

WG C57.139
 Proposed LTC Descriptions
 Contact: Dave Wallach

The following table is to aid an owner of an LTC identify a category of LTC in order to ascertain if the DGA levels are high enough for the owner to be concerned enough to take action. This table is intended for use in transformers where the LTC is located in a separate compartment from the transformer main tank and therefore is not valid for use in transformers where the LTC is co-located with the windings of the transformer. LTC descriptions may be found in the documentation associated with the particular LTC in question or could be found by contacting the LTC and/or transformer [manufacturer](#).

LTC CONTACT TYPE			
ARC	Arcing Switch (Arcing contacts are tap-changer contacts where switching arcs occur in oil during a normal tap change operation.)		
VAC	Vacuum (Vacuum contacts have the switching arc contained in a vacuum bottle)		
↓	LTC TYPE		
	S	Switch with separate tap selector	
	T	Tap selector also makes/breaks	
	↓	VENTING	
		S	Sealed Tank (exclude presence of pressure relief device)
		U	Uni-directional (vents on pressure)
		B	Bi-directional (vents and breathes freely through dessicant breather)
F	Free (vents and breathes freely to atmosphere)		

Editorial comment – an alternative would be to number the types 1 thru 12.

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Condition	<i><u>Ethylene</u></i> <i>Acetylene</i>	<i><u>Methane + Ethane + Ethylene</u></i> <i>Acetylene</i>	<i><u>Ethane</u></i> <i>Methane</i>	<i><u>Ethylene</u></i> <i>Ethane</i>
ARC-S-S				
Normal				
Caution				
Warning				
ARC-T-S				
Normal				
Caution				
Warning				
VAC-S-S				
Normal				
Caution				
Warning				
ARC-S-U				
Normal				
Caution				
Warning				
ARC-T-U				
Normal				
Caution				
Warning				
VAC-S-U				
Normal				
Caution				
Warning				
ARC-S-B				

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Normal				
Caution				
Warning				
ARC-T-B				
Normal				
Caution				
Warning				
VAC-S-B				
Normal				
Caution				
Warning				
ARC-S-F				
Normal				
Caution				
Warning				
ARC-T-F				
Normal				
Caution				
Warning				
VAC-S-F				
Normal				
Caution				
Warning				

NOTES:

1 Treat two compartment arcing, separate tap selector (ARC-S) as ARC-T-U.

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Special thanks to Tim Raymond for supplying a list of LTC categories and James Gardner for review/commentary.

Recommended Next Steps

- Finalize table/descriptions
- Collect data
 - Consider request to Doble Engineering provide data, without identifying source, obtained by recent call to update Doble's LTC DGA Users Guide.
 - IEEE Transformer Committee user members
 - Existing sources such as commercial oil lab databases.
- Categorize data by description.
- Statistically analyze results to obtain limits to populate table. Also determine if there are some minimal dissolved combustible gas levels that must be present before ratios are valid.