

Part Number Breakdown

Anatomy of a Part Number

Introduction

The Barber-Colman part number (model number) is made up of fifteen fields. Each field, or series of fields, contains a code, or codes, that represents a specific feature of the product.

This section of the book is devoted to sensors designed primarily for application in the plastics manufacturing industry. Two types of sensors are listed: thermocouples and resistance temperature detectors.

This section tells you how to identify the specifications of a Barber-Colman thermocouple from the part number (model number).

Analyzing a Part Number

Field 1

Application – Plastics Industry

The code in most of the fields vary from product to product. However, the first field always contains the code "P" which identifies the product as a sensor designed specifically for application in the plastics industry



Model No. P - - - -

Field 13

Attaching Device (Style)

After identifying the plastics industry sensor, the second most significant code is in Field 13. The style of a thermocouple is commonly defined by the way it attaches to the workpiece. The attaching device, also called process mounting, is specified in field 13 of the part number



Model No. P - - - -

All the various styles for the plastics industries thermocouples are:

<u>Code</u>	<u>Description</u>	<u>See Page</u>
0	Tube style with no mounting fitting	2-22, 2-26, 2-28, 2-30, 2-38
1	Melt bolt style	2-40
2	Tube style with brass compression fitting	2-22, 2-26, 2-30
3	Tube style with stainless steel compression fitting	2-26, 2-28, 2-30
4	Tube style with bayonet lock	2-20, 2-22, 2-24, 2-26, 2-28
5	Nozzle melt style	2-34, 2-37
6	Armor style Varidepth®	2-12, 2-15
7	Ring or lug mount	2-32
8	Non-immersion nozzle melt style thermocouple	2-30, 2-36
A	Spring style Varidepth, standard lock cap, 6" spring	2-16, 2-18
B	Spring style Varidepth, standard lock cap, 12" spring	2-16, 2-18
C	Spring style Varidepth, 12 mm lock cap, 6" spring	2-16, 2-18
D	Spring style Varidepth, 12 mm lock cap, 12" spring	2-16, 2-18
E	Spring style Varidepth, 15 mm lock cap, 6" spring	2-16, 2-18
F	Spring style Varidepth, 15 mm lock cap, 12" spring	2-16, 2-18

After identifying the application and style of the thermocouple, you can now define the remaining specifications by the codes in other fields. They are:

Part Number Breakdown

Analyzing a Part Number (continued)

Fields 2 and 3

Element

Two wires of dissimilar alloys joined at the tip. When the ends are exposed to a temperature gradient, and electromotive force (EMF) is generated. The EMF is very small, amounting to microvolts per degree.

Field 4

Element Configuration

This field indicates either single or dual element in a straight, 45° angle, or 90° angle tube.

Field 5

Probe Diameter

This code indicates either a 1/8" diameter or a 3/16" diameter.

Field 6

Junction Style and Protection

This field indicates closed or open end, ground or ungrounded junction, and with or without flexible armor.

Field 7

Cold End Termination

Specifies stripped ends, lugs, plug and/or jack

Fields 8 and 9

Rigid Length or Melt Bolt Length

This field specifies the rigid length of the probe (dimension "X") of those sensors with an adjustable attaching device; or the length of a melt bolt style sensor.

Fields 10, 11 and 12

Flexible Length

This is the flexible length (dimension "Y") of the thermocouple. It is the entire length of the spring style Varidepth sensor, or the flexible portion behind the rigid portion of other assemblies. Flexible length may be fiberglass insulated, or clad with stainless steel overbraid or flexible armor.

Fields 14 and 15

Immersion Depth

This code defines how the sensor interacts with the measured media. It defines the immersion depth (dimension "Z") of a typical sensor or the tip length (dimension "T") of a melt bolt sensor. Or, it defines the size of the ring or lug on the ring/lug style sensor.

Technical Data

Ordering Information

Illustrations on the following pages list wire most commonly used in specific thermocouples (Fields 2, 3 of the part number); however, any wire from the following table can be used. Standard and special limits (tolerances) are defined in Table 1 of the "Overview" section of this book, under "Certification."

When selecting thermocouple wire, be sure to check Table 2 and verify its compatibility with the probe o.d., junction style, and lead protection.

Table 1. Thermocouple Wire

Fields 2, 3. Thermocouple Type						Price		
Code	Gauge	Limits	Constr.	Insulation	Part Number	0 to 36"	Ea Add'l 6"	
Type J – Rated at 900°F except Teflon insulated (code 25) rated at 400°F*								
01	20	Std	Solid	Fiberglass	WJ20-11305			
07				F'glass w/SS	WJ20-12305			
11			Strand	F'glass w/SS	WJ20-32302			
12				Fiberglass	WJ20-31302			
25			Spl	Solid	Teflon	WJ20-11507		
60					Fiberglass	WJ20-21305		
02	24	Std	Solid	Fiberglass	WJ24-11305			
13				F'glass w/SS	WJ24-12305			
15			Strand	F'glass w/SS	WJ24-32305			
26				Fiberglass	WJ24-31305			
61			Spl	Solid	Fiberglass	WJ24-21305		
09	18	Std.	Strand	Fiberglass	WJ18-31304			
Type K – Rated at 900°F*								
05	20	Std	Solid	Fiberglass	WK20-11305			
08				F'glass w/SS	WK20-12305			
20			Spl	Strand	Fiberglass	WK20-31302		
62					Fiberglass	WK20-21304		
19	24	Std	Solid	Fiberglass	WK24-11304			
24				F'glass w/SS	WK24-12305			
63				Spl	Fiberglass	WK24-21305		
Type E – Rated at 900°F*								
17	20	Std	Solid	Fiberglass	WE20-11304			
18	24				WE24-11304			
Type T – 20 gauge rated at 500°F; 24 gauge rated at 400°F*								
06	20	Std	Solid	Fiberglass	WT20-11304			
64		Spl			WT20-21304			
14	24	Std			WT24-11304			
F/glass w/SS = Fiberglass with stainless steel overbraid. *Rating is maximum continuous temperature of wire only; maximum operating temperature of thermocouple assembly may be lower.								

Technical Data

Ordering Information (continued)

Component Compatibility

The number of elements in a thermocouple is constrained by wire size, probe diameter, and lead protection. The table below shows the compatibility of these components

Table 2. Compatibility

Code	Fields 5, 6. Junction Style, Probe O.D., Lead Protection							
	21	23	30	31	32	33	34	35
Probe O.D.	1/8"		3/16"					
Tip	Grounded		Grounded				Ungrounded	
	Closed		Open	Closed	Open	Closed	Closed	
Flex Tube	No	Yes	No		Yes		No	Yes
Fields 2, 3. T/C Type								
01	None		Single or Dual				Single	
02	Single		Single or Dual				Single or Dual	
05	None		Single or Dual				Single	
06	None		Single or Dual				Single	
07	None		Single		None	Single	Single	
08	None		Single		None	Single	Single	
09	None		Single				None	
11	None		Single		None	Single	None	
12	None		Single				None	
13	Single		Single					Single
14	Single		Single or Dual				Single or Dual	
15	Single		Single					Single
17	None		Single or Dual				Single	
18	Single		Single or Dual				Single or Dual	
19	Single		Single or Dual				Single or Dual	
20	None		Single				None	
24	Single		Single or Dual				Single or Dual	
25	Single		Single or Dual				Single or Dual	
26	Single		Single or Dual				Single or Dual	
60	None		Single or Dual				Single	
61	Single		Single or Dual				Dual	
62	None		Single or Dual				Single	
63	Single		Single or Dual				Dual	
64	None		Single or Dual				Single	