

# Tech Corner

## Brady Tachy Overlap (BTO)

NOTE: PLEASE NOTE THAT THE FOLLOWING INFORMATION IS A GENERAL DESCRIPTION OF THE FUNCTION. DETAILS AND PARTICULAR CASES ARE NOT DESCRIBED IN THE ARTICLE. FOR ADDITIONAL EXPLANATION PLEASE CONTACT YOUR SALES REPRESENTATIVE.

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# Brady Tachy Overlap (BTO)

Brady-Tachy Overlap (BTO) is a function which starts as soon as the pacing zone and the Slow VT detection zone overlap by programming the maximum pacing rate faster than the slow VT detection rate.

It allows the patient to benefit from biventricular (CRT-D) and ventricular (ICD) pacing during exercise while maintaining slow VT detection and therapy if programmed.



## AVAILABILITY

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This algorithm is available on all MicroPort CRM ICD and CRT-D models.

## DEFINITION

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MicroPort CRM ICDs and CRT-Ds offer the possibility to pace the ventricle(s) up to the max pacing rate (145 bpm) during the exercise, and to detect ventricular tachycardias slower than the max pacing rate.

## INDICATION

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- **CRT-D patients:** All heart failure patients indicated for CRT pacing, will also benefit from pacing during exercise<sup>1</sup>. In addition, it has been shown that more than 30% of the CRT patients also suffer from Slow VT<sup>2</sup>.
- **ICD patients:** ICD patients with chronotropic incompetence may benefit from sensor driven pacing, or tracking of sinus tachycardia during exercise. About 30% of ICD patients also present Slow VT<sup>2</sup>.

## DESCRIPTION OF THE FUNCTIONING

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### BTO programming

BTO is not a parameter, but the overlap of two zones:

1. the pacing zone
2. the Slow VT detection zone.

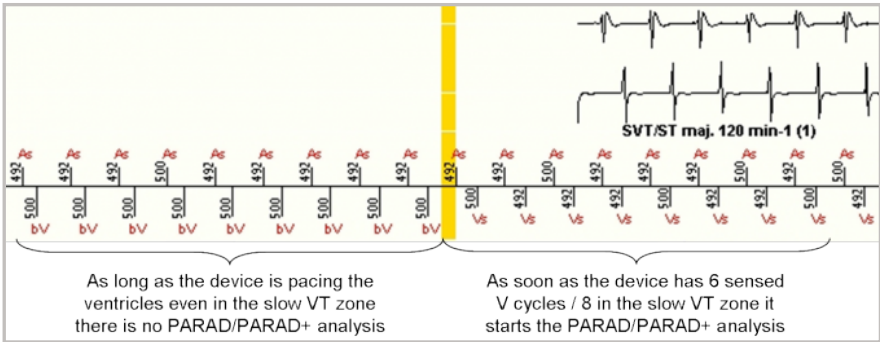
The pacing zone (maximum pacing rate) can be programmed in the BRADY parameter screen and the Slow VT detection zone can be programmed in the TACHY parameter screen.

### BTO functioning

Each ventricular paced cycle even in the slow VT zone will be classified as a slow cycle and the device will not start PARAD/PARAD+ analysis.

When a patient is exercising, he/she benefits from ventricular pacing in VR/DR and biventricular pacing in CRT-D by being paced in the ventricles within the slow VT zone; the device does not start any analysis. As soon as the ventricular rhythm becomes spontaneous, the device stops pacing and the PARAD/PARAD+ analysis starts: stability, PR association and acceleration (see the Tech Corner article “Tachyarrhythmia Suspicion and Detection” and “PARAD/PARAD+” for more details).

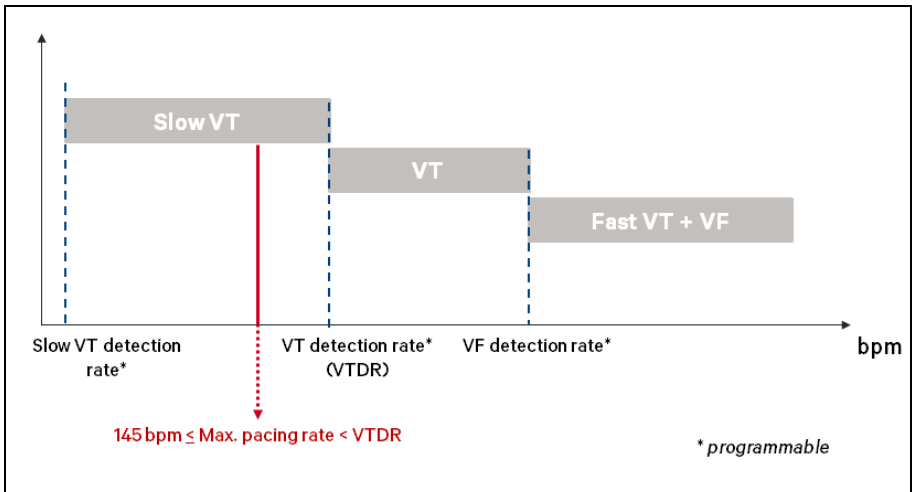
- If the device detects and confirms a ventricular tachycardia, it will apply the programmed therapy (if programmed) and will store the VT according to the storage priority.
- If the device detects and confirms a supra ventricular tachycardia, it will store the SVT according to the storage priority.



SVT episode detected by PARAD+

## Programming constraint

The maximum pacing rate can be programmed up to the VT detection rate (VTDR) or lower. The Brady Tachy Overlap will occur only in the Slow VT zone, never in the VT zone (= pacing is only available in the Slow VT zone).



Maximum pacing rate and detection zone programming

## Therapy in the Slow VT zone

If the cycle rate is between the programmed Slow VT detection rate and the programmed VT detection rate, the cycle is classified as a Slow VT cycle.

Rhythm detection is based on the sliding analysis of 6 cycles out 8 consecutive cycles.

After detecting a Slow VT, the defibrillator applies the therapies programmed for this zone.

## BIBLIOGRAPHY

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1. Maximizing Patient Benefit From Cardiac Resynchronization Therapy With the Addition of Structured Exercise Training. A.Y. Patwal et al, JACC Vol. 53, No. 25, 2009 June 23, 2009:2332–9.
2. N Sadoul, R Mletzko, F Anselme, for the Slow VT Study Group Incidence and Clinical Relevance of Slow Ventricular Tachycardia in Implantable Cardioverter-Defibrillator Recipients: An International Multicenter Prospective Study. *Circulation* 2005; 112: 946-53.

## OTHER RELATED ARTICLES

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1. Bansch D, Castrucci M, Bocker D, et al. Ventricular tachycardias above the initially programmed tachycardia detection interval in patients with implantable cardioverter-defibrillators: incidence, prediction and significance. *J Am Coll Cardiol.* 2000 Aug;36(2):557-65.
2. ACC/AHA 2005 Guideline Update for the Diagnosis and Management of Chronic Heart Failure in the Adult. A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. SA Hunt et al. *Circulation.* 2005;112:e154-e235.
3. Guidelines for the diagnosis and treatment of Chronic Heart Failure. The taskforce for the diagnosis and treatment of CHF of the ESC. K. Swedberg et al., *EJH* 2005.
4. McAlister FA et al. CRT Study meta-analysis. *Ann Intern Med* 2004;141:381.
5. Exercise Performance Following Cardiac Resynchronization Therapy in Patients With Heart Failure and Ventricular Conduction Delay Auricchio, Kloss, Trautmann : *Am J Cardiol* 2002; 89:198 –203.

Refer to user's manual furnished with the device for complete instructions for use ([www.microportmanuals.com](http://www.microportmanuals.com)).