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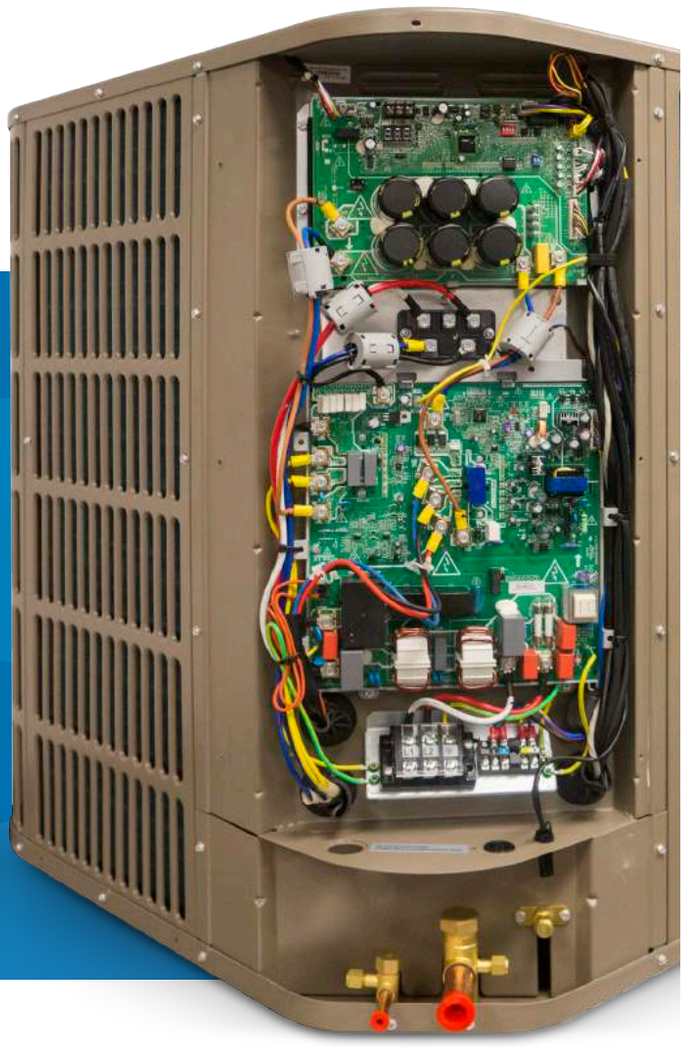
18 SEER IDS
Inverter Ducted Split

Quick Start Guide

BoschHeatingAndCooling.com

Overview

The Bosch Inverter Ducted Split (IDS) is designed to be installed in the same way as standard single stage heat pump/AC system. The IDS condenser is designed to maintain a target coil temperature, and is able to adjust that target coil temperature based on the performance/equipment runtime in the previous hour. Bosch IDS compensates for changes in building load and conditions without having to manipulate blower fan speeds. (Bosch IDS uses a X13 fixed speed type blower motor.) In addition, the systems modulation is “sensed,” not communicated, through a complex proprietary control which allows for the system to be installed with most standard 24v (2H1C) heat pump thermostats. (See Figures 1.1 and 1.2 for wiring diagram.)



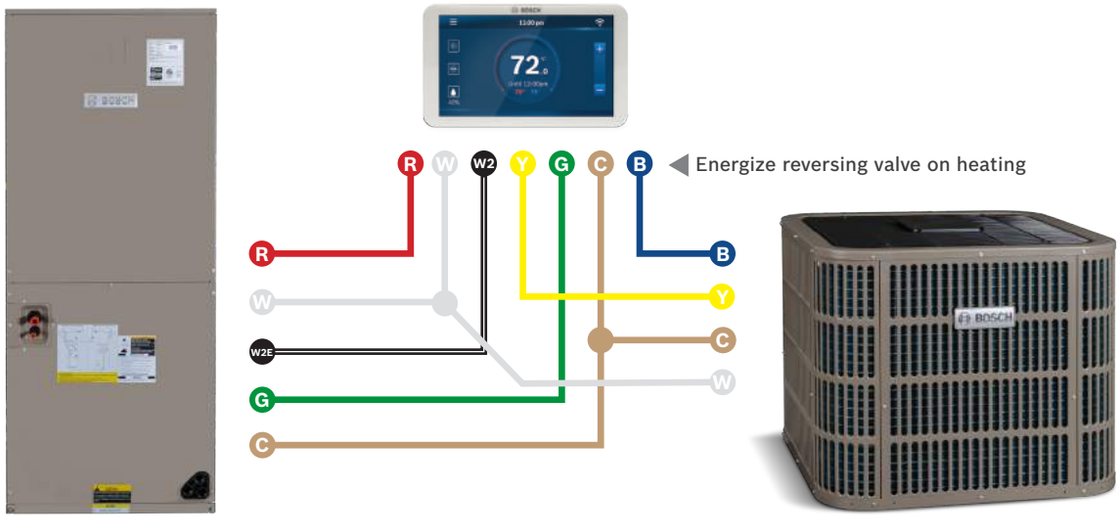
Key Selling and Installation Features and Benefits:

- 18 SEER Inverter Drive
- 85 Step Compressor (25% - 110% capacity)
  5 ton condenser capacity range: 15,000 – 66,000 btus
  3 ton condenser capacity range: 9,000 – 40,000 btus
- Superior humidity control
- 10 Year Part, 90 Day Labor Warranty. Additional 1 year for ABC Contractors (requires registration)
- Whisper Quiet – as low as 56 dB
- 3 & 5 Ton Condenser Dimensions: 29”W x 29”D
- Works with most standard 24v thermostats (2H1C)
- Use standard liquid and suction line sizing

Wiring Diagrams

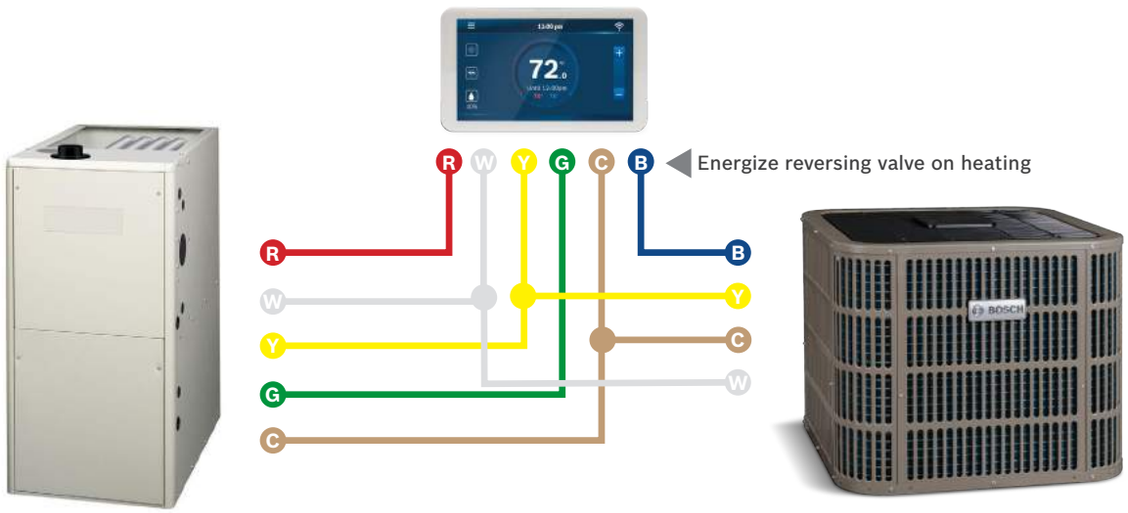
Heat Pump with Electric Heat Back-up

Figure 1.1



Dual Fuel

Figure 1.2



As you can see in Figures 1.1 & 1.2, only four 24V control wires are required for heat pump operation

- **C** Common
- **W** Defrost
- **B** Energize reversing valve (energized in heating)
- **Y** Initiate outdoor compressor sequence

If heat pump operation is not required or desired (A/C Only) simply connect the C and Y terminals.

All other control wiring is set up for single stage controls. If a multi stage thermostat is used or if the IDS is attached to a multi stage system (two stage furnace), this dual fuel application will require controls to properly cycle the outdoor unit based on balance point. The wiring to the condenser will remain the same.

Line Sets and Charging

The Bosch BOVA condenser comes factory pre-charged (410a) for 15’ of line set. Up to 100’ of line set is allowed with a maximum of 50’ lift. Any application with line set length of more than 15’ would require an additional .6 oz/ft for each additional foot of line set (refer to figure 2.2), this can be done by one of two methods by weight or by subcooling.

Figure 2.1

Model	Suction Line	Liquid Line	Length	Lift
BOVA - 36	3/4”	3/8”	100’	50’
BOVA - 60	7/8”	3/8”	100’	50’

Charge by Weight

Can be used at any time and is the recommended way to charge an IDS system. This method can be used when power is not available to the equipment site or when operating conditions are not in range to verify the charge based on subcooling. It is recommend to verify charge and adjust as necessary by subcooling.

Figure 2.2

1. Total Line Length (ft) = _____(a)
2. Standard Lineset (ft) = 15 (b)
3. (a) minus (b) = _____(c)
4. Refrigerant Multiplier = 0.6 oz/ft (d)
5. Refrigerant Adder (c*d) = _____(e)*

*If lineset is less than 15 ft, (e) = 0

Verify Charge Based on Subcooling (AC Mode)

Outside temperature must be between 55° and 120° F and indoor temperatures must be between 70° and 80°F to charge by subcooling. After starting the system in cooling mode, short press “FORCE” button, “⊢” symbol appears, and operate the system for a minimum of 20 minutes.

Figure 2.3

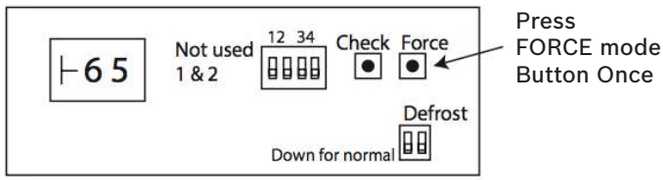


Figure 2.4

Suction Temp (°F)	Final Supercooling(°F) 6	7	8	9	10	11	12	13
	Liquid Gage Pressure (PSI)							
55	173	176	179	182	185	188	191	195
60	188	191	195	198	201	204	208	211
65	204	208	211	215	218	221	225	229
70	221	225	229	232	236	239	243	247
75	239	243	247	251	255	259	262	266
80	259	262	266	270	275	279	283	287
85	279	283	287	291	295	300	304	309
90	300	304	309	313	318	322	327	331
95	322	327	331	336	341	346	351	355
100	346	351	355	360	365	370	376	381
105	370	376	381	386	391	397	402	407
110	397	402	407	413	418	424	430	435
115	424	430	435	441	447	453	459	465
120	453	459	465	471	477	483	489	496
125	483	489	469	502	508	515	521	528

Suction Temp (°F)	Final Superheat (°F) 8	10	12	14	16	18	20	22
	Suction Gage Pressure (PSI)							
40	101	97	93	89	86	82	78	75
42	105	101	97	93	89	86	82	78
44	110	105	101	97	93	89	86	82
46	114	110	105	101	97	93	89	86
48	118	114	110	105	101	97	93	89
50	123	118	114	110	105	101	97	93
52	128	123	118	114	110	105	101	97
54	133	128	123	118	114	110	105	101
56	138	133	128	123	118	114	110	105
58	143	138	133	128	123	118	114	110
60	148	143	138	133	128	123	118	114
62	153	148	143	138	133	128	123	118
64	159	153	148	143	138	133	128	123
66	164	159	153	148	143	138	133	128
68	170	164	159	153	148	143	138	133
70	176	170	164	159	153	148	143	138
72	182	176	170	164	159	153	148	143

Control Board/Dip Switch Adjustments

Dip Switch SW4

SW4-1 and SW4-2 are not used and are reserved for future use. Switch 3 and 4 give you coil temperature and modulation control.

Figure 3.1

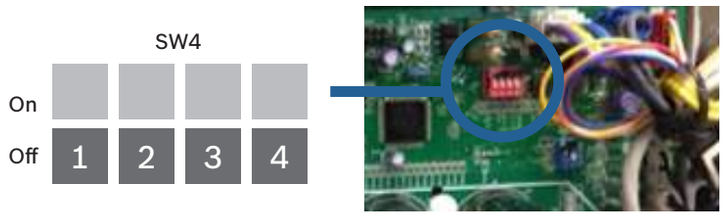


Figure 3.2

Switch		Description
SW4-1		Not used
SW4-2		Not used
SW4-3	ON	Adaptive capacity output disable
	OFF	Adaptive capacity output enable
SW4-4	ON	Accelerated cooling/heating
	OFF	Normally cooling/heating

SW4-3 Function

While in the off position (enabled) allows for coil/ condenser target temperature to drift +/- 4°F based on previous hour of operation in an attempt to optimize run time. Reason to Disable: In zoning applications but only as needed as a result of customer expectations and/or performance.

SW4-4 Function

Reduces target coil temperature in cooling to 37°F and increases target coil temperature in heating to 114°F. Recommended to be used only as needed as a result of customer expectations and/or performance.

Dip Switch SW5

Demand Defrost Adjustments

Figure 3.3

Figure 3.4

Defrosting choice	SW5-1	SW5-2	Remarks
ON	Operating time is reduced by 10%	Defrosting extended for 60 seconds	
OFF	Normal	Normal	Default
Remarks	Enter defrost	Quit defrost	

SW5-1 Function

Functions allows for the equipment to enter defrost sooner than normal. Used in northern cool climates where high humidity is common.

SW5-2 Function

Function allows for defrost cycle to be extended from 8 minutes to 9 minutes. Also used in cooler climates where high humidity is common.

Manual/Force Defrost

To initiate defrost cycle:

1. System must have a call for heat and have been operating for a minimum of 8 minutes
2. Press “FORCE” button on inverter board for 8 seconds to begin forced defrost
3. Wait approximately 40 seconds for defrost to initiate
4. Once defrost initiates the display will indicate dF
5. Defrost test will terminate automatically after which the display will indicate running speed
6. If a second defrost test is required, repeat step 3 after 5 minutes

Onboard Parameter Check and Diagnostics

Figure 4.1

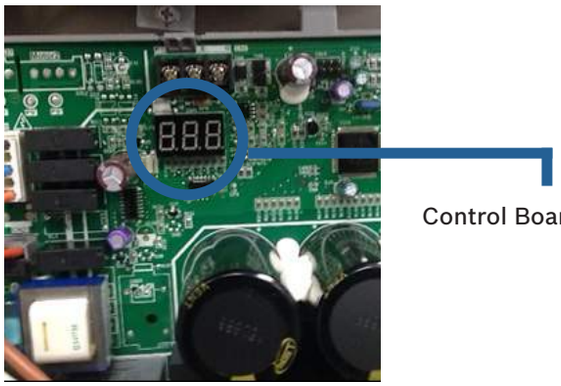
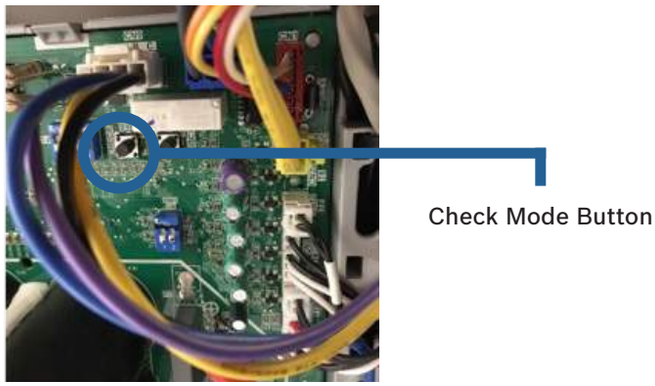


Figure 4.2



1. Press the “Check” button to index through parameters.
2. After first pressing on the “Check” button, it will display the sequence, and after 1 second it will display the value of the parameter.
3. After 20 seconds on same parameter, display will revert back to normal status.
4. If a system protection is active, first digit will display “status code.”

Figure 4.3

No.	Point check content	Example	Remark
0	Outdoor unit capacity	H3	H3=Heat Pump 3 ton
1	Outdoor unit mode	2	0 standby, 2 cooling, 3 heating
2	Outdoor unit set compressor speed		
3	Opening of EEV		Actual value
4	T3(outdoor coil temp.) (°F)		
5	T4 (outdoor ambient temp.) (°F)		
6	T5(compressor discharge temp.) (°F)		
7	Reserved		
8	Te (evaporating temp.) (°F)		
9	Tc (condensing temp.) (°F)		
10	Tf (module temp.) (°F)		
11	Pe (evaporating pressure) (PSI)		
12	Pc (evaporating pressure) (PSI)		
13	Compressor discharge superheat (°F)		Actual value
14	Reserved		
15	Reserved		
16	Compressor current (A)		
17	Reserved		
18	Fan speed		
19	Reserved		
20	Reserved		
21	Compressor discharge superheat (only useful for heating mode) (°F)		Target Value
22	Reserved		
23	Last Fault Code		
24	Software version		
25	Remark"--"		

System Protection Codes

Figure 4.4

System Protection Status Codes	
H	Indication under charge model
L	Running indication under T3 limited condition
D	Running indication under T5 limited condition
P	Running indication under compressor ratio limited condition
F	Running indication under Tf limited condition
C	Running indication under current limited condition
U	Running indication under low voltage limited condition
H	Running indication under high pressure(PT) limited condition in heating
A	Running indication under return oil model
dF	Running indication under defrost model

System Fault Codes

Figure 4.5

Code	Fault Description
E4	Temperature sensor fault(T3, T4, T5, TF)
E5	High/low voltage protection
E6	DC fan motor fault
E7	Compressor discharge sensor(T5) is seated fault
E9	EEPROM fault
Eb	System lockup, 2 times (E6) protection in 10 minutes
H0	Communication fault in main control chip
H4	System lockup, 3 times (P6) protection in 60 minutes
H5	System lockup, 5 times (P2) protection in 100 minutes
H8	Pressure transducer(PT) fault
Hb	High pressure(PT) protection in Heating
P0	High module radiator temperature (TF)protection
P1	High pressure switch(HPS)protection
P2	Low pressure(PT) Protection in cooling
P3	Compressor over current protection
P4	High compressor discharge temperature(T5) protection
P5	condensor coil temperature(T3) protection in cooling
P6	The IPM module protection
PH	Low discharge superheat protection
F1	High pressure switch(HPS) fault
C3	The condensor coil sensor(T3) is seated fault in cooling
L0-L9	The IPM module protection (the same as P6, only for analysis)
AtL	Ambient Temperature Limited

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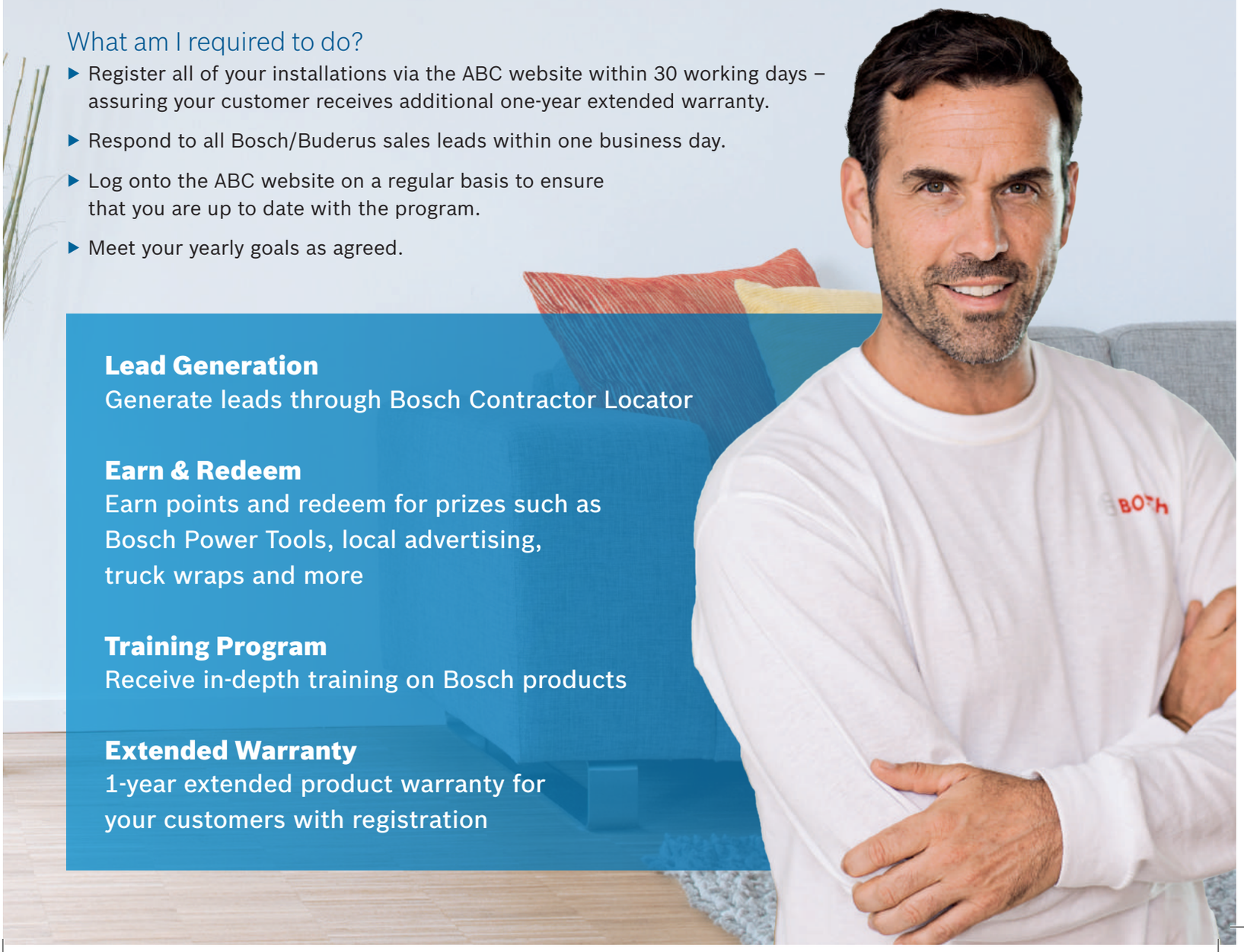
- Log onto the ABC website on a regular basis to ensure that you are up to date with the program.
- Meet your yearly goals as agreed.



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