Flow-shop problems with a single server

- **maximal polynomially solvable:**

$F2\|\|C_{max}$	Johnson (1954) [3]
$F2;S1\|p_{ij}=p;s_{ij}=s;r_i\|C_{max}$	Brucker et al. (2005) [1]
$F;S1\|p_{ij}=1;s_{ij}=s;r_i\|C_{max}$	Brucker et al. (2005) [1]
$F;S1\|p_{ij}=p;s_{ij}=s\|C_{max}$	Brucker et al. (2005) [1]
$F2;S1\|p_{ij}=p;s_{ij}=s;r_i\|\sum C_i$	Brucker et al. (2005) [1]
$F;S1\|p_{ij}=1;s_{ij}=s;r_i\|\sum C_i$	Brucker et al. (2005) [1]
$F\|p_{ij}=p;r_i\|\sum w_iC_i$	Single-machine problem
$F2;S1\|p_{ij}=p;s_{ij}=1;r_i\|\sum w_iC_i$	Single-machine problem
$F\|p_{ij}=p;r_i\|\sum w_iU_i$	Single-machine problem
$F2;S1\|p_{ij}=p;s_{ij}=1;r_i\|\sum w_iU_i$	Single-machine problem
$F2;S1\|p_{ij}=p;s_{ij}=s\|\sum w_iU_i$	Assignment problem
$F;S1\|p_{ij}=1;s_{ij}=s\|\sum w_iU_i$	Assignment problem
$F\|p_{ij}=p;r_i\|\sum T_i$	Single-machine problem
$F2;S1\|p_{ij}=p;s_{ij}=1;r_i\|\sum T_i$	Single-machine problem
$F\|p_{ij}=1;r_i\|\sum w_iT_i$	Single-machine problem
$F\|p_{ij}=p\|\sum w_iT_i$	Single-machine problem
$F2;S1\|p_{ij}=p;s_{ij}=s\|\sum w_iT_i$	Assignment problem
$F;S1\|p_{ij}=1;s_{ij}=s\|\sum w_iT_i$	Assignment problem

- **minimal NP-hard:**

	$F2;S1\|p_{ij}=p\|C_{max}$	Brucker et al. (2005) [1]
*	$F2\|r_i\|C_{max}$	Lenstra et al. (1977) [4]
*	$F2;S1\|s_{ij}=s\|C_{max}$	Brucker et al. (2005) [1]
*	$F3\|\|C_{max}$	Garey et al. (1976) [2]
*	$F2\|\|L_{max}$	Lenstra et al. (1977) [4]
*	$F2;S1\|p_{ij}=1;r_i\|L_{max}$	Brucker et al. (2005) [1]
*	$F3;S1\|p_{ij}=1;r_i\|L_{max}$	Brucker et al. (2005) [1]
*	$F2\|\|\sum C_i$	Garey et al. (1976) [2]
*	$F2;S1\|p_{ij}=1;r_i\|\sum C_i$	Brucker et al. (2005) [1]
*	$F3;S1\|p_{ij}=1;r_i\|\sum C_i$	Brucker et al. (2005) [1]
	$F2;S1\|p_{ij}=1\|\sum w_iU_i$	Brucker et al. (2005) [1]
	$F3;S1\|p_{ij}=1\|\sum w_iU_i$	Brucker et al. (2005) [1]
	$F2;S1\|p_{ij}=1\|\sum T_i$	Brucker et al. (2005) [1]
	$F3;S1\|p_{ij}=1\|\sum T_i$	Brucker et al. (2005) [1]
*	$F2;S1\|p_{ij}=1\|\sum w_iT_i$	Brucker et al. (2005) [1]
*	$F3;S1\|p_{ij}=1\|\sum w_iT_i$	Brucker et al. (2005) [1]

- **minimal open:**

$F2;S1\|p_{ij}=1\|C_{max}$	$F3;S1\|p_{ij}=1;s_{ij}=1;r_i\|L_{max}$	$F2;S1\|p_{ij}=1;s_{ij}=s;r_i\|\sum w_iC_i$
$F2;S1\|s_{ij}=1\|C_{max}$	$F3;S1\|p_{ij}=p;s_{ij}=1\|L_{max}$	$F3;S1\|p_{ij}=1;s_{ij}=1;r_i\|\sum w_iC_i$
$F3;S1\|p_{ij}=1\|C_{max}$	$F2;S1\|p_{ij}=1\|\sum C_i$	$F2\|p_{ij}=p;r_i\|\sum w_iT_i$
$F3;S1\|p_{ij}=p;s_{ij}=1;r_i\|C_{max}$	$F3;S1\|p_{ij}=1\|\sum C_i$	$F2;S1\|p_{ij}=1;s_{ij}=1;r_i\|\sum w_iT_i$
$F2;S1\|p_{ij}=1;s_{ij}=s;r_i\|L_{max}$	$F3;S1\|p_{ij}=p;s_{ij}=1\|\sum C_i$	$F3\|p_{ij}=p;r_i\|\sum w_iT_i$

- **maximal open:**

$F2;S1\|s_{ij}=1\|C_{max}$	$F3;S1\|p_{ij}=p\|\sum U_i$
$F3;S1\|p_{ij}=p;r_i\|C_{max}$	$F;S1\|p_{ij}=1\|\sum U_i$
$F;S1\|p_{ij}=1;r_i\|C_{max}$	$F;S1\|p_{ij}=p;s_{ij}=s;r_i\|\sum w_iU_i$
$F;S1\|p_{ij}=p\|\sum w_iC_i$	$F;S1\|p_{ij}=p;s_{ij}=s;r_i\|\sum w_iT_i$

References

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