

Element	Manual			Semi Automatic			Semi Auto with Quick Connects			Automatic			
	Time (s)	Batch Size	Per Cylinder	Time (s)	Batch Size	Per Cylinder	Time (s)	Batch Size	Per Cylinder	Time (s)	Batch Size	Per Cylinder	
Unload from vehicle to Storage	180	15	12.0	180	15	12.0	180	15	12.0	180	15	12.0	
Visual Inspection & sort cylinders	300	15	20.0	300	15	20.0	300	15	20.0	loaded to conveyor	460	15	30.7
Remove old labels/caps	150	15	10.0	150	15	10.0	150	15	10.0	150	15	10.0	
Check MPR device	0	15	0.0	0	15	0.0	0	15	0.0	0	15	0.0	
FLT to Fill area	100	15	6.7	100	15	6.7	100	15	6.7	0	15	0.0	
Load Pallet to filling bay	60	15	4.0	60	15	4.0	60	15	4.0	0	15	0.0	
at the point of filling													
Connect 15 Hoses	120	15	8.0	120	15	8.0	45	15	3.0	0	1	0.0	
Open 15 Cylinder Valves	75	15	5.0	75	15	5.0	75	15	5.0	0	1	0.0	
Open Vent Valve	5	15	0.3	0	15	0.0	0	15	0.0	0	1	0.0	
Return, Close Vent Valve	35	15	2.3	0	15	0.0	0	15	0.0	0	1	0.0	
Open Vacuum Valve	5	15	0.3	0	15	0.0	0	15	0.0	0	1	0.0	
Return, Close Vacuum Valve	35	15	2.3	0	15	0.0	0	15	0.0	0	1	0.0	
Open O2 Fill Valve, wait and close O2 fill Valve	300	15	20.0	0	15	0.0	0	15	0.0	0	1	0.0	
Manual check of each cylinder for temp. rise	30	15	2.0	30	15	2.0	30	15	2.0	0	1	0.0	
Check O2 Fill Pressure	10	15	0.7	0	15	0.0	0	15	0.0	0	11	0.0	
Open CO2 Fill Valve	5	15	0.3	0	15	0.0	0	15	0.0	0	1	0.0	
Return, wait and close CO2 Fill Valve	180	15	12.0	0	15	0.0	0	15	0.0	0	1	0.0	
Check CO2 Fill Pressure	10	15	0.7	0	15	0.0	0	15	0.0	0	1	0.0	
Open Ar Fill Valve	5	15	0.3	0	15	0.0	0	15	0.0	0	1	0.0	
Return, wait and close Ar Fill Valve	180	15	12.0	0	15	0.0	0	15	0.0	0	1	0.0	
Check Ar Fill Pressure	10	15	0.7	0	15	0.0	0	15	0.0	0	1	0.0	
Close Cylinder valves	75	15	5.0	75	15	5.0	75	15	5.0	0	1	0.0	
Open vent valve, wait to zero	10	15	0.7	0	15	0.0	0	15	0.0	0	1	0.0	
Disconnect 15 hoses	90	15	6.0	90	15	6.0	30	15	2.0	0	15	0.0	
Close vent valve	5	15	0.3	0	15	0.0	0	15	0.0	0	15	0.0	
Log Fill data	60	15	4	0	15	0	0	15	0	0	15	0	
Check & replace labels ar required	100	15	6.7	100	15	6.7	100	15	6.7	100	15	6.7	
Fit caps	45	15	3.0	45	15	3.0	45	15	3.0	45	15	3.0	
Shrink Wrap	45	15	3.0	45	15	3.0	45	15	3.0	45	15	3.0	

Operator time at filling point	24 mins	10 mins	7 mins	3 mins
Cylinder Per man per shift	263	652	849	1989
Cylinders Per man per hour at point of fill	33	81	106	249

FLT to Full Storage	120	15	8	120	15	8	120	15	8	120	15	8
Load to Vehicle	120	15	8	120	15	8	120	15	8	120	15	8
Total time per cylinder - minutes			2.7			1.8			1.6			1.4
Operator Available Time per shift - minutes			420			420			420			420
Cylinders per man per shift			153			235			256			310
Cylinder per man per hour Total			19			29			32			39