



58GP, DP Accessory Gas Conversion Kit

Installation Instructions (Propane-to-Natural)

Part No. 58GP-900---14101

NOTE: Read the entire instructions before starting the installation. There are additional parts shipped in the kit. When the installation is complete, discard the unused parts.

INTRODUCTION

→ This instruction covers the installation of gas conversion kit Part No. 58GP-900---14101 in a Model 58GP Upflow or Model 58DP Downflow Natural-Draft Furnace with the Honeywell VR800A, or VR8200H Gas Valve. The kit is designed to convert propane, match-lit, 100 percent shut-off gas controls to natural, match-lit, 100 percent shut-off gas controls in furnaces with 50,000- through 175,000-Btuh nominal capacity.

NOTE: The definition of 100 percent shutoff refers to automatic shut-off of the main burner and pilot gas when the ignition source is not proven.

▲ WARNING

This conversion kit is to be installed by a Carrier factory-authorized dealer, distributor, or other qualified agency in accordance with the manufacturer's instructions and all codes and requirements of the authority having jurisdiction. A failure to follow instructions could result in serious injury or property damage. The qualified agency performing this work assumes responsibility for this conversion.

In Canada, the conversion shall be carried out in accordance with the requirements of the provincial authorities having jurisdiction and in accordance with the requirements of the Natural Gas and Propane Gas Installation Codes CAN/CGA B149.1 and .2-M86.

▲ CAUTION

Follow these instructions where they differ from the instructions packaged with the springs.

▲ WARNING

Improper installation, adjustment, alteration, service, maintenance, or use can cause carbon monoxide poisoning, explosion, fire, electrical shock, or other conditions which may cause personal injury or property damage. Consult a qualified installer, service agency, local gas supplier, or your distributor or branch for information or assistance. The qualified installer or agency must use only factory-authorized kits or accessories when modifying this product.

This kit contains the following items:

Table 1—Kit Contents

DESCRIPTION	PART NO.	QTY
Natural Regulator Spring Kit for Honeywell VR800A Gas Valve (Tapered-Silver, 14 Turns)	304986-104	1
Natural Regulator Spring Kit for Honeywell VR8200H Gas Valve (Tapered-Silver, 8 Turns)	EF39ZW001	1
Main Burner Orifice No. 42	LH32DB207	7
Pilot Orifice (Silver 9/16-in. Long, 0.016-in. Orifice Diameter Marked N) for Robertshaw 2CH Pilot	69921-1	1
Gas Control Conversion Label	310148-302	1
Conversion Responsibility Label	310167-342	1
Conversion Rating Plate	310168-322	1
Installation Instructions	58DP,GP-5SI	1

INSTALLATION OF PILOT ORIFICES

1. Turn OFF gas and electric supplies to furnace.
2. Remove control compartment access door.
3. Disconnect pilot gas tube and thermocouple from gas valve.
(See Fig. 1.)

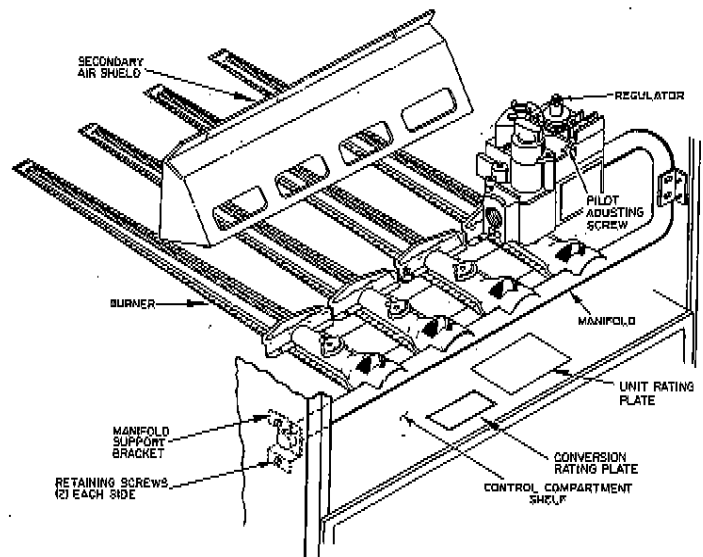


Fig. 1—Gas Controls

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4. Remove pilot mounting screw. Remove pilot assembly from burner and furnace.
5. Using backup wrench, remove gas supply tube from pilot.
6. Remove and discard propane gas pilot orifice (red, 9/16-in. long, 0.010-in. diameter orifice marked LP) from gas supply opening of pilot. (See Fig. 2.)

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

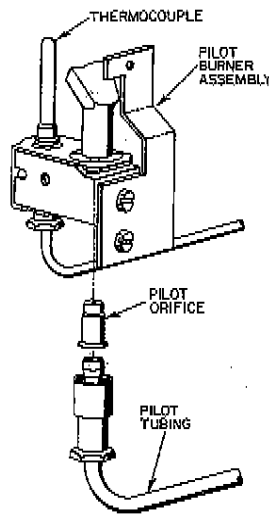


Fig. 2—Robertshaw Pilot

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7. Install new natural pilot orifice (silver, 9/16-in. long, 0.016-in. diameter orifice marked N) provided in kit.
8. Reinstall pilot gas supply tube on pilot. When tightening pilot tube, use backup wrench and turn pilot so that it will be on the same angle as before. Do not reinstall pilot at this time.

INSTALLATION OF MAIN BURNER ORIFICES

1. Remove secondary air shield.
2. Remove main burners from manifold.
3. Remove and discard No. 54 (or field-installed per local application) orifices from manifold.
4. Install No. 42 main burner orifices provided in kit. Fingertighten orifices at least one full turn so as not to cross-thread, then tighten with wrench. There are enough orifices in each kit for the largest furnace. Discard extra orifices. Orifices of other sizes must be field supplied.

See Table 3 for correct orifice size up to 2000 ft based on local gas conditions.

In the U.S.A., the input rating for altitudes above 2000 ft must be reduced by 4 for each 1000 ft above sea level.

Consult the current edition of the National Fuel Gas Code, NFPA No. 54/ANSI Z223.1-1988, Part 8.1 and Appendix F Table F-4, for input adjustment for high altitude.

In Canada, high altitude adjustments must be made in accordance with CAN/CGA B149.1- and .2-M86 Installation Codes. The Canadian ratings are for altitudes up to 2000 ft for natural and propane gases. High altitude ratings are from 2000 ft to 4500 ft above sea level. Derate the furnace input 10 percent for high altitudes.

5. Reinstall main burners on manifold. See Fig. 3 for proper orientation of burners and pilot.
6. Reinstall pilot assembly.
7. Reconnect pilot supply tube and thermocouple to gas valve.
8. Reinstall secondary air shield.

→ CONVERSION OF GAS VALVE AND INLET GAS PRESSURE CHECK

1. Remove regulator seal cap. See Fig. 4 for Honeywell VR800A, or Fig. 5 for Honeywell VR8200H Gas Valve.

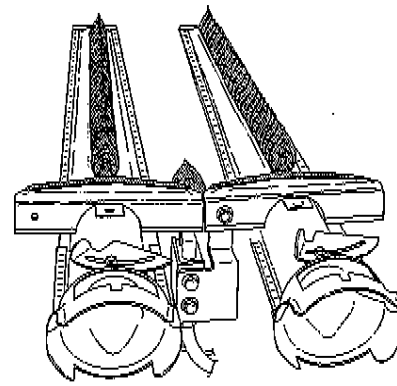


Fig. 3—Pilot/Burner Relationship

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2. Remove adjustment screw and propane gas regulator spring.
3. Install proper natural-gas regulator spring (tapered silver, 14 turns for VR800A, 8 turns for VR8200H) provided in kit. (See Table 1.) For Honeywell gas valves only, insert small end of spring into valve first.
4. Replace regulator adjustment screw. Do not reinstall regulator seal cap at this time.
5. Remove 1/8-in. pipe plug from inlet pressure tap on gas valve.
6. Check inlet natural gas pressure.

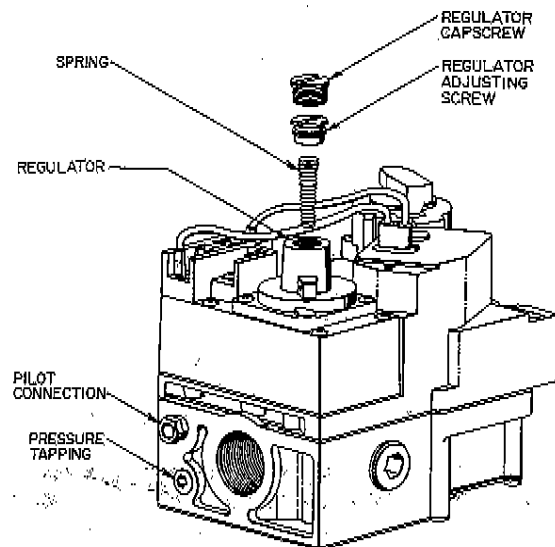


Fig. 4—Honeywell Model VR800A Gas Valve

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NOTE: This kit is to be used only when inlet gas pressure is between 4.5- and 13.6-in. wc.

- a. Attach manometer at inlet pressure tap on gas supply side of furnace gas valve.

⚠ CAUTION

Do not operate furnace more than one minute to check inlet gas pressure as conversion is not complete at this time.

- b. Set room thermostat to "call for heat."
- c. Turn gas supply manual shut-off valve ON.

▲ WARNING

Never use a match or other open flame to check for leaks. Use a soap-and-water solution. A failure to heed this warning could result in personal injury or death.

- d. Turn furnace gas valve control knob to PILOT and depress; then check pilot tube connections for gas leaks.
- e. Turn furnace gas valve control knob to OFF and wait 5 minutes.
- f. Light pilot in accordance with furnace lighting instructions on furnace.
- g. Turn furnace gas valve control knob to ON.
- h. When main burners have ignited, confirm proper inlet gas pressure.
- i. Turn furnace gas valve control knob to OFF.
- j. Turn gas supply manual shut-off valve off.
- k. Turn electrical supply to furnace OFF.
- l. Remove manometer and reinstall plug in pressure tap.

NOTE: Use propane-gas-resistant pipe dope. Do not use Teflon tape.

7. Attach gas control conversion label Part No. 310148-302 to inner front panel.
8. Attach rating plate Part No. 310168-322 near existing rating plate. (See Fig. 1.)

CHECK FURNACE OPERATION AND MAKE NECESSARY ADJUSTMENTS

1. Be sure main gas and electric supplies to furnace are off.
2. Attach manometer at manifold pressure tap on down-stream side of gas valve.
3. Set room thermostat to "call for heat."

▲ WARNING

Never use a match or other open flame to check for leaks. Use a soap-and-water solution. A failure to heed this warning could result in personal injury or death.

4. Turn gas supply manual shut-off valve on.
5. Turn furnace gas valve control knob to ON and check all threaded pipe connections for gas leaks.
6. Turn furnace gas valve control knob to OFF and wait 5 minutes.
7. Light pilot in accordance with furnace lighting instructions on furnace.
8. Turn ON electrical supply.
9. Turn furnace gas valve control knob to ON.
10. When main burners ignite, check manifold orifices for gas leaks.
11. The pilot flame should be soft blue in color and it must provide good impingement on the pilot thermocouple. The flame should extend above the burner carryover port to provide proper ignition. (See Fig. 3.)

When the pilot flame requires adjustment:

- a. Locate adjustment screw on top of the gas valve. (See Fig. 4 or 5.)

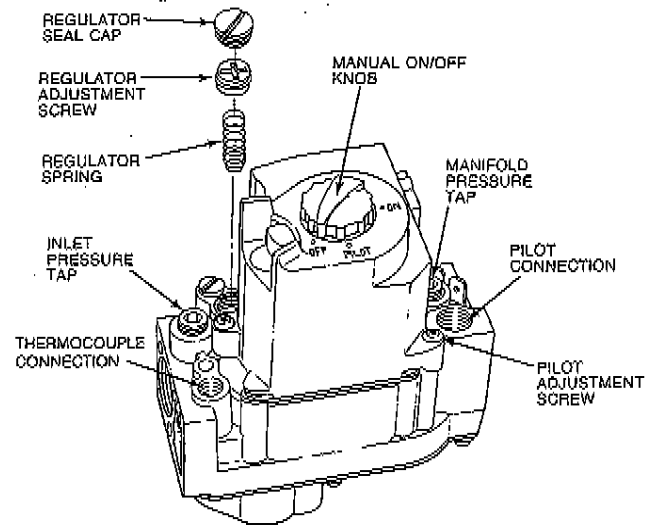


Fig. 5—Honeywell Model VR8200H Gas Valve ^{A89186}

- b. Remove cap and turn adjustment screw clockwise to decrease pilot gas flow. Turn screw counterclockwise to increase pilot gas flow.
- c. When proper adjustment is obtained, replace screw cap.

GAS INPUT

NOTE: The U.S.A. nameplate ratings are for altitudes up to 2000 ft for natural and propane gases. Refer to National Fuel Gas Code Appendix F, Table F-4 for proper orifice sizing at high altitudes.

The Canadian nameplate ratings are for altitudes up to 2000 ft for natural and propane gases. High altitude ratings are from 2000 ft to 4500 ft above sea level. Derate the furnace input 10 percent for high altitudes.

Determine the gas input as follows:

1. Set gas input rate.

There are two methods of adjusting the gas input rate. The preferred method is by using Table 3 and item a. The second method is by clocking the gas meter and item b.

The gas valve regulator should be nominally-set at 3.5-in. wc for natural gas. When adjusting input rate, do not set manifold pressure above 3.8- or below 3.2- in. wc.

- d. Check gas input rate using Table 3 for 58DP and 58GP Furnaces.
 - (1.) Obtain average yearly heat value for local gas supply.
 - (2.) Obtain average yearly specific gravity for local gas supply.
 - (3.) Verify furnace model. Table 3 can only be used for Model 58DP, and 58GP Furnaces.
 - (4.) Check and verify orifice size in furnace. NEVER ASSUME THE ORIFICE SIZE. ALWAYS CHECK AND VERIFY.
 - (5.) Find natural gas heat value and specific gravity in Table 3.
 - (6.) Follow heat value and specific gravity lines to point of intersection. Find orifice size and manifold pressure settings for proper operation at given natural gas conditions.

Table 2—Gas Rate Cu Ft/Hr

SECONDS FOR ONE REVOLUTION	SIZE OF TEST DIAL			SECONDS FOR ONE REVOLUTION	SIZE OF TEST DIAL		
	1 Cu Ft	2 Cu Ft	5 Cu Ft		1 Cu Ft	2 Cu Ft	5 Cu Ft
10	360	720	1800	50	72	144	360
11	327	655	1636	51	71	141	355
12	300	600	1500	52	69	138	346
13	277	555	1385	53	68	136	340
14	257	514	1286	54	67	133	333
15	240	480	1200	55	65	131	327
16	225	450	1125	56	64	129	321
17	212	424	1059	57	63	126	316
18	200	400	1000	58	62	124	310
19	189	379	947	59	61	122	305
20	180	360	900	60	60	120	300
21	171	343	857	62	58	116	290
22	164	327	818	64	56	112	281
23	157	313	783	66	54	109	273
24	150	300	750	68	53	106	265
25	144	288	720	70	51	103	257
26	138	277	692	72	50	100	250
27	133	267	667	74	48	97	243
28	129	257	643	76	47	95	237
29	124	248	621	78	46	92	231
30	120	240	600	80	45	90	225
31	116	232	581	82	44	88	220
32	113	225	563	84	43	86	214
33	109	218	545	86	42	84	209
34	106	212	529	88	41	82	205
35	103	206	514	90	40	80	200
36	100	200	500	92	39	78	196
37	97	195	486	94	38	76	192
38	95	189	474	96	38	75	188
39	92	185	462	98	37	74	184
40	90	180	450	100	36	72	180
41	88	176	439	102	35	71	178
42	86	172	429	104	35	69	173
43	84	167	419	106	34	68	170
44	82	164	409	108	33	67	167
45	80	160	400	110	33	65	164
46	78	157	391	112	32	64	161
47	76	153	383	114	31	62	155
48	75	150	375	120	30	60	150
49	73	147	367				

EXAMPLE: (Using Table 3)
 Heat value 950 Btu/cu ft
 Specific gravity 0.58
 Therefore; Orifice No. 40 or 41*
 Manifold pressure 3.2- or 3.5-in. wc, respectively.
 * The kit is shipped with No. 42 orifices. Therefore, in this example other main burner orifices must be obtained.
 Manifold pressure is acceptable from 3.2- to 3.8-in. wc. Use orifice size with the manifold pressure nearest 3.5-in. wc.

- (7.) Proceed to item c to adjust manifold pressure.
- e. Check gas input rate by clocking gas meter.
 - (1.) Obtain average yearly heat value for local gas supply.
 - (2.) Obtain average yearly specific gravity for local gas supply.
 - (3.) Check and verify orifice size in furnace. NEVER ASSUME THE ORIFICE SIZE. ALWAYS CHECK AND VERIFY.
 - (4.) Turn off all gas appliances and pilots.
 - (5.) Start furnace and let run for 3 minutes.
 - (6.) Measure time (in seconds) for gas meter to complete one revolution.
 - (7.) Refer to Table 2 for cubic ft of gas per hour.
 - (8.) Multiply gas rate (cu ft/hr) x heating value (Btu/ cu ft).

EXAMPLE:
 Btu/hr heating input Btu/cu ft times cu ft/hr
 Heating value of gas 950 Btu/cu ft
 Time for one revolution of 2-cu/ft dial 72 seconds
 Gas rate 100 x 950 = 95,000 Btu/hr

- (9.) The measured gas input must be within 2 percent of the rating plate input.
- (10.) Proceed to item c to adjust manifold pressure.

A CAUTION

DO NOT redrill burner orifices. Obtain new orifices if orifice size must be changed.

- f. Adjust gas input.
 - (1.) Remove regulator seal cap.
 - (2.) Turn adjusting screw counterclockwise to decrease input. Turn screw clockwise to increase input. DO NOT set manifold pressure less than 3.2- or more than 3.8-in. wc for natural gas. Make any major adjustments by changing main burner orifices.
 - (3.) When correct input is obtained, replace regulator seal cap.
 - (4.) Turn furnace gas valve control knob to PILOT.
 - (5.) Remove manometer and replace manifold pressure tap plug.

NOTE: Use propane-gas-resistant pipe dope. Do not use Teflon tape.

- (6.) Turn furnace gas valve control knob to ON.

- (7.) With main burners ignited, check pressure tap plug for gas leaks.

ADJUST MAIN BURNER FLAME

The main burner flame should be clear blue, almost transparent, with a well-defined inner cone. If there is too much primary air, the flame will be well defined, but with a tendency to float or lift off the burner ports. (See Fig. 6.)

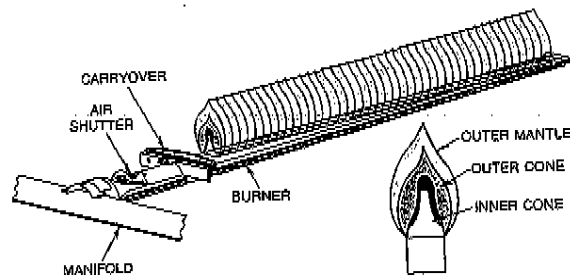


Fig. 6—58GP and 58DP Burner

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1. Allow unit to operate 5 minutes.
2. Burners are equipped with a primary air adjustment. Adjust each burner by closing the air shutter until a slight yellow tip appears on the flame; then open, just enough to clear yellow from the flame.
3. Replace control access door.
4. Check furnace through one operating cycle.

- a. Set room thermostat below room temperature.
- b. Ensure main burners and blower shut off. Pilot should remain lit.
- 5. Sign and date conversion responsibility label Part No. 310167-342, provided in kit, and attach to outside of blower compartment door.

- 6. Set room thermostat to desired temperature.

Table 3—Models 58DP and 58GP Orifice Size and Manifold Pressure for Correct Input Rate
(Tabulated data based on altitude up to 2000 ft and 25,000 Btuh per burner.)

GAS HEAT VALUE (BTUH/CU FT)	SPECIFIC GRAVITY OF NATURAL GAS																	
	0.56		0.58		0.60		0.62		0.64		0.66		0.68		0.70		0.72	
	Orf No.	Mnflid Press.	Orf No.	Mnflid Press.	Orf No.	Mnflid Press.	Orf No.	Mnflid Press.	Orf No.	Mnflid Press.	Orf No.	Mnflid Press.	Orf No.	Mnflid Press.	Orf No.	Mnflid Press.	Orf No.	Mnflid Press.
860	38	3.3	38	3.4	38	3.5	38	3.7	38	3.8	—	—	—	—	—	—	—	—
	39	3.6	39	3.7	39	3.8	—	—	—	—	36	3.2	36	3.3	36	3.4	36	3.5
	40	3.8	—	—	37	3.2	37	3.3	37	3.4	37	3.5	37	3.6	37	3.6	—	—
875	38	3.2	38	3.3	38	3.4	38	3.5	38	3.7	38	3.8	—	—	—	—	—	—
	39	3.5	39	3.6	39	3.7	39	3.8	—	—	—	—	36	3.2	36	3.3	36	3.4
	40	3.7	40	3.8	—	—	37	3.2	37	3.3	37	3.4	37	3.5	37	3.6	37	3.7
890	—	—	38	3.2	38	3.3	38	3.4	38	3.5	38	3.6	38	3.8	—	—	—	—
	39	3.3	39	3.5	39	3.6	39	3.7	39	3.8	—	—	—	—	36	3.2	36	3.3
	40	3.6	40	3.7	40	3.8	—	—	37	3.2	37	3.3	37	3.4	37	3.5	37	3.6
905	—	—	—	—	38	3.2	38	3.3	38	3.4	38	3.5	38	3.6	38	3.7	38	3.8
	39	3.2	39	3.3	39	3.5	39	3.6	39	3.7	39	3.8	—	—	—	—	36	3.2
	40	3.4	40	3.6	40	3.7	40	3.8	—	—	37	3.2	37	3.3	37	3.4	37	3.5
920	40	3.3	40	3.4	40	3.6	40	3.7	40	3.8	—	—	37	3.2	37	3.3	37	3.4
	41	3.6	41	3.7	—	—	38	3.2	38	3.3	38	3.4	38	3.5	38	3.6	38	3.7
	—	—	39	3.2	39	3.4	39	3.5	39	3.6	39	3.7	39	3.8	—	—	—	—
935	40	3.2	40	3.3	40	3.5	40	3.6	40	3.7	40	3.8	—	—	37	3.2	37	3.3
	41	3.5	41	3.6	41	3.7	—	—	38	3.2	38	3.3	38	3.4	38	3.5	38	3.6
	—	—	—	—	39	3.2	39	3.4	39	3.5	39	3.6	39	3.7	39	3.8	—	—
950	—	—	40	3.2	40	3.3	40	3.5	40	3.6	40	3.7	40	3.8	—	—	37	3.2
	41	3.4	41	3.5	41	3.6	41	3.7	—	—	38	3.2	38	3.3	38	3.4	38	3.5
	42	3.8	—	—	—	—	39	3.2	39	3.4	39	3.5	39	3.6	39	3.7	39	3.8
965	—	—	—	—	40	3.2	40	3.4	40	3.5	40	3.6	40	3.7	40	3.8	—	—
	41	3.3	41	3.4	41	3.5	41	3.6	41	3.8	—	—	38	3.2	38	3.3	38	3.4
	42	3.6	42	3.8	—	—	—	—	39	3.2	39	3.4	39	3.5	39	3.6	39	3.7
980	—	—	—	—	—	—	40	3.2	40	3.4	40	3.5	40	3.6	40	3.7	40	3.8
	41	3.2	41	3.3	41	3.4	41	3.5	41	3.6	41	3.8	—	—	38	3.2	38	3.3
	42	3.5	42	3.7	42	3.8	—	—	—	—	39	3.2	39	3.3	39	3.4	39	3.5
995	—	—	—	—	—	—	40	3.2	40	3.3	40	3.4	40	3.5	40	3.6	40	3.7
	—	—	41	3.2	41	3.3	41	3.4	41	3.5	41	3.6	41	3.7	—	—	38	3.2
	42	3.4	42	3.6	42	3.7	42	3.8	—	—	39	3.2	39	3.2	39	3.3	39	3.4
1010	—	—	—	—	—	—	—	—	40	3.2	40	3.3	40	3.4	40	3.5	40	3.6
	—	—	—	—	41	3.2	41	3.3	41	3.4	41	3.5	41	3.6	41	3.7	—	—
	42	3.3	42	3.4	42	3.6	42	3.7	42	3.8	—	—	—	—	38	3.2	38	3.3
1025	42	3.2	42	3.3	42	3.5	42	3.6	40	3.7	42	3.8	—	—	—	—	39	3.2
	—	—	—	—	—	—	—	—	—	—	40	3.2	40	3.3	40	3.4	40	3.4
	—	—	—	—	—	—	41	3.2	41	3.3	41	3.4	41	3.5	41	3.6	41	3.7
1040	—	—	42	3.3	42	3.4	42	3.5	42	3.6	42	3.7	42	3.8	—	—	—	—
	43	3.8	—	—	—	—	—	—	—	—	40	3.2	40	3.3	40	3.4	40	3.4
	—	—	—	—	—	—	—	—	41	3.2	41	3.3	41	3.4	41	3.5	41	3.6
1055	—	—	42	3.2	42	3.3	42	3.4	42	3.5	42	3.6	42	3.7	42	3.8	—	—
	43	3.7	—	—	—	—	—	—	—	—	41	3.2	41	3.3	41	3.4	41	3.5
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40	3.2	40	3.3
1070	—	—	—	—	42	3.2	42	3.3	42	3.4	42	3.5	42	3.6	42	3.7	42	3.8
	43	3.6	43	3.7	—	—	—	—	—	—	—	—	41	3.2	41	3.3	41	3.4
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	40	3.2
1085	—	—	—	—	43	3.8	—	—	—	—	—	—	—	—	—	—	—	—
	43	3.5	43	3.6	—	—	42	3.2	42	3.3	42	3.4	42	3.5	42	3.6	42	3.7
	—	—	—	—	—	—	—	—	—	—	—	—	—	3.2	41	3.2	41	3.3
1100	—	—	—	—	—	—	—	—	42	3.2	42	3.3	42	3.4	42	3.5	42	3.6
	43	3.4	43	3.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	41	3.2	41	3.2