


Laser marking on solenoid valves






July 15, 2013

TPC valve development team

1. Advantages and disadvantages of laser marking

	Label attached	Laser marking
Pictures	 A photograph of a TPC solenoid valve with a white label attached. The label contains the text 'PW08', a barcode, and technical specifications: 'SOLENOID VALVE model DS3130 (20-130 PSI) 1/2" NPT', 'TPC', '528-12, Kijori-cho, San-Hu, Ichikawa', 'AC176 - 242V 50Hz', 'AC187 - 253V 60Hz', 'MADE IN KOREA', and a 'PW' logo.	 A photograph of the same TPC solenoid valve with laser marking instead of a label. The markings include 'TPC SOLENOID VALVE', 'DS3130', '0.15~0.9 MPa', 'PW08', 'MADE IN KOREA', and technical specifications: 'AC176 - 242V 50Hz', 'AC187 - 253V 60Hz', 'MADE IN KOREA', and a 'PU' logo.
Advantages	<ol style="list-style-type: none"> 1. Better visibility than laser marking. 2. Color printing available. 3. Easy attachment and easy removal. 	<ol style="list-style-type: none"> 1. Reduced processing time compared to the label attaching(better lead time). 2. Cost saving(reducing price-increase). 3. Permanent printing. 4. Much lower inferior rate than label.
Dis-advantages	<ol style="list-style-type: none"> 1. Prints can be erased by oil. 2. Additional labor cost (taking approximately 9.5 seconds per each label). 3. Label can be detached as time goes on. 	<ol style="list-style-type: none"> 1. Less visibility than colorful label. 2. Colorless printing. 3. Impossible to erase.
Remarks		

2. Application date

Model	Pictures	Application date	Remarks
DS Series		From July 16, 2013	
DV Series			
DR200			
RS Series			
DX Series			

3. Pattern of laser marking

* DS3000



* DS5000



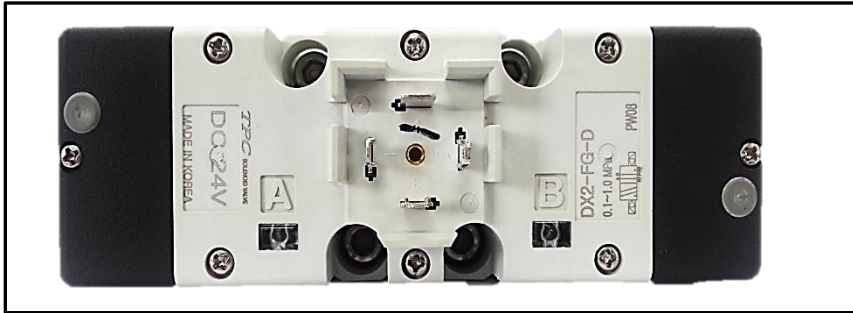
* DS301



- Features:
The TPC brand name prominently marked on the upper box. Compared to the label with limited printing space, the laser marking makes it possible to use bigger fonts and bigger pneumatic symbols.

3. Pattern of laser marking

- * **DX SERIES** (same printing pattern as label)



- * **RS SERIES** (same printing pattern as label)



Larger fonts used compared to label.

- * **DV SERIES**(same printing pattern as label)











4. Comparison table between label and laser marking

번호	제품명	스티커	레이저 마킹	비고
1	DS3130			* 압력단위 수정
2	DS3230			* 압력단위 수정
3	DS3330			* 압력단위 수정
4	DS3430			* 압력단위 수정
5	DS5120			* 압력단위 수정
6	DS5220			* 압력단위 수정 * 저압 오기 수정
7	DS5320			* 압력단위 수정 * 스티커 고압 오기
8	DS5420			* 압력단위 수정 * 스티커 고압 오기
9	DS5520			

10	DS3100			* 압력단위 수정
11	DS3200			* 압력단위 수정
12	DS3300			* 압력단위 수정
13	DS3400			* 압력단위 수정
14	DS301			
15	DP301			* 압력단위 수정
16	DP3130			* 압력단위 수정
17	DP3230			* 압력단위 수정
18	DP5120			* 압력단위 수정 * 고압 오기 수정
19	DP5220			* 압력단위 수정



4. Comparison table between label and laser marking

20	DS3133		TPC SOLENOID VALVE MODEL DS3133 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 압력단위 수정
21	DS3233		TPC SOLENOID VALVE MODEL DS3233 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 압력단위 수정 * 저압 오기 수정
22	DS3333		TPC SOLENOID VALVE MODEL DS3333 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 압력단위 수정 * 스티커 고압 오기
23	DS3433		TPC SOLENOID VALVE MODEL DS3433 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 압력단위 수정
24	DS5123		TPC SOLENOID VALVE MODEL DS5123 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 압력단위 수정
25	DS5223		TPC SOLENOID VALVE MODEL DS5223 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 압력단위 수정
26	DS5323		TPC SOLENOID VALVE MODEL DS5323 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 압력단위 수정
27	UDS301		TPC SOLENOID VALVE MODEL UDS301 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 저압 수정 20~22 PSI
28	UDS3130		TPC SOLENOID VALVE MODEL UDS3130 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 저압 수정 20~22 PSI
29	UDS3230		TPC SOLENOID VALVE MODEL UDS3230 PRESS. 1.0 MPa PW08 MADE IN KOREA	

30	UDS3330		TPC SOLENOID VALVE MODEL UDS3330 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 저압/고압 수정 저압: 20~22 PSI 고압: 150~130 PSI
31	UDS3430		TPC SOLENOID VALVE MODEL UDS3430 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 저압/고압 수정 저압: 20~22 PSI 고압: 150~130 PSI
32	UDS3133		TPC SOLENOID VALVE MODEL UDS3133 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 저압/고압 수정 저압: 20~22 PSI 고압: 150~130 PSI
33	UDS3233		TPC SOLENOID VALVE MODEL UDS3233 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 저압/고압 수정 저압: 20~22 PSI 고압: 150~130 PSI * 공압기호 수정
34	UDS3333		TPC SOLENOID VALVE MODEL UDS3333 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 압력단위 수정



36	UDS5120		TPC SOLENOID VALVE MODEL UDS5120 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 저압 수정 20~22 PSI
37	UDS5220		TPC SOLENOID VALVE MODEL UDS5220 PRESS. 1.0 MPa PW08 MADE IN KOREA	
38	UDS5320		TPC SOLENOID VALVE MODEL UDS5320 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 저압/고압 수정 저압: 20~22 PSI 고압: 150~130 PSI
39	UDS5420		TPC SOLENOID VALVE MODEL UDS5420 PRESS. 1.0 MPa PW08 MADE IN KOREA	* 저압/고압 수정 저압: 20~22 PSI 고압: 150~130 PSI











4. Comparison table between label and laser marking

41	UDP301		<p>TPC SOLENOID VALVE</p> <p>UDP301 22~130 PSI N.C. MADE IN KOREA PW08</p>	* 압력단위 수정
42	UDP3130		<p>TPC SOLENOID VALVE</p> <p>UDP3130 22~130 PSI MADE IN KOREA PW08</p>	* 저압 수정 20→22 PSI
43	UDP3230		<p>TPC SOLENOID VALVE</p> <p>UDP3230 15~130 PSI MADE IN KOREA PW08</p>	
44	UDP5120		<p>TPC SOLENOID VALVE</p> <p>UDP5120 22~130 PSI MADE IN KOREA PW08</p>	* 저압 수정 20→22 PSI
45	UDP5220		<p>TPC SOLENOID VALVE</p> <p>UDP5220 15~130 PSI MADE IN KOREA PW08</p>	
46	DS5520		<p>TPC SOLENOID VALVE</p> <p>DS5520 0.12~0.3 MPa MADE IN KOREA PW08</p>	* 저압용





















번호	제품명	스티커	레이저 마킹	비고
1	DV1120		<p>DV1120 0.15~0.7 MPa MADE IN KOREA PZ01</p> <p>TPC SOLENOID VALVE</p>	
2	DV1220		<p>DV1220 0.1~0.7 MPa MADE IN KOREA PZ01</p> <p>TPC SOLENOID VALVE</p>	
3	DV1320		<p>DV1320 0.2~0.7 MPa MADE IN KOREA PZ01</p> <p>TPC SOLENOID VALVE</p>	
4	DV1420		<p>DV1420 0.2~0.7 MPa MADE IN KOREA PZ01</p> <p>TPC SOLENOID VALVE</p>	
5	DV1520		<p>DV1520 0.2~0.7 MPa MADE IN KOREA PZ01</p> <p>TPC SOLENOID VALVE</p>	
6	DV1140		<p>TPC SOLENOID VALVE</p> <p>DV1140 0.15~0.7 MPa MADE IN KOREA PZ01</p>	
7	DV1240		<p>TPC SOLENOID VALVE</p> <p>DV1240 0.1~0.7 MPa MADE IN KOREA PZ01</p>	
8	DV1340		<p>TPC SOLENOID VALVE</p> <p>DV1340 0.2~0.7 MPa MADE IN KOREA PZ01</p>	
9	DV1440		<p>TPC SOLENOID VALVE</p> <p>DV1440 0.2~0.7 MPa MADE IN KOREA PZ01</p>	





















4. Comparison table between label and laser marking

10	DV1540		TPC SOLENOID VALVE DV1540 0.2~0.7 MPa MADE IN KOREA PZ01
11	DV3120		DV3120 0.15~0.7 MPa MADE IN KOREA PW08 TPC SOLENOID VALVE
12	DV3220		DV3220 0.1~0.7 MPa MADE IN KOREA PW08 TPC SOLENOID VALVE
13	DV3320		DV3320 0.2~0.7 MPa MADE IN KOREA PW08 TPC SOLENOID VALVE
14	DV3420		DV3420 0.2~0.7 MPa MADE IN KOREA PW08 TPC SOLENOID VALVE
15	DV3520		DV3520 0.2~0.7 MPa MADE IN KOREA PW08 TPC SOLENOID VALVE
16	DV3140		TPC SOLENOID VALVE DV3140 0.15~0.7 MPa MADE IN KOREA PZ01
17	DV3240		TPC SOLENOID VALVE DV3240 0.1~0.7 MPa MADE IN KOREA PZ01
18	DV3340		TPC SOLENOID VALVE DV3340 0.2~0.7 MPa MADE IN KOREA PZ01
19	DV3440		TPC SOLENOID VALVE DV3440 0.2~0.7 MPa MADE IN KOREA PZ01

20	DV3540		TPC SOLENOID VALVE DV3540 0.2~0.7 MPa MADE IN KOREA PZ01
21	DV4120		DV4120 0.15~0.7 MPa MADE IN KOREA PW08 TPC SOLENOID VALVE
22	DV4220		DV4220 0.1~0.7 MPa MADE IN KOREA PW08 TPC SOLENOID VALVE
23	DV4320		DV4320 0.2~0.7 MPa MADE IN KOREA PW08 TPC SOLENOID VALVE
24	DV4420		DV4420 0.2~0.7 MPa MADE IN KOREA PW08 TPC SOLENOID VALVE
25	DV4520		DV4520 0.2~0.7 MPa MADE IN KOREA PW08 TPC SOLENOID VALVE
26	DV4140		TPC SOLENOID VALVE DV4140 0.15~0.7 MPa MADE IN KOREA PZ01
27	DV4240		TPC SOLENOID VALVE DV4240 0.1~0.7 MPa MADE IN KOREA PZ01
28	DV4340		TPC SOLENOID VALVE DV4340 0.2~0.7 MPa MADE IN KOREA PZ01
29	DV4440		TPC SOLENOID VALVE DV4440 0.2~0.7 MPa MADE IN KOREA PZ01

4. Comparison table between label and laser marking

30	DV4540		TPC SOLENOID VALVE DV4540 0.2~0.7 MPa MADE IN KOREA  PZ01	
31	DV1140P		TPC SOLENOID VALVE DV1140P 0.15~0.7 MPa MADE IN KOREA  PZ01	
32	DV1240P		TPC SOLENOID VALVE DV1240P 0.1~0.7 MPa MADE IN KOREA  PZ01	
33	DV1340P		TPC SOLENOID VALVE DV1340P 0.2~0.7 MPa MADE IN KOREA  PZ01	
34	DV1440P		TPC SOLENOID VALVE DV1440P 0.2~0.7 MPa MADE IN KOREA  PZ01	
35	DV1540P		TPC SOLENOID VALVE DV1540P 0.2~0.7 MPa MADE IN KOREA  PZ01	
36	DV3140P		TPC SOLENOID VALVE DV3140P 0.15~0.7 MPa MADE IN KOREA  PZ01	
37	DV3240P		TPC SOLENOID VALVE DV3240P 0.1~0.7 MPa MADE IN KOREA  PZ01	
38	DV3340P		TPC SOLENOID VALVE DV3340P 0.2~0.7 MPa MADE IN KOREA  PZ01	
39	DV3440P		TPC SOLENOID VALVE DV3440P 0.2~0.7 MPa MADE IN KOREA  PZ01	










40	DV3540P		TPC SOLENOID VALVE DV3540P 0.2~0.7 MPa MADE IN KOREA  PZ01	
41	UDV1120		UDV1120 22~100 PSI MADE IN KOREA  PZ01	* 압력단위 수정
42	UDV1220		UDV1220 15~100 PSI MADE IN KOREA  PZ01	* 압력단위 수정
43	UDV1320		UDV1320 28~100 PSI MADE IN KOREA  PZ01	* 압력단위 수정
44	UDV1420		UDV1420 28~100 PSI MADE IN KOREA  PZ01	* 압력단위 수정
45	UDV1520		UDV1520 28~100 PSI MADE IN KOREA  PZ01	* 압력단위 수정
46	UDV3120		UDV3120 22~100 PSI MADE IN KOREA  PW08	* 압력단위 수정
47	UDV3220		UDV3220 15~100 PSI MADE IN KOREA  PW08	* 압력단위 수정
48	UDV3320		UDV3320 28~100 PSI MADE IN KOREA  PW08	* 압력단위 수정
49	UDV3420		UDV3420 28~100 PSI MADE IN KOREA  PW08	* 압력단위 수정

4. Comparison table between label and laser marking

50	UDV3520		UDV3520 28~100 PSI MADE IN KOREA PW08 TPC SOLENOID VALVE	<ul style="list-style-type: none"> * 압력단위 수정 * 공압기호 수정
51	UDV4120		UDV4120 22~100 PSI MADE IN KOREA PW08 TPC SOLENOID VALVE	<ul style="list-style-type: none"> * 압력단위 수정
52	UDV4220		UDV4220 15~100 PSI MADE IN KOREA PW08 TPC SOLENOID VALVE	<ul style="list-style-type: none"> * 압력단위 수정
53	UDV4320		UDV4320 28~100 PSI MADE IN KOREA PW08 TPC SOLENOID VALVE	<ul style="list-style-type: none"> * 압력단위 수정
54	UDV4420		UDV4420 28~100 PSI MADE IN KOREA PW08 TPC SOLENOID VALVE	<ul style="list-style-type: none"> * 압력단위 수정
55	UDV4520		UDV4520 28~100 PSI MADE IN KOREA PW08 TPC SOLENOID VALVE	<ul style="list-style-type: none"> * 압력단위 수정
56	UDVP3140		TPC SOLENOID VALVE UDVP3140 22~100 PSI MADE IN KOREA PZ01	
57	UDVP3240		TPC SOLENOID VALVE UDVP3240 15~100 PSI MADE IN KOREA PZ01	
58	UDVP3340		TPC SOLENOID VALVE UDVP3340 28~100 PSI MADE IN KOREA PZ01	
59	UDVP3440		TPC SOLENOID VALVE UDVP3440 28~100 PSI MADE IN KOREA PZ01	
















60	UDVP3540		TPC SOLENOID VALVE UDVP3540 28~100 PSI MADE IN KOREA PZ01	
61	DVC1120		TPC SOLENOID VALVE DVC1120 0.15~0.7 MPa MADE IN KOREA PZ01	
62	DVC1220		TPC SOLENOID VALVE DVC1220 0.1~0.7 MPa MADE IN KOREA PZ01	
63	DCV1320		TPC SOLENOID VALVE DVC1320 0.2~0.7 MPa MADE IN KOREA PZ01	
64	DCV1420		TPC SOLENOID VALVE DVC1420 0.2~0.7 MPa MADE IN KOREA PZ01	
65	DVC1520		TPC SOLENOID VALVE DVC1520 0.2~0.7 MPa MADE IN KOREA PZ01	
66	DVC1123		TPC SOLENOID VALVE DVC1123 0.15~0.7 MPa MADE IN KOREA PZ01	
67	DVC1223		TPC SOLENOID VALVE DVC1223 0.1~0.7 MPa MADE IN KOREA PZ01	
68	DCV1323		TPC SOLENOID VALVE DVC1323 0.2~0.7 MPa MADE IN KOREA PZ01	
69	DCV1423		TPC SOLENOID VALVE DVC1423 0.2~0.7 MPa MADE IN KOREA PZ01	

4. Comparison table between label and laser marking

70	DVC1523		TPC SOLENOID VALVE DVC1523 0.2~0.7 MPa MADE IN KOREA PZ01	
71	DVC1140		TPC SOLENOID VALVE DVC1140 0.15~0.7 MPa MADE IN KOREA PZ01	
72	DVC1240		TPC SOLENOID VALVE DVC1240 0.1~0.7 MPa MADE IN KOREA PZ01	
73	DVC1340		TPC SOLENOID VALVE DVC1340 0.2~0.7 MPa MADE IN KOREA PZ01	
74	DVC1440		TPC SOLENOID VALVE DVC1440 0.2~0.7 MPa MADE IN KOREA PZ01	
75	DVC1540		TPC SOLENOID VALVE DVC1540 0.2~0.7 MPa MADE IN KOREA PZ01	
76	DVC1143		TPC SOLENOID VALVE DVC1143 0.15~0.7 MPa MADE IN KOREA PZ01	
77	DVC1243		TPC SOLENOID VALVE DVC1243 0.1~0.7 MPa MADE IN KOREA PZ01	
78	DVC1343		TPC SOLENOID VALVE DVC1343 0.2~0.7 MPa MADE IN KOREA PZ01	
79	DVC1443		TPC SOLENOID VALVE DVC1443 0.2~0.7 MPa MADE IN KOREA PZ01	

80	DVC1543		TPC SOLENOID VALVE DVC1543 0.2~0.7 MPa MADE IN KOREA PZ01	
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4. Comparison table between label and laser marking









번호	제품명	스티커	레이저 마킹	비고
1	DX1-FG-S		DX1-FG-S 0.15~1.0 MPa  PW08	
2	DX1-FG-D		DX1-FG-D 0.1~1.0 MPa  PW08	
3	DX1-FHG-D		DX1-FHG-D 0.2~1.0 MPa  PW08	
4	DX1-FJG-D		DX1-FJG-D 0.2~1.0 MPa  PW08	
5	DX1-FIG-D		DX1-FIG-D 0.2~1.0 MPa  PW08	
6	DX2-FG-S		DX2-FG-S 0.15~1.0 MPa  PW08	
7	DX2-FG-D		DX2-FG-D 0.1~1.0 MPa  PW08	
8	DX2-FHG-D		DX2-FHG-D 0.2~1.0 MPa  PW08	
9	DX2-FJG-D		DX2-FJG-D 0.2~1.0 MPa  PW08	

10	DX2-FIG-D		DX2-FIG-D 0.2~1.0 MPa  PW08	
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DC 24V


4. Comparison table between label and laser marking

번호	제품명	스티커	레이저 마킹	비고
1	RS1140		TPC SOLENOID VALVE RS1140 0.15~0.7 MPa MADE IN KOREA PZ01	
2	RS1240		TPC SOLENOID VALVE RS1240 0.1~0.7 MPa MADE IN KOREA PZ01	
3	RS1340		TPC SOLENOID VALVE RS1340 0.2~0.7 MPa MADE IN KOREA PZ01	
4	RS1440		TPC SOLENOID VALVE RS1440 0.2~0.7 MPa MADE IN KOREA PZ01	
5	RS1540		TPC SOLENOID VALVE RS1540 0.2~0.7 MPa MADE IN KOREA PZ01	
6	RS1640		TPC SOLENOID VALVE RS1640 0.15~0.7 MPa MADE IN KOREA PZ01	
7	RS1740		TPC SOLENOID VALVE RS1740 0.15~0.7 MPa MADE IN KOREA PZ01	
8	RS1840		TPC SOLENOID VALVE RS1840 0.15~0.7 MPa MADE IN KOREA PZ01	
9	RS2140		TPC SOLENOID VALVE RS2140 0.15~0.7 MPa MADE IN KOREA PZ01	

10	RS2240		TPC SOLENOID VALVE RS2240 0.1~0.7 MPa MADE IN KOREA PZ01	
11	RS2340		TPC SOLENOID VALVE RS2340 0.2~0.7 MPa MADE IN KOREA PZ01	
12	RS2440		TPC SOLENOID VALVE RS2440 0.2~0.7 MPa MADE IN KOREA PZ01	
13	RS2540		TPC SOLENOID VALVE RS2540 0.2~0.7 MPa MADE IN KOREA PZ01	
14	RS2640		TPC SOLENOID VALVE RS2640 0.15~0.7 MPa MADE IN KOREA PZ01	
15	RS2740		TPC SOLENOID VALVE RS2740 0.15~0.7 MPa MADE IN KOREA PZ01	
16	RS2840		TPC SOLENOID VALVE RS2840 0.15~0.7 MPa MADE IN KOREA PZ01	
17	RS4140		TPC SOLENOID VALVE RS4140 0.15~0.7 MPa MADE IN KOREA PZ01	
18	RS4240		TPC SOLENOID VALVE RS4240 0.1~0.7 MPa MADE IN KOREA PZ01	
19	RS4340		TPC SOLENOID VALVE RS4340 0.1~0.7 MPa MADE IN KOREA PZ01	

4. Comparison table between label and laser marking

20	RS4440		TPC SOLENOID VALVE RS4440 0.1~0.7 MPa MADE IN KOREA PZ01		
21	RS4540		TPC SOLENOID VALVE RS4540 0.1~0.7 MPa MADE IN KOREA PZ01		

22	RS1140P		TPC SOLENOID VALVE RS1140P 0.25~0.7 MPa MADE IN KOREA PZ01		
23	RS1240P		TPC SOLENOID VALVE RS1240P 0.25~0.7 MPa MADE IN KOREA PZ01		
24	RS1340P		TPC SOLENOID VALVE RS1340P 0.25~0.7 MPa MADE IN KOREA PZ01		
25	RS1440P		TPC SOLENOID VALVE RS1440P 0.25~0.7 MPa MADE IN KOREA PZ01		
26	RS1540P		TPC SOLENOID VALVE RS1540P 0.25~0.7 MPa MADE IN KOREA PZ01		

번호	제품명	잉크 인쇄	레이저 마킹	비고
1	DR200			