5.116 differ_from_at_most_k_pos

Origin	Inspired by differ_from_at_least_k_pos.
Constraint	differ_from_at_most_k_pos(K, VECTOR1, VECTOR2)
Type	VECTOR : collection(var−dvar)
Arguments	K : int VECTOR1 : VECTOR VECTOR2 : VECTOR
Restrictions	$\lvert$VECTOR$\rvert \geq 1$ required(VECTOR, var) $K \geq 0$ $K \leq \lvert$VECTOR1$\rvert$ $\lvert$VECTOR1$\rvert = \lvert$VECTOR2$\rvert$
Purpose	Enforce two vectors VECTOR1 and VECTOR2 to differ from at most K positions.
Example	$(3, \langle 2, 5, 2, 0 \rangle, \langle 3, 6, 2, 0 \rangle)$
	The differ_from_at_most_k_pos constraint holds since the first and second vectors differ from 2 positions, which is less than or equal to $K = 3$.
Typical	$K > 0$ $K < \lvert$VECTOR1$\rvert$ $\lvert$VECTOR1$\rvert > 1$
Symmetries	• Arguments are permutable w.r.t. permutation (K) (VECTOR1, VECTOR2). • K can be increased to any value $\leq \lvert$VECTOR1$\rvert$. • Items of VECTOR1 and VECTOR2 are permutable (*same permutation used*).
Arg. properties	Contractible wrt. VARIABLES1 and VARIABLES2 (*remove items from same position*).
Used in	all_differ_from_at_most_k_pos.
See also	**implied by:** differ_from_exactly_k_pos ($\leq$ K *replaced by* $=$ K). **system of constraints:** all_differ_from_at_most_k_pos.
Keywords	**characteristic of a constraint:** vector. **constraint type:** value constraint.

Arc input(s)	VECTOR1 VECTOR2
Arc generator	$PRODUCT(=) \mapsto$ collection(vector1, vector2)
Arc arity	2
Arc constraint(s)	vector1.var $\neq$ vector2.var
Graph property(ies)	**NARC**$\leq$ K

Graph model

Parts (A) and (B) of Figure 5.258 respectively show the initial and final graph associated with the **Example** slot. Since we use the **NARC** graph property, the arcs of the final graph are stressed in bold.
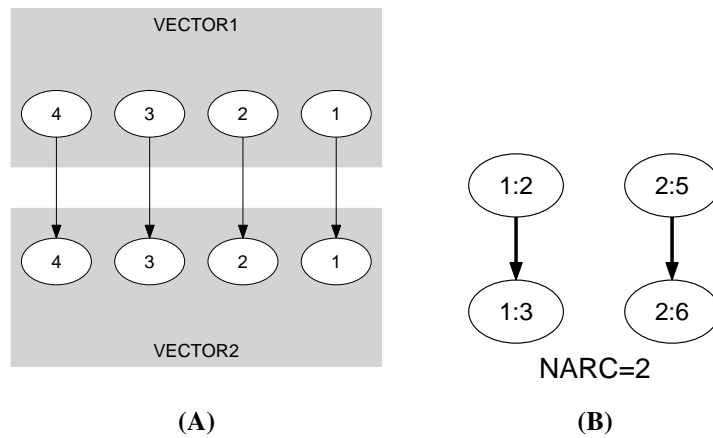

(A)   (B)

Figure 5.258: Initial and final graph of the differ_from_at_most_k_pos constraint