under 3 years of age to have access to small parts during the installation of this product.

**To reduce the risk associated with the ingestion of contaminants:**

- **Do not** use with water that is microbiologically unsafe or of unknown quality without adequate disinfection before or after the system.

**NOTICE:**

**To reduce the risk associated with property damage due to water leakage or flooding:**

- **Read and follow** Use Instructions before installation and use of this system.
- Change the disposable filter cartridge at the recommended interval; the disposable filter cartridge **MUST** be replaced every 12 months or sooner.
- Failure to replace the disposable filter cartridge at recommended intervals may lead to reduced filter performance and failure of the filter, causing property damage from water leakage or flooding.
- **Protect from freezing**, remove filter cartridge when temperatures are expected to drop below 40° F (4.4° C).
- **Do not** install systems in areas where ambient temperatures may go above 100° F (38° C).
- **Do not** install on hot water supply lines. The maximum operating water temperature of this system is 100°F (38°C).
- **Do not** install if water pressure exceeds 125 psi (862 kPa; 8,62 bar). (100 psi (689 kPa; 6,89 bar) for B1175H-S & B1175-S only). If your water pressure exceeds 80 psi (552 kPa; 5,52 bar), you must install a pressure limiting valve. Contact a plumbing professional if you are uncertain how to check your water pressure.

## CARTRIDGE CHANGE INSTRUCTIONS

### STEP 1

Turn cartridge slowly to the left, about 1/4 turn, until it stops (when arrows line up). At this position, both inlet and outlet ports are closed & water pressure has been relieved. Inlet water will automatically turn off.

### STEP 2

Pull used cartridge straight down & discard.

**Note:** There may be a small amount of residual water drainage after pressure is relieved and during cartridge removal.

### STEP 3

Remove sanitary cap from top of new cartridge. Moisten o-ring with water and push new cartridge into filter head. Turn cartridge 1/4 turn to the right until it stops. Top surface of cartridge will become flush with bottom of the head when fully engaged. The label should be facing forward.

### STEP 4

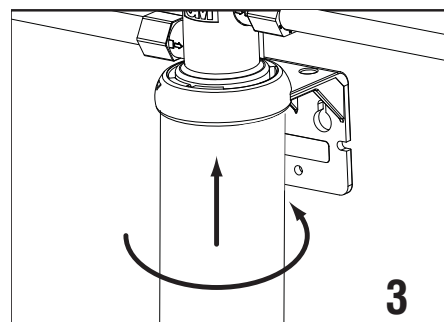
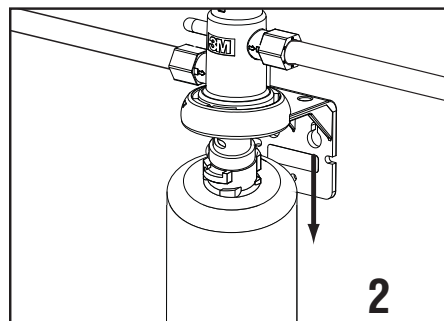
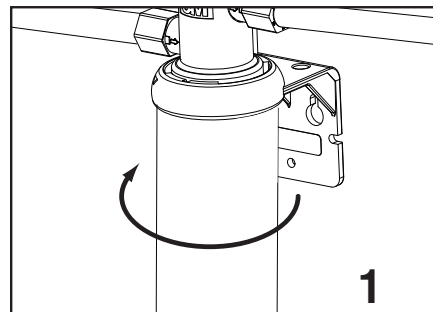
Inlet water will automatically turn on. Flush new filter cartridge in accordance with Performance Data Sheet expelling any trapped air and carbon fines. Water may run cloudy with air but will quickly clear. System is now ready for use.

### STEP 5

Complete water hardness test as per water hardness test kit instructions provided with new cartridge. The water sample used for completing the water hardness test should be taken upstream before the location of the new 3M™ ScaleGard™ Blend product. If your site is a new build, the water sample used for completing the water hardness test should be taken at a nearby existing site.

### STEP 6

Based on water hardness test results (Step 5), set blend setting in head as per the food service application tables (see pages 3 - 11).



## Cartridge Settings & Capacities

### Vending

Inlet Water Hardness					Vending Application [Capacity in Gallons (Litres)]								Bypass Setting
ppm (mg/L)	gpg	English Degree (Clarke or E)	German Degree (DH or KH)	French Degree (FH)	B145-CLS/ ES145-CLS	B165-CLS/ ES165-CLS	B195-CLS	B1175-S	B145H-CLS	B165H-CLS	B195H-CLS	B1175H-S	
100	6	7	6	10	1,234 (4,671)	1,745 (6,606)	2,909 (11,010)	4,882 (18,480)	1,728 (6,539)	2,443 (9,249)	4,072 (15,414)	6,835 (25,872)	6
120	7	8	7	12	1,028 (3,893)	1,454 (5,505)	2,424 (9,175)	4,069 (15,400)	1,440 (5,450)	2,036 (7,707)	3,394 (12,845)	5,696 (21,560)	6
140	8	10	8	14	787 (2,977)	1,112 (4,210)	1,854 (7,017)	3,057 (11,571)	1,101 (4,168)	1,557 (5,894)	2,596 (9,824)	4,280 (16,199)	5
160	9	11	9	16	596 (2,255)	842 (3,189)	1,404 (5,315)	2,229 (8,437)	834 (3,157)	1,179 (4,465)	1,966 (7,441)	3,120 (11,812)	4
180	11	13	10	18	530 (2,004)	749 (2,835)	1,248 (4,725)	1,981 (7,500)	741 (2,806)	1,048 (3,969)	1,747 (6,615)	2,774 (10,499)	4
200	12	14	11	20	408 (1,546)	578 (2,187)	963 (3,645)	1,528 (5,785)	572 (2,165)	809 (3,062)	1,348 (5,103)	2,140 (8,100)	3
220	13	15	12	22	371 (1,406)	525 (1,988)	875 (3,313)	1,389 (5,259)	520 (1,968)	735 (2,783)	1,225 (4,639)	1,945 (7,363)	3
240	14	17	13	24	340 (1,289)	481 (1,822)	802 (3,037)	1,274 (4,821)	477 (1,804)	674 (2,551)	1,123 (4,252)	1,783 (6,750)	3
260	15	18	15	26	275 (1,041)	389 (1,472)	648 (2,453)	1,029 (3,894)	385 (1,457)	544 (2,061)	907 (3,435)	1,440 (5,452)	2
280	16	20	16	28	255 (966)	361 (1,367)	602 (2,278)	955 (3,616)	357 (1,353)	505 (1,914)	842 (3,189)	1,337 (5,062)	2
300	18	21	17	30	238 (902)	337 (1,276)	562 (2,126)	892 (3,375)	334 (1,263)	472 (1,786)	786 (2,977)	1,248 (4,725)	2
320	19	22	18	32	223 (846)	316 (1,196)	527 (1,993)	836 (3,164)	313 (1,184)	442 (1,674)	737 (2,791)	1,170 (4,429)	2
340	20	24	19	34	210 (796)	297 (1,126)	496 (1,876)	787 (2,978)	294 (1,114)	416 (1,576)	694 (2,626)	1,101 (4,169)	2
360	21	25	20	36	199 (752)	281 (1,063)	468 (1,772)	743 (2,812)	278 (1,052)	393 (1,488)	655 (2,480)	1,040 (3,937)	2
380	22	27	21	38	188 (712)	266 (1,007)	443 (1,679)	704 (2,664)	263 (997)	372 (1,410)	621 (2,350)	985 (3,730)	2
400	23	28	22	40	159 (601)	225 (850)	374 (1,417)	594 (2,250)	222 (842)	315 (1,191)	524 (1,984)	832 (3,150)	1
440	26	31	25	44	144 (547)	204 (773)	340 (1,289)	540 (2,045)	202 (765)	286 (1,082)	477 (1,804)	756 (2,863)	1
480	28	34	27	48	132 (501)	187 (709)	312 (1,181)	495 (1,875)	185 (702)	262 (992)	437 (1,654)	693 (2,625)	1
520	30	36	29	52	122 (463)	173 (654)	288 (1,090)	457 (1,731)	171 (648)	242 (916)	403 (1,526)	640 (2,423)	1
560	33	39	31	56	113 (430)	160 (607)	267 (1,012)	425 (1,607)	159 (601)	225 (850)	374 (1,417)	594 (2,250)	1
600	35	42	34	60	106 (401)	150 (567)	250 (945)	396 (1,500)	148 (561)	210 (794)	349 (1,323)	555 (2,100)	1
640	37	45	36	64	99 (376)	140 (532)	234 (886)	371 (1,406)	139 (526)	197 (744)	328 (1,240)	520 (1,969)	1
680	40	48	38	68	93 (354)	132 (500)	220 (834)	350 (1,323)	131 (495)	185 (700)	308 (1,167)	489 (1,853)	1

The stated capacities are intended as guidelines. The capacities may vary according to dispensed volume and machine type.

## Cartridge Settings & Capacities

### Drip Coffee

Inlet Water Hardness					Drip Coffee Application [Capacity in Gallons (Litres)]								Bypass Setting
ppm (mg/L)	gpg	English Degree (Clarke or E)	German Degree (DH or KH)	French Degree (FH)	B145-CLS/ ES145-CLS	B165-CLS/ ES165-CLS	B195-CLS	B1175-S	B145H-CLS	B165H-CLS	B195H-CLS	B1175H-S	
100	6	7	6	10	1,234 (4,671)	1,745 (6,606)	2,909 (11,010)	4,882 (18,480)	1,728 (6,539)	2,443 (9,249)	4,072 (15,414)	6,835 (25,872)	6
120	7	8	7	12	1,028 (3,893)	1,454 (5,505)	2,424 (9,175)	4,069 (15,400)	1,440 (5,450)	2,036 (7,707)	3,394 (12,845)	5,696 (21,560)	6
140	8	10	8	14	787 (2,977)	1,112 (4,210)	1,854 (7,017)	3,057 (11,571)	1,101 (4,168)	1,557 (5,894)	2,596 (9,824)	4,280 (16,199)	5
160	9	11	9	16	596 (2,255)	842 (3,189)	1,404 (5,315)	2,229 (8,437)	834 (3,157)	1,179 (4,465)	1,966 (7,441)	3,120 (11,812)	4
180	11	13	10	18	530 (2,004)	749 (2,835)	1,248 (4,725)	1,981 (7,500)	741 (2,806)	1,048 (3,969)	1,747 (6,615)	2,774 (10,499)	4
200	12	14	11	20	408 (1,546)	578 (2,187)	963 (3,645)	1,528 (5,785)	572 (2,165)	809 (3,062)	1,348 (5,103)	2,140 (8,100)	3
220	13	15	12	22	371 (1,406)	525 (1,988)	875 (3,313)	1,389 (5,259)	520 (1,968)	735 (2,783)	1,225 (4,639)	1,945 (7,363)	3
240	14	17	13	24	340 (1,289)	481 (1,822)	802 (3,037)	1,274 (4,821)	477 (1,804)	674 (2,551)	1,123 (4,252)	1,783 (6,750)	3
260	15	18	15	26	275 (1,041)	389 (1,472)	648 (2,453)	1,029 (3,894)	385 (1,457)	544 (2,061)	907 (3,435)	1,440 (5,452)	2
280	16	20	16	28	255 (966)	361 (1,367)	602 (2,278)	955 (3,616)	357 (1,353)	505 (1,914)	842 (3,189)	1,337 (5,062)	2
300	18	21	17	30	238 (902)	337 (1,276)	562 (2,126)	892 (3,375)	334 (1,263)	472 (1,786)	786 (2,977)	1,248 (4,725)	2
320	19	22	18	32	223 (846)	316 (1,196)	527 (1,993)	836 (3,164)	313 (1,184)	442 (1,674)	737 (2,791)	1,170 (4,429)	2
340	20	24	19	34	210 (796)	297 (1,126)	496 (1,876)	787 (2,978)	294 (1,114)	416 (1,576)	694 (2,626)	1,101 (4,169)	2
360	21	25	20	36	199 (752)	281 (1,063)	468 (1,772)	743 (2,812)	278 (1,052)	393 (1,488)	655 (2,480)	1,040 (3,937)	2
380	22	27	21	38	188 (712)	266 (1,007)	443 (1,679)	704 (2,664)	263 (997)	372 (1,410)	621 (2,350)	985 (3,730)	2
400	23	28	22	40	159 (601)	225 (850)	374 (1,417)	594 (2,250)	222 (842)	315 (1,191)	524 (1,984)	832 (3,150)	1
440	26	31	25	44	144 (547)	204 (773)	340 (1,289)	540 (2,045)	202 (765)	286 (1,082)	477 (1,804)	756 (2,863)	1
480	28	34	27	48	132 (501)	187 (709)	312 (1,181)	495 (1,875)	185 (702)	262 (992)	437 (1,654)	693 (2,625)	1
520	30	36	29	52	122 (463)	173 (654)	288 (1,090)	457 (1,731)	171 (648)	242 (916)	403 (1,526)	640 (2,423)	1
560	33	39	31	56	113 (430)	160 (607)	267 (1,012)	425 (1,607)	159 (601)	225 (850)	374 (1,417)	594 (2,250)	1
600	35	42	34	60	106 (401)	150 (567)	250 (945)	396 (1,500)	148 (561)	210 (794)	349 (1,323)	555 (2,100)	1
640	37	45	36	64	99 (376)	140 (532)	234 (886)	371 (1,406)	139 (526)	197 (744)	328 (1,240)	520 (1,969)	1
680	40	48	38	68	93 (354)	132 (500)	220 (834)	350 (1,323)	131 (495)	185 (700)	308 (1,167)	489 (1,853)	1

The stated capacities are intended as guidelines. The capacities may vary according to dispensed volume and machine type.

## Cartridge Settings & Capacities

### Tea

Inlet Water Hardness					Tea Application [Capacity in Gallons (Litres)]								Bypass Setting
ppm (mg/L)	gpg	English Degree (Clarke or E)	German Degree (DH or KH)	French Degree (FH)	B145-CLS/ ES145-CLS	B165-CLS/ ES165-CLS	B195-CLS	B1175-S	B145H-CLS	B165H-CLS	B195H-CLS	B1175H-S	
100	6	7	6	10	1,234 (4,671)	1,745 (6,606)	2,909 (11,010)	4,882 (18,480)	1,728 (6,539)	2,443 (9,249)	4,072 (15,414)	6,835 (25,872)	6
120	7	8	7	12	1,028 (3,893)	1,454 (5,505)	2,424 (9,175)	4,069 (15,400)	1,440 (5,450)	2,036 (7,707)	3,394 (12,845)	5,696 (21,560)	6
140	8	10	8	14	787 (2,977)	1,112 (4,210)	1,854 (7,017)	3,057 (11,571)	1,101 (4,168)	1,557 (5,894)	2,596 (9,824)	4,280 (16,199)	5
160	9	11	9	16	596 (2,255)	842 (3,189)	1,404 (5,315)	2,229 (8,437)	834 (3,157)	1,179 (4,465)	1,966 (7,441)	3,120 (11,812)	4
180	11	13	10	18	530 (2,004)	749 (2,835)	1,248 (4,725)	1,981 (7,500)	741 (2,806)	1,048 (3,969)	1,747 (6,615)	2,774 (10,499)	4
200	12	14	11	20	408 (1,546)	578 (2,187)	963 (3,645)	1,528 (5,785)	572 (2,165)	809 (3,062)	1,348 (5,103)	2,140 (8,100)	3
220	13	15	12	22	371 (1,406)	525 (1,988)	875 (3,313)	1,389 (5,259)	520 (1,968)	735 (2,783)	1,225 (4,639)	1,945 (7,363)	3
240	14	17	13	24	340 (1,289)	481 (1,822)	802 (3,037)	1,274 (4,821)	477 (1,804)	674 (2,551)	1,123 (4,252)	1,783 (6,750)	3
260	15	18	15	26	275 (1,041)	389 (1,472)	648 (2,453)	1,029 (3,894)	385 (1,457)	544 (2,061)	907 (3,435)	1,440 (5,452)	2
280	16	20	16	28	255 (966)	361 (1,367)	602 (2,278)	955 (3,616)	357 (1,353)	505 (1,914)	842 (3,189)	1,337 (5,062)	2
300	18	21	17	30	238 (902)	337 (1,276)	562 (2,126)	892 (3,375)	334 (1,263)	472 (1,786)	786 (2,977)	1,248 (4,725)	2
320	19	22	18	32	223 (846)	316 (1,196)	527 (1,993)	836 (3,164)	313 (1,184)	442 (1,674)	737 (2,791)	1,170 (4,429)	2
340	20	24	19	34	210 (796)	297 (1,126)	496 (1,876)	787 (2,978)	294 (1,114)	416 (1,576)	694 (2,626)	1,101 (4,169)	2
360	21	25	20	36	199 (752)	281 (1,063)	468 (1,772)	743 (2,812)	278 (1,052)	393 (1,488)	655 (2,480)	1,040 (3,937)	2
380	22	27	21	38	188 (712)	266 (1,007)	443 (1,679)	704 (2,664)	263 (997)	372 (1,410)	621 (2,350)	985 (3,730)	2
400	23	28	22	40	159 (601)	225 (850)	374 (1,417)	594 (2,250)	222 (842)	315 (1,191)	524 (1,984)	832 (3,150)	1
440	26	31	25	44	144 (547)	204 (773)	340 (1,289)	540 (2,045)	202 (765)	286 (1,082)	477 (1,804)	756 (2,863)	1
480	28	34	27	48	132 (501)	187 (709)	312 (1,181)	495 (1,875)	185 (702)	262 (992)	437 (1,654)	693 (2,625)	1
520	30	36	29	52	122 (463)	173 (654)	288 (1,090)	457 (1,731)	171 (648)	242 (916)	403 (1,526)	640 (2,423)	1
560	33	39	31	56	113 (430)	160 (607)	267 (1,012)	425 (1,607)	159 (601)	225 (850)	374 (1,417)	594 (2,250)	1
600	35	42	34	60	106 (401)	150 (567)	250 (945)	396 (1,500)	148 (561)	210 (794)	349 (1,323)	555 (2,100)	1
640	37	45	36	64	99 (376)	140 (532)	234 (886)	371 (1,406)	139 (526)	197 (744)	328 (1,240)	520 (1,969)	1
680	40	48	38	68	93 (354)	132 (500)	220 (834)	350 (1,323)	131 (495)	185 (700)	308 (1,167)	489 (1,853)	1

The stated capacities are intended as guidelines. The capacities may vary according to dispensed volume and machine type.

## Cartridge Settings & Capacities

### Espresso

Inlet Water Hardness					Espresso Application [Capacity in Gallons (Litres)]								Bypass Setting
ppm (mg/L)	gpg	English Degree (Clarke or E)	German Degree (DH or KH)	French Degree (FH)	B145-CLS/ ES145-CLS	B165-CLS/ ES165-CLS	B195-CLS	B1175-S	B145H-CLS	B165H-CLS	B195H-CLS	B1175H-S	
100	6	7	6	10	1,234 (4,671)	1,745 (6,606)	2,909 (11,010)	4,882 (18,480)	1,728 (6,539)	2,443 (9,249)	4,072 (15,414)	6,835 (25,872)	6
120	7	8	7	12	918 (3,473)	1,298 (4,912)	2,163 (8,187)	3,567 (13,499)	1,285 (4,862)	1,817 (6,877)	3,028 (11,461)	4,993 (18,899)	5
140	8	10	8	14	681 (2,577)	963 (3,645)	1,605 (6,075)	2,547 (9,642)	953 (3,608)	1,348 (5,103)	2,247 (8,504)	3,566 (13,499)	4
160	9	11	9	16	596 (2,255)	842 (3,189)	1,404 (5,315)	2,229 (8,437)	834 (3,157)	1,179 (4,465)	1,966 (7,441)	3,120 (11,812)	4
180	11	13	10	18	454 (1,718)	642 (2,430)	1,070 (4,050)	1,698 (6,428)	635 (2,405)	899 (3,402)	1,498 (5,670)	2,377 (9,000)	3
200	12	14	11	20	408 (1,546)	578 (2,187)	963 (3,645)	1,528 (5,785)	572 (2,165)	809 (3,062)	1,348 (5,103)	2,140 (8,100)	3
220	13	15	12	22	325 (1,230)	460 (1,740)	766 (2,899)	1,216 (4,602)	455 (1,722)	643 (2,435)	1,072 (4,059)	1,702 (6,443)	2
240	14	17	13	24	298 (1,127)	421 (1,595)	702 (2,658)	1,114 (4,219)	417 (1,578)	590 (2,232)	983 (3,721)	1,560 (5,906)	2
260	15	18	15	26	275 (1,041)	389 (1,472)	648 (2,453)	1,029 (3,894)	385 (1,457)	544 (2,061)	907 (3,435)	1,440 (5,452)	2
280	16	20	16	28	255 (966)	361 (1,367)	602 (2,278)	955 (3,616)	357 (1,353)	505 (1,914)	842 (3,189)	1,337 (5,062)	2
300	18	21	17	30	238 (902)	337 (1,276)	562 (2,126)	892 (3,375)	334 (1,263)	472 (1,786)	786 (2,977)	1,248 (4,725)	2
320	19	22	18	32	223 (846)	316 (1,196)	527 (1,993)	836 (3,164)	313 (1,184)	442 (1,674)	737 (2,791)	1,170 (4,429)	2
340	20	24	19	34	187 (707)	264 (1,001)	441 (1,668)	699 (2,647)	262 (990)	370 (1,401)	617 (2,335)	979 (3,706)	1
360	21	25	20	36	177 (668)	250 (945)	416 (1,575)	660 (2,500)	247 (935)	349 (1,323)	582 (2,205)	925 (3,500)	1
380	22	27	21	38	167 (633)	236 (895)	394 (1,492)	626 (2,368)	234 (886)	331 (1,253)	552 (2,089)	876 (3,316)	1
400	23	28	22	40	159 (601)	225 (850)	374 (1,417)	594 (2,250)	222 (842)	315 (1,191)	524 (1,984)	832 (3,150)	1
440	26	31	25	44	144 (547)	204 (773)	340 (1,289)	540 (2,045)	202 (765)	286 (1,082)	477 (1,804)	756 (2,863)	1
480	28	34	27	48	132 (501)	187 (709)	312 (1,181)	495 (1,875)	185 (702)	262 (992)	437 (1,654)	693 (2,625)	1
520	30	36	29	52	122 (463)	173 (654)	288 (1,090)	457 (1,731)	171 (648)	242 (916)	403 (1,526)	640 (2,423)	1
560	33	39	31	56	113 (430)	160 (607)	267 (1,012)	425 (1,607)	159 (601)	225 (850)	374 (1,417)	594 (2,250)	1
600	35	42	34	60	106 (401)	150 (567)	250 (945)	396 (1,500)	148 (561)	210 (794)	349 (1,323)	555 (2,100)	1
640	37	45	36	64	89 (338)	126 (478)	211 (797)	334 (1,266)	125 (474)	177 (670)	295 (1,116)	468 (1,772)	0
680	40	48	38	68	84 (318)	119 (450)	198 (750)	315 (1,191)	118 (446)	167 (630)	278 (1,051)	441 (1,668)	0

The stated capacities are intended as guidelines. The capacities may vary according to dispensed volume and machine type.

## Cartridge Settings & Capacities

### Boiler Combi-Oven

Inlet Water Hardness					Boiler Combi-Oven Application [Capacity in Gallons (Litres)]								Bypass Setting
ppm (mg/L)	gpg	English Degree (Clarke or E)	German Degree (DH or KH)	French Degree (FH)	B145-CLS/ ES145-CLS	B165-CLS/ ES165-CLS	B195-CLS	B1175-S	B145H-CLS	B165H-CLS	B195H-CLS	B1175H-S	
100	6	7	6	10	817 (3,093)	1,155 (4,374)	1,926 (7,290)	3,057 (11,571)	1,144 (4,330)	1,618 (6,123)	2,696 (10,205)	4,279 (16,199)	3
120	7	8	7	12	681 (2,577)	963 (3,645)	1,605 (6,075)	2,547 (9,642)	953 (3,608)	1,348 (5,103)	2,247 (8,504)	3,566 (13,499)	3
140	8	10	8	14	511 (1,933)	722 (2,734)	1,204 (4,556)	1,910 (7,232)	715 (2,706)	1,011 (3,827)	1,685 (6,378)	2,675 (10,125)	2
160	9	11	9	16	447 (1,691)	632 (2,392)	1,053 (3,986)	1,672 (6,328)	625 (2,368)	885 (3,349)	1,474 (5,581)	2,340 (8,859)	2
180	11	13	10	18	397 (1,503)	562 (2,126)	936 (3,544)	1,486 (5,625)	556 (2,105)	786 (2,977)	1,311 (4,961)	2,080 (7,875)	2
200	12	14	11	20	318 (1,203)	449 (1,701)	749 (2,835)	1,189 (4,500)	445 (1,684)	629 (2,381)	1,048 (3,969)	1,664 (6,300)	1
220	13	15	12	22	289 (1,093)	408 (1,546)	681 (2,577)	1,081 (4,091)	404 (1,531)	572 (2,165)	953 (3,608)	1,513 (5,727)	1
240	14	17	13	24	265 (1,002)	374 (1,417)	624 (2,362)	991 (3,750)	371 (1,403)	524 (1,984)	874 (3,307)	1,387 (5,250)	1
260	15	18	15	26	244 (925)	346 (1,308)	576 (2,181)	914 (3,461)	342 (1,295)	484 (1,832)	806 (3,053)	1,280 (4,846)	1
280	16	20	16	28	227 (859)	321 (1,215)	535 (2,025)	849 (3,214)	318 (1,203)	449 (1,701)	749 (2,835)	1,189 (4,500)	1
300	18	21	17	30	212 (802)	300 (1,134)	499 (1,890)	792 (3,000)	297 (1,122)	419 (1,588)	699 (2,646)	1,109 (4,200)	1
320	19	22	18	32	199 (752)	281 (1,063)	468 (1,772)	743 (2,812)	278 (1,052)	393 (1,488)	655 (2,480)	1,040 (3,937)	1
340	20	24	19	34	187 (707)	264 (1,001)	441 (1,668)	699 (2,647)	262 (990)	370 (1,401)	617 (2,335)	979 (3,706)	1
360	21	25	20	36	177 (668)	250 (945)	416 (1,575)	660 (2,500)	247 (935)	349 (1,323)	582 (2,205)	925 (3,500)	1
380	22	27	21	38	150 (570)	213 (806)	355 (1,343)	563 (2,131)	211 (798)	298 (1,128)	497 (1,880)	788 (2,984)	0
400	23	28	22	40	143 (541)	202 (765)	337 (1,276)	535 (2,025)	200 (758)	283 (1,072)	472 (1,786)	749 (2,835)	0
440	26	31	25	44	130 (492)	184 (696)	306 (1,160)	486 (1,841)	182 (689)	257 (974)	429 (1,624)	681 (2,577)	0
480	28	34	27	48	119 (451)	168 (638)	281 (1,063)	446 (1,687)	167 (631)	236 (893)	393 (1,488)	624 (2,362)	0
520	30	36	29	52	110 (416)	156 (589)	259 (981)	411 (1,558)	154 (583)	218 (824)	363 (1,374)	576 (2,181)	0
560	33	39	31	56	102 (387)	144 (547)	241 (911)	382 (1,446)	143 (541)	202 (765)	337 (1,276)	535 (2,025)	0
600	35	42	34	60	95 (361)	135 (510)	225 (850)	357 (1,350)	133 (505)	189 (714)	315 (1,191)	499 (1,890)	0
640	37	45	36	64	89 (338)	126 (478)	211 (797)	334 (1,266)	125 (474)	177 (670)	295 (1,116)	468 (1,772)	0
680	40	48	38	68	84 (318)	119 (450)	198 (750)	315 (1,191)	118 (446)	167 (630)	278 (1,051)	441 (1,668)	0

The stated capacities are intended as guidelines. The capacities may vary according to dispensed volume and machine type.

## Cartridge Settings & Capacities

### Boiler Steamer

Inlet Water Hardness					Boiler Steamer Application [Capacity in Gallons (Litres)]								Bypass Setting
ppm (mg/L)	gpg	English Degree (Clarke or E)	German Degree (DH or KH)	French Degree (FH)	B145-CLS/ ES145-CLS	B165-CLS/ ES165-CLS	B195-CLS	B1175-S	B145H-CLS	B165H-CLS	B195H-CLS	B1175H-S	
100	6	7	6	10	817 (3,093)	1,155 (4,374)	1,926 (7,290)	3,057 (11,571)	1,144 (4,330)	1,618 (6,123)	2,696 (10,205)	4,279 (16,199)	3
120	7	8	7	12	681 (2,577)	963 (3,645)	1,605 (6,075)	2,547 (9,642)	953 (3,608)	1,348 (5,103)	2,247 (8,504)	3,566 (13,499)	3
140	8	10	8	14	511 (1,933)	722 (2,734)	1,204 (4,556)	1,910 (7,232)	715 (2,706)	1,011 (3,827)	1,685 (6,378)	2,675 (10,125)	2
160	9	11	9	16	447 (1,691)	632 (2,392)	1,053 (3,986)	1,672 (6,328)	625 (2,368)	885 (3,349)	1,474 (5,581)	2,340 (8,859)	2
180	11	13	10	18	397 (1,503)	562 (2,126)	936 (3,544)	1,486 (5,625)	556 (2,105)	786 (2,977)	1,311 (4,961)	2,080 (7,875)	2
200	12	14	11	20	318 (1,203)	449 (1,701)	749 (2,835)	1,189 (4,500)	445 (1,684)	629 (2,381)	1,048 (3,969)	1,664 (6,300)	1
220	13	15	12	22	289 (1,093)	408 (1,546)	681 (2,577)	1,081 (4,091)	404 (1,531)	572 (2,165)	953 (3,608)	1,513 (5,727)	1
240	14	17	13	24	265 (1,002)	374 (1,417)	624 (2,362)	991 (3,750)	371 (1,403)	524 (1,984)	874 (3,307)	1,387 (5,250)	1
260	15	18	15	26	244 (925)	346 (1,308)	576 (2,181)	914 (3,461)	342 (1,295)	484 (1,832)	806 (3,053)	1,280 (4,846)	1
280	16	20	16	28	227 (859)	321 (1,215)	535 (2,025)	849 (3,214)	318 (1,203)	449 (1,701)	749 (2,835)	1,189 (4,500)	1
300	18	21	17	30	212 (802)	300 (1,134)	499 (1,890)	792 (3,000)	297 (1,122)	419 (1,588)	699 (2,646)	1,109 (4,200)	1
320	19	22	18	32	199 (752)	281 (1,063)	468 (1,772)	743 (2,812)	278 (1,052)	393 (1,488)	655 (2,480)	1,040 (3,937)	1
340	20	24	19	34	187 (707)	264 (1,001)	441 (1,668)	699 (2,647)	262 (990)	370 (1,401)	617 (2,335)	979 (3,706)	1
360	21	25	20	36	177 (668)	250 (945)	416 (1,575)	660 (2,500)	247 (935)	349 (1,323)	582 (2,205)	925 (3,500)	1
380	22	27	21	38	150 (570)	213 (806)	355 (1,343)	563 (2,131)	211 (798)	298 (1,128)	497 (1,880)	788 (2,984)	0
400	23	28	22	40	143 (541)	202 (765)	337 (1,276)	535 (2,025)	200 (758)	283 (1,072)	472 (1,786)	749 (2,835)	0
440	26	31	25	44	130 (492)	184 (696)	306 (1,160)	486 (1,841)	182 (689)	257 (974)	429 (1,624)	681 (2,577)	0
480	28	34	27	48	119 (451)	168 (638)	281 (1,063)	446 (1,687)	167 (631)	236 (893)	393 (1,488)	624 (2,362)	0
520	30	36	29	52	110 (416)	156 (589)	259 (981)	411 (1,558)	154 (583)	218 (824)	363 (1,374)	576 (2,181)	0
560	33	39	31	56	102 (387)	144 (547)	241 (911)	382 (1,446)	143 (541)	202 (765)	337 (1,276)	535 (2,025)	0
600	35	42	34	60	95 (361)	135 (510)	225 (850)	357 (1,350)	133 (505)	189 (714)	315 (1,191)	499 (1,890)	0
640	37	45	36	64	89 (338)	126 (478)	211 (797)	334 (1,266)	125 (474)	177 (670)	295 (1,116)	468 (1,772)	0
680	40	48	38	68	84 (318)	119 (450)	198 (750)	315 (1,191)	118 (446)	167 (630)	278 (1,051)	441 (1,668)	0

The stated capacities are intended as guidelines. The capacities may vary according to dispensed volume and machine type.



## Cartridge Settings & Capacities

### Boilerless Combi-Oven

Inlet Water Hardness					Boilerless Combi-Oven Application [Capacity in Gallons (Litres)]								Bypass Setting
ppm (mg/L)	gpg	English Degree (Clarke or E)	German Degree (DH or KH)	French Degree (FH)	B145-CLS/ ES145-CLS	B165-CLS/ ES165-CLS	B195-CLS	B1175-S	B145H-CLS	B165H-CLS	B195H-CLS	B1175H-S	
100	6	7	6	10	572 (2,165)	809 (3,062)	1,348 (5,103)	2,140 (8,100)	801 (3,031)	1,132 (4,286)	1,887 (7,144)	2,996 (11,339)	0
120	7	8	7	12	477 (1,804)	674 (2,551)	1,123 (4,252)	1,783 (6,750)	667 (2,526)	944 (3,572)	1,573 (5,953)	2,496 (9,450)	0
140	8	10	8	14	408 (1,546)	578 (2,187)	963 (3,645)	1,528 (5,785)	572 (2,165)	809 (3,062)	1,348 (5,103)	2,140 (8,100)	0
160	9	11	9	16	357 (1,353)	505 (1,914)	842 (3,189)	1,337 (5,062)	500 (1,894)	708 (2,679)	1,179 (4,465)	1,872 (7,087)	0
180	11	13	10	18	318 (1,203)	449 (1,701)	749 (2,835)	1,189 (4,500)	445 (1,684)	629 (2,381)	1,048 (3,969)	1,664 (6,300)	0
200	12	14	11	20	286 (1,082)	404 (1,531)	674 (2,551)	1,070 (4,050)	400 (1,515)	566 (2,143)	944 (3,572)	1,498 (5,670)	0
220	13	15	12	22	260 (984)	368 (1,392)	613 (2,319)	973 (3,682)	364 (1,378)	515 (1,948)	858 (3,247)	1,362 (5,154)	0
240	14	17	13	24	238 (902)	337 (1,276)	562 (2,126)	892 (3,375)	334 (1,263)	472 (1,786)	786 (2,977)	1,248 (4,725)	0
260	15	18	15	26	220 (833)	311 (1,178)	518 (1,963)	823 (3,115)	308 (1,166)	436 (1,649)	726 (2,748)	1,152 (4,361)	0
280	16	20	16	28	204 (773)	289 (1,093)	481 (1,822)	764 (2,893)	286 (1,082)	404 (1,531)	674 (2,551)	1,070 (4,050)	0
300	18	21	17	30	191 (722)	270 (1,021)	449 (1,701)	713 (2,700)	267 (1,010)	377 (1,429)	629 (2,381)	999 (3,780)	0
320	19	22	18	32	179 (676)	253 (957)	421 (1,595)	669 (2,531)	250 (947)	354 (1,339)	590 (2,232)	936 (3,544)	0
340	20	24	19	34	168 (637)	238 (900)	396 (1,501)	629 (2,382)	235 (891)	333 (1,261)	555 (2,101)	881 (3,335)	0
360	21	25	20	36	159 (601)	225 (850)	374 (1,417)	594 (2,250)	222 (842)	315 (1,191)	524 (1,984)	832 (3,150)	0
380	22	27	21	38	150 (570)	213 (806)	355 (1,343)	563 (2,131)	211 (798)	298 (1,128)	497 (1,880)	788 (2,984)	0
400	23	28	22	40	143 (541)	202 (765)	337 (1,276)	535 (2,025)	200 (758)	283 (1,072)	472 (1,786)	749 (2,835)	0
440	26	31	25	44	130 (492)	184 (696)	306 (1,160)	486 (1,841)	182 (689)	257 (974)	429 (1,624)	681 (2,577)	0
480	28	34	27	48	119 (451)	168 (638)	281 (1,063)	446 (1,687)	167 (631)	236 (893)	393 (1,488)	624 (2,362)	0
520	30	36	29	52	110 (416)	156 (589)	259 (981)	411 (1,558)	154 (583)	218 (824)	363 (1,374)	576 (2,181)	0
560	33	39	31	56	102 (387)	144 (547)	241 (911)	382 (1,446)	143 (541)	202 (765)	337 (1,276)	535 (2,025)	0
600	35	42	34	60	95 (361)	135 (510)	225 (850)	357 (1,350)	133 (505)	189 (714)	315 (1,191)	499 (1,890)	0
640	37	45	36	64	89 (338)	126 (478)	211 (797)	334 (1,266)	125 (474)	177 (670)	295 (1,116)	468 (1,772)	0
680	40	48	38	68	84 (318)	119 (450)	198 (750)	315 (1,191)	118 (446)	167 (630)	278 (1,051)	441 (1,668)	0

The stated capacities are intended as guidelines. The capacities may vary according to dispensed volume and machine type.

## Cartridge Settings & Capacities

### Boilerless Steamer

Inlet Water Hardness					Boilerless Steamer Application [Capacity in Gallons (Litres)]								Bypass Setting
ppm (mg/L)	gpg	English Degree (Clarke or E)	German Degree (DH or KH)	French Degree (FH)	B145-CLS/ ES145-CLS	B165-CLS/ ES165-CLS	B195-CLS	B1175-S	B145H-CLS	B165H-CLS	B195H-CLS	B1175H-S	
100	6	7	6	10	572 (2,165)	809 (3,062)	1,348 (5,103)	2,140 (8,100)	801 (3,031)	1,132 (4,286)	1,887 (7,144)	2,996 (11,339)	0
120	7	8	7	12	477 (1,804)	674 (2,551)	1,123 (4,252)	1,783 (6,750)	667 (2,526)	944 (3,572)	1,573 (5,953)	2,496 (9,450)	0
140	8	10	8	14	408 (1,546)	578 (2,187)	963 (3,645)	1,528 (5,785)	572 (2,165)	809 (3,062)	1,348 (5,103)	2,140 (8,100)	0
160	9	11	9	16	357 (1,353)	505 (1,914)	842 (3,189)	1,337 (5,062)	500 (1,894)	708 (2,679)	1,179 (4,465)	1,872 (7,087)	0
180	11	13	10	18	318 (1,203)	449 (1,701)	749 (2,835)	1,189 (4,500)	445 (1,684)	629 (2,381)	1,048 (3,969)	1,664 (6,300)	0
200	12	14	11	20	286 (1,082)	404 (1,531)	674 (2,551)	1,070 (4,050)	400 (1,515)	566 (2,143)	944 (3,572)	1,498 (5,670)	0
220	13	15	12	22	260 (984)	368 (1,392)	613 (2,319)	973 (3,682)	364 (1,378)	515 (1,948)	858 (3,247)	1,362 (5,154)	0
240	14	17	13	24	238 (902)	337 (1,276)	562 (2,126)	892 (3,375)	334 (1,263)	472 (1,786)	786 (2,977)	1,248 (4,725)	0
260	15	18	15	26	220 (833)	311 (1,178)	518 (1,963)	823 (3,115)	308 (1,166)	436 (1,649)	726 (2,748)	1,152 (4,361)	0
280	16	20	16	28	204 (773)	289 (1,093)	481 (1,822)	764 (2,893)	286 (1,082)	404 (1,531)	674 (2,551)	1,070 (4,050)	0
300	18	21	17	30	191 (722)	270 (1,021)	449 (1,701)	713 (2,700)	267 (1,010)	377 (1,429)	629 (2,381)	999 (3,780)	0
320	19	22	18	32	179 (676)	253 (957)	421 (1,595)	669 (2,531)	250 (947)	354 (1,339)	590 (2,232)	936 (3,544)	0
340	20	24	19	34	168 (637)	238 (900)	396 (1,501)	629 (2,382)	235 (891)	333 (1,261)	555 (2,101)	881 (3,335)	0
360	21	25	20	36	159 (601)	225 (850)	374 (1,417)	594 (2,250)	222 (842)	315 (1,191)	524 (1,984)	832 (3,150)	0
380	22	27	21	38	150 (570)	213 (806)	355 (1,343)	563 (2,131)	211 (798)	298 (1,128)	497 (1,880)	788 (2,984)	0
400	23	28	22	40	143 (541)	202 (765)	337 (1,276)	535 (2,025)	200 (758)	283 (1,072)	472 (1,786)	749 (2,835)	0
440	26	31	25	44	130 (492)	184 (696)	306 (1,160)	486 (1,841)	182 (689)	257 (974)	429 (1,624)	681 (2,577)	0
480	28	34	27	48	119 (451)	168 (638)	281 (1,063)	446 (1,687)	167 (631)	236 (893)	393 (1,488)	624 (2,362)	0
520	30	36	29	52	110 (416)	156 (589)	259 (981)	411 (1,558)	154 (583)	218 (824)	363 (1,374)	576 (2,181)	0
560	33	39	31	56	102 (387)	144 (547)	241 (911)	382 (1,446)	143 (541)	202 (765)	337 (1,276)	535 (2,025)	0
600	35	42	34	60	95 (361)	135 (510)	225 (850)	357 (1,350)	133 (505)	189 (714)	315 (1,191)	499 (1,890)	0
640	37	45	36	64	89 (338)	126 (478)	211 (797)	334 (1,266)	125 (474)	177 (670)	295 (1,116)	468 (1,772)	0
680	40	48	38	68	84 (318)	119 (450)	198 (750)	315 (1,191)	118 (446)	167 (630)	278 (1,051)	441 (1,668)	0

The stated capacities are intended as guidelines. The capacities may vary according to dispensed volume and machine type.

## Cartridge Settings & Capacities

### Warewashing

Inlet Water Hardness					Warewashing Application [Capacity in Gallons (Litres)]								Bypass Setting
ppm (mg/L)	gpg	English Degree (Clarke or E)	German Degree (DH or KH)	French Degree (FH)	B145-CLS/ ES145-CLS	B165-CLS/ ES165-CLS	B195-CLS	B1175-S	B145H-CLS	B165H-CLS	B195H-CLS	B1175H-S	
100	6	7	6	10	572 (2,165)	809 (3,062)	1,348 (5,103)	2,140 (8,100)	801 (3,031)	1,132 (4,286)	1,887 (7,144)	2,996 (11,339)	0
120	7	8	7	12	477 (1,804)	674 (2,551)	1,123 (4,252)	1,783 (6,750)	667 (2,526)	944 (3,572)	1,573 (5,953)	2,496 (9,450)	0
140	8	10	8	14	408 (1,546)	578 (2,187)	963 (3,645)	1,528 (5,785)	572 (2,165)	809 (3,062)	1,348 (5,103)	2,140 (8,100)	0
160	9	11	9	16	357 (1,353)	505 (1,914)	842 (3,189)	1,337 (5,062)	500 (1,894)	708 (2,679)	1,179 (4,465)	1,872 (7,087)	0
180	11	13	10	18	318 (1,203)	449 (1,701)	749 (2,835)	1,189 (4,500)	445 (1,684)	629 (2,381)	1,048 (3,969)	1,664 (6,300)	0
200	12	14	11	20	286 (1,082)	404 (1,531)	674 (2,551)	1,070 (4,050)	400 (1,515)	566 (2,143)	944 (3,572)	1,498 (5,670)	0
220	13	15	12	22	260 (984)	368 (1,392)	613 (2,319)	973 (3,682)	364 (1,378)	515 (1,948)	858 (3,247)	1,362 (5,154)	0
240	14	17	13	24	238 (902)	337 (1,276)	562 (2,126)	892 (3,375)	334 (1,263)	472 (1,786)	786 (2,977)	1,248 (4,725)	0
260	15	18	15	26	220 (833)	311 (1,178)	518 (1,963)	823 (3,115)	308 (1,166)	436 (1,649)	726 (2,748)	1,152 (4,361)	0
280	16	20	16	28	204 (773)	289 (1,093)	481 (1,822)	764 (2,893)	286 (1,082)	404 (1,531)	674 (2,551)	1,070 (4,050)	0
300	18	21	17	30	191 (722)	270 (1,021)	449 (1,701)	713 (2,700)	267 (1,010)	377 (1,429)	629 (2,381)	999 (3,780)	0
320	19	22	18	32	179 (676)	253 (957)	421 (1,595)	669 (2,531)	250 (947)	354 (1,339)	590 (2,232)	936 (3,544)	0
340	20	24	19	34	168 (637)	238 (900)	396 (1,501)	629 (2,382)	235 (891)	333 (1,261)	555 (2,101)	881 (3,335)	0
360	21	25	20	36	159 (601)	225 (850)	374 (1,417)	594 (2,250)	222 (842)	315 (1,191)	524 (1,984)	832 (3,150)	0
380	22	27	21	38	150 (570)	213 (806)	355 (1,343)	563 (2,131)	211 (798)	298 (1,128)	497 (1,880)	788 (2,984)	0
400	23	28	22	40	143 (541)	202 (765)	337 (1,276)	535 (2,025)	200 (758)	283 (1,072)	472 (1,786)	749 (2,835)	0
440	26	31	25	44	130 (492)	184 (696)	306 (1,160)	486 (1,841)	182 (689)	257 (974)	429 (1,624)	681 (2,577)	0
480	28	34	27	48	119 (451)	168 (638)	281 (1,063)	446 (1,687)	167 (631)	236 (893)	393 (1,488)	624 (2,362)	0
520	30	36	29	52	110 (416)	156 (589)	259 (981)	411 (1,558)	154 (583)	218 (824)	363 (1,374)	576 (2,181)	0
560	33	39	31	56	102 (387)	144 (547)	241 (911)	382 (1,446)	143 (541)	202 (765)	337 (1,276)	535 (2,025)	0
600	35	42	34	60	95 (361)	135 (510)	225 (850)	357 (1,350)	133 (505)	189 (714)	315 (1,191)	499 (1,890)	0
640	37	45	36	64	89 (338)	126 (478)	211 (797)	334 (1,266)	125 (474)	177 (670)	295 (1,116)	468 (1,772)	0
680	40	48	38	68	84 (318)	119 (450)	198 (750)	315 (1,191)	118 (446)	167 (630)	278 (1,051)	441 (1,668)	0

The stated capacities are intended as guidelines. The capacities may vary according to dispensed volume and machine type.

**Product Use:**

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

**Warranty, Limited Remedy, and Disclaimer:**

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